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Growth of Indian Information Technology Industry and Its Management

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Abstract
Growth and revolution in it industry plays a phenomenal role in determining how we live our lives and redefining consumer experiences. It helps the economy growth in many ways. It gives more employment opportunities through its management properly, brings foreign currencies through export and so on. Information Technology is the recent development in communication. This industry has included information technology and business processing management. Size of IT Industry in India is very big with 948560 crores approx. in terms of revenue. It also brings a considerable amount of foreign currencies into the country through exports. It has developed in front of most parts of innovation. It has turned into the key driver of word wide management of financial development. No doubts its impact in India has started a bit late but now it is taking fast strides and moving shoulder to shoulder even with the most advanced countries of the world.

Key Words: *IT industry, financial development, Employment, Innovation, Management, Foreign Currency, Business Opportunity.*

INTRODUCTION

The argument for achieving economic progress mainly through industrialisation and concomitant urbanisation had been put forward as early as the 1940s (Rosenstein-Rodan 1943). Subsequently, the post-World War II period witnessed a large body of literature emanating from economists and development practitioners engaging in discourses as to when, how, and for how long the state should intervene in the industrialisation process of a nation. A number of developing countries, including Thailand, Malaysia, South Korea, and China, had designed integrated national policies to build local/indigenous technological capability in those industrial sectors which they deemed critical to their progress—for instance, steel, aviation, petrochemicals, electronics, and energy(Ramesh and Weiss 1979).In the case of technology-intensive sectors in developing economies, the state is expected to play the dual role of facilitating technology access (through trade negotiations) and help build national/subnational technology capability by investing in enabling infrastructure as well as actively promoting an innovative ethos in the citizenry. The strategy and approach of the state in achieving the aforesaid dual objectives in a dynamic context would largely determine the way in which a certain sector would develop over time. This is not to undermine the contribution of independent market-responsive actions of the private enterprises, which often strengthens a sector's performance beyond the fi rm level. This paper attempts to examine the role of the Indian state (both national and subnational) in enabling the information technology (IT) sector to capitalise on the opportunities and deal with challenges during the last quarter of a century or so. The choice of the sector could not have been better as the Indian IT industry has grown phenomenally, and its engagement with the global market has been acknowledged widely. Taking off with the fast globalisation of the software industry and increased demand for software following the personal computer (PC) revolution of the 1970s, the Indian IT industry responded to the sustained demand for networking in the 1980s. The commercialisation of the internet in the 1990s and the growing demand for Indian IT engineers in the field of customised software development as well as repair and maintenance of computing machines prompted the rapid growth of the industry which, as Parthasarathy (2004a) observes, took advantage of the contemporaneous changes in the political and institutional arena, both globally and at home. This industry has earned a distinction of being one of the few "achieving" sectors in India during the post-reforms period. As would be detailed later, this sector has emerged as a globally competitive industry, especially in information technology enabled services (ITES). It has generated large-scale employment opportunities, encouraged innovation, and has remained largely non-polluting. The paper has been organised as follows. Section 1 delineates the growth and performance of the IT sector in India. Section 2 provides a critical assessment of the various policy initiatives taken by the central as well as state (subnational) governments. Section 3 discusses key constraints and challenges facing the sector in a highly competitive global market scenario. Section 4 summarises analyses and arguments. The scope of this paper, however, does not include state initiatives in e-governance and e-commerce.

Rise of the IT Industry in India

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The presence of a nascent IT industry could be found during the early years of post-independence India, although it remained an insignificant sector for long. As may be surmised from Figure 1 that even by the early 1990s the sector had achieved little to underscore its contribution to the national industrialisation process. This was despite the fact that the state had made immense efforts to build and nurture a knowledge infrastructure, which enabled the IT industry to prosper post the 1990s. This exemplary role played by the state early on must not be undermined. Nevertheless, it has been argued that in keeping with the growing pace of trans nationalisation of business and trade the state had played a proactive role from the mid-1980s to the mid-1990s (Evans 1995; Heeks 1996; and Joseph 1997). A particular mention may be made of the strong emphasis placed on the discipline of electronics and telecommunications which picked up rapidly from 1980 onwards, leading to an increase in the number of seats in the discipline in public engineering and technical education/training institutions.1Moreover, with the economic reforms formally in place by the early 1990s, India's position as the preferred business process outsourcing (BPO) and knowledge process outsourcing (KPO) destination in the world had been established. India entered the global IT market by capitalising on the demand for low-cost but high-quality programming skills (Parthasarathy 2004a). The establishment of a series of software technology parks (STPs) across several cities in India during the 1990s (and beyond) was an exemplary initiative of the state, akin to affirmative action, in promoting an industry. Besides a favourable domestic policy climate and highly attractive export promotion schemes, a host of external factors were crucial for the growth of the software industry (Sharma 2015). Several state-promoted technical and other professional institutes of higher learning contributed to the massive rise in the number of IT/ITES trained graduates and professionals by introducing various relevant courses in their curricula. The import–export policy of 1983–84 and subsequent foreign trade policies of 2004–09 and 2009–14 laid a clear emphasis on the promotion of exports from the IT sector. Also, the foreign direct investment (FDI) policies adopted in the early 1990s and encouragement offered to IT companies to set up operations in special economic zones (SEZs) indirectly incentivised the IT industry. The deregulation of the telecom sector gave a big boost to the IT revolution in India. Moreover, labour reforms introduced during the post-liberalisation period facilitated easy hiring and fi ring, thereby benefiting the firm owners in the sector. Figure 1 depicts the impressive performance of the sector in terms of the exports from the Indian IT/ITES sector since the turn of the millennium. This remarkable transformation of the sector is attributable in a large measure to the Indian IT sector's matchless solution to the unprecedented global IT crisis, best known as the "Y2K problem" or the "Millennium bug."2 It is widely acknowledged that the Indian IT business grew manifold on the basis of the competence displayed in solving this crisis, and subsequently prominent multinational companies (MNCs) started outsourcing financial, legal, logistics, retail, and health services in large volumes to the Indian IT sector. In a sense, the Indian strategy and experience with software services is not very different from that of Taiwan or South Korea in manufacturing (Parthasarathy 2004a). However, the global financial crisis that precipitated in2007–08 had an adverse impact on the Indian IT industry's prospects; the major MNCs, particularly from the United States (US) and United Kingdom (UK), scaled down their orders. This was in addition to the fact that the US government, as a matter of policy, was not keen that large-scale BPO assignments be awarded to the Indian IT fi rms. Despite these external challenges, the Indian IT services have performed impressively even during the recent years. For instance, in 2015 alone, the IT and BPO/business process management (BPM) business had generated a revenue worth $148 billion (amounting to 8.1% of the GDP), and its exports had amounted to approximately $98 billion. The Indian IT companies have set up over 600 delivery centres across 78 countries, thus maintaining their leadership position in the global sourcing arena.3 Notwithstanding the moving up of India in the value chain over the last one and a half decades, the Indian IT sector is still viewed by major MNCs from the industrialised nations as a destination where cheap labour is available. This is because a significant portion of Indian outsourcing industry still comprises low-end IT services.

National-level IT Policy Initiatives

Across several developing economies such as India, Brazil, China, and South Korea, the state policy of protection and promotional intervention has helped build technological capabilities, including those in the IT sector (Heeks 2004). In an analysis of the nature of state intervention in the Indian IT sector, Parthasarathy (2004b) has identified three phases—rigid policy restrictions (prior to 1984), eased restrictions (1984–90), and proactive promotion of the IT industry (post 1990). Policies for the Indian IT industry in the post-reform period have been congruous with the obvious global shift in development policy thinking from state intervention towards market-oriented policies (Harindranath and Liebenau 1995). In India, the state has assumed the role of a facilitator and active promoter of the IT industry through initiation of several policies directly and indirectly concerning the sector and its various facets.4 In addition to the IT Act of 2000 (Ministry of Law, Justice and Company Affairs 2000) and the IT (Amendment) Act of 2008 (Ministry of Law and Justice 2009), it is possible to identify policies, at least since the mid-1980s, which directly or indirectly helped the growth of the IT industry (Table 1). These policies, inter alia, simplified procedures and reduced the number of documents and formalities required in foreign trade.

Table 1: Selected Policies and Their Focus on the IT Industry in India

Policies with Primary Focus on the IT Industry	Policies That Indirectly Helped the IT Industry

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New Computer Policy (1984); Software Policy (1986); IT Act, 2000 and IT Act (Amendment) (2008); National Electronics Policy (2012); National Cyber Security Policy (2013)	EXIM Policy (1985, 1992–97, 2002–07); Industrial Policy (1991); Labour Reforms Policy, SEZ Policy (2000); Science, Technology and Innovation Policy (2013); Foreign Trade Policy (2009–14, 2015–20); Fiscal Policy; FDI Policy; Education Policy (1968, 1986, 1992, 2015); National Manufacturing Policy (2011)

(Source: Prepared by authors on the basis of information obtained from the Ministry of Statistics and Programme Implementation, Reserve Bank of India, and Ministry of Human Resource Development).

The reforms made the import of capital goods, including computer hardware, smart mobile and related accessories, cheaper. This helped in meeting the demand for products needed to fuel the IT revolution in our country. The removal of state controls and regulations and export incentives offered to IT firms through a series of policy reforms led the Indian exporters to explore business opportunities in new markets outside India. Macro policies with general growth objectives too helped this industry grow significantly. For example, several STPs and electronics hardware technology parks (EHTPs) were set up across the country under the export, import and foreign trade policies. The IT industry also cashed in on several government-initiated major projects such as computerisation of train reservation and banking operations, networking of government offices, modernisation of telecom infrastructure during the 1980s, withdrawal of money through ATMs, the use of Unique Identification Authority of India (UIDAI) card for the transfer of government benefits to people, and e-governance for better public service delivery (Sharma 2015). The IT/ITES industry will play a vital role in the recently launched government programmes/ schemes such as Make-in-India, Stand-up India, Digital India, and Smart City Mission. The role of state policy in IT industry, particularly in India, has been well-acknowledged in literature (Parthasarathi 1987; Joseph 1997 and 2007; Heeks 1996; Chowdary 2002; Mani 2001a and 2001b; Joseph and Parayil 2008). The government set up or promoted a number of professional and specialised institutions of repute in different stages across the country that helped lay a strong foundation for the growth of IT industry.5 Without the state's infrastructure during the 1960s and 1970s— designed to promote import substitution industrialisation— the industry would not have been in a position to exploit the IT opportunities which arose during the 1980s (D'Costa 2011). During the past six decades, the central government has provided fiscal concessions such as tax holidays and reduction in excise duty and import duty to promote the IT sector. The liberalisation of imports since the mid-1980s rendered it easier to import computer spare parts and components for assembling, repair, and maintenance of old computers. Trade fairs, seminars, and conferences were organised regularly to facilitate networking to boost the IT sector. A number of trade and technology-related agreements signed by central and state governments with other nations and United Nations agencies benefited the IT sector substantially. Further, establishment of computer-related infrastructure such as IT parks,6 earth stations, satellite links and international gateways and setting up of institutions such as Computer Software Export Promotion Council were proactive policy initiatives. Importantly, the government itself has been a bulk buyer of computer hardware and software manufactured by domestic firms to promote local manufacturers. While a single window clearance mechanism for trade in IT products has been facilitated, state policies on data security, prevention of piracy, content regulation, and cybercrimes have also been framed from

Table 2: Policy Thrust Areas in the IT Sector in India since 1955

Period	Thrust Areas	Inadequacies
1955–70	Early computing	Only individual motivation to the sector
1970–78	Slow growth of indigenous computers	No clear IT policy
1978–90	Hardware manufacturing	Substantial dependence on electronics/computer imports
1991–97	Improved telecom infrastructure, sops and incentives	Confined to select citie
1997–2008	Export promotion, clusters of IT or STPIs	Unevenly spread across space
2008–14	ITES, software development for export purpose. India becoming software superpower	No hardware manufacturing, no pan-India presence, domestic demand untapped, poor data security

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2014 and After	Maturing with diversification of ITES, big data, cloud computing, e-commerce	No autopilot mode, stuck with low-end of the IT services value chain

Source: Compiled from Rajaraman (2012), Sharma (2009 and 2015), Heeks (2004) and Department of Electronics and Information Technology.

The policy emphasis on self-reliance through the promotion of an indigenous IT industry remained throughout much of the 1970s. But by 1978, there had emerged a growing recognition of the potential of imported technology in accelerating the national electronics and computer industry. It was, therefore, no coincidence that between 1978 and 1984 a host of state and central electronics development corporations were established with the "state-of-the-art" facilities for manufacturing, training and education. This reorientation in policy could be seen in the formulation of several "forward-looking" policies, which underlined this newfound belief. The Electronics Commission (1971), New Computer Policy (1984), New Electronics Policy (1985), and Indian Software Policy (1986) were formal initiatives undertaken to create a strong base for an outward-oriented and liberalised IT sector in India. Notwithstanding these bold policy efforts, in practice, the IT activities undertaken by the state, private sector, universities, or institutions continued to remain dependent on the imports of computers, peripherals, and other components. Hence, by the mid-1980s a gradual but visible shift towards external orientation of the so-far "protected" IT industry could be noted. With the economic reforms formally in place by 1991, the IT sector received a major boost during the 1990s through a series of state policies—the dismantling of Foreign Exchange Regulation Act (FERA) and other restrictive regulations; setting up of STPs and EHTPs; introduction of single window clearance and, importantly, removal of physical controls on imports of most electronics equipment and components (Joseph 2007). Similar policies were introduced in the subsequent decades as well.8 Moreover, the implementation of the New Industrial Policy of 1991 and subsequent state policies to facilitate the IT (including BPO) sector through tax-free and fi scally-incentivised SEZs and National Manufacturing Investment Zones have been recognised as important measures in this direction.

Major Challenges before the IT Sector

Notwithstanding a range of policy initiatives to take the industry forward, the Indian IT sector is still stuck in the low-end segment, threatening its pre-eminent position which it enjoyed during the early 2000s. Some of the major concerns plaguing this sector have been discussed below.

Neglect of research and development:

The neglect of research and development (R&D) in the IT sector is evident from the fact that the number of information technology related patents registered by Indian companies during the 15-year period (1999–2013) has remained relatively low; only 14% patents were registered in computer technology (14%), 3% in IT methods for management, and 3% in digital communication (Figure 2). While this unenviable record reflects the poor R&D taking place in STPs, which account for much of the software exports from India, it also shows that the firms outside the software parks were just not exporting enough. It has been pointed out that the uneven performance of firms in STPs across states has affected the R&D activities. As shown in Figure 3, four states, namely, Andhra Pradesh (14%), Karnataka (35%), Maharashtra (20%) and Tamil Nadu (11%) accounted for 80% of the total exports from registered units with STPIs (software technology parks of India) for 2012–13.

Neglect of electronic hardware manufacturing:

Mani (1995) argues that innovation capabilities of developing countries in areas of high technology such as telecommunication equipment get influenced in a significant manner by not only the domestic policies and support systems which favour such activities but also by the external environment. In the last 10–15 years (2000–15), countries such as China, Korea, Taiwan, Singapore and Malaysia have emerged as leading global IT hardware and electronics manufacturers/exporters and have contributed significantly to the growth of their economies, whereas the Indian electronics industry has failed to keep pace with these countries and is still at a nascent stage of development (Vijayasri and Rao 2013). India's current competitiveness in the international IT market may be undermined by the emergence of new players like China, which has a solid hardware base and a rapidly strengthening software base (Joseph 2007).

Too much emphasis on low-end IT services:

The Indian IT/ ITES industry is virtually in a trap, providing low-end services. Most of the Indian IT firms provide business-to-business (B2B) services and not business-to-consumer (B2C) till date. India is yet to see its own corporate IT product company the size of Google, Yahoo, Facebook, SAP, WhatsApp, or Adobe. However, in recent times, the high-end IT segments like cloud computing, big data, and mobile applications are also becoming an integral part of the IT firms in India. Constant innovation in SMAC (social, mobile, analytics, and cloud computing) technologies is the biggest factor posing serious threats as well as creating opportunities for the IT industry in India. The ever-changing terms and conditions of IT business models coupled with clients' demand for latest IT technologies and technological disruptions are transforming this sector significantly. Although the value of domestic revenue from the IT/ITES industry has been on the rise, the share of the high-end software products and engineering services for the period 2012–16 remained just half of that of the IT services and one-

fifth of the total revenue from these three segments of the industry in 2016–17 (Figure 4). But, the compound annual growth rate (CAGR) for the segment, unlike a decade back, for the same period was 13.22%, and was the highest among the three segments—IT services (8.68%), ITES/BPO (12.53%), and total IT/ITES (8.96%).

Concluding Observations

The IT policy in India has undergone drastic changes during the past 60 years. Following the early decades of protectionism, by the mid-1980s, the state, partially and gradually though, moved ahead to liberalise the economy and formulated its first computer policy. However, even though the government had realised early on the potential of computer technology for the economic progress of the nation, the dependence on imports of IT hardware remained heavy for the decades to come. Another policy concern was the uneven growth of the sector spatially. By the early 1990s, the central government had created a notable IT infrastructure, especially the STPs and related transport and communication network. However, in subsequent years, several state governments started offering attractive fiscal sops and other incentives for IT firms; a few states succeeded in creating IT clusters, which were mostly concentrated in the four states of Karnataka, Maharashtra, Andhra Pradesh, and Tamil Nadu. Globally, India has continued to perform well in the computer software and ITES sphere since the post-reforms period.

However, this achievement has been dwarfed by the neglect of high-end IT services, albeit it can be noted that latest technological advancements like cloud computing, big data and mobile applications, increasingly, are becoming part of business of IT firms in India. Too much of dependence on a few external markets for IT exports could prove to be a risky business model, and there is a serious need to explore possibilities of broad basing its market by looking at the African, Asian and Latin American markets. India's leading position as the global outsourcing hub has now come to be challenged by the anti-outsourcing policy of the US government, slowing down of growth in the developed world, and the fast-growing competition from Philippines, China, and Costa Rica. Also, the IT/ITES sector in the country faces a scarcity of professionals and venture capital. The increased threat to cyber security due to cloud computing, internet of things e-commerce, and digital payments is another concern which the industry has to deal with today. Recent government initiatives like Make-in-India, 100 Smart Cities Mission, and Digital India aim at improving e-governance, reducing electronics imports, spreading the benefits to smaller towns, and access untapped markets in India. But the success of such state initiatives would hinge upon constant innovation, improving the IT infrastructure, and removing legal and administrative bottlenecks to sustain its leadership position.

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2
Composition of The Research Paper

(Based on The Literature)

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Abstract

Research, derived from the idea of "Re-Search," is essentially a systematic and diligent inquiry aimed at discovering truth or filling gaps in knowledge. It involves logical investigation, critical evaluation, and analysis within a defined framework to arrive at reliable conclusions. In literature research, structure plays a vital role, as poems, stories, novels, or plays must be studied using appropriate methodologies such as text analysis, comparative, descriptive, or historical methods. A researcher must identify a relevant research area, study existing works, and avoid duplication to ensure novelty and contribution to knowledge. The process begins with topic selection, followed by title formulation, structured analysis, and interpretation. A research proposal further guides the project by outlining objectives, methodology, scope, limitations, and planning. Whether scientific, sociological, or literary, all research demands discipline, unbiased analysis, and logical reasoning to achieve meaningful outcomes and enrich the world of knowledge.

Key Words: *Research, comparative, methodologies, limitations*

Re-Search = Research. Research is a simple term. Searching for knowledge and searching for truth is research. It is a diligent and systematic inquiry or investigation into a subject. It is the process of filling a gap in knowledge by making a definite conclusion or finding out the truth after a detailed investigation of a limited topic following one or more well-disciplined research methods. In a word, (Samadi, Gazi, Hasan; 2014: pp.-15). the search for truth in an orderly manner can be called research. And in this quest for truth, it becomes necessary to use and apply again and again the data and knowledge that are known to us. The researcher has to move on the path of systematic analysis to reach a conclusion on a particular topic or to get new results. To reach the goal of research, the researcher has to work with the relevant data, evidence, sample, while he has to carry out the analysis process within a certain framework. This particular structure is of utmost importance in standard literature research. Why only literature research, may be that research is scientific or laboratory based, may be that of sociological or survey based. In a word, all research is based on a certain structure. In the field of literature research, there is no exception to the specific structure, rather the structure of the thesis is formed according to the subject matter. When literature written in the form of poems, stories, novels, plays, etc. becomes the basis of research, then the researcher has to follow a systematic research method, analyze many other relevant topics as needed and come to a conclusion. (Goswami, 1989: pp. 15-16). And this decision is considered a novelty in the state of knowledge.

Literature is the center of research. Regardless of the form in which the literature is written, the researcher tries to reach his conclusion through analysis and evaluation from a multifaceted point of view. The discovery of information or the discovery of theory, whatever the purpose for which the research is conducted, the main purpose of the researcher is to search for truth. In order to make this process of truth discovery acceptable, it is very important to follow a logical process within a certain research framework. In the logical and scientific process, the seemingly obscure facts or theories of literature become clear and enrich the world of knowledge. In the study of literature, a researcher always follows a systematic approach in presenting any basic truth or information. In this case, he performs his research work under the supervision of an institution or supervisor. However, no matter how independent or subordinate the research is carried out, the researcher has to follow the specific structure of the research to reach its precise goal. Research without definite objectives and structure never achieves the desired goal or does not allow that research work to be successful. Material as well as abstract materials can be relevant in literature research. Keeping in mind the specific scope and limitations of these materials, the researcher has to open new doors of knowledge through unbiased analysis, unemotional evaluation and logical conclusions. The first step to unlocking this new window of knowledge is to identify research areas. (Identification of the research field). The researcher has to do a lot of study to identify the research area. Because if the field of research is chosen without study, it may also happen that other researchers has already done research on the chosen topic. In such a case, the main goal of the research remains incomplete to fill the knowledge gap or to illuminate the unexplored topic or to give a new dimension to the previously discussed topic.

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Step-by-step in the systematization of a certain structure, first the topic and title (selection of the problem and fixing the title) are determined. After getting the idea of adequate study, relevant research, the researcher selects his own research topic and then selects the best title from the many alternative titles. The researchers then followed a systematic approach and arrived at the conclusion based on a step-by-step analysis. Text analysis is a widely used method in literature research. This method is usually applied to research conducted on stories, poems, novels, plays, or essays. But there are other methods like descriptive method, historical method, comparative method, observation method, case study, field study so on and so forth.

A research proposal is one of the most important aspects of a research project. A research proposal is a brief, well-written document that outlines the overall plan of the research. (Imam, 2001: pp. 539). The research proposal includes the following structural guidelines:

1) Title 2) Introduction 3) Description of the topic or problem 4) Functional definition 5) Objectives 6) Critique of relevant works 7) Reasonableness 8) Scope 9) Limitations 10) Possibilities 11) Research methodology 12) Sources 13) Chapter planning 14) Other plans 15) Conclusion and 16) Possible bibliography.

The life of the Subaltern classes in Bengali Drama (1947-2000)

Distribution of chapters

Chapter 1: Introduction
Chapter 2: The subaltern classes in Bengali Drama (pre-independence).
Chapter 3: The position of the subaltern classes based on different professions in Bengali Drama.
Chapter 4: Women of subaltern classes in Bengali Drama.
Chapter 5 Man of Subaltern classes in Bengali Drama
Chapter 6: Language, culture and religion. (Subaltern classes)
Chapter 7: The Conclusion
Bibliography (possible)

Since the main objective of research is to bring to light the truth or the unexplored so linguistic and proper arrangement are important in every research work. The thesis is constructed in a specific structured manner with the topics discussed, reviewed and analyzed throughout the study. In the field of literature research also, there is no dearth of formalism in writing this structured thesis. It is especially important to maintain the sense of context and impersonality in language construction. Apart from this, one has to move towards the results and conclusions through data analysis. A correct thesis or an appropriate thesis is written in a simple understandable language by recognizing the correct syntax and structure. A thesis is created based on the subject matter. Usually, the Context is made up of the preface or primary part, the middle or main text, and the end part. (Samadi, Gazi, Hasan; 2014: pp.-66).

Preliminaries

Generally, the task of the preface is to provide a concise and precise understanding of the overall topic of the written research according to the formal rules of the institution or the academic scenario. It contains titles, declarations, attestations, acknowledgements, prefaces and indexes. Relevant information about the research topic, perspective, institutional context, etc. can be easily obtained from these sections. Particularly in the preface, the essence of the entire study is found. Any reader reading this will get an idea of the whole concept. This includes tables, diagrams, indexes, word tables, epigraphs, dedicatory letters, and summaries.

The Main Text

The largest and most important part of the thesis is the text. This is called the main part. It contains the main problems of the entire study, all the data, the necessary analysis, the results and conclusions obtained. Here the researcher elaborated his arguments in the logical tradition. Here there is an introduction, there is also an important discussion of the main text. A summary and conclusion are also included. If necessary, the analysis of the main text is rationalized by means of charts, tables, diagrams, etc. Quotations are sometimes used here, and footnotes and endnotes are provided at the bottom of each page to avoid the confusion of finding the source of the quoted statement. This footnote and the last note are considered to be a structurally important part of the standard reference.

The End Part or The End Matter

The structure of a research work is important in many ways. Here the relevant information is attached as per the rules. The information of the statements made in the primary and main part is given in a comprehensive manner in the end. Basically, it is a list, a list and a summary. Here bibliography is identified as the most important part. The bibliography consists of a systematic list of published and unpublished books used in the entire research work. Specific conventions are maintained in referring to sources of bibliography and footnotes. As in the case of footnotes, the sources are mentioned at the bottom of the page or at the end of the chapter, as in the case of bibliography, all the information is mentioned at the end of the research work. In this regard, it should be remembered that the tradition of footnotes and the tradition of bibliography should be preserved. However, all

published and unpublished books, magazines, journals, etc. mentioned in the footnote must be mentioned in the bibliography, but there is no rule that everything in the bibliography must be in the footnote. (Samadi, Gazi, Hasan; 2014: p.78). The citation method is especially necessary in the writing of a research paper to provide logical support for correct information or theory in a given discussion. Another author's book chapter is used as a discussion or statement or as a citation of reliable sources from the Internet. At the same time, pointing to the source of accepted citations is an important part of honest research work. This is done by following the prescribed formats. Just as it is important to point out the true source of information, to acknowledge the contribution of others, it is the responsibility of an honest researcher to publish a reliable research work, avoiding plagiarism. The two most common methods for citation are:

1)The Chicago method

2) The M.L.A method

The **Chicago method** is a special method of bibliography. In this method, the name of the author, the title of the book, the reform number, the publication information and the page number are given in order. On the other hand, the MLA (The Modern Language Association) method has been appreciated in the research community as another important method. It is a important method of referencing. It consists of two parts: a brief in-text citation in the body of an essay and a detailed list of the 'works Cited' at the end of the work. In this method (for reference purposes only), the first parenthesis begins with the author's surname, publication date, colon, page number and ends with the first parenthesis. In writing the bibliography, the following information is presented in a specific order: Author's name, title, date of publication, author's name, date of publication, and place of publication.

Here is an example of a Chicago method;

Sukumer Sen, Bangla Sahiyyer Itihas: Vol ii, 1418, Ananda publisirs private limited Kolkata, page no-77.

Here is an example of a MLA method:

Brammer,Hugh. Land use and Land planning in Bangladesh. Dhaka. The University Press limited, 2002.

In addition, the composition of the research and the completion of the composition of a thesis may take into account such things as its regular typing, text correction, printing, interrupting, and submitting the necessary number of references to the authority, including the forwarding letter, following the proper procedure in a definite manner. However, these topics are sometimes considered extraneous to the main research topic. Overall, it can be said that out-of-structure research papers are in fact considered as canceled or weak research work.

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3

An Evaluative Study on Plagiarism: A Pertinent Problem in the field of Research

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Abstract
In the academic field, it is the desire of the academicians to publish his/her own research paper. In this process sometimes the research of one or more researcher becomes inspiration to a particular researcher. The level of inspiration sometimes crosses the ethical boundaries which leads to copying of the ideas or original research work of a researcher by a subsequent researcher & when such copying is done without proper acknowledgement or proper citation of the job of the previous authors, it gives rise to plagiarism. This results in loosing of the distinctiveness in the research work & seriously effects the academic integrity in research field. This situation is described as plagiarism. Plagiarism is usually done by educated people like research scholars and students who often take refuge to illegal modes of completing their research work. In the present paper the researcher has highlighted on the concept of plagiarism, the different types of plagiarism, the different softwares or anti plagiarism tools that are available to check and control plagiarism, strategies to tackle plagiarism and avoid it and finally the penal measures that are introduced by University grant Commission (UGC). The study concludes that although origin of plagiarism can be traced since ancient times, but the development of internet has aided a huge upsurge in plagiarism in the recent times. Therefore, to cope up with plagiarism it is the need of the hour to focus on information technology and develop adequate software system to detect and prevent plagiarism.

Keywords*: Plagiarism, software, UGC, academic integrity*

Introduction

Plagiarism is a term used to describe some unethical practice done by research scholars in the academic field. When someone use someone else's intellectual property without giving the author his/her proper acknowledgement and at the same time claiming his/her ownership on that intellectual property directly or indirectly, that activity is called Plagiarism. Now a days, students or research scholars are doing this to avoid hard work or to cover up their poor writing abilities. Plagiarism is derived from the Latin word plaga ("used by hunters to catch game") can be said kidnapper, its actual meaning in Latin to include a person who stole the words, rather than the children, of another. Sometimes the research of one or more researcher becomes inspiration to a particular researcher. The level of inspiration sometimes crosses the ethical boundaries which lead to copying of the ideas or original research work of a researcher by subsequent researchers & when such copying is done without proper acknowledgement or proper citation of the job of the previous authors, it gives rise to plagiarism.

Literature Review

Prakash & Badrinath (2016) discussed plagiarism is not always intended and its usually arises due to lack of awareness and lack of time management skill. In their study they discussed that a systematic and concerted effort involving all the faculty members and staff can provide a long term mechanism to curtail the plagiarism over a period of time. Raising awareness on these issues at various levels through training and user awareness programs will be helpful in reducing the problem of plagiarism.

Chowdhury (2020) highlighted in his research paper about how Plagiarism has become a great concern. The researcher mentioned that it is not just a breach of trust, it is stealing someone's intellectual property. The researcher also suggested imposing anti plagiarism policy to the academic institution and destroying the problem of plagiarism by pulling up from its roots.

Islam, Koka, Wahab and Khan (2022) pointed in their research paper that plagiarism is crime and ethical offence. The researchers discussed about penalties for students and the research scholars. The techniques to avoid plagiarism also highlighted by the researchers. Finally, the researchers suggested for set a standard to be maintained by the teachers who are supervising the research work.

Harinarayana, Kumbar, Chandrahekara M, Adithya Kumari H.(2023) investigated the causes and consequences of plagiarism in India. The study broadly discussed about five popular cases in India during 20th century. The study suggested to the Govt. to implement adequate mechanism to curtail plagiarism.

Hada (2024) discussed several informative facts about Plagiarism, it's types etc. The paper discussed about many anti plagiarism softwares by which researcher can prevent plagiarism. The study suggested some steps to avoid plagiarism.

Types of Plagiarism

There are seven types of Plagiarism, which is discussed below -

- **Complete plagiarism** - When someone is copying word to word and pasting the same without acknowledging the original author, in other words when someone submit any other's work by his/her own name, that is called Complete Plagiarism.
- **Direct plagiarism** - Direct plagiarism is almost the same to complete plagiarism. The difference between the two is how much of the paper is plagiarised. In case of complete plagiarism, the entire paper is copied, while in case of direct plagiarism, specific sections or paragraphs are included without acknowledging the author.
- **Paraphrasing plagiarism** – Such plagiarism a particular sentence, paragraph or piece of text of previously published text by someone is rephrased by changing its tense, phrase or arrangement of words and later presenting it as their own work, with zero credit to the author. Paraphrasing highlight giving credit to the owner whose work one is taking to enhance their work.
- **Self-plagiarism** - When someone uses his/her own previous work without referencing that earlier work is called self-plagiarism.
- **Patchwork plagiarism** – Such plagiarism is also called mosaic plagiarism. When a researcher steals idea or thought from various sources, and finally compiles them to establish a new content, it is called Patchwork Plagiarism.
- **Source-based plagiarism** – Such plagiarism is might tricky one to understand. In this kind of plagiarism, the author might cite their sources correctly but present the sources in a illusory way.
- **Accidental plagiarism** – Such plagiarism occurs when someone copies without the intention of plagiarizing. It refers to a situation when the researcher writes a text and such text unintentionally matches with already existing text or published content. Sometimes one misses to quote the source or some citations unintentionally, which is also considered plagiarism. It also called Inadvertent Plagiarism.

Anti-plagiarism tools

Anti-plagiarism software, also known as text-matching software (TMS) or plagiarism detection software is a tool that helps identify plagiarism and copyright violation in written works. It works by noticing a same text against a large database of written content to find identical content. Some important anti plagiarism tools are discussed below:

Plagium: Plagium is an excellent plagiarism detection tool. It breaks up the content into small 'snippets', these snippets are identical against content efficiently, with the matches scored to determine what documents match the input text. It is a New York-based company that expertise in advanced search solutions for industry, the public sector, and government.

Turnitin: Turnitin is one of the leading anti-plagiarism tool all around the world. The company basically provides cloud-based service for authenticity checking, online grading and peer review and thereby saves time and gives feedback to users.

Duplichecker: DupliChecker is an online tool that lets user check their work for plagiarism—either for free or with a paid subscription. It is incapable to identify quotes or syndicated content and probably won't show every instance where the researchers' content has been plagiarised.

Plagarismdetector: Detect plagiarism instantly for Windows. Fast, reliable, and accurate ensure authenticity with every check.

Glatt Plagiarism Program: Since 1990, Glatt Consulting Services is providing plagiarism check towards academic and legal setting. Its consulting services include developing policies and procedures to deal with issues of academic deception and plagiarism.

Essay Verification Engine: EVE2 is a very powerful tool that help teachers to check plagiarism at all levels of the education system to determine if students have plagiarised content from the internet.

PlagiServe: The PlagiServe Team viz. Olexiy Shevchenko, Max Litvin and Sasha Lugovskyy introduced the concept of a plagiarism checking device in June 2000. The software used by PlagiServe not only check papers that have been obtained from a term paper company and turned into an instructor, but it also looks for any alteration made to these papers.

CopyCatch Gold: A forensic linguist at CFL Software Development earlier aimed to detect collusion, but now it can be used anywhere to check on the individual production of documents.

MOSS: MOSS or Measure of Software Similarity is a tool that developed in 1994. MOSS is an automation system written in C, C++, Java, Pascal, Ada and other languages to find a similar code structure in different documents.

Urkund: It is a fully automated plagiarism checking system. Urkund is successfully used for plagiarism detection at higher education institute all over the World. It verifies all documents from three main sources: the Internet, previously published materials, and previously materials submitted by researcher or students as their work.

ShodhShuddhi: In the year 2022, on 10th May Education Ministry, Govt. India has introduced a "ShodhShuddhi" programme that provides all universities / institutions in India with free access to Plagiarism Detection Software. It is virtually launched by UGC Chairman Professor Mamidala Jagadesh Kumar. URKUND is digital workspace and anti plagiarism software for all universities / intuitions in the country under this initiative.

Penalties by UGC

The penalty depends on the level of plagiarism for faculty and researcher, as follows:

- **Level 1** (10%–40%): The person must withdraw the manuscript and will be suspended from publishing for at least one year.
- **Level 2** (40%–60%): The person shall be denied a right to one annual increment. The person shall be disallowed to be a supervisor to any new Master's, M.Phil or PhD student/scholar for two years. The person must withdraw the manuscript and will be suspended from publishing for at least two years.
- **Level 3** (above 60%): The person shall be denied the right to two successive annual increments. The person shall be disallowed to be a supervisor to any new Master's, M.Phil or Ph.D student/scholar for three years. The person must withdraw the manuscript and will be suspended to publish for at least three years.

The penalty depends on the level of plagiarism for students, as follows:

- **Level 1** (10–40%): The student receives zero credit and have to resubmit a revised version within six months.
- **Level 2** (40–60%): The student receives zero credit and have to resubmit a revised version within 1–18 months.
- **Level 3** (above 60%): The student receives zero credit and his/her registration for the course is cancelled.

Guideline lines for avoiding Plagiarism

1. **Researcher should use his/her ideas**. He/she should possess proper knowledge. At the time of choosing words, the researcher should use own thoughts, and convey own ideas, so than he/she can improve writing ability.
2. **Researcher should mention credit for copied, adapted, or paraphrased material.** At the time of repeating another's exact words, he/she must use quotation marks and cite the source. If the researcher adapts a chart or paraphrases a sentence, he/she must cite it. Paraphrasing means summing up the author's ideas, meaning, and information in his/her own words.
3. **Always avoid using others' work with minor "cosmetic" changes.** Like using "good" for "better" or reversing the order of a sentence, or changing the terms in a computer code, or altering a spread sheet layout.
4. **If text is taken from any other source it must be placed between quotation marks with an in text citation.** Whenever using someone else's line or phrase, it must be placed in between inverted comma.
5. **Beware of "common knowledge."** Researcher doesn't need to cite "common knowledge,". But the fact must be very known. That Abraham Lincoln was the U.S. President during the Civil War is known to all, but the thing is over 51,000 Union and Confederate soldiers died in the Battle of Gettysburg is not known to all & such facts, if mentioned in the research work, must be acknowledged by the researcher.
6. **When researcher is not confident, then to be on safe side should cite.** When researcher is not confident about authenticity, he/she should not take the risk and should mention the source of information.
7. **Should have proper knowledge on language.** Researcher should have proper knowledge and sufficient stock of word for using in his/her study.
8. **Reveal the proper information.** If a paper consists pre-published data, reviews, or findings, the researcher must throw light on the nature of published information to editors and readers.
9. **Practice ethical writing.** It is advised to practice the ethical writing spirit and avoid reuse own previously published material.
10. **Transparency is the keyword.** Presentations at conferences or seminars must follow the same rule of transparency with their audience.
11. **Checking fully in details.** One must fully check the citation styles properly before submission.
12. **Read the guidelines of the journal.** One must read the journal guidelines properly to which they are planning to submit the work.
13. **Authorship should give to actual contributor of the work.** Faculty and student alliance must be promoted by mentioning authorship to students if they have contributed to finishing the study.

14. **Asking permission for using someone's material is mandatory**. Always should ask permission if tables, charts, images, and graphs are used from someone's previously published material.

Strategies to Tackle Plagiarism

1. The researcher should go through the journal's guidelines properly.
2. The researcher should always mention other's contributions and the source of ideas and words, whether paraphrased or summarised.
3. The researcher must use quotations while using word to word language.
4. The researcher should give credit to the sources which has been utilised in his/her study.
5. When rewriting, the researcher should make sure that he/she fully understands the topic and use his/her own words.
6. Whenever the researcher has any doubt on whether information is common knowledge, he/she should look it up.
7. The researcher should carefully to provide proper reference and cite all the used sources.
8. If the results of a single complicated whole study are best to be presented, that should not be separated into many parts or publications.
9. When submitting a manuscript for publication that consists research questions/hypotheses, methods, data, discussion points, or conclusions that have already been published or distributed in a substantial way (such as a separate journal article), inform the editors and readers about this fact. The cover letter should notify editors, and readers should be informed by identifying and referring previously published work.
10. If there is any chance about duplication of manuscripts arising from the same study while submitting a paper for possible publication, the authors should inform the editors of the overlap and accompany the other manuscripts.
11. Write good cover letters to the editor, mainly if there is a chance of publishing overlap. The cover letter should describe the overlap and past description, as well as seek guidance on how to handle the situation.
12. The researcher should be amicable with the basic elements of copyright law.

Conclusion

Plagiarism must be taken very seriously indeed particularly in academic area. Now this is the ideal time to act by clearly identifying what plagiarism is and ways of handling it among both students and researcher. The some of the reasons of plagiarism are laziness, carelessness, and ignorance. But there are cases when plagiarism is committed accidentally, when one chooses to write on the same topic and that he or she may even express the same concepts and express them similarly in his or her paper also. If this does happen, then it is extremely unfortunate that one will be accused of plagiarism. The researcher in her present can conclude saying that a systematic and concerted effort involving all the faculty members can go a long way in reducing the chance plagiarism over a period of time. Raising awareness of these issues at different levels through training and frequent user awareness programs would be a good start. Although for being more effective, the process has to begin a lot earlier with an appreciation of property rights and a change in mindset with regard to the total concept of academic excellence and rankings.

Suggestions

The researcher in her present paper suggests that plagiarism should be understood as claiming other's intellectual product, as their own. This may be done by intentionally or unintentionally. This fits the use of the term in ordinary language fairly well, while at the same time being sufficiently accurate. Possibly it is reliable by being simple and easily comprehensible. The

researcher in her present suggests that the discussion in the study supports the view that the definition is theoretically fruitful and highly relevant for normative purposes. As a result of our normative analysis, the study suggests that what makes plagiarism reprehensible is that it involves an unfair acquisition of scientific credit. In addition, intentional plagiarism involves falsity. In plagiarism of data or results, fabrication is also understood.

It is suggested that the researchers should increase their knowledge of the topics on which they wish or intend to work. Before starting of the work, they should keep all the items in mind. Understanding plagiarism is also crucial because there are consideration when one can be involved in plagiarism without even realizing it. Plagiarisers suffer penalties such as jail, monetary fines, and suspensions due to their actions and face loss too. Avoiding plagiarism can be done intended, as both types of cheating have the same influence on work. It is also advised to seek help from individuals who are legends in the field of knowledge and debate the complicated topics with them since no doubt is ridiculous. Brainstorming helps to generate fresh and unique ideas and will undoubtedly add to the existing knowledge base. Hence, libraries need to organize special Information Literacy programs, conferences, seminars, and hands on workshops to curtail plagiarism in the research and academic work of the students. The current study is significant because it represents the reasons for plagiarism, the considerable efforts and steps that may be taken to avoid or curtail plagiarism, the reasons behind the plagiarism activities and knowing UGC regulations and other legal repercussions concerned with plagiarism to control plagiarism.

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4
Multilevel Marketing Towards Key to Success.

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Abstract
Multilevel Marketing is a legitimate business strategy commonly used by businesses that rely heavily on sales to generate revenue. Unlike traditional sales channels multilevel marketing programs use networks for sales and to recruit new participants. As such, they are often referred to as network marketing. Individuals are brought into the businesses contractors, independent business owners, distributors, or direct sales people. These people are tasked with selling the company's products and or services to others, including family and friends. Sales can be done in person or online. They are given a commission for every sales they make. The success rate in network marketing is often low with estimates suggesting that only 1-5% of distributors achieve significant financial success. Most of the people fail because of they want to make MLM their primary income, but that is rarely case. The future of the network marketing industry in India looks very promising. Industry is growing rapidly and there are a number of factors driving this growth. Network marketing companies are also innovating and adopting to changing needs of consumers only 25% of MLM turn a profit. While the FTC reports that 99% of MLM participants less money. The more recent AARP Study finds that the numbers are not quite as Stark. The AARP found that 25% of those surveyed made a profit, while 27% broke even only about half lost money.

Keywords*: Multilevel Marketing, Direct Selling, rapidly growing, Changing Needs, Consumer Behaviour.*

Introduction

Multi-level marketing (MLM), also called network marketing, refers to individuals selling products to the public, often by word of mouth and direct sales. MLM is a peculiar form of direct selling which the salespeople who are in business for themselves utilise and their compensation assumes a multi-level structure (Christensen 2008). In 2021, it was estimated that approximately 128 million salespeople (called distributors in MLM) were participating in network marketing globally, with only 5.48 million active in Africa and the Middle East (Statista 2021). MLM has earned its association with direct marketing because it gets the products into the hands of the end-user through face-to-face selling, which occurs away from the manufacturer's location. Some studies have also indicated that MLM can be traced to relationship marketing philosophy, which stresses long-term relationships with the customer rather than transactional relationships (Jung, Ineson and Green 2013).

In Zimbabwe also, MLM has become a popular business option, although there are no documented statistical records of participants in the business. In Asia, similar gains as those realised in the United States (US) are being recorded through MLM. Rubino (2005) claims a direct link between network marketing and the transformation being experienced by many individuals, communities, and companies that are engaged in this form of business. It is noted that network marketing has become a source of hope to those who normally would not have stood a chance at being employed in the formal sector Rubino (2005). The socially disadvantaged groups, such as women, widows, and those who were previously unemployed

and deemed unemployable, have found a viable route through which many have risen from poverty to prosperity (Groß and Vriens 2019). In many cases, this has happened in the famous rags to riches style.

Zimbabwe has seen an influx of MLM companies, and they have brought an assortment of products ranging from healthcare, skincare, kitchenware, clothing, and accessories to agricultural implements; all of which are sold through what is referred to as MLM. Some of the most common names in MLM found in Zimbabwe include the following: Forever Living, Dynapharm, Tablecharm, Tiange, and World Ventures. The products are distributed by individuals through social network channels. The local manufacturing firms have not yet embraced MLM as a distribution strategy. The individuals who are involved in MLM seem not to be making much of an impact in the business, and hence there are few success stories.

Past research has recorded that recruitment will mostly enhance growth and earnings as long as the other factors remain stable (Vander Nat and Keeo 2002). This is further supported by Pang and Monterola (2017) who brought forth the concept of dendritic formations in MLM. Exchanges do occur in those linked nodes, and hence risk becomes a factor that needs to be dealt with by all the parties involved in the process. The fact that risk is a significant factor in the exchange process, means that measures have to be instituted to protect and safeguard the exchange process (De Wulf and Odekerken- Schröder 2001). The sharing of information in the business process may also affect the viability of the exchange process, as noted by the transaction cost theory (Coase 1937). To observe the relationship mechanisms which lead to trust and commitment in MLM, the researchers drew upon the social exchange theory (SET) in terms of rewards (Cortez and Johnston 2020) and the transaction cost economies theory in terms of transaction costs (Ketokivi and Mahoney 2020).

The SET is premised on the interaction between individuals and other groups, and emphasis is placed on resource dependence, resource availability, and power as a frame of reference (Emerson 1976). The SET notes that individuals are driven by incentives to cooperate in an exchange, hence other theories, such as the self-determination theory (SDT) (Deci, Olafsen and Ryan 2017), may support the determination of the factors enhancing MLM success strategies.

Risk is reduced in MLM due to the need for a long-term relationship, and this inhibits the desire to engage in destructive behaviour that might damage trust leading to broken relationships. Members in network marketing relationships employ a structured method of achieving gains (Bowen and Jones 1986). As noted from the research carried out by Lee and Loi (2016), several factors that affect network distributor satisfaction were explored, focusing on the diffusion of business ideas, perceived quality of members joining a network, training, support, perception of marketing offers, and the rewards every month to assess the strategies which are helpful in MML.

Problem Statement and Research Questions

The controversies in MLM or network marketing depict an evidence-void gap concerning the factors that stimulate the growth being experienced in MLM organisations at a global level due to unrestrained market capitalism or neoliberalism (Wrenn 2022) and also at regional and country levels (Beek 2019). The legal and ethical challenges of MLM companies emanate from the operational focus, which can be either recruitment or value provision, resulting in the entities being viewed as illegal pyramid schemes due to recruitment focus and misleading promises (Groß and Vriens 2019; Suwitho, Riharjo and Dewangga 2023). Hence, the participants' satisfaction is a critical construct or factor in determining continuity and growth in MLM, and this calls for further contribution in analysing the attitudinal and behavioural loyalty aspects which lead to satisfaction (Purcaru et al. 2022). This study will contribute to the body of knowledge by suggesting factors that motivate individuals supported by content,

process, and reinforcement theories. Therefore, the following research question was put forward to evaluate the relationships of the various predictors on the outcome variables:

Literature Review

A network is a set of multi-party relationships that can be simple or complex depending on the number of partners involved. When the number of partners increases, the relationship gets more complex, and it then calls for relationship management. These relationships are characterised by interaction, and this interaction is in the form of information exchange and collaboration based on commitment and trust (Anderson, Håkansson and Johanson 1994; Buttle and Maklan 2019; Gummesson 2008; Morgan and Hunt 1994). The network can be a social network of acquaintances (friends and relatives) working together for the common good. MLM is premised on leveraging this connectivity in order to source and distribute products. It mainly involves the development of retail selling and distribution networks that grow exponentially as new distributors are incorporated. In some instances, these networks develop into vast empires benefiting the individual distributors in the network and the firm supplying the products. The networks in MLM are largely quasi-informal, and the distributors (who become partners) are bound together by the gains they are likely to receive in that relationship and the contractual agreements signed (Albaum and Peterson 2011).

In MLM, the distributors earn money on their sales, as well as on the deals of people they recruited into the business, and on the sales of people hired by their recruits. The network positions resemble a supply chain with various nodes; however, the MLM linkages are dendritic in form. Different hierarchical locations are the hallmark of a successful MLM supply chain network. The positions include distributor, assistant supervisor, supervisor manager, and finally director, although the titles vary depending on individual companies. Perhaps the pivotal positions in this dendritic formation, which are also the key drivers of the business, are those of the recruiter and the prospector. Collaboration between the two determines the extent of success that is achieved in the MLM company.

Vander Nat and Keeo (2002) define MLM as a process of selling goods or services through social networks which is either directly or indirectly linked. The MLM method of selling tends to sell exclusive products and places heavy emphasis on the recruitment of many representatives who, in turn, are also expected to recruit new members. The same pattern continues to duplicate itself leading to the downstream formation of social network chains that continue to multiply in a dendritic formation. In these networks, the recruited member purchases an absolute value of the company's products as an initial investment which also qualifies them for membership. The products can either be consumed by the member or sold to the market at a profit. Membership makes the member eligible to be a distributor, and hence gain the privilege to buy products at a discount. In the process, the distributor earns commissions or points and makes a direct profit from selling the products. Higher revenue is received through the recruitment of new members who become active distributors. This is because the recruiter earns a commission from the sales of their downline recruits making the drive for recruitment a critical activity in MLM. Consequently, the more members are recruited and added to the network chain, the more explosive the dendritic formation (Pang and Monterola 2017). As MLM grows and changes occur in business models there is a need to identify the factors that motivate individuals to join MLM companies.

Incentives

The process of distributing goods and selling various products through networks makes MML unique (Selamet et al. 2020). Factors, such as the company's image or good reputation, service delivery, reward schemes, social satisfaction, personal goals, trust, and commitment, have been explored in terms of how they are perceived by potential MLM participants (Nga and Mun 2011; Pratistha 2017). In addition, the prominence of reward schemes has received wide

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recognition as one of the key motivational factors to join a MLM company (Syahrivar et al. 2020). Other factors are critical in profiling potential participants in MLM. Several distinct profiles have been used to categorise participants and these may be based on major segmentation variables, such as demographics (age, gender, religion, educational level), and psychographic characteristics, such as social status (Grant-Smith et al. 2021).

Motivation

The researchers also noted motivation as an essential factor in MLM. The team leader carries the responsibility for coaching, training, mentoring, and ensuring that team members downstream are highly motivated (Vander Nat and Keeo 2002). Quite often the motives would be closely linked with some personal situation for which they will be searching for a solution. Both monetary and non-monetary rewards have been found to motivate team members to actively participate in an MLM business, and the simple explanation for this is said to rest on the social relationships that are characteristic of the business (Coughlan and Grayson 1998).

Another mini-theory of the SDT, the GCT asserts that individuals are driven by the anticipated results of their pursuit. This is based on the premise that individuals have to establish a clear vision of their goals, as a prerequisite for building sufficient will and effort to pursue the laid-out plans (Mullins 2010). Goals must be challenging and realistic to provide direction, focus, and also regulate behaviour. The GCT explains and notes the key differences between intrinsic motivators, such as personal growth, close relationships, and community feelings, and extrinsic motivators, such as money, fame and image, and hence the need to analyse the effect of both intrinsic and extrinsic motivators on network marketing (Gilal et al. 2019).

For individuals who are motivated by financial rewards, then the compensation plan sits at the top of the list. Compensation plans used by MLM companies vary according to the preference of the owners of the companies. However, four basic types of compensation plans are commonly used by MLM companies, namely: binary, matrix, breakaway, and unlived plans (Coughlan and Grayson 1998). Commonly, MLM members are compensated based on the volumes of the products that they sell together with their team members (downlines). Thus, the total compensation comprises the sales generated by the member, direct recruits, and indirect recruits (Christensen 2008).

Recruitment Strategies

MLM relies mostly on presentations for recruitment and product sales (Pride and Ferrell 2008). Before the growth of internet technology, MLM companies used to rely on the door-to-door contact method for accessing potential recruits and customers. However, new concepts have since been incorporated such as the party plan or group presentation method (Pride and Ferrell 2008).

The presentation strategies incorporate the use of word of mouth and testimonials of success stories which have proven to be quite crucial in delivering the message successfully. Other members of the MLM company are encouraged to present their own life stories which bear testimony of tangible evidence of their success that can be achieved in MLM (Msosa 2022). To enhance their efforts members also incorporate other elements of the promotion mix such as advertising to augment the purchase decision process (Fill 2009).

Presentation as a strategy for recruitment has a ripple effect on the MLM process. Its impact creates results not only regarding convincing prospective members to join but also the would-be users of the products to purchase, which results in the build-up of momentum towards the achievement of overall goals. Thus, multi-level marketers also borrow certain concepts from psychology to maximise the ripple effects derived from personal testimonies. The more presentations made using personal stories the more significant the impact on individual participants' desire to excel in the business as well as added inspiration to buy and sell more

products (Christensen 2008). The presentations, therefore, can be equated to the fuel that drives success in MLM.

Research Methodology

The data was collected from the respondents through a structured survey questionnaire. The questionnaire items were developed based on research constructs, such as team building, which were derived from Alzamora-Ruiz et al. (2020), Hakanen and Soudunsaari (2012), Rafferty and Griffin (2004), and Roman et al. (2021); recruitment strategies from Coughlan and Grayson (1998) and Vander Nat and Keeo (2002); collaboration from Alzamora-Ruiz et al. (2020) and Nha Trang et al. (2022); and motivation from Jain, Singla and Shashi (2015) and Lee and Loi (2016). The research participants were members of several selected firms comprising, Forever Living, Dynapharm, Tablecharm, Tiange, and World Ventures to deduce the success strategies employed to grow the distribution of products and services.

A pilot study was carried out by collecting data from 25 participants in the selected MLM companies to deal with possible errors in the questionnaire. Each question was rated on a five-point Likert scale, with 5 indicating “strongly agree” and 1 indicating “strongly disagree”. The data was analysed using IBM Statistical Product and Service Solutions (SPSS) version 23.0 and ADANCO software.

An empirical cross-sectional research study was used to understand the motivational factors of MLM in developing countries. Both intrinsic and extrinsic motivators were analysed to establish the factors that offer the greatest motivation for individuals to participate in MLM.

The research followed a quantitative research design as the nature of the problem required that the researchers describe the strategies currently being used by MLM companies. Data collection comprised researcher-administered questionnaires to ensure a high response rate. Using a convenience sampling technique, 146 usable responses were used from the 250 survey questionnaires distributed; hence, a 58.4% response rate was noted.

Limitations and Future Research

The research has made contributions in the area of theory and various latent constructs or factors have been identified which provide support in future research if they are utilised in collaboration with other variables. The limitations of the study are primarily in the sampling technique which was a non-probability technique thus restricting broad inferences on the findings. The analysis of the research findings can lead to further research of the variables using other analysis techniques such as confirmatory factor analysis.

Conclusion and Recommendations

Much more than a traditional business, MLM is anchored on trust between the sponsor (the leader of the team) and their distributors (downlines). In MLM, when a member is recruited into the business, they become a partner of the individual who recruited them. Their success in achieving their goals is mutually dependent. The team leader becomes, in essence, the mentor, coach, trainer, motivator, and role model. Even after the recruit has learned the business skills, they continue to look up to the leader as a compass for the organisation’s moral fibre, accountability, and work habits (Christensen 2008). Trust is therefore identified as a critical binding ingredient in MLM relationships. Thus, it can also be said that trust acts as an enabler in the formation of the MLM relationships which often cut across the lines of personality, physical distance, and social standing divide. Trust forms a pillar in relations created purely based on achieving personal gains and a legally binding document that is devoid of social ties. Many participants in MLM teams are neither friends nor family, but they grow into such because of the working relationship built through trust. MLM is a form of business that is still clouded by negative images, with individuals and governments around the globe even questioning its legality. Thus, the individuals joining this business must have trust and confidence in the words of the person who is recruiting them.

The model tested in the current study suggests that MML relationships are dendritic and do not necessarily result in linear relationships (Cuntz et al. 2010). Recruitment of new members into MLM starts with motivation, and it has been noted that despite the high loss rate, the focus remains on changing beliefs, attitudes and behaviour (Hiranpong, Decharin and Thawesaengskulthai 2016). The resulting structure is quite complex yet profoundly interconnected and interdependent. The researchers' validation process of the proposed model is supported by literature (Legara et al. 2008).

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5

Hypothesis Testing: A Threshold of Experimental Research

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Abstract
In the academic world, research is one of the cherished activities of the academicians. In the field of experimental research, based on quantitative analysis, the importance of hypothesis is well established fact. Human reasoning is complex and can be complicated; this is the reason why researchers must rule out chances or assumption as a plausible explanation for the results from a research study. In other words, while interpreting research findings, researchers need to assess whether these findings may have occurred by chance. In this regard, academicians have devised a means of drawing inferences from research findings through hypothesis testing, where hypothesis testing is a systematic procedure for deciding whether the results of a research study support a particular theory which applies to a population. Hypothesis testing uses sample data to evaluate a characteristic about a population. In the present paper, the researcher has highlighted the concept of hypothesis, different types of hypotheses, qualities of a good hypothesis, formulating a hypothesis, hypothesis testing & its steps, and the tests associated with hypothesis. The study finally concludes that hypotheses are theoretical guesses about the population characteristics, based on limited knowledge and hence needs to be tested. Therefore, hypothesis testing is a decision-making process for evaluating claims about a population. In formal hypothesis testing, the null hypothesis is tested by the researcher for its possible rejection, because such rejection supports the alternative hypothesis, the one that is deduced from theory as a tentative explanation.

Keywords*: Type I Error, Power of test, Parametric Tests, Critical Region, p value*

1. Introduction

Hypothesis is considered as a significant instrument in research. A hypothesis is a statement framed by the researchers based on their speculation upon the outcome of a research. A well-developed hypothesis is generally half way to the research findings. The word hypothesis consists of two words, “hypo” and “thesis” which means less than or less certain than a thesis. It is a presumptive statement of a proposition or a reasonable guess, based upon the available evidence, which the researcher seeks to prove or reject through his study.

2. Literature Review

Mourougan & Sethuraman (2017) observed that hypothesis testing is an important activity of evidence-based research. To frame a proper & effective hypothesis, both knowledge of the subject derived from extensive review of the existing literature on the topic and extensive knowledge about the basic statistical concepts are necessary. The also paper discussed the techniques of framing a good hypothesis and statistical concepts which enables a proper hypothesis testing.

Kunwar (2021) discussed about characteristics of hypothesis, it’s types, purposes of hypothesis testing, steps involved in hypothesis testing & important parametric tests used to evaluate the null hypothesis.

Kolawole (2017) observed that the understanding of hypothesis testing is the elementary requirement for explaining the result of a scientific research. The researcher also stressed on

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the importance of several statistical software like SPSS, STATA, JMP etc. in order to ease the stress of the rigorous calculations involved in hypothesis testing. The manual step is to justify those results from this software. In the case of large data, the manual method of calculation can become a tedious job.

Kaur (2013) discussed the methods to select correct statistical tests for research projects. In order to test a hypothesis, different types of tests are available like Student's t-test, F test, Chi square test, ANOVA etc. The researcher has explained the conditions and methods of applying these tests in her paper. Obtaining valid results from hypothesis testing depends to large extent on the selection of appropriate test. Therefore, precautions should be taken while selecting the tests of hypothesis for large and small sample tests otherwise one gets invalid results.

Khan & **Mir** (2021) observed that statistical hypothesis test is a method of statistical inference used to derive a scientific conclusion from two different, and contradictory, hypotheses. In a statistical hypothesis test, a null hypothesis and an alternative hypothesis is proposed for the probability distribution of the data. If the sample selected has a probability of occurrence less than the significance level, the difference between the sample and the null hypothesis in deemed to be statistically significant. The hypothesis test will lead to the rejection of null hypothesis and acceptance of alternate hypothesis.

3. Hypothesis

In its elementary stage, the hypothesis may be any hunch, guess, imaginative idea, which becomes the basis for research or investigation. A researcher calls these assumptions/ hunches as hypotheses and they become the basis of an enquiry.

A statistical hypothesis is an assertion or conjecture concerning one or more populations. Test of hypothesis is a process of testing of the significance regarding the parameters of the population based on sample drawn from the concerned population. Hence, it is also termed as "Test of Significance".

In short, hypothesis testing or test of significance enables us to make probability statements about population parameter.

4. Types of Hypotheses

Hypothesis can be classified into five types. The different types of hypotheses can be portrayed through the diagram below.

4.1 Working hypothesis

When the researcher is not sure about the phenomenon in question or there is lack of background information, the researcher may frame a hypothesis which is not very specific and is subject to modification during the research process, such type of hypothesis is called Working Hypothesis.

4.2 Statistical hypothesis

Statistical hypothesis is a statement about the population which we want to verify on the basis of the sample drawn from the population. It is a statement about one or more parameters that are measures of the population under consideration for the research purpose. Statistical hypothesis is stated in such a way that they may be evaluated using appropriate statistical techniques.

There are two types of statistical hypotheses:

4.2.3 Null Hypothesis (H_0) – The null hypothesis represents a theory that has been put forward, either because it is believed that it is true or because it can be used as a basis for argument, but it has not been proved yet. In other words, a statistical hypothesis states that there is no difference between a parameter and a specific value, or that there is no difference between two parameters. Such a hypothesis is designated by: Ho or Hn.

A researcher should give special consideration to the null hypothesis. This is due to the following reasons

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- The null hypothesis is the statement to be tested, whereas the alternative hypothesis is the statement to be accepted if when the null is rejected.
- The conclusion, that is derived after the completion of the test, is always given in terms of the null hypothesis. We either 'reject Ho and accept H_1' or 'do not reject Ho'; we never conclude 'H_1 is rejected', or 'accept H_1'.

Null hypotheses can be:

- ❖ simple or complex
- ❖ associative or causal

4.2.3.1 Associative and causal Hypotheses:

- ➢ **Associative Hypotheses**: Such hypothesis states relationship between variables - when one variable changes, the other changes but do not indicate cause and effect relationship among the variables.
- ➢ **Causal Hypotheses**: Such hypothesis proposes a cause and effect relationship between two or more variables. Causal hypothesis is framed when change in one variable (Independent Variable) causes the change in other related variable (Dependent Variable).

4.2.4 Alternative Hypothesis (H_1) – An alternative hypothesis is one that contradicts the null hypothesis. A statistical hypothesis that states there exists a difference between a parameter and a specific value, or states that there exists a difference between two parameters is an alternative hypothesis. An alternative hypothesis suggests a potential outcome that the researcher may expect. It is designated by: H_1 or Ha. It is accepted only when a null hypothesis is rejected. Usually, alternative hypothesis is the actual desired conclusion of the researcher.

The two types of alternative hypothesis are:

(a) Directional Hypothesis and

(b) Non-directional Hypothesis.

4.2.4.1 Directional Hypothesis: An alternative hypothesis that specifies the direction of expected findings is known as directional hypothesis. These are usually derived from theory. They specify the expected direction of the relationship between variables. Directional hypothesis may read,"…is more than..", "…will be lesser.." Example of this type of hypothesis can be "The level of anxiety in youth is more than that in adults."

4.2.4.2 Non-directional Hypothesis: It is a type of alternative hypothesis in which no definite direction of the expected findings is specified and such hypothesis is used when there is little or no theory. Such hypotheses do not indicate the direction of the relationship. It may read, "...there is a difference between..." Example of this type of hypothesis can be "There is a difference in the anxiety level of the youth & adults."

4.3 Descriptive hypothesis: Hypotheses that is framed to describe the characteristics of population is descriptive hypothesis. It may also state the percentage or proportion of the items of the population possessing certain specific characteristics. For example, "The level of primary education in Government Schools of India is not satisfactory." Or "The proportion of the students attending regular classes in higher education is decreasing."

4.4 Research Hypothesis: A hypothesis which is a tentative solution for the problem that is being investigated is a research hypothesis. It is the assumption that motivates the researcher to accomplish future course of action.

The Research Hypothesis can be classified into – Simple Research hypothesis and Complex Research Hypothesis.

A **simple research hypothesis** states the relationship between a single independent variable and a single dependent variable. But when the number of dependent or independent variables are two or more than two, it gives rise to complex hypothesis. Therefore, a **Complex**

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hypothesis is one that states the relationship between two or more independent variables and two or more dependent variables.

4.5 Relational hypothesis: Relational hypothesis is a statement describing the relationship between two or more variables or frequency of occurrence of an event. The example of relational hypothesis may be, "Families with low income spend greater proportion of their income on consumer goods than rather on intellectual items such as books".

5. Formulation of Hypothesis

There exist no precise & proper rules for formulating hypothesis and deducing consequences on its basis but there are certain necessary conditions that are necessary for their formulation, which are as follows:

- **Richness of background knowledge**: In the absence of knowledge relating to the concerned subject matter, one cannot formulate a proper & relevant hypothesis. Background knowledge is essential for perceiving relationships among the variables under consideration and to determine what findings other researchers have concluded on the problem under consideration.
- **Logical and Scientific approach**: Formulation of proper hypothesis depends on one's experience in the subject area. A researcher may begin his research study by selecting a theory from his own area of interest and formulate a hypothesis from this theory based on logic which is possible only when the researcher has a proper understanding of the scientific method and has a versatile intellect.

Formulation of Hypothesis differs with the methodology of research conducted such as

a) Qualitative method and (b) Quantitative method.

- **Qualitative Method:** The researcher uses questions, and not hypothesis. He poses a central question, which is being examined in the study in the general form. Several sub-questions are raised related to the central question to narrow the focus of study but to leave the questioning at an open end.
- **Quantitative Method:** The researcher uses questions and hypothesis to focus on the purpose of study. Hypothesis or research questions are used to compare, relate and describe variables which are considered for the research work. The research follows from a test of theory and the question and the hypothesis or the research questions are included in the theory.

6. Steps of hypothesis testing

1. **Specifying the null hypothesis (H_0) and the alternative hypothesis (H_1)**. The null hypothesis usually states that there is no difference between the population parameters under consideration (H_0: $\mu_1 - \mu_2 = 0$). The alternative hypothesis states that there exists a difference between the population parameters under consideration (H_1: $\mu_1 \neq \mu_2$).

2. **Select a significance level.** Usually, academicians select a 5% level of significance. This implies that the researcher can have 95% confidence in accepting a hypothesis or the probability of making a wrong decision could be wrong 5%. The range of variation can be divided into – acceptance region and critical region or rejection region. If the computed value of sample statistic falls in critical region, the null hypothesis is rejected, and the alternative hypothesis gets selected.

The critical region under a normal curve, has two sides and accordingly there can be two types of test;

(a) one side under a curve; either on the right tail or left tail (**One Tailed Test**)

(b) two sides under a curve (**Two Tailed Test**)

A test of statistical hypothesis, where the region of rejection is on only one side of the normal curve, is called a **one tailed test**.

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For example, let us suppose that the null hypothesis states that the mean is less than or equal to 10. The alternative hypothesis would state that the mean is greater than 10. The region of rejection would consist of a range of numbers located on the right side of sampling distribution i.e., a set of all the numbers greater than 10.

A test of statistical hypothesis, where the region of rejection is on both sides of the normal curve, is called a **two-tailed test**. For example, suppose the null hypothesis states that the mean is equal to 10. The alternative hypothesis would state that the mean is less than 10 or greater than 10. The region of rejection would consist of a range of numbers located on both sides of sampling distribution; i.e., the region of rejection would consist of the numbers that are less than 10 and also the numbers that are greater than 10.

3. **Setting a Test Criterion:** This step involves selecting an appropriate probability distribution for the particular research purpose, that is, a probability distribution which can properly be applied for the purpose of the test. Some probability distributions that are commonly used in testing hypothesis are Z, t, F and $\chi 2$.

4. **Calculation:** The fourth step is to calculate the probability value also referred as the **p value**. A p-value is a statistical measurement used to validate the null hypothesis, that is put to test, against observed data. A p-value measures the probability of obtaining the observed results, assuming that the null hypothesis is true. The lower the p-value, the greater the statistical significance of the observed difference and higher is the probability of rejecting the null hypothesis.

5. **Decision making:** The probability value computed in the previous step is compared with the significance level chosen in Step 2. If the probability value (p value) is less than or equal to the significance level, then the null hypothesis is rejected and the alternative hypothesis gets selected. However, if the probability value (p value) is greater than the significance level then the null hypothesis is not rejected. Rejection of the null hypothesis indicates, the results to be "statistically significant" however non rejection of null hypothesis indicates the results to be "not statistically significant."

Power of a hypothesis test: The probability of not committing a Type II error is called the **power** of a hypothesis test. It denotes rejecting of null hypothesis, when alternative hypothesis is true. The lower the significance level, the lower will be the power of the test. When the significance level is reduced, the region of acceptance becomes larger. As a result, the chance of rejecting the null hypothesis gets reduced, even if it is false & the chances of committing a Type II error increases.

8. Tests of Hypothesis

Statisticians have developed several tests of hypotheses (also known as the tests of significance) for the purpose of testing of hypotheses which can be classified as:

a) Parametric tests or standard tests of hypotheses

Parametric tests can be applied when certain assumptions regarding certain properties of the population, from which the samples are drawn, is satisfied. These assumptions include that sample is drawn from a normal population, size of sample is large, and relevant assumptions regarding the population parameters like mean, variance, etc.

b) Non-parametric tests or distribution-free test of hypotheses.

Non parametric tests are used when the sample drawn does not belong to a normal population. Therefore, the key point in choosing a parametric test or non-parametric test is whether the population from which the sample is chosen is a normal one. Non parametric tests do not depend on any assumption about the parameters of the parent population.

The most commonly used non-parametric test in elementary statistics is the chi-square test. However, there are several others non parametric tests. For example: the Kruskal Wallis test is

the non-parametric test which is alternative to the One-way ANOVA and the Mann Whitney test is the non- parametric test which is alternative to the two-sample t test.

9. Conclusion

Hypothesis testing is a decision-making process for evaluating claims made about a population. The academicians use several statistical analysis to test the null hypothesis. In formal hypothesis testing, the researcher evaluates the null hypothesis and usually wishes to reject it because rejection of the null hypothesis leads to automatically the selection of the alternative hypothesis. If the researcher fails to reject the null hypothesis, he/she has to accept it by default. In this paper, the researcher has looked at the complete process of undertaking hypothesis testing. Initially, we looked at the concept of hypothesis followed by the types of hypotheses and steps to test hypothesis to derive a valid decision.

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6
Types of Research Design and Perspective in Methodological Approach.

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Abstract
A plan for addressing your research topic is called a research design. A research method is a tactic to carry out that scheme. While research design and techniques are distinct, they are intimately linked since a well-designed study guarantees that the information you collect will enable you to address your research question more fully.The framework of research methodologies and techniques selected by a researcher to carry out a study is known as research design. The design enables researchers to focus on the most effective research techniques for the topic at hand and organize their investigations for success. The process of formulating a research subject clarifies the nature of the research, including survey, experimental, semi-experimental, review, and its subtypes (descriptivestudy, research problem, and experimental design). An organization's research challenge will dictate the design, not the other way around. Which tools to employ and how to utilize them are decided upon during the design phase of a study.A methodical and planned technique to conducting research is the research design process. To make sure the study is legitimate, trustworthy, and yields insightful data, the procedure is crucial.Similar to research approach, research design has varying definitions in different textbooks. Some writers believe that choosing between qualitative and quantitative research approaches determines research design. Some contend that the selection of particular techniques for data gathering and analysis is referred to as study design. The best way to define research design seems to be as a master strategy for carrying out a research endeavour, which is also where it is found.

Keywords: *Research design, Research methodology, Research question, Research tools, Qualitative Research and Quantitative Research.*

Introduction:

The plan for approaching the research topic is called the research design. The research method is the tactic for implementing this plan. Although the research design and method are different, they are closely related because the information collected through a well-designed study can help you address your research question more completely.

When setting up a study, you may need to make assumptions about the data you are going to collect. The expected results from the study should be unbiased and free of bias. Determine the views of those who agree with the results regarding the final score and conclusion.

Researchers expect consistent results when conducting research regularly. The intended results can only be obtained if the design is reliable. To ensure the quality of the results, the plan should specify how the research question is formulated.

A variety of measurement tools can be used. However, a valid measurement tool is only one that helps the researcher evaluate the results according to the purpose of the study. Then, the questionnaire developed based on this design becomes valid.

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The conclusions of the design should be valid for the entire population, not just a small sample. The general approach assumes that the survey can be conducted with similar accuracy across all segments of the population.

Key ideas in research design:

1) **Variable:** A variable is a concept that can have various quantitative values, such as weight or height.
2) **Dependent Variable**: In an experiment, the dependent variable is the variable that is tested and changes in some way depending on the change in the independent variable.
3) **Independent Variable:** An independent variable is a variable that is considered separate in an experiment. For example, if a class's test scores are the result of their effort, then the scores are the independent variable and the effort is the independent variable.
4) **Hypothesis:** A hypothesis is what is to be tested in an experiment.

Types of Research Design:

To choose which model to use for a study, a researcher needs to have a thorough understanding of the many models. Similar to the study, your analysis's design can be broadly categorized as either qualitative or quantitative.

Qualitative research: Using mathematical computations, qualitative research establishes connections between observations and data that have been gathered. The application of statistical tools can support or refute hypotheses concerning naturally occurring phenomena. Researchers use qualitative observational research methodologies to determine "what" respondents have to say about a certain theory and "why" it exists.

Quantitative research: When gathering actionable insights through statistical conclusions is crucial, quantitative research is the way to go. When making important business decisions, the perspective offered by numbers is superior. Methods of quantitative research are essential to every organization's development. Insights obtained from intricate numerical data and analysis are very useful for making future business decisions.

Descriptive research: A researcher's only goal when writing a descriptive paper is to describe the circumstance or case they are studying. It is a theory-based design process that was developed through data collection, analysis, and presentation. This enables a researcher to explain the how and why of their work. Others can comprehend the necessity of the research more clearly thanks to descriptive design. To address ambiguity in the problem statement, exploratory research may be undertaken.

Experimental research: Through experimental research, a connection between a situation's cause and effect is established. This type of research design, known as causal research, looks at how the independent variable affects the dependent variable. For instance, one tracks how an independent variable like pricing affects a dependent variable like brand loyalty or consumer happiness. It is a productive study method since it helps to resolve an issue.

To track changes in the dependent variable, the independent variables are changed. It is frequently used in social sciences to examine two groups in order to observe human behaviour. To better understand social psychology, researchers might have participants alter their behaviour and watch how those around them respond.

Correlational research: One method of non-experimental research is correlational analysis. It aids in the establishment of a connection between two closely related variables for researchers. When assessing the relationship between two other variables, no assumptions are made; instead, the relationship between the variables is calculated using statistical analytic techniques.Forthis kind of research, two distinct groups are needed. A correlation coefficient, with values ranging from -1 to +1, establishes the link between two variables. A positive correlation between the variables is shown by a correlation coefficient leaning toward +1, whereas a negative correlation is indicated by a correlation coefficient leaning toward -1.

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Explanatory research: Explanatory design is the process of using a researcher's ideas and opinions to delve deeper into their hypotheses. The research questions' what, how, and why are explained in detail, along with hitherto unexamined facets of the topic.

Identify the population and sampling method:

Your research design should specify exactly who or what your study will investigate as well as the process you'll use to select participants or subjects. A sample is the smaller group of people from whom you will actually gather data for your study, whereas a population is the overall group about whom you want to make conclusions.

Define the population:

Anything you choose to investigate can be included in a population, including countries, texts, organizations, animals, and plants. It most frequently refers to a group of persons in the social sciences. Will you, for instance, concentrate on individuals from a certain background, location, or demographic? Are you drawn to individuals who use a specific product, have a particular occupation, or have a particular health issue?

The process of collecting a representative sample will be facilitated by a more accurate population definition.

Example of population:

It would be quite challenging to obtain a sample of high school students from across the nation if you were researching the efficacy of online learning in the US. You may concentrate your research on a smaller demographic, such as 9th grade pupils in low-income regions of India, in order to handle the project more effectively and come to more accurate results.

Sampling Method:

Data collection from every individual is rarely feasible, even with a population that is strictly defined. Rather, you will gather information from a sample. There are two primary methods for choosing a sample: non-probability sampling and probability sampling. How confidently you may extrapolate your findings to the entire population depends on the sampling strategy you choose.

Probability Sampling:

The most statistically sound choice is probability sampling; however, this isn't always possible unless you have a very small and easily accessible population. Many research utilizes non-probability sampling for pragmatic reasons, but it's critical to understand the limitations and take potential biases into careful consideration. Whenever possible, you should try to collect a sample that is as representative of the population as possible.

Data collection method:

Techniques for collecting data include ways to measure variables and obtain information directly. They give you the chance to learn firsthand information and generate fresh ideas for your study issue. One data collection method might be used, or multiple methods can be used in the same study

Survey method:

You can ask people directly about their thoughts, attitudes, experiences, and qualities to gather data through surveys. Questionnaires and interviews are the two primary survey methodologies from which to pick.

Observation Method:

Without depending on self-reporting, observational studies enable you to gather data covertly by observing traits, behaviours, or social interactions. Real-time observations can be made while taking notes, or they can be recorded on audiovisual media for examination at a later time. They could be numerical or qualitative.

Importance of Research Design:

- A carefully thought-out research approach has many advantages. Including:
  Research objectives' clarity: A clear grasp of the goals and expected results is provided by the research design.
- Enhanced validity and reliability: Research design reduces the possibility of bias and aids in the control of unimportant variables in order to guarantee the validity and reliability of results.
- Better data collection: A systematic, consistent, and appropriate gathering of data is made possible by research design.
- Improved data analysis: A well-designed study makes it possible to assess the data that has been gathered and draw insightful conclusions.
- Better communication: A well-planned study makes sure the findings are clear and impactful for both the research team and outside stakeholders.
- Efficient use of resources: research design contributes to the efficient use of resources by minimizing waste and optimizing the impact of the study.

Successful research requires a well-designed research plan that ensures resources are practical and provide insightful information in a clear and relevant manner.

Conclusion: Questioner provides scholars wishing to conduct research with a complete solution. Questioner offers a flexible platform for planning and carrying out research projects because of its user-friendly interface, strong data gathering and analysis capabilities, and capacity to combine results from numerous sources. You have all you need to obtain research results with our extensive collection of research instruments. We offer complex question kinds and bespoke point-and-click logic in our online survey platform. Discover the most important insights.

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A Critical Philosophical Analysis of Plagiarism

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Abstract

Plagiarism is the art of using someone else's words or ideas as your own. Copying someone else's material without using and inverted commas of getting false information about another is also plagiarism. Today, in the era of ICT, a large number of academic and research material is readily available online. I think that instructors and students need to see each other's learning and writing process as a reality. Like an irresponsible person, plagiarism cannot be used only for the purpose of writing on the paper, journal, or just to get more marks and pass. There have been repeated incidents of plagiarism in philosophy over the year. Separate research in this situation is not adequately equipped to deal with plagiarism. Irresistible plagiarism has tainted research for years. As a result, continued motivation to steal my lead to additional instanced of serial plagiarism.

Using the philosophical perspectives of S Radhakrishnan, Martin Heidegger, Edmund Husserl, Immanuel Kant, and Peter Singer to analyze and react to the academic context of plagiarism or ethics of Plagiarism. I make the case for a method of being the teacher-students or scholar-guider dynamic back to a normal condition of care and responsibility.

Keywords*: Plagiarism, ICT, Philosophy, Research, Philosophical perspective,ethics.*

Introduction

Proceeding in one's own name without obtaining any consent from the original author. With the help of this technology in today's ICT era, we paraphrase and use the subject. Again, it can be seen that presenting one's pre-written subject anew after a long time is also plagiarism and is a punishable offence.

Content may be copied using AI technology or artificial intelligence, where prior consent has been obtained for that text. Such as transcript software, grammar checker etc. The best way to avoid plagiarism is - first, to study the subject matter thoroughly, following the principles of academic practice properly. Second, paraphrase in such a way that the content in advanced plagiarism checker software is below 10% of academic plagiarism. As a result, the topic will become a topic of its own. And morally I will also be transparent.

Plagiarism

Plagiarism is the act of dishonestly taking material from someone else and passing it off as one's own. Or republishing your own pre-written content with minor changes and under your own name. In the current ICT era, people are working to change other people's writings in their own name using advanced technology i.e. AI technology. As a result, it is possible to present the content under its own name.

Reasons Behind Plagiarism

Plagiarism is something that a person likes to do all the time and tries to carry out the plagiarism properly as a saint. There are many reasons behind this plagiarism. which is as follows-

lack of confidence: Due to lack of knowledge about the content and lack of confidence about the content, we cannot interpret the content properly and present a unique content.

lack of awareness: Lack of proper awareness and lack of knowledge on how to make the content unique, we resort to plagiarism. So if you have proper awareness, you can take the content forward in your own way.

Lack of time: Due to the lack of time, we continue the writing of others in our own name, which amounts to plagiarism. So it takes a lot of time to make a piece of writing unique, as a result the writing will be unique.

Don't Care: As a result of careful study of the content and not having a deep knowledge of the content, we present the content by doing don't care. As a result, the esoteric matter inside us does not want to come out.

Confusion About Terminology: Sometimes the terminology of the subject matter is hidden or out of light, thus we cannot reach our desired goal.

Objectives

- Need to know how plagiarism narrows our vision?
- How can we bring uniqueness to our content while being ethically transparent?
- See how to solve problems by looking at the subject from a philosophical perspective?
- How can we properly give our writing a different dimension without plagiarism?

Methodology

I will use descriptive method to make the writing unique and plagiarism free. I will use the conceptual method to understand the content more deeply. As secondary data I will use mobile, journal, e-book, web resource, internet etc.

Type of Plagiarism:

There are several type of plagiarism that can occur in research :-

Direct plagiarism

Direct copying without credit is called direct plagiarism.

Paraphrasing Plagiarism:

Rewriting someone else's writing in your own words without giving credit. Paraphrasing is considered valid if it cites the writing of another.

Accidental Plagiarism

Continuing the writing of others without using any quotations.

Self-Plagiarism

Who is re-using the previously written subject without any recognition.

Complete Plagiarism

Using your own intelligence to use others' writing as your own.

Global Plagiarism

Willingness to recognize another person's writing as one's own.

UGC Guide line for Plagiarism

The following can be disregarded while the plagiarism similarity check is being performed: any piece of writing that uses phrases or quotes. Any acknowledgments, preface, table of contents, bibliography, and references. any usage of standard equations, laws, symbols, and terminology. According to UGC guidelines:-

Levels of plagiarism In order to define plagiarism,
the following levels of severity would be assigned to it:

Level 0: Ten percent similarity
Level 1: Reliability greater than 10% to 40%
Level 2: Reliability greater than 40% to 60%
Level 3: More than 60% of similarities

Punishments for plagiarizing while submitting theses and dissertations

Level 0: Minor Similarities, no liability; works with similarities up to 10%.

Level 1: student submissions having similarities between 10% and 40% of the original work will be required to resubmit a rewritten script within a six-month timeframe.
Level 2: works that are more comparable by 40% to 60% - Students who fall into this category will not be allowed to submit the amended screenplay for a year.
Level 3: If there are more than 60% similarities, the student's registration for that program will be cancelled.

Penalties for plagiarism in scholarly and scientific publications

Level0: Minor resemblances up to 10% are not penalized.
Level 1: If there are similarities between 10% and 40%, the author will be asked to retract the work.
Level 2: Reliability greater than 40% to 60% will be requested to remove the manuscript. shall not be eligible for a single yearly raise. shall not be permitted to supervise any new Master's or doctoral students or scholars for a period of two years.
Level 3: More than 60% of similarities shall be requested to have the manuscript withdrawn. shall not be entitled to get two consecutive annual raises. will not be permitted to supervise any incoming Master's or PhD students or scholars for a period of three years.

An Ethical overview of Plagiarism

There is no "middle ground" in plagiarism that says that one thing is ethical or acceptable and the other is not, regardless of whether you use an AI tool to help you get "unstuck" when writing, to help give you an online guide of how to proceed, or you have been taking significant portions of AI-written content and passing them off as your own. The simple fact remains that plagiarism is immoral in all its manifestations. It is equivalent to theft, and the question is not if one will get caught, but rather when. When that occurs, there may be financial or legal ramifications at worst, but there are also unnoticed consequences that occur, such as a decline in search engine ranking, a loss of authority in one's position as a thought leader or expert, a loss of credibility as a writer or marketer, and so forth. Because of this, it's more crucial than ever to know that the content you buy, hire out, or create yourself is real, authentic, and specifically tailored for that project or destination, and that it always stands alone as a uniquely human example of originality.

Philosophical Perspective in plagiarism

There have been discussions and accusations about possible plagiarism in S. Radhakrishnan's work, especially in his book "Indian Philosophy." The criticisms focus on the passages in the book that are similar to those in other philosophical texts without proper attribution, but Radhakrishnan is also acknowledged for his unique contributions to the comprehension of Indian philosophy and for combining different philosophical traditions.

The dynamic nature of space—that is, the "spacing" of human and non-human bodies in their intricate interconnection—is highlighted in this course as it examines the relationship between the body and space. The goal is to move away from the idea of space as a separate entity and instead see space as an integral element of bodies and events in their actual, tangible spatial occurrence. We will also explore if it is possible to think about objects and events in a way that goes beyond a subject-cantered perspective without going back to an object-oriented ontology. We'll read works by Merleau-Ponty and Heidegger.

It is widely accepted that Edmund Husserl (1859–1938), a German philosopher, is the "father" of the intellectual movement known as phenomenology, even though he did not originate the term. A general definition of phenomenology is the systematic effort to explain sensations (and the "things themselves") without resorting to theoretical or philosophical conjecture. According to utilitarianism, a consequentialist ethical theory, an action's morality is decided by its repercussions. A deed is ethically justified if it leads to a greater overall good, according to Peter Singer's utilitarian calculus. We will look at Singer's viewpoint on the

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morality of treating all living things equally and the moral conundrum of sacrificing one for the sake of others in this essay. Additionally, we shall refute Immanuel Kant's moral deontology by opposing the idea of employing people as means to an aim.

Method of avoiding Plagiarism

In the case of plagiarism, we use many types of methods. Two of which are important-

Copy Paste Method:

Presenting exactly the same way without making any changes from the original content is called copy paste. But in most cases, there is a practice of copying and pasting the writing of other languages in their own language.

Paraphrasing method:

By changing some words and sentences from the main content without changing the complete meaning, the writing is made unique. This technology is the most secure method.

Anti Plagiarism Detection Tool

In the era of ICT technology and AI technology, there are various application tools to check any plagiarism in writing, with the help of which we can detect plagiarism. These are discussed below: -

Dupli Checker:

More precisely, the technique of finding instances of plagiarism or copyright infringement in a work of content for writers, teachers, student bloggers, webmasters, or any document is known as plagiarism checking or content similarity detection. More precisely, The technique of finding instances of plagiarism or copyright infringement in a work of content for writers, teachers, student bloggers, webmasters, or any document is known as plagiarism checking or content similarity detection.

Grammarly:

Verify my grammar and plagiarism - We Write It All, from Grammar and Spelling to Style and Tone, and to Spot Plagiarism. Learn The Power of Self-Assured Communication. A detector of tones. Tone of Brand. Style Manual.

Copy leaks:

An all-inclusive platform that prioritizes honesty and integrity in content. It works for AI detector, Plagiarism detector, writing assistant, codeleaks etc.

Paper Rater:

FAQ about our tool for proofreading, plagiarism detection and grammatical checks.

Plagiarisma :

Searching for a trustworthy plagiarism detector to make sure your writing is unique? PLAGIARISMA is the only place to look! As a content developer, I am fully aware of the anxiety associated with inadvertently stealing someone else's ideas and having to deal with the consequences of plagiarism. Nobody wants to feel the disappointment and shame that comes with it.

Plagiarism Checker:

With only one click and no cost, the plagiarism detector accurately identifies copyrighted content or text in assignment and documents.

Conclusion

Finally, it can be said that plagiarism is one of the things that helps to make our writing unique. If the rules in the case of plagiarism resume can be followed properly, then there is no problem in writing. This brings a new dimension to our content. If the writer has deep knowledge of the subject, writing skills and confidence for writing etc., writing without plagiarism can be taken to a unique level. Which is a part of our ethics. Where ethics is employed, it is possible to bring uniqueness to the writing in a philosophical perspective. As a result, there is no plagiarism in the writing.

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8
Language - A Powerful Tool of Research

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Abstract

In research paper, language and its readability plays a crucial role in communicating research ideas to the reader. Most of the time, people are least interested to slog through long sentences or complex languages in research papers. As a result, a visible impact on accessibility of research findings occur. So, more complex research idea should be constructed in simple, grammatically correct language. Academic Language is concerned with terminology and norms. Learners even as researchers sometimes find it complicated to write and comprehend. Using hyphens, symbols, punctuation, capitalization, acronyms, units of measure -- are some tricks to maintain consistency and logical flow of writing. User friendly fonts, simple yet front loaded sentences help readers to assess necessary information quickly. Avoiding repetition of words or phrases make the text polished and precised. On the other side, research paper must have a structured language, which ensures research findings are valid, reliable and linked effectively. Misunderstandings and misinterpretations of data and conclusions can be prevented in this way. Language bridges the gap between researcher and target audience. In academic research, appropriate technical language can give better scope of adaptation to target group during data collection. Here, language conveys complex ideas, methods and findings to audience in much simpler way. It also plays a crucial role in data interpretation, analysation and pattern identification. In scientific research, right words and terms make complex ideas understandable. Hence, the quality of research and its acceptance among readers solely rely on its convincing presentation of language.

Keywords*: Academic language, Readability, Accessibility, Target Audience, Technical Language*

Introduction:

Language is mode of expression. It is a non-instinctive method to convey ideas, emotions, desires by using signs and symbols. These expressions of symbols are auditory and produced by organs of speech. There are four aspects of language skills. LSRW—Listening, Speaking, Reading and Writing are those skills of language. In addition, with these skills, grammar, vocabulary, punctuation are basic aspects of language, especially for spoken and written language. Speaking and Writing is the productive part of a language, hence they are productive skills or skills of expression. In the other hand, Listening and Reading are receptive skills or skills of comprehension as user receives information in spoken or written form.

Academic language

Language is an essential tool to conduct classroom interaction between teachers and pupils. Here, the concept of "academic language" comes. It refers to the language used in academic purpose. It is considerably more sophisticated, polished and formal than informal spoken form used outside the classroom. Each discipline has its own linguistic characters and terminologies. To understand the meaning and application of words to explain diverse situations in subjects, students need to grip a basic academic language.

It is the language of classroom, in contrast to social language. It contains high level vocabulary, grammar and syntactic concepts. Defined academic language and its proper application assures

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the academic success of culturally and linguistically diverted pupils. From classroom teaching, Curriculum development and implementation to writing research paper, academic language plays a key role in higher studies. It highlights on content- specific and comprehensive expression. English, as global academic language widely accepted everywhere. Though, sometimes it can be difficult for non-native students/researchers to justify the abundance of grammatical quirks, idiomatic expressions, symbols in the English language. Therefore, dialects with proper academic integrity can be alternative mode of expression.

Nature of academic language

Language is a way of communication. Encoder, who speaks or writes, passes on his/her thought process to decoder. Decoder, in research, target audience who hears the speech or reads the paper keeping the message in mind sent by the encoder. Next, decoder can give a feedback through spoken, written form or through gesture. This is the way; the whole communication process occurs.

In research, research findings, ideas and methods are expressed through a well- established academic language. Language represents the overall concepts, theories and data. Data interpretation, analysis and finding results through hypothesis is also subject to language. Technical language, academic language, symbols (in mathematics and statistics) are combined tools of writing a research paper. Research paper language and its readability plays a crucial role in communicating research ideas to the audience/reader. It encourages and facilitates a distinct way of thinking other than informal everyday language. It enables researcher to think and convey abstract, literature review, thesis in a sophisticated way.

Features of academic language

Generally, a simple, formal and grammatically correct style of language is used in academic writing. Avoiding journalistic expressions, colloquial, idiomatic terms should be maintained while writing a research paper. Precise vocabulary and correct punctuation are also subject to concern. A unique set of rules control the academic language writing. it should be formal, objective, explicit, enclosed and responsible. Such as:

- Academic writing must be formal and impersonal in style
- Personal pronouns, like ‘I’, Me’, ‘you’, ‘We’ must be avoided
- Shortened forms of verbs, like ‘don’t’, ‘haven’t’, ‘it’s’, ‘won’t’ should not be applied
- Linking words, such as ‘and’, ‘but’ must be avoided in the beginning of a sentence
- Verbs formed with multiple words like ‘give up’, ‘take away’ must be ignored
- Passive form of verbs must be used rather than active form
- Specialised vocabulary must be used
- Research findings should be portrayed through language in cautious way, using expressions such as ‘should’, ‘could’, ‘may’ etc.
- Avoiding slang, metaphors or expressions common in ordinary speech, jargon and any kind of clichés
- Avoiding over-explaining or over-generalizing the content
- Personal reactions must be ignored

Using these features must depend on researcher’s own view, necessity for writing and judgement.

Spoken and Written form of language in research

Short messaging services (SMS) like texting, tweeting is very trendy now a day. It is communicated by mobile network. Illustrations and variations are less in this form. This in formal mode of language are often used in general conversations. Spoken language, mostly face-to-face interaction is more communicative than written form, body language, voice, expressions, voice, resonance impacts well. In speeches or presentation sometimes there are

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imperfect sentences, repetition of words, full of pauses or errors. Though, it reaches up to the target audience in more convincing way. In the other hand, written form is quite assembled, thoroughly revised, formal, precise and sophisticated. It maintains particular expressions with logical characteristics. Punctuations, heading, spacing between words, sentences, design, colours, graphical elements, capitalization these are the ornamental part of written language. These is not applicable in oral language. Hence, readers could completely involve himself/herself in written piece. A good research paper must be written in this way, that it can satisfy the need of the potential readers. With the help of proper academic writing it can be communicated to targeted audience successfully.

Major concerns about academic language in research

Language is an established societal framework. People from diverse sociocultural background has different perspectives. In research, researcher(encoder) could not overcome these limitations. These might be reflected in writing. In that case, a range of linguistic features must be concerned, such as

- Clarity and accessibility
- Objectivity
- Precision
- Accuracy
- Free from biasness
- Free from cultural sensitivity
- Contextualization
- Technological and digital concerns
- Adhering to research ethics guidelines

A sound knowledge over academic language helps a researcher to develop his/her research paper flawlessly. Learning academic language involves, understanding, communicating, way of utilizing, evaluating and finally presenting. It's a gradual process to acquire the skill. Ultimately the researcher should keep this in mind, that language comprehension is rely on accordance of target audience. Most of the time, people are least interested to slog through long sentences or complex languages in research paper.

Steps of academic writing

Academic writing refers to a style of expression that researchers used to define of their disciplines and specific areas of expertise. Its main goal is to contribute scholarly goal in a subject. A prospective researcher should know his/her target audience and must have a clear vision on his/her area of research. He/she must access similar observations of his/her area of research, target specific articles related with it to gain an idea about previous research work on this topic. Hence, academic writing should follow few steps:

1) **Planning and preparation:** organized planning is always helpful to execute desired research work. Defining research questions, developing objectives and literature review necessary for academic writing.
2) **Outline**: an outline is always required for proper execution. It not only helps to synchronize the thought process but also helps in research findings.
3) Style of writing: formal writing pattern is compulsory in academic writing void of abbreviations, slangs, metaphors, jargon or any form of clichés.
4) **Drafting**: firstly, portraying introduction and background of research work. Then precise description of methodology in understandable, simple language. Finally showcasing results along with discussion. This ends up with conclusion and recommendations.
5) **Revising**: checking spelling, grammar and punctuation. Ensuring continuity of writing, reviewing formatting and style also.

6) **Referencing**: using proper citation and referencing. Adhering academic integrity guidelines.
7) **Language**: this final step is the regulatory step of all the previous steps. This is actually not step of academic writing, rather most important characteristic feature of academic writing. Using clear concise language in overall writing, that must be understandable to target group of audience, is always preferred in academic writing.

Hence, to organise a research paper a long thought process and preparation is mandatory. Academic writing is the ultimate tool for expressing the research findings in a written mode.

English as a global language in academic writing

English is language of choice for many international scholarly journals. It enhances the mobility and accessibility of researchers worldwide. Academic English is quite different from everyday English. It has wide use in understanding and implementing the research findings to written form. Researcher must be concerned while using academic English. Precise, simple yet meaningful, accurate writing can take reader's attention and understanding.

Academic English is connected with education, especially in higher studies. In simpler version, this is the type of English one should understand for reading or understanding study materials or writing about his/her subject. It has wide application in the field of research. For reading an article in an academic journal or listening a speech or presentation academic English must be learnt. Discussing about academic subject in an academic environment also requires adequate knowledge of academic English.

Researchers must have command over academic English to establish their ideas, opinions, insights, findings about their research area. Effective academic English depends on producing most appropriate style for the purpose and the target audience. It should include consistency, right level of formality, precise ideas and solutions with objectivity. Researchers must get the fluency in this language also while presenting their research paper. Here, LSRW—Listening, Speaking, Reading, and Writing, these four language skills are relevant. In addition to these four skills, fundamental aspects of English language such as grammar, vocabulary, punctuation are crucial factors of written and spoken English. These skills and aspects have a vital role, like,

- Accessing and understanding study materials of interest and necessity
- Finding effective use of terms, concepts for writing
- Writing well-structured research paper, assignments, without plagiarism
- Developing subject oriented language pattern and vocabulary
- Communicating views through writing or speech by relevant use of language

Academic language in scientific research

Scientific research is a process, consists systematic observation, measurement, experiment, and formulation of hypotheses. Scientific researchers plan systematic study before performance. They perform series of experiments by collecting samples. Establish a data and interpret accordingly and finally find a result. This whole procedure is sometimes very lengthy. Failures might happen multiple times. Though, they sustain with patience to obtain the desired result, as they designed an experiment in the initiation of research work. In this lengthy research process, they have to take care of the academic writing part and systematically writing the research report with all detail descriptions of the whole work.

Mastery on specific academic subject is not sufficient for research work. A researcher must have profound knowledge on their specific patterns of language usage. Language is the main medium through which research work based on these subjects reach to target audience. In case of science subjects, there are specific terminologies. sometimes, it might be unfamiliar to readers/listeners, as in science subject's large variety of academic terms are there.

Academic language in scientific research is important for effectively communicating complex ideas, research findings and technical information. There are various types of scientific writing, such as—

- Research articles
- Review articles
- Conference papers
- Thesis
- Dissertations
- Research proposals
- Technical reports

In each type, researcher should follow the basic features of academic language. Simple yet meaningful, grammatically correct sentences that could portray the vision of the author. Normally in scientific research writing the use of tenses should be simple present, simple past or past participles. Here, progressive elements are rarely employed. In case of recommendation or instruction author should use modality. In scientific manuscript, thoughts of the author must be organised thoroughly. He/she should develop this simultaneously arranging into sections. The vision of the whole experiment must be reflected clearly in writing. Readers understand the research idea by reading only. Hence, it's the sole responsibility of the author/researcher to present his/her research in a logical way. Language bridges the gap between researcher and the target audience.

Readability of research paper

Research paper language and its readability plays a vital role in communicating research ideas to readers. Most of the time, people are least interested to slog through long sentences or complex languages in research paper. Recent research on this, after analysis, concluded that, there has been a steady decrease in readability over the years. This scenario is quite dissatisfying for researchers, readers as well as policy makers. Complex research idea must be presented in simple language. Readers/target audience should find an engagement in readers, rather than struggling with the language of the paper. There are several guidelines, that provide tips to novice authors to improve readability. For example, the European Association of Science Editing (EASE) provides guidelines for preparing manuscripts in a suggestive way. It is quite helpful for language improvement.

An author might have personal style of writing. It needs to be effective and precise. In research, the fundamental part is clear and accurate writing. Journals prefer to publish high quality research, that meets demands of readers. Poor research language, grammatical error faces rejection. Hence, a good piece of writing must pass through multiple revisions. Few points to increase readability of research paper are as follows:

Proofreading: grammar check, spelling error, punctuations, spacing, font styles must be checked thoroughly to avoid bad impression.

Logical flow: consistency and logical flow in writing is one of the most reader- friendly gesture of an author. Punctuation, symbols, capitalization, acronyms must be noticed.

Avoiding redundancy: repetition of words or redundancy create lack of engagement for readers. Readers face difficulty to follow, become bore easily.

Short words and sentences: short and simple writing style are highly preferred by many popular journals. Therefore, complex, overloaded sentences must be avoided.

Frontload sentences: reader can quickly access significant and desired information from the frontloaded sentences. This feature of writing attracts readers as well.

Impotence to criticism: criticism must be accepted in a positive way for the betterment of writing. Hence, reviewer's feedback must be considered with importance. Discussion and conclusion section should be verified thoroughly.

In scientific research, formula, derivation, data analysis and interpretation, graphical representation should be logical and understandable.

Conclusion:

In this elaborated discussion, the significance of language in research is focused. The objective and analytical nature of academic language is relevant for not only research but in many educational activities. From junior classroom to higher academic platform acceptance of academic language is everywhere. Students, teachers, instructors are used to in this particular form. Learning this form of language from the childhood, helps a person to develop his/her writing and reading skill properly. In academic setting, its specialized vocabulary and conventional text structures impacts on both productive and receptive modalities. English is always the language of choice for many international scholarly journals. it is widely used for academic and scientific research for its formal, objective and factual nature. Therefore, researchers, other than subject of regional language, should emphasize on academic English for good academic writing and well acceptance of research work to the target audience.

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Introduction To Research Methodology

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Abstract
Research, often understood as "Re-Search," is a systematic and diligent process of inquiry aimed at discovering truth and expanding knowledge. It involves identifying a research problem, reviewing existing studies, and applying appropriate methods to fill gaps in knowledge. In literary research, the structure of investigation is crucial, as poems, stories, novels, or plays are analyzed through methods such as text analysis, historical, comparative, or descriptive approaches. The process demands unbiased analysis, logical reasoning, and structured evaluation to ensure originality and validity. A well-prepared research proposal outlines the plan, including objectives, methodology, scope, and limitations, thereby guiding the entire study. Ultimately, research enriches knowledge by offering new insights and perspectives through systematic investigation.

Keywords*: Research, Knowledge, Truth, Literature, Methodology, Analysis, Structure, Proposal, Evaluation, Framework*

Introduction to Research Methodology

The term Research may be defined as a systematic gathering or collection of data and information. It is a process of analysis for the advancement of knowledge in any subject.

Definition of Research

There is various definition of Research by various researchers/ as per the fields of their study and the availability of resources at the given time. As a basic definition of Research, we can say Research is the process of gathering information and data to discover a new knowledge/concept or advancement of existing theories, which is a new understanding that was not previously known.

Characteristics of a Good Research

- The purpose of the research is clear.
- It follows a systematic process.
- It is logical and objective.
- It is easy to understand.
- Research starts with a problem/question.
- It creates a path for generating new questions.
- It is ethical.
- It resolves any current problems/issues.
- The data of the research is appropriate.
- It is empirical & replicable.

Purpose of Research

There are many purposes of Research but the main three purposes are –

1. **Exploratory:** Exploratory research is the first unstructured research for solving new problems that haven't been explored/discovered before.
2. **Descriptive:** Descriptive research expands knowledge of an existing research problem in a structured way.

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3. **Explanatory:** Explanatory research is casual research, It is experiential research. It is conducted to check the result of specific changes in an existing procedure or system.

Types of Research

Research can be divided into two main types :

1. **Basic research (Pure Research):** It does not focus on solving specific problems or issues. It focuses on the advancement of an existing problem.
2. **Applied research:** It focuses to find solutions to specific problems or issues.

Types of Research Methods

Research methods are mainly classified into two

1. **Qualitative Research Methods:** Qualitative research refers to analyzing in-depth information about human behavior and producing "textual data" (non-numerical).
2. **Quantitative Research Methods:** Quantitative research refers to analyzing something based on some numerical data and mathematical models and producing "numerical data".

- **Qualitative Research**: This type involves non-numeric data collection and analysis methods. Techniques such as interviews, focus groups, and ethnographic research fall under qualitative research, which emphasises understanding the phenomenon through depth over breadth.
- **Quantitative Research**: Unlike qualitative research, quantitative research involves numerical data. It uses statistical, mathematical, or computational techniques to analyse data. Its main goal is to determine patterns and averages, make predictions, test causal relationships, and generalise results to wider populations.
- **Mixed Methods Research:** This methodology combines both qualitative and quantitative research. The rationale is to benefit from the strengths of both methods while neutralising their weaknesses, thus providing a more comprehensive analysis of the research topic.
- **Descriptive Research**: Often considered a preliminary research phase, this method describes the characteristics of a population or phenomenon being studied. It does not answer questions about how/when/why the characteristics occurred, which are left for further research.
- **Experimental Research**: This method is used to establish cause-and-effect relationships between variables. It involves controlled tests and experiments that manipulate one variable (independent variable) to see the effect on another variable (dependent variable).
- **Correlational Research**: Unlike experimental research, correlational research studies the relationship between two or more variables without attribute causation. This method is used to find trends or patterns.
- **Longitudinal Research** involves repeated observations of the same variables over long periods of time. Psychology, sociology, and medicine often use it to study long-term trends and effects.
- **Cross-sectional Research:** Cross-sectional research studies a particular phenomenon (or elements of it) at a single point in time. This snapshot provides insight into the variables at that specific point.
- **Action Research:** Designed to effect direct changes, action research involves iterative cycles of planning, acting, observing, and reflecting to improve practices and methods.

Each type of research methodology serves its purpose and can be selected based on the specific requirements and contexts of the study.

Process of Research Methodology

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The process of research methodology involves several key stages:

- **Identifying and Defining the Research Problem**: The first step in any research is to clearly define the issue or problem that needs to be investigated. This involves understanding the nature of the problem and its implications.
- **Literature Review**: Conducting a thorough review of existing literature to gather background information and existing data on the topic. This helps in framing the research questions or hypotheses.
- **Designing the Study**: This involves choosing the research design, selecting the research methodology, and determining the sample size and data collection techniques.
- **Data Collection**: This stage involves gathering the necessary data through chosen methods, which could be qualitative, quantitative, or mixed.
- **Data Analysis:** After collecting data, it is analysed to draw meaningful insights and patterns. Depending on the nature of the data and research objectives, this can involve statistical analysis, thematic analysis, or other methods.
- **Interpreting the Results:** Once analysed, the data is interpreted in the context of the research questions and the hypothesis posed. This stage helps in understanding the implications of the findings.
- **Reporting and Evaluation**: The final stage involves compiling the research findings into a structured report and evaluating the research process, including the methodology applied and its effectiveness.

This systematic approach ensures that the research is robust, reliable, and valid, contributing effectively to the knowledge base.

Objectives of Research Methodology

The objectives of the research methodology are multifold:

- **To Provide a Clear Framework**: One of the primary objectives is to provide a systematic framework that guides the entire research process from start to finish. This ensures that the study remains on track and is conducted systematically.
- **To Ensure Accuracy**: By adhering to a structured methodology, researchers can minimise biases and errors, thus enhancing the accuracy of the results.
- **To Enhance Reliability**: Employing standardised methods enhances the reliability of the research findings, allowing others to replicate the study under similar conditions.
- **To Facilitate Peer Review**: A well-defined methodology allows peers to evaluate the research for its validity and reliability, which is crucial for its acceptance and credibility.
- **To Enable Generalisation:** Appropriate methodology allows researchers to generalise the results to a larger population, thus increasing the utility and impact of the research.
- **To Provide Insight and Understanding**: Any research aims to provide insights and a deeper understanding of the topic being studied. The right methodology is crucial in achieving this objective effectively.

These objectives underscore the importance of research methodology in conducting and evaluating effective research.

Scope of Research Methodology

The **scope of research methodology** is extensive and varies across disciplines. It includes:

- **Academic Research**: In academia, research methodology is fundamental in thesis and dissertation work, supporting scholars in contributing new knowledge to their field.
- **Scientific Research**: In the sciences, the methodology ensures that the experimental research is carried out under controlled and standardised conditions that can be replicated and verified.

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- **Social Sciences**: Here, methodology is crucial in understanding complex social realities through qualitative, quantitative, or mixed methods.
- **Business and Marketing**: In this sector, business research methodology is essential for market research, business strategies, and consumer behaviour analysis.
- **Health and Medicine:** Medical research methodology covers clinical trials, epidemiological studies, and other health-related investigations that require rigorous methodologies.
- **Engineering and Technology:** Methodology involves precision, control, and systematic processes essential for developing new technologies or improving existing ones.

Research methodologies' broad applicability and adaptability make them essential across various domains, highlighting their universal relevance and utility.

Conclusion

Understanding and mastering research methodology is essential for anyone involved in the academic or professional pursuit of knowledge. It ensures the integrity and credibility of the research conducted and enhances the impact and relevance of the findings.

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Nature and problem in Research method

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Abstract:
Research is a systematic process of inquiry aimed at discovering new knowledge or validating existing information. Despite its crucial role in advancing understanding, the research process is fraught with various challenges that can impede the quality and reliability of findings. One of the primary issues is the formulation of a clear and concise research problem. A poorly defined research problem can lead to ambiguous objectives, which, in turn, may result in an inadequate research design. This ambiguity often stems from a lack of understanding of the research context or insufficient preliminary studies, leading to a mismatch between the research question and the chosen methodology.
Another significant challenge is the selection and application of appropriate research methods. Researchers often grapple with choosing between qualitative, quantitative, or mixed-method approaches. Each method has its strengths and limitations, and the choice largely depends on the nature of the research problem. However, misalignment between the research question and method can lead to biased or incomplete results. Moreover, practical constraints such as time, budget, and access to data can further complicate this selection process.
Data collection and analysis present additional hurdles. Issues such as sampling bias, measurement errors, and data integrity can undermine the validity and reliability of research outcomes. Researchers must also navigate ethical considerations, particularly when dealing with sensitive subjects or vulnerable populations, ensuring that their methods do not harm participants or misrepresent findings.
Finally, the dissemination and application of research findings are fraught with challenges, including publication bias, misinterpretation of results, and the difficulty of translating research into practice. These challenges highlight the importance of rigor, transparency, and reflexivity throughout the research process to ensure that the findings contribute meaningfully to the existing body of knowledge and address the research problem effectively.
Keywords: *Validating existing information, Research problem, Validity and reliability, Misrepresent findings, Research process.*

1. Introduction

Definition of research problems.

A research problem is a specific issue, difficulty, or gap in knowledge that a researcher aims to address through their study. It defines the focus of the research and sets the direction for gathering data, formulating hypotheses, and analysing results. A well-defined research problem is essential as it guides the entire research process, helping to identify objectives, methodology, and the scope of investigation. A research problem typically arises from a need to solve a practical issue or to fill a gap in the existing body of knowledge. It can take the form of:

1. Theoretical Problems: These focus on expanding understanding or exploring new theories or concepts. For example, a researcher might identify a lack of clarity in a particular area of study and seek to develop a new theory or model.

2. Practical Problems: These are real-world issues that require solutions. For example, a company may need to determine why employee productivity is declining, or a medical team may want to find a more effective treatment for a disease.

To effectively define a research problem, the researcher must:

- *Identify the context:* Understand the background and setting of the problem.
- *Explore existing literature:* This helps in recognizing what has already been studied and where the gaps are.
- *Specify the problem clearly:* It should be precise and well-defined to make the research focused.
- *Consider the feasibility:* The research problem should be manageable, considering the available resources, time, and tools.

A clear research problem helps set the stage for the formulation of research questions or hypotheses, which further guide the study's methodology and data collection.

2. Identifying Research Problems

Identifying research problems is a crucial step in academic work because it establishes the foundation for meaningful and impactful research. Here are several reasons why it's important:

1. Guides the Research Direction

A well-defined research problem provides a clear focus and direction for the study. Without it, research efforts may become scattered and ineffective. The research problem helps in narrowing down the scope and identifying relevant literature, data sources, and methodologies.

2. Highlights Knowledge Gaps

By identifying a research problem, scholars can pinpoint gaps or unexplored areas in existing knowledge. This allows them to contribute new insights, theories, or solutions that add value to their field of study. It also ensures that their research is original and not simply a repetition of previous work.

3. Ensures Relevance

A strong research problem ensures that the study addresses real-world issues or theoretical questions that are significant and relevant to the academic community or society. This increases the chances of the research being useful and having an impact, whether it's in solving practical problems or advancing knowledge.

4. Improves Research Design

Defining the research problem clearly helps in formulating research questions or hypotheses. It leads to the development of a structured research design, including appropriate methods for data collection and analysis, making the research more robust and reliable.

5. Attracts Interest and Funding

Identifying a pressing or innovative research problem can attract the attention of academic peers, institutions, or funding bodies. If the problem is seen as important and valuable, it can lead to collaboration, resources, or financial support for the project.

6. Facilitates Critical Thinking

The process of identifying a research problem requires critical thinking, as it involves analyzing current knowledge, evaluating the significance of issues, and identifying what needs to be explored. This promotes intellectual rigor and enhances the quality of the research.

7. Contributes to Academic and Professional Growth

Addressing a research problem effectively helps students and researchers develop important skills, including problem-solving, analytical thinking, and the ability to synthesize information. These skills are essential for academic success and can also be transferred to professional environments.

In summary, identifying a research problem is vital because it serves as the anchor of the research process, ensuring that the study is focused, original, and valuable. It plays a key role

in producing meaningful academic work that advances knowledge and addresses real-world challenges.

2.1 What is a Research Problem?

Identifying Research Problems

Research is a structured process aimed at answering specific questions or addressing particular issues. At the heart of every research endeavor lies a well-defined research problem. The process of identifying a research problem is fundamental to academic work, as it establishes the basis for meaningful and productive inquiry. Without a clearly articulated problem, research efforts can become disorganized or misguided, failing to contribute valuable knowledge to a field. This makes the identification of research problems one of the most critical tasks for researchers in any discipline. In this essay, we explore the significance of research problems, the processes involved in identifying them, and the impact they have on academic work.

Importance of Research Problems

The identification of a research problem provides a structured framework for a study. A research problem acts as the guiding force that directs the focus of the research and helps in outlining the research objectives and methodology. It defines the "what" and "why" of the study: what the researcher aims to explore and why it is important. This ensures that the research remains relevant, focused, and coherent.

In the academic world, research problems serve a dual purpose. On one hand, they address theoretical issues by filling gaps in existing knowledge or offering new interpretations of known data. On the other hand, research problems can address practical issues by solving real-world problems or improving processes, products, or systems. In both cases, identifying a research problem enables the researcher to make original contributions to their field of study. It also ensures that the research adds value to the wider body of academic literature.

Sources of Research Problems

There are several sources from which researchers can identify problems to investigate. One primary source is existing literature. By reviewing prior studies, researchers can identify gaps or inconsistencies in knowledge. For example, a study might reveal conflicting results on a particular issue, indicating a need for further investigation. Alternatively, the literature might point to areas that have been overlooked or underexplored, presenting opportunities for original research.

Another source of research problems is real-world observations. Practical issues that arise in professional, social, or personal contexts often serve as the basis for research inquiries. For example, a business might experience declining employee productivity, leading researchers to explore factors influencing workplace efficiency. Similarly, societal challenges like climate change, public health crises, or technological advancements create ample opportunities for research.

Personal experiences can also generate research ideas. Many researchers are motivated by personal interests or experiences that inspire them to address specific problems. A researcher with a passion for environmental sustainability, for example, may identify a need to study new methods for reducing carbon emissions.

Discussions with peers and experts in the field can be invaluable for generating research problems. Collaborations often lead to new insights or perspectives that help researchers identify issues worth investigating. Attending conferences, workshops, or seminars also provides exposure to current trends and unanswered questions in a discipline.

Process of Identifying a Research Problem

The process of identifying a research problem typically begins with exploratory research, where a researcher immerses themselves in the existing body of knowledge. By conducting a

thorough literature review, researchers can identify gaps or limitations in previous studies that suggest the need for further investigation. This stage is crucial for understanding what has already been studied and determining whether there is room for original inquiry.

Once a potential gap or issue is identified, the next step is to refine the problem. A good research problem should be clear, specific, and researchable. It should not be too broad, as this can lead to a lack of focus, nor too narrow, as this may limit the scope of the study. For example, a research problem that seeks to understand "the impact of technology on education" is overly broad, whereas one that investigates "the effect of mobile apps on reading comprehension in elementary students" is more specific and manageable.

Feasibility is another important consideration in identifying a research problem. Researchers must ensure that the problem they wish to address can be realistically studied given the available resources, time, and expertise. For instance, a study that requires access to proprietary data or advanced laboratory equipment may not be feasible for all researchers. Similarly, ethical concerns, such as the impact on human participants, must be carefully considered.

The identification of a research problem is a critical first step in any research process. It determines the focus, relevance, and feasibility of the study, guiding researchers in their quest to contribute new knowledge or solutions. By carefully considering gaps in existing literature, real-world issues, and personal experiences, researchers can pinpoint significant problems worth investigating. Ultimately, a well-defined research problem sets the foundation for successful academic work and ensures that the research adds value to both the academic community and society at large.

The Role of Research Problems in Academic Work

Research problems are the cornerstone of academic work because they provide direction and purpose. They serve as the basis for developing research questions or hypotheses, which in turn guide the study's design, methodology, and analysis. Without a clear research problem, it is difficult to determine what data to collect, how to interpret the results, or what conclusions to draw. A well-defined research problem also helps researchers avoid the trap of collecting data without a clear purpose or conducting studies that are irrelevant or redundant.

Moreover, identifying an important research problem enhances the credibility of the research. When a problem is well-formulated and addresses significant gaps or practical needs, the research is more likely to attract attention from the academic community, funding agencies, and other stakeholders. This increases the likelihood of publication and the impact of the research on the field.

Explanation of a research problem as a gap in knowledge.

A research problem often emerges as a gap in knowledge, which refers to an area within a field of study that has not been fully explored, understood, or resolved. This gap presents an opportunity for researchers to investigate and contribute new insights, theories, or solutions. The identification of such a gap is critical because it defines the purpose of the research and justifies why the study is necessary.

Understanding the Gap in Knowledge

A gap in knowledge can take various forms, including:

1. Unexplored Topics: Certain areas or topics may have been overlooked by previous research, leaving questions unanswered or perspectives unexplored.

2. Inconsistent Findings: Previous studies might show conflicting results, indicating that further investigation is needed to clarify or resolve these inconsistencies.

3. Outdated Research: As fields evolve, new technologies, theories, or methodologies emerge that render older research less relevant. This creates a gap where more current studies are needed.

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4. Limitations of Previous Studies: Sometimes earlier research is limited in scope, sample size, or methodology, leaving certain questions only partially answered.
5. Theoretical Gaps: New theories or frameworks may be required to better explain phenomena that existing theories cannot fully account for.
Researchers typically identify gaps in knowledge through a literature review. By critically examining the existing body of research, they can pinpoint areas that have not been thoroughly studied or questions that remain unanswered. This involves:

- *Analyzing existing studies:* Understanding what has already been done in the field and where limitations exist.
- *Assessing the relevance of past research:* Considering whether changes in context or new developments (e.g., technological advancements) require a fresh look at the subject.
- *Evaluating methodologies:* Looking for gaps in the methods used in previous research, which may indicate an opportunity to approach the problem differently.

Why Addressing a knowledge Gap is Important
Addressing a knowledge gap is essential because it ensures that research contributes something new and meaningful. Rather than replicating what has already been studied, researchers focus on advancing understanding or offering practical solutions to unresolved issues. This not only helps in expanding the academic body of knowledge but also provides potential benefits for industry, policy-making, and society.
By identifying and investigating a gap in knowledge, researchers ensure their work is original, relevant, and capable of making a significant impact in their field.
Research problems can be classified into different types based on their nature and the purpose they serve. Understanding these types is crucial for selecting an appropriate research approach and methodology. Below are the main types of research problems:
1. Theoretical Research Problems
These problems arise from the need to expand or refine existing theories or concepts. They often emerge when existing theories fail to fully explain certain phenomena or when new theories are proposed to offer better understanding. The goal of addressing a theoretical problem is to contribute to knowledge by developing or improving frameworks and models.
Example: Investigating why certain psychological theories fail to explain new behavioral trends in a digital world.
2. Applied Research Problems
Applied research problems focus on finding solutions to real-world issues. These are practical problems that affect individuals, organizations, or communities, and researchers aim to provide actionable solutions. The findings are often directly relevant to policy-making, business strategies, or societal improvements.
Example: Developing an effective public health campaign to reduce smoking rates in a particular population.
3. Descriptive Research Problems
Descriptive research problems seek to describe a situation, phenomenon, or characteristic without aiming to determine relationships or cause-and-effect dynamics. The objective is to gather detailed information and provide a comprehensive account of the subject under study.
Example: Describing the demographics and behaviors of social media users in a particular country.
4. Causal Research Problems
Causal research problems focus on understanding cause-and-effect relationships. They aim to determine the factors responsible for particular outcomes and to establish how changes in one variable lead to changes in another.

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Example: Investigating the effects of sleep deprivation on cognitive performance in adults.

5. Relational Research Problems

Relational research problems focus on examining the relationships between two or more variables. Unlike causal problems, relational research does not necessarily seek to establish causality but rather to understand how variables are associated with each other.

Example: Studying the correlation between exercise frequency and stress levels in college students.

6. Exploratory Research Problems

Exploratory research problems arise when little is known about a subject. The purpose of this type of research is to explore a new or under-researched topic, identify key variables, and gather preliminary information. This type of research often lays the foundation for further study.

Example: Exploring the potential impact of artificial intelligence on job displacement in emerging markets.

7. Normative Research Problems

Normative research problems involve evaluating how things should be based on certain criteria or standards. They often address issues related to policies, ethics, or best practices, and they aim to define norms or principles that should guide behavior or decision-making.

Example: Assessing what ethical standards should be in place for autonomous vehicle decision-making algorithms.

8. Complex Research Problems

Complex research problems involve multiple layers of variables and relationships. These problems often span various fields or require a multidisciplinary approach to address. They may involve interacting systems, multiple stakeholders, or conflicting outcomes that require intricate analysis and balance.

Example: Investigating the environmental, economic, and social impacts of renewable energy adoption in different regions.

Understanding the type of research problem helps define the research's goals, methodology, and scope. Whether the problem is theoretical, applied, descriptive, causal, relational, exploratory, normative, or complex, identifying the nature of the problem ensures that researchers can design studies that effectively address their research questions and contribute to their respective fields.

2.2 Sources of Research Problems

A **literature review** is like the intellectual treasure hunt of academia. It's where you put on your metaphorical detective hat and explore the scholarly landscape to uncover hidden gems of knowledge. So, what's the deal with literature reviews? Let me break it down for you:

1. **Purpose of a Literature Review**:
    - When you're writing a thesis, dissertation, or research paper, a literature review becomes your trusty sidekick. Its mission? To survey scholarly sources related to a specific topic. Think of it as the GPS guiding you through the academic wilderness.
    - Here's what a literature review helps you achieve:
        - **Demonstrate Familiarity**: Show off your knowledge chops by demonstrating that you're well-versed in the topic and its scholarly context.
        - **Theoretical Framework and Methodology**: Develop the scaffolding for your research—your theoretical framework and methodology.
        - **Position Your Work**: Place your work in the grand tapestry of other researchers' efforts. Who's who in the academic zoo?

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- **Address Gaps and Debates**: Highlight gaps in existing research or contribute to ongoing debates.
- **Evaluate the State of Research**: Show that you've got your finger on the scholarly pulse.
- **Career Prep**: Writing literature reviews is like doing push-ups for your brain—essential if you're eyeing grad school or a research-oriented career.

2. **Steps to Writing a Literature Review**:
    - **Search for Relevant Literature**: Imagine you're Sherlock Holmes, sipping tea and combing through databases, journals, and dusty old books. Find those relevant sources!
    - **Evaluate and Select Sources**: Channel your inner judge. Which sources are worthy? Which ones are a bit dodgy? Be discerning.
    - **Identify Themes, Debates, and Gaps**: Group your findings into themes. Are there recurring ideas? Controversies? And where are the holes in the knowledge quilt?
    - **Outline Your Literature Review's Structure**: Think of this as the blueprint for your review. How will you organize your thoughts? Chronologically? Thematically? Alphabetically by author's middle name? (Okay, maybe not that last one.)
    - **Write Your Literature Review**: Time to weave your magic. Analyze, synthesize, and critique. Remember, it's not just a summary—it's a synthesis of scholarly voices.

Gaps in existing research.

A research gap is an area where existing research has not been fully explored or where there is a lack of sufficient information. These gaps often present opportunities for new research to contribute to the field.

Common Types of Research Gaps

- **Methodological gaps:** These occur when existing studies have limitations in their research methods, such as sample size, data collection techniques, or statistical analysis.
- **Theoretical gaps:** These arise when existing theories fail to adequately explain a phenomenon or when there is a need for new theoretical frameworks.
- **Contextual gaps:** These exist when research has not been conducted in specific contexts or populations.
- **Temporal gaps:** These occur when research is outdated or has not kept pace with recent developments.

How to Identify Research Gaps

1. **Conduct a thorough literature review:** Examine existing research in your field to identify areas where there are inconsistencies, contradictions, or unanswered questions.
2. **Analyze research methods:** Evaluate the methodologies used in previous studies to determine if there are any limitations or biases.
3. **Consider emerging trends:** Stay updated on the latest developments in your field and identify areas where research is needed to address new challenges or opportunities.
4. **Look for suggestions for future research:** Many researchers explicitly mention potential areas for further investigation in their conclusions.
5. **Consult with experts:** Seek input from experts in your field to get their insights on the most pressing research questions.

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Industry needs and **practical challenges** often intersect, driving innovation and problem-solving. These challenges can arise from various factors, including technological advancements, economic conditions, societal changes, and environmental concerns.

Social, political, and economic trends are interconnected and constantly evolving, shaping our world in significant ways. Here are some key trends to consider

2.3 Criteria for a Good Research Problem

Relevance and significance to the field.

Relevance and significance refer to the importance and impact of a particular research topic, idea, or project within a specific field or discipline. They are crucial factors to consider when evaluating the value and contribution of research.

Factors That Contribute to Relevance and Significance

- **Originality:** Research that offers new insights or perspectives is generally considered more significant.
- **Theoretical contribution:** Research that advances existing theories or develops new frameworks can be highly influential.
- **Practical applications:** Research with practical implications or applications is often valued.
- **Policy relevance:** Research that informs policy decisions or shapes public discourse can have a significant impact.
- **Interdisciplinary connections:** Research that bridges different fields or disciplines can be particularly valuable.

Feasibility of addressing the problem.

Feasibility refers to the practicality and possibility of implementing a solution to a particular problem. It involves assessing various factors, including technical, economic, social, and environmental considerations.

Key Factors to Consider

- **Technical feasibility:** Can the solution be implemented with existing technology or does it require new developments? Are there any technical limitations or challenges?
- **Economic feasibility:** Is the solution financially viable? What are the costs associated with implementation, and are there potential sources of funding?
- **Social feasibility:** Will the solution be accepted by the target population? Are there any social or cultural barriers to implementation?
- **Environmental feasibility:** Does the solution have any negative environmental impacts? Are there ways to mitigate these impacts?
- **Legal and regulatory feasibility:** Does the solution comply with existing laws and regulations? Are there any legal or regulatory hurdles to overcome?

Assessing Feasibility

To assess the feasibility of a solution, it is often helpful to conduct a feasibility study. This involves:

- **Identifying potential solutions:** Explore different options for addressing the problem.
- **Evaluating the technical, economic, social, and environmental implications of each solution.**
- **Identifying potential risks and challenges.**
- **Developing a plan for implementation.**

Novelty and contribution to the body of knowledge.

Novelty and **contribution to the body of knowledge** are essential components of research. They refer to the originality of the research and its ability to advance understanding in a particular field.

Factors That Contribute to Novelty and Contribution

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- **Originality:** Research that offers new insights or perspectives is generally considered more novel.
- **Theoretical contribution:** Research that advances existing theories or develops new frameworks can make a significant contribution to the body of knowledge.
- **Empirical evidence:** Research that provides new empirical evidence to support or refute existing theories is valuable.
- **Methodological innovation:** Research that employs innovative methods or techniques can contribute to the field by advancing methodological knowledge.
- **Interdisciplinary connections:** Research that bridges different fields or disciplines can offer unique perspectives and insights.

2.4 Challenges in Identifying Research Problems

Narrowing down broad topics can be challenging for several reasons:

1. **Overwhelming amount of information:** When dealing with a broad topic, there can be an overwhelming amount of information available. This can make it difficult to identify the most relevant and important aspects to focus on.
2. **Lack of clarity or specificity:** Broad topics may be too vague or general, making it difficult to define the specific research question or problem to be addressed.
3. **Interconnectedness of concepts:** Many broad topics are interconnected with other concepts, making it difficult to isolate a specific area of focus without losing sight of the broader context.
4. **Limited knowledge or expertise:** If you are new to a particular field or topic, you may not have the necessary knowledge or expertise to identify specific areas of interest or to assess the feasibility of research.
5. **Fear of missing out:** It can be difficult to narrow down a broad topic because you may be afraid of missing out on important aspects or potential research directions.

Overlapping research areas occur when different fields or disciplines share common interests or questions. While this can lead to interdisciplinary collaboration and innovation, it can also present challenges in terms of defining boundaries and avoiding duplication of effort. **Common Causes of Overlapping Research Areas -**

- **Evolution of fields:** As fields evolve and develop, they may overlap with other disciplines as they address new questions or explore new methodologies.
- **Interdisciplinary nature of problems:** Many complex problems require a multidisciplinary approach, leading to overlapping research interests.
- **Technological advancements:** New technologies can enable researchers from different fields to study similar phenomena or address similar questions.
- **Lack of clear boundaries:** Sometimes the boundaries between fields may be unclear or contested, leading to overlap.

A researchable problem is one that can be investigated through systematic inquiry and analysis. To ensure that a problem is researchable, it should meet the following criteria:

1. Clearly Defined:

- **Specific:** The problem should be narrowly defined and focused.
- **Measurable:** There should be a way to quantify or observe the problem.
- **Achievable:** The problem should be feasible to investigate given the available resources and time constraints.
- **Relevant:** The problem should be important and meaningful within the field of study.
- **Time-bound:** There should be a clear timeframe for addressing the problem.

2. Grounded in Existing Knowledge:

- **Literature review:** Conduct a thorough literature review to identify existing research on the topic and identify gaps or unanswered questions.

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- **Theoretical framework:** Connect the problem to relevant theories or frameworks to provide a theoretical foundation for the research.

3. Answerable:

- **Research questions:** Develop clear and focused research questions that directly address the problem.
- **Hypotheses:** Formulate testable hypotheses that can be supported or refuted through research.

4. Ethical:

- **Ethical considerations:** Ensure that the research complies with ethical guidelines and does not harm participants or violate their rights.
- **Informed consent:** Obtain informed consent from participants before conducting research.

5. Feasible:

- **Resources:** Consider the availability of resources, such as funding, time, and equipment.
- **Methodology:** Choose appropriate research methods that are suitable for addressing the problem and collecting data.

6. Original:

- **Novelty:** Contribute to the existing body of knowledge by offering new insights or perspectives.
- **Avoid duplication:** Ensure that the research does not simply replicate previous studies.

3. Research Methodology

3.1 Overview of Research Methodology

Research methodology is the systematic process of planning, collecting, analyzing, and interpreting data to answer research questions. It provides a framework for conducting research and ensures that the findings are valid, reliable, and credible.

Key Components of Research Methodology

1. **Research Design:** This outlines the overall strategy for conducting the research. It includes:
    - **Experimental Design:** Manipulating variables to establish cause-and-effect relationships.
    - **Survey Research:** Collecting data through questionnaires or interviews.
    - **Case Study:** In-depth analysis of a specific case or phenomenon.
    - **Action Research:** Research conducted to solve specific problems within a social setting.
2. **Sampling:** This involves selecting a representative subset of the population to study. Sampling techniques include:
    - **Probability Sampling:** Random selection of samples.
    - **Non-Probability Sampling:** Non-random selection of samples.
3. **Data Collection:** This refers to the methods used to gather information, such as:
    - **Observation:** Observing behaviors or phenomena.
    - **Interviews:** Conducting structured or unstructured interviews.
    - **Questionnaires:** Administering surveys to collect data.
    - **Documents:** Analyzing existing documents or records.
4. **Data Analysis:** This involves organizing, summarizing, and interpreting the collected data. Techniques include:
    - **Quantitative Analysis:** Statistical methods to analyze numerical data.
    - **Qualitative Analysis:** Analyzing non-numerical data through themes and patterns.

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5. **Research Ethics:** This ensures that research is conducted ethically, respecting the rights of participants and maintaining data confidentiality.

Importance of Research Methodology

- **Validity:** Ensures that the research measures what it intends to measure.
- **Reliability:** Ensures that the research results can be replicated.
- **Credibility:** Establishes the trustworthiness of the research findings.
- **Generalizability:** Determines the extent to which the findings can be applied to a broader population.
- **Objectivity:** Minimizes bias and ensures that the research is impartial.

3.2 Types of Research Methodologies

3.2.1 Quantitative Research

Quantitative research is a systematic approach to collecting and analyzing numerical data. It uses statistical methods to measure and quantify variables, allowing researchers to draw conclusions about relationships, patterns, and trends.

Characteristics of Quantitative Research

- **Numerical Data:** Focuses on data that can be measured and counted, such as numbers, frequencies, and percentages.
- **Statistical Analysis:** Employs statistical techniques like correlation, regression, and hypothesis testing to analyze data.
- **Objectivity:** Strives for objectivity and impartiality in the research process.
- **Generalizability:** Aims to draw conclusions that can be applied to a broader population.

Common Research Designs in Quantitative Research

1. **Experimental Design:** Manipulates independent variables to observe their effects on dependent variables.
2. **Correlational Design:** Examines the relationship between two or more variables without establishing causality.
3. **Survey Research:** Collects data through questionnaires or interviews to measure attitudes, beliefs, or behaviors.
4. **Quasi-Experimental Design:** Similar to experimental design but lacks random assignment of participants to groups.

Data Collection Methods in Quantitative Research

- **Surveys:** Questionnaires or interviews administered to a sample of the population.
- **Observations:** Systematic observations of behaviors or phenomena.
- **Experiments:** Controlled settings where variables are manipulated.
- **Existing Data:** Analyzing existing data, such as census data or medical records.

Data Analysis Techniques in Quantitative Research

- **Descriptive Statistics:** Summarizes data using measures like mean, median, mode, standard deviation, and frequency distributions.
- **Inferential Statistics:** Tests hypotheses and makes inferences about a population based on sample data.
- **Hypothesis Testing:** Evaluates whether the observed data support or refute a hypothesis.
- **Correlation Analysis:** Measures the strength and direction of relationships between variables.
- **Regression Analysis:** Predicts the value of one variable based on the values of other variables.

3.2.2 Qualitative Research

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Qualitative research is a systematic approach to understanding and interpreting human experiences, behaviors, and cultural phenomena. It focuses on collecting and analyzing non-numerical data, such as words, images, and observations, to gain insights into the meaning and significance of these phenomena.

Key Characteristics of Qualitative Research

- **Non-Numerical Data:** Relies on data that cannot be easily quantified, such as interviews, focus groups, observations, and documents.
- **In-Depth Understanding:** Aims to gain a deep and nuanced understanding of the research topic.
- **Flexibility:** Often involves an iterative and flexible research process that allows for adjustments as new insights emerge.
- **Subjectivity:** Recognizes the subjective nature of human experience and acknowledges the researcher's role in shaping the research process.

Common Research Approaches in Qualitative Research

1. **Grounded Theory:** Develops theories from data collected through systematic observations and interviews.
2. **Phenomenology:** Explores the lived experiences of individuals to understand their subjective perspectives.
3. **Ethnography:** Studies cultural groups and their behaviors within their natural settings.
4. **Case Study:** In-depth analysis of a specific case or phenomenon.
5. **Narrative Analysis:** Examines the stories and narratives people tell to understand their experiences and perspectives.

Data Collection Methods in Qualitative Research

- **Interviews:** In-depth conversations with individuals or groups to gather their perspectives and experiences.
- **Focus Groups:** Small groups of participants who discuss a particular topic or issue.
- **Observations:** Observing behaviors and interactions in natural settings.
- **Documents:** Analyzing existing documents, such as letters, diaries, or photographs.
- **Artifacts:** Examining physical objects or artifacts to understand cultural practices and beliefs.

Data Analysis Techniques in Qualitative Research

- **Coding:** Identifying and categorizing key themes and patterns within the data.
- **Memoing:** Writing reflective notes to document insights and interpretations.
- **Thematic Analysis:** Identifying and analyzing recurring themes or patterns in the data.
- **Narrative Analysis:** Examining the stories and narratives people tell to understand their experiences.
- **Discourse Analysis:** Analyzing language and communication to understand power relations and social structures.

3.2.3 Mixed Methods

Mixed methods are a research approach that combines both quantitative and qualitative methods to provide a more comprehensive understanding of a research topic. By integrating different perspectives and data types, mixed methods research can enhance the validity, reliability, and credibility of research findings.

Key Characteristics of Mixed Methods Research

- **Integration:** Combines quantitative and qualitative data to provide a more holistic view of the research topic.
- **Complementarity:** Uses different methods to complement each other's strengths and weaknesses.

- **Triangulation:** Cross-validates findings from different methods to increase the credibility of the results.
- **Flexibility:** Allows researchers to adapt their approach based on the specific research question and context.

Types of Mixed Methods Research

1. **Convergent Design:** Simultaneously collects and analyzes both quantitative and qualitative data, then integrates the findings.
2. **Sequential Exploratory Design:** Begins with qualitative data to explore a topic and then uses quantitative data to test or confirm the findings.
3. **Sequential Explanatory Design:** Begins with quantitative data to test hypotheses and then uses qualitative data to explain or understand the findings.
4. **Embedded Design:** Integrates one type of data within the other, such as conducting qualitative interviews within a quantitative survey.

Advantages of Mixed Methods Research

- **Increased Validity:** Provides a more comprehensive and nuanced understanding of the research topic.
- **Enhanced Reliability:** Cross-validates findings from different methods to improve the consistency of the results.
- **Improved Credibility:** Establishes the trustworthiness of the research findings through triangulation.
- **Greater Flexibility:** Allows researchers to adapt their approach to address different research questions and contexts.

3.3 Choosing the Right Methodology

Selecting the appropriate research methodology is crucial for conducting a successful and meaningful study. The choice often depends on the research question, the nature of the data, and the desired outcomes. Here are some key factors to consider:

Research Question:

- **Exploratory:** If you aim to explore a new topic or phenomenon, qualitative methods like interviews or focus groups can be effective.
- **Descriptive:** To describe characteristics or behaviors, quantitative methods like surveys or observational studies can be suitable.
- **Explanatory:** If you want to establish cause-and-effect relationships, experimental designs or quasi-experimental designs are often used.

3.4 Common Mistakes in Methodology

While research methodology is a systematic process, it's not without its pitfalls. Here are some common mistakes to avoid:

1. Incorrect Research Design:

- **Mismatched Design and Question:** Choosing a design that doesn't align with the research question can lead to invalid results.
- **Lack of Control:** Inadequate control over variables can compromise the internal validity of the study.

2. Sampling Errors:

- **Biased Sampling:** Using non-representative samples can limit the generalizability of findings.
- **Insufficient Sample Size:** Small sample sizes can reduce statistical power and increase the margin of error.

3. Data Collection Issues:

- **Poor Instrument Validity:** Using unreliable or invalid measurement tools can produce inaccurate data.

- **Measurement Error:** Mistakes in data collection, recording, or analysis can introduce errors into the results.
- **Missing Data:** Incomplete data can limit the analysis and reduce the representativeness of the sample.

4. Analysis Errors:

- **Incorrect Statistical Tests:** Applying inappropriate statistical techniques can lead to erroneous conclusions.
- **Overinterpretation:** Drawing overly broad conclusions from the data without considering limitations or alternative explanations.
- **Ignoring Outliers:** Outliers can significantly affect statistical results if not handled properly.

5. Ethical Oversights:

- **Lack of Informed Consent:** Failing to obtain informed consent from participants can violate ethical principles.
- **Privacy Violations:** Not protecting participant privacy can lead to legal and ethical issues.
- **Plagiarism:** Using others' work without proper attribution can result in academic misconduct.

6. Overreliance on Secondary Data:

- **Data Quality:** Secondary data may not be reliable or relevant to the research question.
- **Outdated Data:** Using outdated data can lead to inaccurate conclusions.

7. Insufficient Literature Review:

- **Lack of Context:** Failing to review existing literature can limit the understanding of the research topic.
- **Overlooking Previous Findings:** Ignoring relevant studies can lead to duplication of effort.

By being aware of these common mistakes and taking steps to avoid them, researchers can improve the quality and credibility of their studies.

4. Relationship Between Research Problems and Methodology

4.1 How Methodology Influences Research Outcomes

The methodology chosen for a research project significantly impacts the validity, reliability, and generalizability of its findings. Here's a breakdown of how methodology influences research outcomes:

1. Validity:

- **Internal Validity:** This refers to the extent to which a study can establish a cause-and-effect relationship between variables. A well-designed methodology, such as a controlled experiment, can enhance internal validity by minimizing the influence of confounding factors.
- **External Validity:** This refers to the extent to which the findings of a study can be generalized to the broader population. A representative sample and appropriate research design can improve external validity.

2. Reliability:

- **Consistency:** A reliable methodology produces consistent results when repeated under similar conditions. This can be achieved through standardized procedures, clear definitions, and reliable measurement instruments.
- **Accuracy:** A reliable methodology also measures what it intends to measure accurately. This requires careful selection of research methods and instruments.

3. Generalizability:

- **Sample Representation:** A representative sample is essential for generalizing findings to a broader population. A well-chosen sampling method can increase generalizability.
- **Research Design:** The research design can also influence generalizability. For example, experimental designs often have higher internal validity but may have limitations in external validity.

4. Credibility:

- **Trustworthiness:** A credible methodology builds trust in the research findings. This can be achieved through transparency, ethical conduct, and rigorous analysis.
- **Objectivity:** A methodology that minimizes bias and subjectivity can enhance credibility.

5. Objectivity:

- **Bias Reduction:** A well-designed methodology can reduce bias by controlling for confounding factors and using objective measurement techniques.
- **Transparency:** Transparency in the research process, including data collection, analysis, and interpretation, can enhance objectivity.

In summary, the choice of methodology directly affects the quality and significance of research outcomes. By carefully selecting and implementing appropriate methods, researchers can ensure that their findings are valid, reliable, generalizable, credible, and objective.

4.2 Aligning Research Problems with Methodology

A well-aligned research problem and methodology are crucial for successful research. The problem should guide the choice of methodology, ensuring that the research is focused, relevant, and effective.

Here are some key factors to consider when aligning research problems with methodology:

1. Nature of the Research Problem:

- **Exploratory:** If the problem is to explore a new topic or phenomenon, qualitative methods like interviews or focus groups can be suitable.
- **Descriptive:** To describe characteristics or behaviors, quantitative methods like surveys or observational studies are often used.
- **Explanatory:** If the goal is to establish cause-and-effect relationships, experimental designs or quasi-experimental designs are appropriate.

2. Data Requirements:

- **Quantitative Data:** For numerical data (e.g., measurements, frequencies), quantitative methods are ideal.
- **Qualitative Data:** For non-numerical data (e.g., text, images, observations), qualitative methods are more appropriate.

3. Research Objectives:

- **Generalizability:** If the objective is to draw conclusions about a broader population, quantitative methods with larger sample sizes are often preferred.
- **In-depth Understanding:** For a deep exploration of individual experiences or perspectives, qualitative methods can provide rich insights.
- **Actionable Insights:** If the goal is to generate practical recommendations or solutions, mixed methods research can combine the strengths of both quantitative and qualitative approaches.

4. Feasibility:

- **Resources:** Consider the availability of time, budget, and expertise for conducting the research.
- **Ethical Considerations:** Ensure that the chosen methodology complies with ethical guidelines and protects participant rights.

4.3 Flexibility and Adaptation

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Flexibility and adaptation are essential elements of successful research. While a well-planned methodology provides a framework, researchers often need to adjust their approach in response to unexpected challenges, new insights, or changing circumstances.

Reasons for Flexibility and Adaptation:

- **Unforeseen Challenges:** Research can encounter obstacles such as limited access to data, unexpected participant responses, or changes in the research environment.
- **Emerging Insights:** As research progresses, new findings may require adjustments to the data collection or analysis methods.
- **Changing Circumstances:** External factors like economic conditions, political events, or technological advancements can necessitate changes in the research design.

Strategies for Flexibility and Adaptation:

- **Iterative Design:** Incorporate iterative elements into the research process, allowing for adjustments based on initial findings.
- **Contingency Planning:** Develop alternative plans for potential challenges or changes.
- **Open-Ended Questions:** Use open-ended questions in interviews or surveys to allow participants to provide unexpected or nuanced responses.
- **Data-Driven Adjustments:** Use data analysis to inform decisions about changes in the research design or methods.
- **Collaboration:** Collaborate with other researchers or experts to gain new perspectives and insights.

Importance of Flexibility and Adaptation:

- **Relevance:** Adapting to changing circumstances ensures that the research remains relevant and addresses current issues.
- **Rigor:** Flexibility can improve the rigor of the research by allowing for adjustments based on emerging evidence.
- **Credibility:** Adapting to challenges can enhance the credibility of the research by demonstrating responsiveness and adaptability.

5. Conclusion

The proper identification of research problems and the selection of suitable methodologies are essential for conducting high-quality research. By carefully considering these two elements, researchers can ensure that their studies are focused, relevant, and impactful. The relationship between research problems and methodologies is a dynamic one, with each influencing and shaping the other. A well-aligned research problem and methodology are essential for conducting successful and impactful research. By understanding the dynamic relationship between research problems and methodologies, researchers can make informed decisions about their research design and increase the likelihood of producing high-quality and impactful findings. The nature of the research and the problem to be investigated are crucial factors to consider when designing and conducting research. By carefully considering these elements, researchers can ensure that their studies are rigorous, relevant, and contribute to the body of knowledge.

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11
Uses of Language in Research

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Abstract
Language plays a central role in research as it serves as the primary tool for communication, expression, and interpretation of ideas. It enables researchers to frame questions, describe problems, review literature, and present findings in a clear and systematic manner. Through language, abstract concepts are explained, arguments are structured, and evidence is analysed logically. In literature research, language is not only the subject of study but also the medium through which critical analysis and evaluation are expressed. In scientific and social research, precise language ensures accuracy, objectivity, and validity. Thus, language functions as both a vehicle for knowledge creation and a means of sharing discoveries with the academic community.

Keywords: *Language, Research, Communication, Expression, Literature, Analysis, Knowledge, Interpretation*

Language is an important basic tool for Research. In any Research paper language has its own credibility. Historical facts prove that over years the readability aspect of abstracts written during Research has considerably declined.
It is better said than done that in most complex Research work use of language should be very simple to promote acceptability and engagement to Research work.
A skilled language user is one who can convey his information message, ideas with ease and understanding to same. This is possible only when encoder and recorder both are familiar in the vocal sound in which structure arrangement of the words and phrases imported. The influences in children's language development are recognized to be interactive and dynamic. The inter disciplinary projects must allocate time to the development of shared vocabularies and understandings. Language plays a vital role in enhancing the relations of trust that are necessary for effective interdisciplinary working the evolution of language, in Researches reflects broader changes in disciplinary paradigm and methodological approaches highlight the dynamic in nature of scientific inquiry. The precision of language is crucial in Research document. The quality of your Research and the manuscript need to be precise and unambiguous to be effective. It is advisable to check the paper repeatedly for grammar, consistency and accuracy in writing. Language reduces the problem of ambiguity, misunderstanding which in turn may result in loss of validity and reliability. Language helps all Researchers to have easy and clear access to all work enabling the capability of Researchers to influence the outside world.
In any research paper, language plays a very important role in communicating our research ideas to the reader. In present day scenario, people are busy and they don't have any time to slog through long sentences or complete languages in research papers. Different researches tell us that the. Readability of abstracts have decreased over the years. This is a matter of concern as they impact both the reproducibility and accessibility of our research finding.

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If there is search idea is a complex work, the language to be presented should be very simple. Only then it will allow the readers to emphasise on the research work and instead of taking it as a troublesome or a boring work to take it as a interesting work, on the topic we worked on. There are different methods to improve our research paper language and its reliability. Some of them are as follows –

1) Proofreading for any kind of elementary mistake – In our research work, it is very important to see that the paper is grammatically correct. Basic mistakes in the form of spelling, Punctuation, Spacing, or grammar may live a very bad impression. A simple proof reading, before the final submission of the research paper will help us to avoid any kind of such mistakes.
2) Keep it simple -As it comes to the research Paper, the use of language in the research paper should be very simple so that it is accessible by others. The complex words must be avoided. And instead of the complex word, simpler words should be used.
3) Consistency and logical flow should be maintained in our writing -As a Writer, we must have the urge for maintaining consistency. In. Using hyphens. Different units of measures, punctuation, grammar, symbols, capitalization, and acronyms.
4) Avoid Repetition – As a researcher, any kind of repetition of words and phrases must be admitted. For example, “due to the fact” can be replaced with “because” Or “In the form of” can be replaced with “as.”
5) Reader friendly fonts can be used – As the research work is meant for each one of us, So it is advisable to use reader friendly fonts such as, - Times New Roman, Arial, which are very easy and soothing to the eye.
6) Words and sentences used must be short – In any kind of research work, long sentences affect the readable capacity of the article. So, it is necessary that the paper must have short and Simple sentences. Focusing on introducing one idea with every sentence.
7) Frontload sentence – This means that the, Important part of the sentence must be presented in the beginning. It is necessary for quick assessment of the information by the reader.
8) Attention to be paid to reviews -Every research work must be free for common criticism. Review of the research book will help a researcher to focus on the negative comments and work on it to have a better research work next time.
   Below is an example of simple abstract with above properties –

Sample of Simple abstract –

Indian Economy –

In the present scenario India's economy is on a very positive notion. All the social welfare activities, with the GDP growth is taking place hand in hand. In India with the help of the Government and the people working together all the three sectors of the economy have made enormous development. It is suggested that if we all work with a positive notion and have nation feeling, India be one of the developed Nation in coming 10 to 15 years. With the help of LPG (liberalization, privatization and globalization) programs India is now one of the leading countries in international trade. But along with the LPG policy India has stuck itself firmly with the ethnicity and culture of the country. We Indians are looking forward to be one of the citizens of developed India.

In today's World for human connection language plays very important role. It is very well known that all species in this universe have their own way of communication. Humans at the only once that have been able to master cognitive language of communication.

It is to be noted that with the help of language we can share our ideas, thoughts and feelings with our fellow men. Language has the ability to construct a society as well as to break it down.

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Below some advantages. Of language used as a mean of communication in research work –

A. **Expressiveness** - Language is very expressive in nature. It allows for intricate expression of. Our. Thought process. Emotions and different ideas. Enabling a clear and detailed communication.
B. **Versatility** – Language in the real world is very adaptable in nature. It's capable of conveying a wide range of. Ideas and visions from. Contact facts to abstract concept.
C. **Cultural Transmission** – Language has a crucial role to play in transmission of our tradition and Culture along with social values from generation to generation.
D. **Social bonding** – Language fosters social connection, allowing individuals to share experience in order to build relationship and form Communities.
E. **Learning and Education** – Language serves as the foundation of education. Language. Facilitates. Transformation of any kind of knowledge, skills and information in various academical and Cultural fields.
F. **Problem – Solving** – Language helps. In. Collaborating with people to solve problem by Providing the facility of communication within groups and teams.
G. **Record keeping** – Writing and recording languages helps in. Protecting historical records, literature and scientific knowledge.

There are, Face of every coin. So, in the same way, language has certain disadvantages as a means of communication. Some of them are as follows –

1) **Ambiguity -** Language often can be subjected to ambiguity. Ambiguity often leads to misunderstanding of concepts or mistake interpretation of concepts. This happens specially when multiple set of meanings.
2) **Barriers -** Different languages have different set of barriers in the process of communication, hindering understanding between individuals or groups who speak different type of language.
3) **Subjectivity -**Language is very subjective in nature and individual interpretations may vary. What one person intense to convey may be understood in a different way by any other person.
4) **Inefficiency -** Expressing certain abstract Complex ideas can be very challenging and maybe Lost in Translation leading to in efficiency in communication of the matter.
5) **Miscommunication -** Errors in Grammar, pronunciation of words or choice of words in miscommunication of concepts impacting the clarity of message.
6) **Influence of Emotions -** Emotional States has a lot of influence on a language. Emotions may lead to Communications that may not accurately reflect the intended message.
7) **Selective Communication -** Individuals can make a choice to be hold or distort information leading to selective or Biased communication in the society.
8) **Overreliance on words** - Nonverbal clothes and gestures are very important aspects of communication and overreliance on verbal Language main neglect this crucial element of nonverbal communication.

It has to be accepted by each one of us that language is very powerful and a versatile to of communication. Its effectiveness depends on various factors including the context, the individual involved and the clarity of expression. Being aware of the limitations and actively working to overcome potential disadvantage can contribute to more effective communication.

Importance of language

Language is the very important part of human collection. Altho in this world all species have their own way of corresponding, it is only humans that have mastered cognitive language communication. Language in common sense allows all of us to communicate our ideas our thoughts and our feelings with one another. Language in a pure sense has the power to build

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society. Not only language can create societies but it also can tear and bring a downfall to the society.

Language Affecting Different Aspects of Our Lives

Language is what makes each one of us human. It is the basic concept of how people communicate with one another. By learning a language, it means we have mustard a system of words structures and grammar to properly communicate with others.

Too many people language comes very naturally. We learn how to communicate with society even before we can learn to speak. As we a grow older and older we find many ways to transform language to actually convey what we want to say with words and complex sentences. It is obvious that not all communication is done through language but having a hold over a language certainly helps speed up the process of communication. This is one of the many reasons because of which language is so important is today's world.

Language is Important for Culture and Society

Language helps us in expressing our feelings emotions and thoughts which is an unique component to our species because it is a way to express the unique ideas and Customs within different culture and Society.

When we learn a foreign language, we can understand the ideas and thoughts that may be different from our own culture. People also learn about customs and how people of different sections of the world interact India own given societies. Language undoubtedly helps us to preserve culture and is also well known for allowing us to learn about others and spread ideas very quickly.

Language is Important for All Types of Business

The importance of language in business is unmatched. Without language we can't share any kind of Ideas or grow them into something more you unique and innovative. This means learning a language will help us to share ideas with people who come from different countries or how to use language to master and interview, demand presence in a room or network with others languages vital.

Language is Very Crucial for Individual Development

Humans all over the world learn to talk at slightly different times and observing them when a child starts to use language can be indicated to how well they are developing.

But it is not only applicable to human babies. It similarly applies to young children learning a second language in school that's different from the language they speak at home, adults learning a second language or even those who may have lost language due to some type of accident and working on regaining it.

Language is Important for Personal Communication

It is very good to acknowledge that do much of human communication is nonverbal (i.e. we can demonstrate our thoughts feelings and ideas by many forms of gestures, expression, tones, emotions) language is important for our personal communication. Whether it is being able to talk to our friends, our partner or our family members having a shared language is undoubtedly necessary for these types of interaction.

Some Basic Functions of Knowledge

1) Informative Function - the informative function of any language is that when we use any particular language to communicate in the society or to provide any kind of information to others it is essential that it functions in such a way that it is used to inform others by being able to state facts very clear.

2) Expressive Function - one of the basic functions of language is the expressive function. As it sounds it is used to express once View By giving us ways to convey our feelings ,emotions, attitude to any other person or even to ourself or the society at large.

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3) Directive Function - the directive function is one of the most important functions of language. It is the basic function that helps human society to direct or command. In normal sense it gives the stability to tell to ourself or someone else in the society what to do in any given situation.

Different Type of Languages Used

Language comes in various forms each of them playing a role in how we communicate with the society.

Oral Vs Written Language

In general day to day life oral communication is the spoken language meant for girls burcing with our fellow citizens. Within language is all about expressing our innovative ideas 3rd emotions through writing them down in words of our own.

Oral communication is usually done in the more informal and in a faster process while written communication is more formal and a slower process.

Denotative Meaning Vs Connotative Meaning

Words do have a lot of meaning to them and the meaning depends on the context of the use of words. This is why there is a denotative meaning and your connotative meaning.

Denotative meaning is literally definition of the word whereas connotative meaning is when words carry positive or negative connotation. For example, the word home versus house. House is denotative being literal turn for the type of structure where someone may leave whereas home is connotative and represents a shelter, family, security etc.

Clear understanding of connotative and denotative meaning of words will help us in the use of these words in proper format.

Conclusions

Language helps us to connect. It helps us to express ourselves. Language influences our culture, society, business and personal growth. All different elements of language play different role in our communication. Body language and the listening skills are also very chey elements which are used effectively in interaction. Society was so does language reflecting new ways of innovative thinking and interaction with each one of us.

Does last but not the least keep learning and adapt to new skills in order to stay connected and communicate effectively with the world around you.

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12
Research Methodology: A Fundamental Overview

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Abstract

Research methodology is an approach to methodically explain the research problem. It may be implicit as a science of studying how research is through scientifically it is required for a researcher to identify not only the research methods or techniques but also the methodology. Research methodology describes the techniques and procedures used to identify and analyze information regarding a specific research topic. It is a process by which researchers design their study so that they can achieve their objectives using the selected research instruments. It includes all the important aspects of research, including research design, data collection methods, data analysis methods and the overall framework within which the research is conducted while these points can help to understand what a research methodology is, also we need to know why it is important to pick the right methodology.

Research may be broadly defined as systematic gathering of data and information and its analysis for advancement of knowledge in any subject. Research attempts to find answer intellectual and practical questions through application of systematic methods. Webster's Collegiate Dictionary defines research as "studious inquiry or examination; esp: investigation or experimentation aimed at the discovery and interpretation of facts, revision of accepted theories or laws in the light of new facts, or practical application of such new or revised theories or laws". Some people consider research as a movement from the known to the unknown. It is actually a voyage of discovery. We all possess the vital instinct of inquisitiveness for, when the unknown confronts us, we wonder and our inquisitiveness makes us prove and attain full understanding of the unknown. This inquisitiveness is the mother of all knowledge and the method, which man employs for obtaining the knowledge of whatever the unknown can be termed as research. As it is indicated from the title, here the focus is built on the types of research methodology.

***Keywords**: Research, Research methodology, knowledge management*

INTRODUCTION

Research seeks to answer questions that remain unresolved, relying on human effort to provide solutions. It addresses only those questions for which answers are not readily available in existing literature, i.e., within human knowledge. Thus, research focuses on questions that can be answered based on available facts. In essence, research is the process of finding dependable solutions to problems through the planned and systematic collection, analysis, and interpretation of data. It is a critical process for advancing knowledge, promoting progress, enabling humans to interact more effectively with their environment, achieving their purposes, and resolving conflicts.

From the dawn of time, humans have observed irregularities among phenomena and events and sought to devise laws and principles to express these regularities. These laws and principles, however, are not without exceptions; any law is valid only under the conditions under which it was derived. For instance, while objects tend to fall due to gravity, they may rise when other forces are active, yet this does not negate the general principle of gravity. Research is devoted to identifying the conditions under which a phenomenon occurs and those under which it does

not, even in seemingly similar circumstances. Research is also frequently used in contexts where little true research, in the strict sense of the term, is conducted.

The Advanced Learner's Dictionary of Current English defines research as "careful investigation or inquiry, especially through the search for new facts in any branch of knowledge." Redman and Mory define research as "systematized efforts to gain new knowledge, thus making an original contribution to the existing stock of knowledge for its advancement." It is the pursuit of truth through study, observation, comparison, and experimentation. In short, the search for knowledge through an objective and systematic method of finding solutions to a problem is research. This systematic approach involves enunciating the problem, formulating a hypothesis, collecting facts or data, analyzing them, and reaching conclusions.

The research methodology offers the following advantages:

- It helps other researchers replicate your work, as the explanations provided benefit them.
- It provides a framework and guidelines for researchers to clearly define research questions, hypotheses, and objectives.
- It assists in identifying the most appropriate research design, sampling techniques, and data collection and analysis methods.
- A sound methodology ensures that findings are valid, reliable, and free from biases and errors.
- It ensures adherence to ethical guidelines during research.
- A good methodology aids researchers in planning their work efficiently, optimizing the use of time and resources.

The objectives of research methodology are multifaceted:

- **To Provide a Clear Framework**: A primary objective is to offer a systematic framework that guides the entire research process from start to finish, ensuring the study remains on track and is conducted systematically.
- **To Ensure Accuracy**: Adhering to a structured methodology minimizes biases and errors, enhancing the accuracy of results.
- **To Enhance Reliability**: Using standardized methods increases the reliability of findings, enabling others to replicate the study under similar conditions.
- **To Facilitate Peer Review**: A well-defined methodology allows peers to evaluate the research for validity and reliability, crucial for its acceptance and credibility.
- **To Enable Generalization**: An appropriate methodology allows researchers to generalize results to a larger population, increasing the research's utility and impact.
- **To Provide Insight and Understanding**: Research aims to provide insights and a deeper understanding of the topic studied, and the right methodology is critical to achieving this effectively.

These objectives highlight the importance of research methodology in conducting and evaluating effective research.

TYPES OF RESEARCH

1. **Qualitative Research** Qualitative research is a methodological approach primarily used in fields like social sciences, anthropology, and psychology. It aims to understand human behavior and the motivations behind it through detailed, in-depth exploration.

   Definition and Approach: Qualitative research focuses on understanding human behavior and the reasons governing it, involving in-depth analysis of non-numerical data such as texts, videos, or audio recordings.

   Key Features:

- Emphasis on exploring complex phenomena.

- Involves interviews, focus groups, and observations.
- Generates rich, detailed, often subjective data.

Applications: Widely used in social sciences, marketing, and user experience research.

2. **Quantitative Research** Quantitative research is a systematic approach used in various scientific fields to quantify data and generalize findings from a sample to a larger population.

Definition and Approach: It centers on quantifying data and generalizing results from a sample to the population of interest, involving statistical analysis and numerical data.

Key Features:

- Relies on structured data collection instruments.
- Uses large sample sizes for generalizability.
- Employs statistical methods to establish relationships between variables.

Applications: Common in natural sciences, economics, and market research.

3. **Descriptive Research** Descriptive research describes the characteristics of a population or phenomenon without addressing how or why things occur. It provides a snapshot of current conditions or what exists.

Definition and Approach: This method aims to accurately describe characteristics of a particular phenomenon or population.

Key Features:

- Provides detailed insights without explaining why or how something happens.
- Involves surveys and observations.
- Often used as a preliminary research method.

Applications: Used in demographic studies, censuses, and organizational reporting.

4. **Analytical Research** Analytical research seeks to understand the underlying factors or causes behind phenomena or relationships, going beyond description to explain why and how things happen.

Definition and Approach: It goes beyond description to understand underlying reasons or causes.

Key Features:

- Involves comparing data and facts to make evaluations.
- Critical thinking is a key component.
- Often hypothesis-driven.

Applications: Useful in scientific research, policy analysis, and business strategy.

5. **Applied Research** Applied research aims to solve specific practical problems or address practical questions, focusing on real-world applications rather than expanding knowledge for its own sake.

Definition and Approach: It focuses on finding solutions to practical problems.

Key Features:

- Direct practical application.
- Often collaborative, involving stakeholders.
- Results are immediately applicable.

Applications: Used in healthcare, engineering, and technology development.

6. **Fundamental Research** Fundamental research, also known as basic or pure research, aims to expand the existing knowledge base without a specific practical application in mind. It is driven by curiosity or the pursuit of knowledge for its own sake.

Definition and Approach: It seeks to expand knowledge without immediate application.

Key Features:

- Theoretical framework.

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- Focus on understanding fundamental principles.
- Long-term in nature.

Applications: Foundational in fields like physics, mathematics, and social sciences.

7. **Exploratory Research** Exploratory research is conducted for problems that are not clearly defined, aiming to gain insights and familiarity with the issue or topic.
   Definition and Approach: It is conducted to explore problems that lack clear definitions.

Key Features:

- Flexible and unstructured.
- Used to identify potential hypotheses.
- Relies on secondary research, such as reviewing available literature.

Applications: Often the first step in social science research and product development.

8. **Conclusive Research** Conclusive research, also known as confirmatory research, aims to confirm or refute a hypothesis or provide answers to specific research questions, aiding decision-making.
   Definition and Approach: It is designed to provide information useful for decision-making.
   Key Features:

- Structured and methodical.
- Aims to test hypotheses.
- Involves experiments, surveys, and testing. **Applications**: Used in market research, clinical trials, and policy evaluations.

RESEARCH PRACTICE

1. **Formulating the Research Problem** There are two types of research problems: those related to states of character and those concerning relationships between variables. Initially, the researcher must select the area of focus.
2. **Extensive Literature Survey** Once the problem is formulated, a brief summary is prepared, primarily for the research purpose. Research can be grouped into four categories: exploration, description, diagnosis, and experimentation. Various research designs exist.
3. **Developing a Working Hypothesis** Research yields accurate results only when an effective hypothesis is developed. This is a key component of the study, used to draw logical conclusions.
4. **Preparing the Research Design** The researcher prepares a research design, i.e., a conceptual structure within which the research will be conducted, to ensure the collection of relevant evidence.
5. **Determining the Sample Design** A sample design is a specific plan determined before data collection to obtain a sample from a given population. Significant sample designs include: a) Deliberate sampling b) Simple random sampling c) Systematic sampling d) Stratified sampling e) Quota sampling f) Cluster or area sampling g) Multistage sampling h) Sequential sampling
6. **Collecting the Data** Data collection methods include: a) Primary data and b) Secondary data. Two significant methods for collecting primary data are: i) **Questionnaire Method**: Used to collect data over a large geographical area. ii) **Observation Method**: Used to observe individuals or processes within a society.
7. **Analysis of Data** After data collection, the researcher analyzes the collected data. Raw data are processed through coding and tabulation.
8. **Hypothesis Testing** The researcher tests the hypothesis using various tests, such as the Chi-square test, t-test, or F-test.

9. **Generalizations and Interpretations** If a hypothesis is tested and upheld multiple times, the researcher may develop a theory, a process known as interpretation.
10. **Preparation of Report or Thesis** Finally, the researcher prepares a report detailing the research process. The report should include: i) Preliminary pages, ii) Main text, and iii) Title, date, acknowledgments, and preface.

Thus, research practice in methodology enhances credibility by making the process transparent and reproducible.

CONCLUSIONS

The choice of research methodology depends on the research questions, aims, practicalities, and resource constraints. For example, qualitative methods like interviews and focus groups are often used for exploratory research, while large-scale surveys are used to measure specific variables or test hypotheses. Research methodology involves using specific tools, techniques, and procedures to identify, categorize, and analyze information about a research problem. The methodology section of a research document should provide enough detail for readers to replicate the process. Research is a source of knowledge that informs government policies, enhances knowledge, supports trade organizations, uncovers unknown facts and theories, and contributes to the growth and maturity of society and its people.

Research is a mission of discovery, helping researchers meet new objectives. In short, the systematic search for knowledge to find solutions to a problem is research.

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13
Concept and Types of Research

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Abstract *This paper provides a concise exploration of the fundamental concepts and classifications of research, categorized by methods and purposes, presented in clear and accessible language. The motivation behind selecting this topic stems from a desire to deepen understanding of the term "research" and its related concepts. The works of C.R. Kothari and K.N. Krishnaswamy on research methodology and management research methodology served as key references in developing the content of this paper. The paper is structured into five chapters, beginning with an introductory chapter that outlines the topic and includes well-known definitions from prominent researchers. This is followed by discussions on the objectives of research, its characteristics, and its classifications, divided into two main groups, which are elaborated in subsequent chapters.*

Keywords*: Research, Research Methodology, Types of Research, Research Objectives, Research Characteristics*

Chapter 1
INTRODUCTION

Research—it's a word we hear a lot, but what does it really mean? At its core, research is simply a way to rediscover something or uncover new knowledge. Think of it as a journey where you seek answers to important questions, whether you're trying to solve a problem, understand a situation better, or explore uncharted territory in any field of knowledge. Hence it is a journey from the known to the unknown.

Whether you're examining the past, solving problems in the present, or imagining future possibilities, research is all about digging deeper. It's a curious mind asking, *"What if?"* and then working hard to find the answer. This might involve gathering facts, testing theories, or coming up with entirely new ways to look at things. Ultimately, research helps expand our understanding and allows us to come to informed conclusions. Actually, we all possess the inherent instinct of curiosity or investigative nature which drives us towards the unknown; to employ fuller knowledge and enquire of whatever is unknown can be termed as research.

So, what's the goal of research? It's to add to the existing pool of knowledge—building on what we already know or sometimes even challenging those ideas. Whether through careful observation, experimentation, or comparison, researchers aim to uncover the truth. Research helps bring clarity and can even spark innovation, all while being a vital tool in almost every field, from science and technology to business and management.

In fact, management itself can be seen as both an art and a science. If we dive deeper from the perspective of management, which is also considered both an art and a science: it is termed an art as it depends on individuals' experience, intellect, and ability to take decisions depending upon the circumstances prevailing; and a science as it is based on careful experimentation conducted under controlled conditions, and noting down the observations and coming to a consensus thus helpful in making of the theory which can be studied. The theories that exist in the present times contributed by various management thinkers hold relevance and the subject matter contained in it provides enough base material for further research work. In recent times, quantitative and qualitative techniques have been rapidly used in the field of knowledge on management and organisation. As researchers, we are constantly learning from these processes to create new theories that push our understanding forward.

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Chapter 2
Objectives of Research

At its heart, research is about discovering the truth. To extend and solidify the existence of research in the field of knowledge, there are certain objectives, aims or purposes of research which provide solutions to the questions through the application of scientific procedures or enquiries. We all know that feeling of curiosity when we stumble upon something we don't fully understand—research is what helps us explore that curiosity. The objective is to uncover facts or solve problems using scientific methods. Although each research study might have its own specific purpose, here are some of the common goals that most research shares:

1. **Exploring the Unknown:** Sometimes, research starts with a question that hasn't been clearly answered yet. The goal here is to explore new ideas and gather key takeaways that could lead to deeper understanding (these types of studies are known as exploratory or formulative research studies).
2. **Describing What's Happening:** Other times, researchers aim to paint a picture of what's currently happening. Whether it's studying a specific individual, a group of people, or a situation, descriptive research helps us understand things as they are right now (these types of studies are called descriptive research studies).
3. **Finding Causes and Solutions:** Research can also be about finding the root cause of a problem, especially in fields like medicine or social science. These studies try to identify what's causing the issue and what can be done to fix it (these kinds of studies are termed diagnostic research studies).
4. **Testing Relationships:** Sometimes researchers already have an idea of how certain things are connected. In these studies, the goal is to test these relationships, that is, relationship between dependent and independent variables often using what's called "hypothesis-testing" research.

Why Do People Do Research?

Different things motivate people to dive into research. Some might be chasing a degree or certification, while others might simply enjoy the challenge of solving tough problems. For many, research offers a chance to be creative and contribute something new to the world. And of course, there's always the possibility of earning recognition and respect in the academic or professional community. However, to add a few more motives to the above motivational factors: employment conditions, to understand the relationships between variables, social thinking and awakening, and directives of government may force people or scholars to undertake research operations.

Chapter 3
Characteristics of a Good Research

Good research doesn't just happen by accident. It's a thoughtful, organized process that follows some important principles to ensure the findings are meaningful and trustworthy. Here's what makes research stand out:

1. **Ethical and Honest:** Researchers must act responsibly, ensuring their findings are honest and free from bias. Maintaining high ethical standards is key to gaining trust in the findings.
2. **Logical and Structured:** Research should follow a logical path, combining both numbers (quantitative data) and observations (qualitative data) to tell a complete story.
3. **Real-World Relevance:** The data collected should come from real people or real situations, ensuring that it reflects actual experiences. Also, participants' privacy should be protected at all times.
4. **Deep Analysis:** The analysis should be thorough and fair, with no shortcuts. Unbiased results help build credibility, making the research findings reliable.

5. **Quality and Clarity:** The research should be well-written and clearly presented, drawing from relevant literature and contributing new insights.
6. **Scientific Rigor:** Good research sticks to scientific methods—whether it's using theories, comparing findings, or gathering data over time. The more rigorous the process, the more reliable the results.

In short, research should aim to answer important questions, stay organized, and contribute something meaningful to the world. And while it may seem like a long process, the rewards—knowledge, innovation, and discovery—are well worth the effort.

Chapter 4

Types of Research – Part 1

Research comes in many different forms, depending on what you're trying to achieve and how you go about it. This chapter focuses on the various kinds of research which represent the foundation stone of the rigorous and exhaustive study that lays a path to add new knowledge to the existing one. Broadly speaking, research can be divided into two main categories: **by methods** and **by purposes**. Let's break these down.

Historical Research

This type of research dives into the past, analysing events, people, or trends to better understand how they shaped the present. It involves collecting, evaluating, and interpreting evidence from various primary (surveys, experiments, interviews, case studies, etc.) and secondary sources (literature reviews, archival research, online databases, government reports, etc.) to reconstruct and understand past literature, processes, and experiences to contribute to new understandings of the stated events. It involves critical examination of past occurrences to know the truth and later generalise the same. Think of it like being a detective, piecing together clues from history to discover the full story. Whether it's studying World War II, the Great Depression, or even the life of an influential leader, historical research helps us learn valuable lessons from the past.

Descriptive Research

Descriptive research is like holding up a mirror to reality. It aims to describe what's happening right now without trying to influence it. It's all about observing, collecting data, and understanding the current state of affairs. The researcher enlists opinions, processes, trends or effects that exist or are developed at present. This kind of research is also known as non-experimental research. For example, researchers might conduct surveys to study social media habits among teenagers or assess employee satisfaction at a company. The key is that descriptive research describes rather than tests.

Ex-Post Facto Research

As the name suggests, ex-post facto research looks at things after they've already happened. It's a way of understanding cause-and-effect relationships by analysing past events and situations. Researchers here don't control the variables—they simply study what's already occurred to draw conclusions. This type of research aims to look back at past events or situations, analyse existing data, and attempt to identify cause-and-effect relationships. This means researchers accept things as they are and try to extract meaning from them. The data so collected comprises of field study in the form of questionnaires and/or interviews collected at the point or over a period of time. It can be rightly pointed out that ex-post facto research is the outcome of a combination of historical and descriptive research. For instance, they might look at the impact of a natural disaster or examine the results of policy changes on business and social performance.

Experimental Research

Experimental research takes things a step further by actually manipulating variables to observe the outcomes. It's all about controlled environments—changing one thing to see how it affects

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another. Experimental research provides valuable insights into cause-and-effect relationships, helping researchers understand how variables interact and influence outcomes. It involves procedures for obtaining knowledge by collecting new or fresh observations under controlled conditions. Hence, it calls for careful, precise, and accurate observation and immediate recording of the data on the floor. In this research process, both independent and dependent variables are involved. This method is powerful because it helps establish cause and effect. Whether testing new medicines, evaluating consumer behaviour, or studying teaching methods, experimental research is key for discovering how different factors influence results.

Chapter 5

Types of Research – Part 2

Pure Research (Basic Research)

This type of research exists simply because of the desire to know more. It doesn't have an immediate application in the real world, but it helps build a solid foundation of knowledge. Imagine it as laying the groundwork—developing new theories, ideas, and principles that may lead to practical solutions later on. The theories and scientific principles developed by various management thinkers, based on their experiences, observations, and experiments conducted under controlled situations, contribute to solutions for dealing with practical problems confronted in firms or enterprises concerning human behaviour. This is a tribute to pure or basic research.

Applied Research

In contrast to pure research, applied research is all about solving real-world problems. It takes what we already know and applies it to practical situations. Applied research transforms knowledge into action, driving progress and improvement in various sectors. Applied research focuses on practical applications, whereas fundamental research seeks to expand knowledge. The principles and theories of management developed over a period of time hold relevance down the lane, which when applied, help to solve real-world problems concerning human behaviour in industrial/business organisations, developing new products/services, enhancing new technologies, and modifying the existing ones through continuous improvements in the application of science and technology. For example, businesses use applied research to develop new products, improve services, or find more efficient ways to operate. It's action-oriented, focusing on making tangible improvements in various sectors.

Action Research

Action research is hands-on. The researcher isn't just an observer—they're an active participant. It's about solving problems in real-time and adapting as the situation changes. It is a different kind of research in which real testing of the applications takes place in certain situations and modifying the same according to the circumstances prevailing on the spot. The important feature of this research is that it adapts itself to the changes that take place around it. It is similar to applied research but differs through its action process. It mainly depends upon the feedback received regarding the identified problem. For instance, a teacher might use action research to find ways to help struggling students, constantly adjusting methods based on feedback and results.

Evaluation Research

Ever wonder if a program or initiative really worked? That's where evaluation research comes in. Evaluation research is conducted to assess the programme that has been implemented or action that has been taken to achieve the desired objectives or set targets. It means measurement of the final result in the form of a product or service and its impact on the efforts made to implement the programme to achieve some goals or objectives as planned in advance. This type of research measures the outcomes of a program to see if it met its goals. It's like taking a step back and assessing the strengths, weaknesses, opportunities, and threats (SWOT)

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of an effort, ensuring that organizations can improve and make better decisions in the future. This type of research is applicable to all profit-seeking concerns as well as non-profit organisations. The evaluations can be conducted on formative, periodic, or summative bases depending upon the need of the programmes implemented.

Interdisciplinary Research

In today's world, knowledge doesn't exist in silos. Interdisciplinary research breaks down traditional barriers between different fields of study. It brings together ideas, methods, and expertise from multiple disciplines to tackle complex problems. This approach has changed how we view education and business—solutions aren't based on just one factor but on multiple factors working together. It develops a collaborative mindset, enhancing critical thinking and problem-solving skills not only of the researchers but of the associated parties both in the education sphere and the business world.

GLOSSARY

1. Observation – the ability to notice things
2. Experimentation – process of trying methods, activities, etc.
3. Comparison – act of comparing people or things
4. Consensus – a generally accepted opinion
5. Quantitative – measured in units
6. Qualitative – describe characteristics
7. Curiosity – desire to know or learn
8. Intellect – power of the mind to think
9. Uncharted Territory – area of land or sea not surveyed
10. Scientific methods – definite rules and procedures to find new knowledge
11. Hypothesis – an idea or explanation subject to test
12. Motivation – driving force for human actions
13. Principles – general statements
14. Ethical – moral values
15. Logical – thinking in sensible way
16. Structured – organised form
17. Detective – an investigator
18. Piecing – assemble
19. Clues – guesses
20. Generalise – form opinion or statement
21. Processes – step by step actions
22. Survey – method of gathering information
23. Cause and effect relationship – the relationship between two events or situations
24. Extract – to take out something
25. Outcome – the end result
26. Controlled conditions – a standard against which other conditions can be compared
27. Independent variable – a variable whose variation does not depend on other
28. Dependent variable – a variable whose variation does depend on other
29. Foundation – fact
30. Tangible improvements – real and noticeable improvements
31. Formative – assessment during the period
32. Periodic – assessment conducted regularly
33. Summative – assessment conducted at the end of the period
34. Silos – a pit
35. Collaborative – working together

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14
Introduction To Research Methodology

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Abstract *This paper provides a concise exploration of the fundamental concepts and classifications of research, categorized by methods and purposes, presented in clear and accessible language. The motivation behind selecting this topic stems from a desire to deepen understanding of the term "research" and its related concepts. The works of C.R. Kothari and K.N. Krishnaswamy on research methodology and management research methodology served as key references in developing the content of this paper. The paper is structured into five chapters, beginning with an introductory chapter that outlines the topic and includes well-known definitions from prominent researchers. This is followed by discussions on the objectives of research, its characteristics, and its classifications, divided into two main groups, which are elaborated in subsequent chapters.*

Keywords*: Research, Research Methodology, Types of Research, Research Objectives, Research Characteristics*

1 INTRODUCTION

At the very beginning there is a must raised question – *What do you mean by 'Research'?* and the answer we can present as — the English noun *'research'* comes from the Middle French *'recerche'* which goes back to the Latin *'circare'* which means *"to know"*. Simply, research means a search for knowledge.

If we briefly discuss research methodology, then we can say that it refers to the systematic plan and process that researchers follow to gather data, analyse it, and draw conclusions. It encompasses the theoretical framework that underpins a study and the methods used to conduct research. Effective research methodology is crucial for the reliability and validity of findings, allowing researchers to address specific questions and contribute meaningfully to their fields. It is an investigation conducted with the aim to solve a raised problem.

Research methodology is the overall strategy and framework for a research project, including the theoretical framework, research questions, and research approach. It presents the reasoning behind the research approach and guides the researcher in selecting appropriate research methods.

Research is an art of scientific investigation. It is similar to the science project one conducts in schools, wherein one attempts to learn something by way of experimenting. Research is a careful and detailed study into a specific problem, concern, or issue using the scientific method. It can be defined as:

- Prefix *'re'* — again, anew, or over again.
- Suffix *'search'* — a verb meaning *to test*, *to examine closely and carefully*.

Now we can say that search for knowledge through the objective and systematic scientific methods of finding solutions to a problem is research. It helps in decision-making and reducing the element of risk and uncertainty.

Research is a scientific inquiry carried out systematically and analysed critically using a variety of methodologies, including surveys, experiments, observations, and interviews. Research is, thus, an original contribution to the existing stock of knowledge making for its advancement. It is the pursuit of truth with the help of study, observation, comparison, and experiment.

In short, the search for knowledge through objective and systematic methods of finding

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solutions to a problem is research. The systematic approach concerning generalization and the formulation of a theory is also research. It is actually a voyage of discovery.

We all possess the vital instinct of inquisitiveness for, when the unknown confronts us, we wonder and our inquisitiveness makes us probe and attain fuller understanding of the unknown. This inquisitiveness is the mother of all knowledge and the method which man employs for obtaining the knowledge of whatever the unknown can be termed as research.

In research methodology, we study the various steps that are generally adopted by a researcher in studying his research problem along with the logic behind them.

Definitions of Research

- Clifford Woody:
  "Research comprises defining and redefining the problem, formulating a hypothesis or suggesting solutions, collecting, organizing and evaluating data, making deductions and reaching conclusions to determine whether they fit the hypothesis."
- Lundberg:
  "A systematic method through which observed information and data are classified, generalised and verified."

Research methodology provides the tools and frameworks necessary for conducting rigorous and impactful research. Whether through quantitative, qualitative, or mixed methods, a well-structured approach is crucial for producing valid and meaningful results.

1.1 Importance of Research Methodology

Research methodology presents in front of us several critical functions:

- **Guiding the Research Process**: Provides a clear framework and structure that guides researchers through their studies.
- **Ensuring Reliability and Validity**: Enhances the credibility of the research by ensuring that findings can be trusted.
- **Facilitating Replication**: A transparent methodology allows other researchers to replicate studies, which is essential for verifying results and building upon existing knowledge.
- **Addressing Research Questions**: Different methodologies can be employed based on the nature of the research question, allowing for more nuanced exploration of the topic.

2 RESEARCH APPROACHES

Research approaches mean *a systematic plan or strategies that one uses to achieve particular objectives*. It is based on the nature of the research problem. Research attempts to answer certain questions which have not been answered till today.

2.1 Objectives of Research in Research Methodology

Generally, the objective of any research is *to expand human knowledge*. It helps in giving direction for the research work. It involves basic steps such as exploring, investigating, describing, measuring, etc. The main objectives of research are to find out the truth, which is hidden and not yet discovered.

Thus, the purpose is to discover answers to questions through the application of scientific procedures. Though each research study has its own separate and specific purpose, yet the following objectives can be presented:

- To obtain familiarity or knowledge with a phenomenon or to achieve new insight into it.
- To formulate a new theory or concept based on the findings of research.
- To picturise aptly the characteristics of a particular individual, situation, or a group.
- To confirm and select the frequency with which something occurs or with which it is related to something else.
- To test a hypothesis of a causal relationship between the variables.

In fact, the objectives of any research should always be **SMART**:

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- **S** – Specific
- **M** – Measurable
- **A** – Achievable
- **R** – Realistic
- **T** – Timed

3 RESEARCH PROCESS OR STEPS OF RESEARCH

Before going into the details of research methodology and techniques, it seems apt to present a brief overview of the research process. This process contains a series of closely related activities which must be carried out by a researcher. Research process requires patience.

Key Steps in the Research Process

i. Formulation of Research Problem

The first step is to clearly define the research problem or question. This involves identifying gaps in existing knowledge and articulating specific issues that the research aims to address.

ii. Reviewing the Literature (Extensive Literature Survey)

Conducting a literature review helps researchers understand the current state of knowledge on the topic, identify theoretical frameworks, and inform the choice of methodology.

iii. Making Hypothesis

Formulation of hypothesis is another important step of research. A hypothesis is a tentative, testable proposition stated clearly and subjected to empirical or experimental verification.

iv. Selecting the Research Design

Researchers must decide on the appropriate research design — experimental, descriptive, correlational, or exploratory.

v. Execution of the Research Project

Implementation of the research plan must be systematic to avoid errors and ensure reliability.

vi. Choosing Data Collection Methods

Researchers must select appropriate quantitative, qualitative, or mixed methods depending on research objectives.

vii. Data Analysis Plan

Developing a plan for data analysis ensures appropriate handling of the collected data, including statistical or qualitative coding approaches.

viii. Ethical Considerations in Research Methodology

Ethics play an important role in research. Researchers must ensure their work respects the rights and dignity of participants. Key aspects:

- Informed Consent
- Confidentiality
- Minimizing Harm
- Integrity
- Debriefing

ix. Pilot Testing

Conducting a pilot study helps refine the methodology before full-scale research.

x. Report Writing and Presentation

The researcher must prepare a detailed report in simple but effective language, with charts, graphs, and illustrations where necessary.

4 COMPONENTS OF RESEARCH METHODOLOGY

Research methodology can be broken down into several key components:

4.1 Research Design

Research design refers to the overall strategy that researchers adopt to integrate the different components of the study in a coherent and logical way. It lays the foundation for data collection and analysis.

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Common types of research designs include:

- **Descriptive Research**: Aims to describe characteristics of a population or phenomenon.
- **Correlational Research**: Investigates relationships between two or more variables.
- **Experimental Research**: Involves manipulation of one variable to determine its effect on another.

4.2 Data Collection Methods

Data collection methods are the techniques used to gather information. They can be broadly categorized into:

- **Qualitative Methods**: Such as interviews, focus groups, and observations, which aim to gather in-depth insights into human behavior and social phenomena.
- **Quantitative Methods**: Such as surveys and experiments, which focus on numerical data and statistical analysis.

4.3 Sampling Techniques

Sampling involves selecting a subset of individuals from a population to make inferences about the entire population.

Common sampling techniques include:

- **Random Sampling**: Every member of the population has an equal chance of being selected.
- **Stratified Sampling**: The population is divided into subgroups, and samples are taken from each subgroup.
- **Convenience Sampling**: Samples are taken from a group that is easily accessible.

4.4 Data Analysis

Data analysis involves processing and interpreting the collected data to draw conclusions. Analytical techniques vary depending on the nature of the data:

- **Qualitative Analysis**: Often involves thematic analysis or content analysis to identify patterns and themes in qualitative data.
- **Quantitative Analysis**: Utilizes statistical methods to test hypotheses and make predictions based on numerical data.

4.5 Interpretation and Presentation

Interpreting results and presenting findings clearly is vital for communicating research outcomes effectively. Researchers must be transparent about their methods and findings, providing context and implications for their work.

5 TYPES OF RESEARCH METHODOLOGIES

Research methodologies can be broadly classified into two main categories: **qualitative** and **quantitative methodologies**, each serving different research purposes.

5.1 Quantitative Research

Quantitative research involves the collection and analysis of numerical data to identify patterns, relationships, and causal effects.

Characteristics:

- **Objective Measurement**: Researchers employ statistical tools to measure variables and test hypotheses.
- **Large Sample Sizes**: Ensures generalizability of results.
- **Structured Instruments**: Surveys, questionnaires, and tests are commonly used.

5.2 Qualitative Research

Qualitative research focuses on understanding the underlying reasons, motivations, and meanings behind human behavior.

Characteristics:

- **Subjective Exploration**: Seeks to understand phenomena from participants'

perspectives.

- **Small Sample Sizes**: Typically involves smaller, purposefully selected samples.
- **Flexible Data Collection Methods**: Uses interviews, focus groups, and observations.

5.3 Mixed Methods Research

Nowadays, mixed methods research combines both qualitative and quantitative approaches to provide a more comprehensive understanding of a research problem. This methodology leverages the strengths of both paradigms, allowing for richer data collection and analysis.

Other Types of Research

1. **Descriptive Research** – Questionnaires or opinion studies; describes subject matter through survey and fact-finding.
2. **Ex-Post Facto Research** – Used in social sciences and business; no control over variables, conducted after incidents.
3. **Analytical Research** – Analyses already available data (secondary sources).
    - (a) **Quantitative Research** – Expressed in numerical terms.
    - (b) **Qualitative Research** – Especially important in behavioural sciences; explores motives of human behaviour.
4. **Applied Research** – Also called action research; solves immediate practical problems.
5. **Fundamental Research** – Purely theoretical; aims at formulating or revising theories.
6. **Conceptual Research** – Based on abstract ideas; often used by philosophers.
7. **Empirical Research** – Experimental/observational; conclusions drawn from evidence.
8. **Historical Research** – Collects past data to test hypotheses and prove/disprove them.
9. **Exploratory Research** – Conducted for poorly defined problems; useful in designing methods but not decision-making.
10. **Diagnostic Research** – Identifies causes of problems, their frequency, and possible solutions.
11. **Experimental Research** – Conducted in controlled environments; tests hypotheses through manipulation of variables.

6 CONCLUSION

At last, we can conclude that research methodology is an essential component of the research process, influencing the quality, credibility, and ethical integrity of findings. By understanding the various types of methodologies, researchers can make informed choices that align with their research questions and objectives.

Whether employing quantitative or qualitative methods, a well-defined methodology enhances the reliability and validity of research, promotes ethical practices, and contributes to the advancement of knowledge across disciplines. As researchers continue to navigate the complexities of their fields, a solid grasp of research methodology will remain indispensable in producing meaningful and impactful research outcomes.

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15
Research Design: An Extensive Analysis

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Abstract
Research design is a cornerstone of modern research, providing a structured and logical framework for conducting scientific investigations. Before initiating a research project, a researcher formulates a coherent action plan by systematically arranging various components to ensure smooth execution. This plan, known as a research design, is developed immediately before the research begins. According to Swain, "the research design is basically a working plan/blueprint from beginning to the end of a research study involving collection, measurement, and analysis of data" (p. 99). In essence, a research design serves as a structured program that guides data collection, interpretation, and analysis while facilitating decisions about cause-and-effect relationships among variables. A robust design is created only after the subject is selected, the problem is defined, objectives are stated, concepts are clarified, and hypotheses are framed.

Keywords: Research Design, Research Methodology, Data Collection, Cause-and-Effect Relationships, Hypotheses Formulation

Introduction

Research design holds an essential place in modern research. Prior to a scientific investigation, the researcher develops a logical and coherent action plan by arranging various components systematically to ensure smooth execution. This plan, formulated immediately before the research begins, is called a research design. Swain defines it as *"a working plan/blueprint from beginning to the end of a research study involving collection, measurement and analysis of data"* (p. 99).

A research design, therefore, is not just a plan but a structured framework that guides data collection, interpretation, and analysis. It also assists researchers in making decisions regarding cause-and-effect relationships among variables. Importantly, a research design should only be developed after the subject is selected, the problem is defined, objectives are outlined, terms are clarified, and hypotheses are framed.

Objectives of Research Design

The primary purpose of research design is to gain insights, describe a subject, determine relationships among variables, or test hypotheses. Scholars such as Hans Raj and Selliz et al. emphasize its crucial role. The key objectives include:

1. **Clarity** – Achieving a clear understanding of the subject matter.
2. **Field Selection** – Ensuring accurate data collection by selecting the appropriate field.
3. **Data Analysis** – Designing strategies for collection, processing, and analysis.
4. **Variable Control** – Identifying, determining, and managing variables.
5. **Identifying Errors** – Detecting possible errors and ambiguities.
6. **Error-free Outcomes** – Achieving reliable and valid research results.

Steps or Components of a Research Design

The abstract idea of a research plan becomes concrete through research design. The major components include:

1. **Research Title** – Clear and engaging to reflect the subject.

2. **Introduction to the Problem** – Explaining the rationale and importance.
3. **Research Objectives** – Stating objectives and related data needs.
4. **Definition of Concepts** – Establishing operational definitions.
5. **Formulation of Hypotheses** – Constructing testable hypotheses.
6. **Rationale of the Research** – Highlighting benefits and contributions.
7. **Sources of Data** – Identifying direct and indirect sources.
8. **Methods of Data Collection** – Outlining observation, interviews, questionnaires, etc.
9. **Reliability and Validity** – Ensuring accuracy of data and tools.
10. **Data Processing and Analysis** – Explaining classification, tabulation, and statistical tests.

Classification of Research Design

Research designs can be broadly classified into three main categories:

1. **Exploratory Research Design** – Focused on exploring assumptions and clarifying problems; provides understanding but not conclusive evidence.
2. **Conclusive Research Design** – Aimed at providing clear answers. It includes:
    - **Descriptive Research Design**:
        - *Cross-sectional*: Data collected at one point in time.
        - *Longitudinal*: Repeated observations over time.
    - **Causal Research Design**: Establishes cause-and-effect relationships by defining independent and dependent variables.
3. **Other Classifications**:
    - McGrant's Five Types: Controlled Experiment, Study, Survey, Investigation, Action Research.
    - General Types: Experimental, Quasi-experimental, Non-experimental.

Characteristics of a Good Research Design

According to C. R. Kothari, *"A good design is flexible, appropriate, efficient, and economical. The design which minimizes bias and maximizes the reliability of the data collected is considered good."*

Key characteristics include:

- **Objectivity** – Producing realistic outcomes.
- **Reliability** – Accuracy and transparency of data.
- **Flexibility** – Allowing necessary adjustments.
- **Accuracy in Data Collection** – Ensuring precision in data gathering.
- **Hypothesis Testing** – Objectively testing hypotheses.
- **Alignment with Objectives** – Suitability for exploratory, descriptive, diagnostic, or experimental studies.

Additionally, efficient use of resources, time management, and error reduction are crucial.

Importance of Research Design

A well-prepared research design is indispensable for smooth execution. Its importance lies in:

1. Facilitating maximum data collection with minimum effort.
2. Guiding the researcher in choosing techniques of collection and analysis.
3. Ensuring proper use of time and resources.
4. Saving money and effort through systematic planning.
5. Helping in achieving valid, reliable, and desired outcomes.

Conclusion

Research design is the blueprint of any research project. It provides a structured and logical framework that ensures clarity, objectivity, and validity in research outcomes. By minimizing errors, maximizing reliability, and guiding every stage of investigation, research design plays an indispensable role in achieving successful research results.

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16
Plagiarism

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Abstract
Plagiarism, the act of using another person's ideas, words, or work without proper attribution, poses a significant ethical challenge in academic, professional, and creative domains. This paper explores the concept of plagiarism, its forms, and its implications, emphasizing the importance of academic integrity. It examines various types of plagiarism, including direct copying, paraphrasing without credit, and self-plagiarism, while highlighting the role of proper citation in mitigating these issues. Drawing on established guidelines, the paper underscores the necessity of acknowledging sources to maintain credibility and foster original thought. By analyzing the consequences of plagiarism and the tools available for its detection, such as Turnitin and Grammarly, this study advocates for proactive measures like education on ethical writing practices to prevent unintentional violations. The objective is to provide a comprehensive understanding of plagiarism and promote strategies for upholding integrity in research and creative endeavors.

Keywords*: Research, Research Methodology, plagiarism*

1. Introduction

The quest for knowledge is based on integrity, innovation, and trust in academic and research contexts. These pillars guarantee that research advances morally and advances society's collective intellectual development.

Plagiarism can take many different forms, from copying whole passages of material to more covert techniques like misrephrasing or omitting credit sources. Sometimes, because of a lack of awareness, researchers may even unintentionally engage in plagiarism.

Nevertheless, of intent, the outcomes of plagiarism can be severe, affecting not only the individual researcher but also the organizations they represent and the educational community at large.

2. Types of Plagiarism

The various forms of plagiarism indicate a serious violation of ethical research standards, which can occur accidentally or on purpose. Understanding the different types of plagiarism is crucial for researchers, academics, and students to avoid likely violations of educational virtue. Below are the most common types of plagiarism:

2.1 Direct Plagiarism

Direct plagiarism happens when a researcher or writer duplicates someone else’s work word-for-word without ethical acknowledgement or citation marks. This type of plagiarism is usually deemed as the most heinous and severe, as it affects the detailed stealing of another individual’s intellectual possessions.

It is extremely detrimental when the stolen material is submitted as authentic research or ideas. In academic environments, direct plagiarism can lead to painful outcomes, including academic probation, removal, or retraction of published assignments. Researchers must ensure that any material borrowed from different sources is adequately referred to, whether it be a single sentence or a whole passage.

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2.2 Self-Plagiarism

Self-plagiarism occurs when a researcher reuses important portions of their own earlier published results without any reasonable quotation or acknowledgement. Although it may be harmless since the person is reusing his assignment, it is still considered as unethical as it deceives the audience into assuming the content is unique or original.

Self-plagiarism can take several conditions, such as republishing an earlier article as a unique one, utilizing exact data and outcomes across numerous journals, or presenting duplicate manuscripts to various journals. Numerous educational bulletins keep rigorous procedures against self-plagiarism, and infringing these can result in the retraction or denial of articles.

2.3 Mosaic Plagiarism

Similarly known as *"patchwriting,"* mosaic plagiarism affects piecing together different concepts, terms, or sentences from various references without any reasonable attributions. Even though the author may not have copied full sentences word-for-word, they may have yet borrowed the layout or terminology references.

This could occur inadvertently when the student is attempting to translate but turns out too near reproducing the authentic matter. Mosaic plagiarism is reasonably modest than direct plagiarism, but it yet violates the regulations of educational system virtue. Reasonable paraphrasing affects more than just mixing terms or modifying a few phrases.

2.4 Accidental Plagiarism

Accidental plagiarism happens when an author unintentionally ceases to work to guide their sources correctly, or misuses source techniques. This form of plagiarism is usually the outcome of unawareness or misconception rather than purposeful deception and can even have important effects.

For instance, a scholar can rephrase data without admitting that it still needs authority, or they can skip a citation in their bibliography casually. Even if the purpose is not negative, accidental plagiarism can yet lead to punishments.

2.5 Source-Based Plagiarism

This kind of plagiarism happens when a student mentions a source inaccurately or furnishes wrong or false references. This could pertain to quoting non-existent references, using secondary references but declaring they are primary or falsifying the source's content.

Source-based plagiarism can be extremely dangerous because it fools the audience about the genuineness of the analysis and its foundation. A failure to correctly confirm and mention citations can prove to be false for the whole research assignment and harm the credibility of the student.

2.6 Paraphrasing Without Proper Citation

Paraphrasing is an essential and everyday procedure in academic papers, permitting researchers to express ideas from different works in their phrases. Nonetheless, inappropriate paraphrasing can lead to plagiarism if the actual concept or arrangement is too closely mirrored without a source.

Negligence to do so, even if the words are distinct, constitutes plagiarism. Adequate paraphrasing affects the total understanding of the citation matter and then rewording it in a technique that matches the researcher's assertion, pursued by reasonable quotation.

2.7 Collaborative Plagiarism

Collaborative plagiarism happens when numerous authors or collaborators forget to deliver proper praise to each other or misattribute the contributions of various partners of a research group. This can occur in group research assignments, co-authored documents, or combined studies where the allocation of recognition is not clear or accurately reported.

Combined assignment requires clear communication and reasonable attributions to avoid moral values, particularly in large research undertakings about multiple contributors.

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3. The Legal and Ethical Consequences of Plagiarism

In addition to being against academic virtue, copying in research has severe moral and lawful results. These ramifications consequence not merely distinct scholars furthermore enormous academics and society. This section investigates the moral difficulties that copying presents as well as the possible legal consequences, which often vary based on the events and seriousness of the violation.

3.1 The Ethical Consequences of Copying

Because copying involves dishonesty and an absence of transparency in revealing the origin of opinions or jobs, copying is an ethical crime. Plagiarism damages the core regulations of research, which comprise integrity, equity, duty, and admiration for intellectual property.

Among the major ethical problems are the following:

- **Violation of Intellectual Property Rights**: Plagiarism violates the intellectual property rights of the authentic writer, rejecting their reasonable recognition for their contribution. This disregards the effort and creation of the authentic founder but also falsely increases the prestige of the pirater.
- **Sabotaging the Academic World**: Academic research relies on building upon previous work. Infringement distorts the academic record, making it difficult for future researchers to trust the rightfulness of the work they are referencing. It hampers the flow of true wisdom and harms the reliability and trust of educational professions.
- **Deterioration of Trust**: The foundation of the academic world is trust. Scholars and researchers must be able to trust that their colleagues are working ethically and presenting authentic work. Infringement diminishes trust not only in the individual but in the institutions and systems that allowed the breach to happen.
- **Damage to Reputation**: For the individual who commits breaching, the moral fallout can be sabotaging to their academic and professional reputation. Once an individual is found guilty of impeachment, it is difficult to restore reliability within the academic society, which often leads to isolation from professional networks and restricted opportunities for collaboration.

3.2 Penalties for Copyright Infringement

Diminishing of trust not only in the individual but also in the institutions and systems that allowed the breach to happen when a breach is discovered.

When spoofing violates intellectual property rights, it can result in significant legal outcomes in addition to ethical issues. The punishment depends on the severity of the jurisdiction, offences, and the precise events surrounding the case.

- **Patent Violation**: The majority forms of infringement ironically violate patent laws, which protect the original expression of ideas in artistry, music, manuals, and other multimedia. Duplicating or distributing work that is protected under copyright without approval from the copyright owner occurs when someone copies content. This can lead to lawsuits where the actual author can request to stop the distribution of the copied material or settlement for lost earnings.
- **Breach of Contract**: In academic and professional research environments, agreements usually manage the association between experimenters and organisations, funders, or collaborators. If morphing is discovered, it may constitute a loss of funding and cancellation of these agreements, resulting in the revocation of contracts, or legal penalties. For example, any violation of these conditions through morphing may lead to the termination of the grant because budgeted agreements usually mandate that analysis be performed ethically and legally.
- **Renunciation of Published Works**: Publishers and journals reject the writing if duplicity is recognized in published analysis, thereby sabotaging both the credibility

and academic record of the research scholar. Mostly the authentic author may take lawful steps to look for repayment for impairments caused by the culprit or have the plagiarized work removed from publication.

- **Penalties and Compensation**: Monetary punishment for trademark infringement, including fines and compensation of lawsuits expenses, are imposed by some courts. Where copying ushers to important monetary casualties for the authentic author or publisher, the punishments can be significant in extreme cases.
- **Consequence on Career Opportunities**: Plagiarism can have long-term consequences for job opportunities, rather than just immediate legal outcomes. Investigators found guilty of infringement typically face difficulties in obtaining future educational or research positions, and their previous journals may be investigated for additional violations of principles. This not only excludes you from important research collaborations, but it can also result in a loss of professional standing.

3.3 Case Studies of Violation Consequences

Very well-known high-profile cases of researchers, academics, or professionals being found guilty of copying hence to illustrate the consequences of cheating let's study these cases:

- **Famous Case 1**: A renowned historian was blamed for spoofing large percentages of another scholar's work in her best-selling book. The plagiarism disgrace not only resulted in the retraction of the book but also spoiled her reputation as a serious intellectual. Despite public apologies, the deterioration to her occupation was irreversible.
- **Famous Case 2**: A senior researcher at a well-known university self-plagiarized multiple papers by using data and excerpts from previous publications. He was fired from the university and had several papers rejected by the academic journal. This case highlighted the gravity of self-plagiarism and the institutional response to unethical behavior.

3.4 Ethical Obligation in Joint Ventures

- It is more common than ever for researchers to collaborate, especially in interdisciplinary fields. However, working together also increases the possibility of misattributing feelings and neglecting to properly credit all of the supporters. Group research places a greater emphasis on ethical responsibility because plagiarism damages the reputations of all participants.
- To prevent potential ethical transgressions, researchers must ensure that all sources and contributions are duly acknowledged and communicate in a clear and concise manner.
- **A Synopsis of the Moral and Legal Repercussions**: Plagiarism has serious ethical and legal repercussions that can permanently damage people's careers and the reputation of the academic community. To avoid moral failings and legal repercussions, researchers should carefully follow the guidelines of openness and truthfulness in their work. When it comes to teaching researchers the value of maintaining research integrity and refraining from plagiarism, institutions are essential.

4. The Role of Educational Institutions in Reducing Debate

To ensure the validity of scholarly publications and discourage plagiarism, academic institutions are crucial. Clear institutional policies, education and training, and plagiarism detection techniques are all useful examples of their methodology.

4.1 Plagiarism Detection Tools

- **Turnitin**: One of the most widely used programs is Turnitin, which compares submitted work to a sizable database of academic papers, journals, and web content. Teachers are able to review and take preventative action because it highlights similarities and potential plagiarism cases. Furthermore, Turnitin provides originality

reports that help educators assess students' levels of similarity and provide advice on proper citation styles.

- **Grammarly**: This tool not only checks grammar and writing style, but it also has a plagiarism detection feature. By comparing the text with internet sources, it finds information that is not original. By self-checking their work before turning it in, students can use this tool to encourage themselves to write better and properly cite their sources.
- **iThenticate**: An extensive tool for identifying possible plagiarism in academic work, iThenticate is intended for professional and academic researchers. Though it is frequently used in situations like grant proposals and journal submissions, it is comparable to Turnitin.

4.2 Education and Training Workshops

- **Workshops**: Academic institutions should regularly hold lectures on research ethics and preventing plagiarism. These workshops teach students about the different types of plagiarism, proper reference styles, and the importance of upholding academic integrity. Students can better understand and remember these concepts by going over and discussing case studies in interactive sessions.
- **Courses**: Students can receive a formal education on avoiding plagiarism by including research ethics and academic writing courses in the curriculum. These courses should cover techniques for proper paraphrasing, quoting sources, and understanding intellectual property rights.
- **Seminars**: By arranging lectures with outside speakers, including seasoned researchers and ethicists, students can gain a broader understanding of the consequences of plagiarism and the best practices for academic writing. These conferences might also cover recent advancements in technology and trends related to plagiarism prevention.

4.3 Policies at the Institution

- **University Guidelines**: Establishing clear and thorough institutional policies against plagiarism is essential. These guidelines should include a definition of plagiarism in general and self-plagiarism in particular, along with the process for investigating potential cases of plagiarism. The purpose of detection tools and the responsibilities of teachers and students in maintaining academic integrity should be made clear.
- **Consequences of Plagiarism**: Institutions must make it apparent what happens when someone plagiarizes in order to deter dishonest behavior. The severity of the offense should be reflected in the consequences, which could range from a formal warning to academic penalties like suspension or poor grades. These guidelines must be clearly communicated to all members of the academic community and applied consistently in order to maintain fairness and confidence.

In conclusion, by putting in place clear institutional policies, comprehensive training and education programs on research ethics, and the tactical application of plagiarism detection tools like Turnitin, Grammarly, and iThenticate, academic institutions can effectively prevent plagiarism.

5. Techniques for Preventing Plagiarism

5.1 Proper Citation Practices

- **APA Style**: The social sciences frequently employ the American Psychological Association (APA) style. The final page must include a comprehensive reference list in addition to in-text citations containing the author's last name and the year of publication. A reference that corresponds to an in-text citation, such as *Smith, 2020*, would include complete publication details.
- **MLA Style**: The humanities frequently employ the Modern Language Association

(MLA) style. It includes in-text citations like *(Smith 23)* that include the page number and the author's last name. The final page of the document, the *Works Cited* page, contains an alphabetical list of all the sources along with complete publication detail.

- **Chicago Style**: Two systems provided by the Chicago Manual of Style are the *Notes and Bibliography* system, which is widely used in the humanities and social sciences, and the *Author-Date* system, which is used in the social sciences. Whereas the Author-Date method employs parenthetical in-text citations and a reference list, the Notes and Bibliography system uses footnotes or endnotes for citations and a bibliography.

5.2 Paraphrasing and Summarizing Techniques

- **Paraphrasing**: To paraphrase effectively, read the original text thoroughly and understand its meaning. Next, rephrase the concept in your own terms while maintaining the original meaning. Make sure the material you have paraphrased differs enough from the original and remember to give credit to the original author. *Example*: *The impact of climate change is evident in the alteration of global weather patterns.*
- **Summarizing**: Summarizing is the process of distilling a longer text's main ideas into a concise summary. Avoid giving too much away; instead, focus on the main points. Cite your sources and use your own words to summarize the concepts. *Example*: *Recent research illustrates how climate change is altering weather systems worldwide.*

5.3 Collaborative Work

- **Appropriate Attribution**: When collaborating, it is important to give each member of the collaborative team the credit they deserve. This can be done by providing acknowledgements or a co-authorship credit, which will allow each co-author to be acknowledged for their individual contributions.
- **Clearly Stated Agreements**: To avoid misunderstandings and ensure that all contributors are fairly recognized in the final product, clearly state agreements regarding authorship, contribution, and citation requirements as soon as a collaborative effort is initiated. These agreements should be documented.

6. The Prospects for Research Integrity and Plagiarism Detection

- These tips can help people successfully prevent plagiarism and maintain their academic integrity. They include learning how to properly cite sources, developing your paraphrasing and summarizing skills, and ensuring that proper credit is given in collaborative work.
- With the evolution of academic environments come changes in the methods and challenges associated with research integrity and plagiarism detection. Future developments in technology, shifts in society, and the results of collaboration and open access will all have an effect on these fields.

6.1 Progress in Technology

- **AI-Powered Detectors of Plagiarism**: The application of artificial intelligence (AI) is revolutionizing the field of plagiarism detection. AI systems have the ability to scrutinize content more thoroughly, identifying subtle forms of plagiarism that human approaches may miss. By employing machine learning algorithms to recognize patterns, semantic similarities, and context, these advanced systems improve detection efficiency and accuracy. AI is able to discern between intentional plagiarism and inadvertent overlap, for instance, by understanding the nuances and context of the text.
- **Data Mining**: These technologies enhance the ability to detect plagiarism by looking through vast amounts of text from a range of sources. These programs search through enormous databases and digital archives for any instances of content that may have

been copied. Furthermore, data mining can track trends and patterns in plagiarism, providing academic institutions with important insights into the prevalence of plagiarism and helping them to enhance their preventive strategies.

6.2 Changes in Culture

- **Fostering Academic Honesty**: The future of research integrity depends on academic institutions creating an honest culture. This change necessitates a proactive approach to education that places a strong emphasis on the value of moral behaviour from the beginning of academic instruction. Institutions ought to uphold and incorporate originality, accountability, and transparency into their academic programs and institutional cultures. By encouraging candid conversation about the consequences of academic dishonesty and fostering environments where students feel supported in their studies, a stronger foundation of integrity can be established.
- **Ethical Research Practices**: Stressing moral research practices that go beyond plagiarism is crucial. This means protecting intellectual property rights, conducting ethical research, and keeping proper data management. By adding these tactics to their research protocols and academic training initiatives, institutions can enhance overall research integrity.

6.3 Open Access and Collaboration

- **Difficulties**: With the rise of open-access publishing and interdisciplinary cooperation, plagiarism detection encounters more difficulties. Open-access platforms facilitate easier access to a wider range of sources, potentially increasing the likelihood of inadvertent plagiarism. Moreover, collaborative research often involves multiple authors from different institutions, which complicates credit attribution and increases the likelihood of overlap or unintentional exploitation of other people's work.
- **Benefits**: On the plus side, open access encourages greater dissemination and transparency of research, which facilitates the process of verifying sources and ensuring accurate attribution. Better collaboration could also lead to the development of more dependable practices and tools for spotting and avoiding plagiarism.

7. Conclusion

- **Summary of Main Ideas**: Technological advancements like data mining and AI-driven plagiarism detection techniques improve the methods for handling and identifying plagiarism.
- **Key Prevention Practices**: This can be avoided by accurately citing sources, putting direct quotes in quotation marks, paraphrasing your writing correctly, and using plagiarism detection software.
- **Respect for Originality**: Respecting intellectual property and original thought is necessary to foster creativity, innovation, and justice in academic and professional settings.
- **Personal Responsibility**: Everyone is expected to uphold moral standards, refrain from plagiarism, and correctly credit all of their sources.
- **Preserving Research Integrity**: Preserving research integrity promotes trustworthiness and credibility, which furthers knowledge and encourages the production of real intellectual work.
- **Ethical Commitment**: A strong commitment to ethical research and writing practices ensures important contributions to any field and supports the upkeep of one's professional standing.
- **Concluding Remarks**: People who refrain from plagiarizing safeguard their reputations and preserve an ethical culture that benefits every member of the academic, professional, and artistic communities.

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Plagiarism In Research

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Abstract
Plagiarism, the act of using another person's ideas, words, or work without proper attribution, poses a significant ethical challenge in academic, professional, and creative domains. This paper explores the concept of plagiarism, its forms, and its implications, emphasizing the importance of academic integrity. It examines various types of plagiarism, including direct copying, paraphrasing without credit, and self-plagiarism, while highlighting the role of proper citation in mitigating these issues. Drawing on established guidelines, the paper underscores the necessity of acknowledging sources to maintain credibility and foster original thought. By analyzing the consequences of plagiarism and the tools available for its detection, such as Turnitin and Grammarly, this study advocates for proactive measures like education on ethical writing practices to prevent unintentional violations. The objective is to provide a comprehensive understanding of plagiarism and promote strategies for upholding integrity in research and creative endeavors.

Keywords: plagiarism, types, case studies

1.1 Definition of Plagiarism

Plagiarism, the act of using someone else's words, ideas, or creative works without proper acknowledgment, strikes at the heart of academic integrity. It undermines the fundamental values of originality and trust that form the bedrock of research and scholarship. In a world where knowledge is built upon the ideas and findings of others, plagiarism constitutes a form of intellectual theft that erodes the credibility of the entire academic enterprise.

1.2 Significance of Originality and Integrity in Research

The significance of originality in research cannot be overstated. Genuine, novel contributions drive fields of study forward, expanding the boundaries of human understanding. When researchers present ideas as their own that are derived from unacknowledged sources, they not only fail to add substantively to the collective body of knowledge but also cast doubt on the reliability of research as a whole.

Moreover, the prevalence of plagiarism has only increased in the digital age, where vast amounts of information are readily available at the click of a button. A 2017 study found that nearly 40% of undergraduate and graduate students admitted to paraphrasing or copying sentences from Internet sources without citation (Icon, 2018). This underscores the pressing need to educate students and researchers about the various types of plagiarism, the consequences of engaging in such misconduct, and effective strategies for prevention.

1.3 Purpose of the Paper

(To explore types, consequences, prevention, and ethics of plagiarism)

The purpose of this paper is to provide a comprehensive overview of plagiarism in academia. It will begin by delineating the different forms plagiarism can take, from verbatim copying to more subtle practices like self-plagiarism. It will then explore the ethical and legal implications of plagiarism, highlighting high-profile cases and their outcomes. The role of academic institutions in detecting and preventing plagiarism through tools, training, and policies will also be examined.

Building on this, the paper will outline best practices for individuals to avoid plagiarism in

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their own work. Finally, it will discuss the future of plagiarism detection and research integrity in light of technological advancements and cultural shifts. Ultimately, this paper aims to underscore the vital importance of upholding honesty and rigor in research while equipping readers with the knowledge to recognize and prevent plagiarism.

2. Types of Plagiarism

2.1 Direct Plagiarism: Copying Text or Ideas without Acknowledgment

Plagiarism encompasses a spectrum of practices, from the blatant and intentional to the inadvertent and accidental. The most egregious form is direct plagiarism, which involves copying verbatim from a source without enclosing the lifted passage in quotation marks or providing attribution. For example, a student might copy and paste an entire paragraph from a journal article into their own paper without citing the source. Such flagrant academic dishonesty is never acceptable.

2.2 Self-Plagiarism: Reusing One's Own Previous Work without Citation

Self-plagiarism, on the other hand, is the reuse of one's own previously written work or data in a new context without referencing the original. While it may seem counterintuitive that one can plagiarize oneself, academia generally expects researchers to produce fresh insights in each new publication. Recycling old material verbatim can mislead readers and often violates copyright agreements. For instance, a researcher might reproduce a literature review from an earlier paper without acknowledgment. Though the ideas are ostensibly their own, reusing the exact phrasing requires a citation to the prior work.

2.3 Mosaic Plagiarism: Combining Various Sources without Proper Attribution

A more subtle form of plagiarism is mosaic plagiarism, also known as "patchwriting." This involves stitching together passages from multiple sources, making superficial changes like substituting synonyms or altering word order, without fundamentally expressing ideas in one's own words. Though the resulting text may not match any single source exactly, it still constitutes plagiarism because the underlying ideas are not original. Patchwriting can be especially tempting for writers struggling to paraphrase fluently, but it ultimately hinders the development of genuine authorial voice.

2.4 Accidental Plagiarism: Unintentional Failure to Cite Correctly

Accidental plagiarism, as the name suggests, occurs due to carelessness or ignorance of proper citation practices rather than deliberate intent to deceive. A writer might include a statistic or turn of phrase from a source, believing it to be common knowledge not requiring attribution. Or they may forget to add an in-text citation to a paraphrased idea, even if the source is included in the bibliography. While less ethically compromising than purposeful plagiarism, accidental plagiarism can still carry serious academic penalties. It is each researcher's responsibility to scrupulously document and acknowledge their intellectual debts.

2.5 Case Studies/Examples

Case studies abound of plagiarism derailing academic careers. For example, in 2014, University of Montana Professor Joel Velasco resigned after an investigation found his dissertation contained unattributed material "on virtually every page" (Mangan, 2014). Though Velasco claimed the omissions were unintentional, the result was still a torpedoed career and public disgrace. Cases like these underscore the high stakes of plagiarism and the need for vigilance at all levels of academia.

3. Ethical and Legal Consequences of Plagiarism

3.1 Ethical Implications: Academic Dishonesty, Loss of Trust, and Intellectual Theft

Beyond the purely academic realm, plagiarism carries weighty ethical and legal implications. Most fundamentally, it violates the bedrock principle of honesty that makes scholarly inquiry possible. Researchers have a professional and moral obligation to represent their work accurately, acknowledge their influences, and give credit where due. Plagiarism, by contrast,

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is a form of theft that breeds mistrust, fractures intellectual communities, and impedes the free exchange of ideas so vital to advancing knowledge.

Moreover, plagiarism often intersects with dynamics of power and privilege. Senior researchers may feel emboldened to take credit for the work of graduate students or untenured colleagues, knowing the risks of challenging an established authority. Scholars from Western institutions sometimes neglect to cite or properly contextualize ideas from non-Western thinkers, reinforcing colonial hierarchies of knowledge production. Plagiarism in these contexts compounds the original offense with layers of exploitation and marginalization.

3.2 Legal Implications: Copyright Infringement and Intellectual Property Law

The legal consequences of plagiarism typically center on copyright law. Nearly all writing, from casual social media posts to formal academic publications, is protected by copyright from the moment it is recorded in a tangible form. Unauthorized use of this material that exceeds the bounds of fair use may constitute infringement. Authors whose work has been plagiarized can seek injunctions, monetary damages, or a portion of the infringing work's profits.

3.3 High-Profile Cases of Plagiarism and Their Outcomes

High-profile cases illustrate the grave professional fallout plagiarism can unleash. For example, in 2002, renowned historian Stephen Ambrose was found to have reproduced passages from several other scholars' work in his bestselling book *The Wild Blue* without proper attribution (Marsh, 2007). The revelations tarnished Ambrose's reputation and cast a shadow over his entire oeuvre.

Similarly, Jane Goodall's 2013 book *Seeds of Hope* was discovered to contain unattributed material from various websites, forcing the primatologist to apologize and revise the book in later editions (Kennedy, 2014). Even luminaries are not immune to the consequences of plagiarism.

In academia, plagiarism may also breach institutional policies and honor codes. Many universities treat it as a form of research misconduct subject to a range of sanctions, including failing grades, suspensions, and degree revocations. For instance, Ohio University revoked a graduate student's doctoral degree in 2006 after finding that his dissertation had plagiarized over 50 pages of material (Wasley, 2006). Such penalties can derail careers and tarnish institutional reputations, underscoring the collective stake in preventing plagiarism.

4. The Role of Academic Institutions in Preventing Plagiarism

4.1 Plagiarism Detection Tools: Turnitin, Grammarly, iThenticate

Given the high stakes of plagiarism, academic institutions have an ethical and practical imperative to prevent it through a multifaceted approach of detection tools, educational initiatives, and clear policies.

One key tool in the fight against plagiarism is detection software. Programs like **Turnitin**, **iThenticate**, and **SafeAssign** compare submitted texts against vast databases of web content, published literature, and previous student work, flagging matching passages for further scrutiny. Many institutions now require students to submit papers through such platforms, both as a deterrent and to catch potential misconduct. Instructors can then use the software reports as a launching point for conversations with students about proper citation and paraphrasing.

However, text-matching software is not foolproof. It can flag false positives like properly quoted and cited material, while missing paraphrases or translations. It is ultimately just a tool; human judgment is required to determine whether flagged similarities constitute plagiarism. As such, detection software is most effective when coupled with educational initiatives to foster cultures of integrity.

4.2 Education and Training: Workshops, Courses, and Seminars on Research Ethics

Many institutions now offer workshops, online tutorials, or for-credit courses on research ethics and academic writing. For example, Indiana University's School of Education requires

all new graduate students to complete an online academic integrity tutorial covering plagiarism, proper citation practices, and ethical collaboration (*How to Recognize Plagiarism*, n.d.). The goal is to empower students with the skills and knowledge to navigate the often-murky terrain of source use and attribution.

Education efforts must reach faculty and staff too, ensuring all members of an academic community are held to shared standards. Professors can model good practices by being transparent about their own research and writing processes, acknowledging their intellectual debts, and making expectations around citation and collaboration explicit in syllabi and assignment prompts. Librarians can offer training on citation management tools and the latest iterations of style guides. Writing center consultants can coach students on paraphrasing and patchwriting. Preventing plagiarism is a team effort.

4.3 Institutional Policies: University Guidelines and Consequences of Plagiarism

The final piece of the institutional puzzle is clear, consistently enforced policies. Many colleges have honor codes specifying the behaviors that constitute academic misconduct and the procedures for reporting and adjudicating potential violations. For example, the **University of California San Diego's Policy on Integrity of Scholarship** outlines the spectrum of plagiaristic practices, the roles of instructors and committees in investigating cases, and the sanctions for confirmed offenses, which range from failing grades to expulsion (*UCSD Policy on Integrity*, n.d.). Codifying community standards in this way creates a common vocabulary and shared stake in upholding academic integrity.

In sum, preventing plagiarism requires a holistic approach from academic institutions. By investing in detection tools, educational initiatives, and robust policies, schools can create environments where the temptation to cut corners is minimized and intellectual honesty is the default. It's not a foolproof system, but one that significantly tips the odds in integrity's favor.

5. Methods to Avoid Plagiarism

5.1 Proper Citation Practices: APA, MLA, Chicago Styles

With the serious consequences of plagiarism in view, it behooves students and scholars to proactively reduce their risk of committing it through a few key practices: scrupulous citation, judicious paraphrasing, and up-front communication in collaborations.

Proper citation is the bedrock of avoiding plagiarism. Generally, any words, ideas, or data incorporated from sources should be accompanied by a citation specifying author, publication date, and locating information like page numbers. Different style guides like **APA**, **MLA**, and **Chicago** have slightly different formats, but all share the aim of making sources readily recoverable by readers. Researchers should choose one style, learn its ins and outs, and apply it consistently.

Citation management tools like **Zotero**, **Mendeley**, and **EndNote** can streamline the process of documenting and formatting references. They allow users to quickly save source metadata, generate in-text citations and bibliographies, and toggle between styles. Taking the time to learn a reference manager can pay dividends in the proper attribution of sources.

5.2 Paraphrasing and Summarizing Techniques: How to Write in Your Own Words

When quoting sources directly, authors should use quotation marks scrupulously to differentiate others' words from their own. Quotes should be reproduced exactly, with any omissions or modifications clearly indicated by ellipses or square brackets. However, over-quotation can produce a choppy, derivative text. Authors should quote only when the original phrasing is especially pithy or vivid, using their own words the rest of the time.

Paraphrasing, or restating a source's ideas in one's own words, is thus an essential skill. But it's one that many writers struggle with, often producing patchwriting that too closely mirrors the source. The key is to capture the core idea of a passage without getting caught up in its exact phrasing. One technique is to read the passage, look away and describe its gist based on

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memory, then refine that initial paraphrase to clarify the meaning and match the surrounding text (Tancer, 2015). It can help to imagine explaining the concept to a layperson using everyday vocabulary and analogies.

5.3 Collaborative Work: Proper Attribution of Co-authors

Avoiding plagiarism also means proactively communicating expectations around collaboration. On co-authored works, all contributors should agree up front on their respective roles and how credit will be allocated, including the order of authorship. It may be wise to memorialize these agreements in writing to forestall later misunderstandings. Students collaborating on group projects should likewise delineate who will be responsible for which sections of the final product and agree to write and revise their own parts.

In the end, avoiding plagiarism boils down to good scholarly hygiene: careful citation, attentive paraphrasing, and clear communication. Making these techniques habitual considerably reduces the risk of inadvertent misconduct. But it's equally important that they flow from an internalized ethic of integrity, a commitment to truthfulness and accurate representation that transcends the fear of getting caught. True scholars adopt these practices not because they have to, but because they recognize how essential they are to the shared enterprise of knowledge creation.

6. The Future of Plagiarism Detection and Research Integrity

6.1 Technological Advancements: AI-Driven Plagiarism Detectors, Data Mining

As we look toward the future, the landscape of plagiarism prevention is rapidly evolving in response to technological and cultural shifts. In the realm of detection, artificial intelligence tools are growing ever more sophisticated. Researchers are training machine learning models on stylistic patterns unique to individual authors, improving their ability to catch patchwriting and spot anomalies (Altheneyan & Menai, 2020). Some envision a future in which every manuscript is automatically screened for potential plagiarism as part of the publication pipeline, drastically reducing the burden on editors and reviewers.

Yet even as detection technology races forward, so too do tools for evading it. Students are increasingly turning to paraphrasing programs and contract cheating services to outsource their work (Lancaster & Clarke, 2016). As these practices spread, educators may have to get more creative in their assessments, relying less on standard essays and more on in-class writing, annotated bibliographies, and process-oriented assignments that build in checkpoints and reflections throughout the research process. The fight against plagiarism will be an arms race between concealment and detection for the foreseeable future.

6.2 Cultural Shifts: Fostering an Environment of Honesty in Academia

At the same time, there are calls to re-examine academic reward structures that may unintentionally incentivize corner-cutting. The “publish or perish” ethos, some critics argue, puts immense pressure on scholars to churn out new findings at a breakneck pace, tempting them to recycle old work or claim undue credit for collaborative projects (Grimes et al., 2018). Reforming tenure and promotion criteria to prize quality over raw quantity may reduce the temptation of plagiarism at its source.

6.3 Open Access and Collaboration: Challenges and Benefits

There are also moves toward open access and a more communal model of knowledge production. This perspective views academic insights as a public good that should circulate as widely as possible, not be hoarded behind paywalls and gated by restrictive copyright. The rise of open access journals, preprint servers, and institutional repositories makes scholarship more discoverable and reusable than ever before. Some have even proposed an academic “creative commons” where authors agree up front to let others borrow and remix their work with attribution (Suber, 2012). In this paradigm, plagiarism may come to be seen less as a crime against individual authors and more as a violation of the norms of an intellectual community.

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Of course, open access brings its own challenges. More access to others' work may tempt some to plagiarize, necessitating even greater vigilance. The traditional model of peer review will come under strain as the volume of submissions balloons; already, there are horrifying tales of plagiarized, fabricated, and nonsensical manuscripts making it into open-access publications as periodic hoaxes (Bohannon, 2013). If academic publishing is to diversify, it is crucial the standards of screening and research integrity remain robust across all venues.

7. Conclusion

7.1 Recap of Key Points

In summary, this paper has surveyed the landscape of plagiarism in academic contexts, tracing its causes and consequences, prevention strategies, and future outlook. Plagiarism takes many forms, from verbatim copying to patchwriting to outright contract cheating. But whatever the type, the core violation is claiming others' intellectual contributions as one's own, eroding the currency of originality so vital to scholarly progress.

The consequences of this erosion are stark: the breakdown of trust, the thwarting of scientific self-correction, legal jeopardy, and professional and personal disgrace for offenders. As such, it is incumbent on academic institutions to prevent plagiarism through robust educational initiatives, detection technology, and clear and consistently enforced policies. But individual authors also have a crucial role to play through scrupulous citation and record-keeping, careful paraphrasing, and proactive communication around collaboration.

7.2 Final Thoughts on Maintaining Research Integrity and Preventing Plagiarism

Looking ahead, the fight for academic integrity is sure to evolve alongside technology. New detection algorithms promise to catch ever-subtler forms of plagiarism, while new evasion tools aim to help students outsource their work. Open-access publishing may reshape traditional notions of individual authorship and originality.

Ultimately, no single tool, policy, or publishing model will eradicate plagiarism. The roots of academic dishonesty are complex and deep-seated, ranging from performance pressure to ignorance to a misplaced sense of cleverness. But by critically examining these causes and chipping away at them from multiple angles, it is possible to foster cultures of integrity and ensure more scholarship meets a genuine standard of originality. It is painstaking work that requires buy-in from researchers, teachers, and institutions. But the credibility of the academic enterprise may well depend on it.

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Hypothesis

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Abstract
A hypothesis is a crucial element in the research process, serving as a predictive statement about the relationship between independent and dependent variables. It provides direction, clarity, and purpose to an investigation, bridging the gap between theory and observation. A well-framed hypothesis must be specific, testable, precise, and free from moral judgments, ensuring focused inquiry and efficient use of resources. Hypotheses can be derived from various sources such as prior knowledge, literature, observations, and expert discussions. Different types of hypotheses—including working, descriptive, relational, null, alternative, statistical, practical, directional, and causal—highlight the diverse ways variables can be studied. By offering a structured path for data collection and analysis, hypotheses prevent research from becoming aimless and enable systematic exploration of problems. Ultimately, hypotheses empower researchers to generate meaningful knowledge, refine theories, and contribute to academic and social progress.

Keywords: *Hypothesis, Independent Variable, Dependent Variable, Research Process, Testable Statement, Null Hypothesis, Alternative Hypothesis, Causal Relationship,*

A hypothesis is the researcher's expectation, assumption, or prediction regarding the relationship between an independent variable and a dependent variable. It is essentially a statement that expresses what one anticipates discovering as a result of research. A hypothesis must be formulated before data collection, as it guides the direction of inquiry and determines the methods and tools to be used. Importantly, a hypothesis is not something that can be conclusively "proved," but it can be supported or rejected based on systematic investigation.
For example, the assumption *"Prolonged usage of mobile phones leads to distraction in studies"* may serve as a hypothesis. Only through proper research can it be confirmed whether mobile phone usage is indeed the primary cause of distraction, or whether other factors are involved. Thus, hypotheses are testable assumptions that can be verified using data, experiments, and analysis.
A well-framed hypothesis provides a clear path for investigation and aids in decision-making. It connects theory with observation, enabling the researcher to build logical explanations and arrive at valid conclusions. For this reason, hypotheses are regarded as powerful tools in the research process. A good hypothesis should be:

- **Clear and precise**, so that it avoids confusion.
- **Specific, not general**, as vague statements weaken research focus.
- **Testable**, meaning that data can be collected and analyzed to verify it.
- **Based on facts or prior knowledge**, not moral judgments or assumptions.

For instance, the statement *"Girls are more in number in education"* is too general and context-dependent, whereas a hypothesis like *"In rural regions, female enrollment in higher education has increased significantly over the last decade"* is more precise and researchable.
A strong hypothesis also helps determine appropriate research methods and tools. It saves time and resources by preventing blind exploration, while ensuring that the investigation remains

focused on the research objectives. A purposeful hypothesis can only be framed if the researcher has sufficient knowledge of the problem and a clear sense of objectivity. Ideally, it should also have long-term relevance, so that its findings may serve as a reference for future research or social welfare.

Hypotheses also encourage researchers to explore new areas of knowledge, enhance skills, and connect theories with real-life contexts. They provide a systematic path for data collection, analysis, and interpretation. Without a hypothesis, research often becomes directionless and unfocused.

Sources of Hypotheses

Hypotheses may arise from different sources, including:

- Intuition or prior knowledge.
- Real-life experiences and observations.
- Continuity of existing research work.
- Academic literature such as books, articles, and prior studies.
- Discussions with experts or mentors.
- Cultural and social contexts.

These sources ensure that hypotheses are grounded in reality and not merely speculative.

Types of Hypotheses

There are several types of hypotheses, each reflecting the nature, direction, and complexity of the relationship between variables:

1. **Working Hypothesis** – An initial assumption used as a starting point for investigation.
   Example: "Seafood causes allergies" (may later be refined with data).
2. **Descriptive Hypothesis** – Describes characteristics of a group or phenomenon.
   Example: "Girls are more organized in academics than boys."
3. **Relational Hypothesis** – Indicates a relationship between two variables.
   Example: Income levels affect nutritional quality of children's diets.
4. **Formalized Hypothesis** – Expresses cause-and-effect between variables.
   Example: Rate of diffusion depends on molecular size.
5. **Null Hypothesis (H_0)** – Predicts no relationship between variables.
   Example: Age has no effect on mobile phone usage.
6. **Alternative/Research Hypothesis (H_1)** – Accepted when the null is rejected.
   Example: Age influences the extent of mobile phone usage.
7. **Substantive Hypothesis** – States relationships that cannot be easily operationalized.
   Example: The environment nurtures child growth.
8. **Statistical Hypothesis** – States relationships tested with statistical tools.
   Example: Eating ice cream significantly increases the risk of fever (tested using T-test or Chi-square).
9. **Practical Hypothesis** – Derived from real-life practical outcomes.
   Example: Eating ice cream leads to fever and school absenteeism.
10. **Universal Hypothesis** – True for all times and places.
    Example: Motivation enhances academic performance.
11. **Existential Hypothesis** – True in at least one particular case.
    Example: Some students do not improve academically despite motivation.
12. **Directional Hypothesis** – Predicts the direction of the relationship.
    Example: Girls perform better than boys in academics.
13. **Non-Directional Hypothesis** – States a relationship without predicting direction.
    Example: There is a difference in academic performance between boys and girls.
14. **Simple Hypothesis** – Relates two variables only.

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Example: Lack of nutrients causes deficiency diseases.

15. **Complex Hypothesis** – Involves more than two variables.
    Example: Fast-food consumption is linked to obesity, cholesterol, and heart disease.
16. **Associative Hypothesis** – States that changes in one variable are associated with changes in another.
    Example: Physical activity improves overall health.
17. **Causal Hypothesis** – Suggests that one variable directly influences another.
    Example: Prolonged use of antibiotics damages internal organs.

Formulating a Hypothesis

The steps in developing a good hypothesis include:

- Careful observation and identification of the problem.
- Reviewing existing knowledge and literature.
- Predicting possible outcomes.
- Identifying and defining independent and dependent variables.
- Stating the hypothesis in clear, concise, and testable terms.

In conclusion, a hypothesis is not merely a prediction but a guiding framework for research. It makes objectives clearer, provides direction, prevents unnecessary exploration, and ensures that research is focused, testable, and meaningful. Without a hypothesis, research risks becoming aimless and inefficient. With it, however, researchers can confidently move forward, connecting theory with evidence and contributing valuable knowledge to society.

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Understanding The Different Methods of Research

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Abstract
Research is a systematic and in-depth process of inquiry aimed at discovering new knowledge, modifying existing concepts, or providing solutions to problems. This paper explores the different methods of research including historical, descriptive, developmental, experimental, action, ethnographic, and documentary analysis approaches. Each method follows specific steps, techniques, and tools for data collection, analysis, and interpretation. Quantitative research focuses on numerical data, statistics, and hypothesis testing, while qualitative research emphasizes meanings, experiences, and cultural contexts. Both approaches are essential in understanding human behaviour, social processes, and natural phenomena. By comparing and classifying various methods, this study highlights their distinct purposes, strengths, and limitations, thereby providing researchers with a comprehensive framework to choose appropriate methodologies for their investigations.

Keywords: *Research methods, Experimental research, Action research, Ethnographic research, Documentary analysis, Quantitative research, Qualitative research.*

Introduction

Discovery and research are two potent weapons in the hands of human beings for knowing the secret of nature and getting properly adjusted to the physical and social environment. The word *research* means searching again or to search for something new or to modify the existing one. The word research signifies knowing something new or getting more knowledge about it. It is a process of systematic and in-depth study of any particular topic, subject, investigation backed by collection, computation, presentation, and interpretation of relevant data.

Research methods are strategic processes utilized in the collection of data to analyze in order to uncover new information to better understand a topic and analyze data. There are different types of research methods, which use different tools for data collection.

Historical Research

History presents a truthful and integrated account of the past events. The main purpose of its study is to know about the past and learn useful lessons, actions, and events of the past, present, and showing the directions for the future.

Historical research is any field enquiry—historical aspects of things, ideas, events or the development aspects of an institution, life and achievement of a person, society, or group of people and looking into their past, present, and planning for the future. Historical research is concerned with the study of things and events concerning the past. It helps us to know and understand a thing by looking into its original development.

The events that took place in the past cannot be repeated and that is why the researcher is dependent on the availability of evidence, sources, and documentaries which are connected directly or indirectly as the witnesses of the things that happened in the past. It makes a critical analysis and intelligent, unbiased interpretation on the basis of their available evidences, documentaries and sources for the faithful representation of the past.

Historical research, like other types of research, involves some specific steps for its execution on the part of its researcher. It is following five steps:

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1. **Identification and Specification of Research Problem**
   The first step in historical research is the choice and identification of a research problem. Choice of an area and topic for the researcher is not an easy task. Its suitability and appropriateness for conducting historical type of research is based on willingness, interest, and capability of the researcher.
2. **Formulation of Research Hypothesis**
   After a clear specification of the problem arises the need for the formulation of specific and testable hypothesis. When hypotheses are stated, usually they are not in a statistical sense, although statistical information from the past could be used to support hypothesis. Historical research hypotheses are conjectures about the characteristics, causes, or effects of the situation. Researchers should try to formulate specific and testable hypotheses for tentatively explaining relationships between historical factors, yet they should not unnecessarily struggle for formulating specific hypotheses.
3. **Literature Review**
   The literature review in research is generally utilized for the beginning stage of data collection as well as acquainting the researcher with previous research on the topic under study.
4. **Data Collection**
   History is not a science of direct observation like chemistry and physics, but the historians are not less than a scientist. They must utilize evidence resting on reliable observation. Data collection tasks in historical research differ much compared to other types of research. A researcher cannot go to the past to witness the information belonging to the past.
   - **Primary sources** are firsthand accounts of the things belonging to the past. They provide a solid base for collecting relevant data about the research problem. They include sources which have direct physical relationship with the event of past and provide the firsthand account of those events. Examples: written and oral testimony, autobiography, letters, personal diary, manuscripts, etc.
   - **Secondary sources** include quoted materials, textbooks, encyclopedia, newspapers, journals, reviews of research, etc.
5. **Evaluation of Data Collection**
   It depends on the available data, reliable and valid sources, and genuine documents. It must be free from forgeries, frauds, etc.

Descriptive Research

The descriptive research method describes the state of affairs to accurately and systematically present a phenomenon. It focuses mainly on studying and describing what happened in the past. It often uses the survey method for knowing and describing what exists at a particular time and situation, or particular characteristics of a given population.

Descriptive research collects data from factual, accurate, and systematic methods. It cannot be used to create causal relationships where one variable affects another. As a result, it is always categorized as a non-experimental research.

Descriptive or normative survey research may be used for frequency, averages, and other statistical calculations for justifying the normative research as statistical research. Descriptive or normative survey research is quite comprehensive, both in scope and complexity. It may be qualitative as well as quantitative.

Descriptive research is especially useful for knowing and analyzing characteristics. It is also helpful in bringing out large amounts of statistical information quickly. The researchers are able to generate a number of valuable instruments, tools, and techniques for correlation studies.

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It is beneficial in exploring and establishing associations and relationships between the variables.

Classifications of Descriptive Research

1. **Based on Field of Study**
   Community survey, social survey, marketing survey, educational survey, geographical, political, and commercial survey, etc.
2. **Based on Purpose Served**
   Correlation research, causal comparative research, trend analysis research, status exploring research, etc.
3. **Based on Survey Design**
   Cross-sectional research, panel research, longitudinal research, etc.
4. **Based on Techniques or Tools**
   Descriptive research can also be classified according to the tools and techniques employed for data collection.

Types of Descriptive Research

- **Correlation Research**: Undertaken for knowing about the existence and nature of association or relationship between two variables or two sets of data in a particular study.
- **Causal Comparative Research**: Here the researcher tries to compare the similarities and differences among phenomena to discover what factors or circumstances seem to accompany them. Researchers are unable to manipulate the independent variable and establish the required controls.
- **Developmental Research**: Researchers undertake either cross-sectional surveys or longitudinal studies of required populations across different age spans or life periods.
- **Survey Research Method**: A non-experimental research that does not involve direct observation. It uses quantitative methods for studying a large sample and collecting data with the help of standardized questionnaires or interviews from the respondent population.

Survey research requires the selection of a representative sample, use of survey tools, and careful data analysis. Tools may include questionnaires, interviews (mail, telephonic, face-to-face, or internet-based).

Development Research

Development Research is a type of research concerned with the growth and development of individuals, functions of time and age, etc. It is a non-experimental research method used to study changes in behavior, changes over time, etc.

- **Growth Studies**: The aim of growth studies is to study the changes in behavior and personality of children in growing age. Two basic designs are used to carry out growth studies: cross-sectional design and longitudinal design.
  - **Cross-Sectional Design**: Examines the relationship between memory and aging. Cross-sectional studies can be more economical and time-saving for collecting data and following up on the establishment of reliability and validity.
  - **Longitudinal Research Design**: Examines the growth and development of behavioral changes occurring in one aspect of personality of an individual or group of individuals. It is time-consuming, lengthy, and costly.
- **Significance**: Development Research reflecting future trends is very useful and significant in areas such as birth rate, death rate, sex ratio, particular religion, rise and fall of prices, political or social stability, declining crime rates, suicidal attempts, etc.

Experimental Research

Experimental Research is a type of research aimed at establishing a cause-and-effect

relationship between variables under systematic and well-planned observations. The variables upon which the effect of changes is observed are called dependent variables, which depend on the value of independent variables. Experimental research is a method of scientific observation carried out in well-controlled laboratory-like conditions, following well-defined steps and stages.

- **Steps in Experimental Research**:
  - **Selecting and Identifying the Research Problem**:
    - Selecting the topic or problem.
    - Stating the problem or research question.
    - Formulating research hypotheses.
  - **Reviewing the Relevant Literature**.
  - **Planning and Designing of Experimental Research**:
    - Formulating the relevant experimental design.
    - Selecting and assigning participants to groups.
    - Selecting measuring instruments.
    - Defining the experimental treatment.
  - **Carrying Out the Experimental Research Study**:
    - Administering experimental treatments.
    - Taking measurements of variables.
    - Recording the collected data.
  - **Analyzing the Collected Data**:
    - Organizing collected data.
    - Deciding upon appropriate methods of analysis.
    - Carrying out the analysis of organized data.
  - **Deriving Conclusions**:
    - Formulating the conclusion of the study.
  - **Writing Research Report**.
- **Types of Experimental Research Designs**:
  - **Pre-Experimental Research Design**: Used for comparison purposes. It is not a typical experimental design; it uses exploratory tools and comparisons with other experimental designs.
    - **One-Shot Case Study Research Design**: Considers one dependent variable. It is a post-test study carried out after treating what presumably caused the change. It is difficult to draw conclusions or establish a typical cause-and-effect relationship between intervention and outcome. For example, educational institutions design exams and evaluate students at the end of the semester, where students are dependent variables and lectures are independent variables.
    - **One-Group Pretest-Posttest Design**: More structured, combines both pre- and post-tests by testing a single group before and after the treatment.
    - **Static Group Comparison**: Involves studying two groups, subjecting one to treatment while the other remains static. After the post-test, differences are observed.
  - **True Experiment**: A "gold standard" for evaluating other experimental designs. It aims to depict cause-and-effect relationships among variables through manipulation, control, and random assignment to groups.
    - **Pretest and Posttest**: Results depend on statistical analysis to approve a hypothesis. It can be conducted with or without a pretest on a

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minimum of two dependent variables randomly.
        - **Posttest-Only Control Group**: Involves selecting and assigning subjects into two groups (experimental and control). Only the experimental group is treated, while both groups are observed, and conclusions are drawn from the differences between them.
        - **Pretest-Posttest Control Group Design**: Two groups are randomly assigned subjects. Both are pretested and posttested to measure how much change occurred in each group.
    - **Quasi-Experiment**: Resembles experimental design but has limited scope for manipulating independent variables before dependent variables. The sample size is small, making randomization difficult. They are more stable for real-world settings and easier to design than true experimental designs.
        - **Time Series Design**: The dependent variable is measured at many different points in time. One group is tested before and after treatment is administered. Researchers can manipulate it.
        - **Multiple Time Series**: Adds a control group for comparison purposes.
    - **Statistical Group Design**: Deals with random aspects, provides flexibility, and depends on numerous variables in the field setting, with random assignments of participants to treatments based on randomization.
        - **Randomization Block Design**: An experimental design where groups are called blocks, and treatments are allocated within each block.
        - **Latin Square Design**: An arrangement of *t* treatments, each repeated *t* times, such that each treatment appears exactly once in each row and each column in the design.

Action Research

Action Research refers to a wide variety of evaluative, investigative, and analytical research methods designed to diagnose problems with the objective of helping researchers find practical solutions to address them quickly and efficiently. It is essentially learning by doing. The action research process involves simultaneous development and research, with action and critical reflection occurring alongside reviewing previous action plans and planning the next ones. Researchers try to find instant solutions based on previous experiences, but solutions may be partial or temporary, requiring further research-based solutions.

- **Stages of Action Research**:
    - **Planning**: The first step is analyzing the problem scientifically in the specific context in which it emerged. Identify the problem and plan to overcome it.
    - **Action**: After planning, the researcher determines procedures for investigation, administers tools to collect data and information, conducts systematic analysis, and records results. This stage is time-bound.
    - **Observation**: Tools must be observed cautiously. Detailed observation, monitoring, and recording are needed for findings.
    - **Reflection**: Results are obtained, and conclusions are drawn. Changes or modifications in teaching methods are the result of action research aimed at improving the teaching-learning process, reflecting the efficiency of changes brought by the researcher.

Ethnographic Research

Ethnographic Research focuses on studying the cultural characteristics of primitive people or tribes, their behavior, and the lifestyles of people belonging to different groups, organizations, and communities. It emphasizes inquiry or discovery based on the study of social phenomena. Ethnographic research uses both quantitative and qualitative methods for collecting and

analyzing data, depending on the situation and type of data collected.

- **Stages of Ethnographic Research**:
  - **Identification of Topic**: Researchers may enter a group or tribe without preconceived assumptions or research questions. Topics are investigated in a naturalistic context, with flexibility to modify the research question based on situational demands.
  - **Review of Literature**: Guides the researcher in planning, designing, conducting, and deriving conclusions from the study.
  - **Sampling**: Requires subjects to provide necessary information and data. Statistical sampling techniques like randomization are not suitable for ethnographic studies.
  - **Data Collection**: No restrictions on using quantitative methods for data collection. For qualitative research, main instruments and methods include interviews, documentaries, observation, and analysis.
  - **Observation**: Researchers should be open-minded and receptive, keeping in mind that their sole purpose is to realize the research objective.
  - **Interview**: Should be open-minded and casual, providing respondents with time and freedom to furnish information naturally.
  - **Data Analysis**: Collected data is sorted, classified, and coded into specific categories to derive conclusions.
  - **Research Report**: The final stage involves reporting findings, including a detailed description of phenomena witnessed and evaluated.

Documentary Analysis Research

Documentary Analysis Research involves analyzing available documents to provide information and evidence related to the research study. It relies on the careful and appropriate analysis of documentary material and the researcher's wise interpretation, which determines the success or failure of the study. Documents include written papers used in daily life, such as those for property transactions, banking loans, utility connections, insurance, wills, agreements, etc. In this context, "documents" refer to readable materials related to aspects of the social world, providing useful information about human behavior, social conditions, and social processes.

- **Types of Documentary Analysis Research**: Field notes, diaries and journals, records, biographies and autobiographies, formal records, timetables, technical documents, minutes of meetings, memos and emails, plans, pamphlets and advertisements, prospectuses and directories, policy documents, conversations and speeches, books and articles, public records, etc.

Quantitative and Qualitative Research

Quantitative and Qualitative Research are categorized based on their approaches. Quantitative research provides a quantitative description of behavior observed and recorded by collecting data in the form of numbers, while qualitative research provides a qualitative description of observed behaviors and events.

- **Quantitative Research**: Helps in a deductive approach, dealing with numbers and statistics. It systematically measures variables and tests hypotheses.
- **Qualitative Research**: Deals with words and meanings, exploring concepts and experiences in detail. It provides qualitative aspects of things, persons, groups, institutions, cultures, communities, situations, socioeconomic status, gender roles, religions, etc. It uses open-ended questions to allow respondents to answer in their own words, requiring researchers to be flexible and good listeners while retaining the individual personalities of interviewees.

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- **Types of Qualitative Research**: Ethnographic research, case study research, phenomenological research, historical research, philosophical research, documentary research, etc.
- **Stages of Quantitative and Qualitative Research**:
    - **Identify the Research Problem**: Begins with identifying the research area, theme, or topic based on the researcher's experiences or observations.
    - **Review of Literature**: Researchers review and identify important information related to the study and formulate research questions. They lay down tentative purposes for research questions and answers by selecting participants and collecting data.
    - **Sampling**: Focuses on in-depth study of particular groups, individuals, communities, or cultural setups. Requires smaller but focused samples comprising participants who can provide needed data.
    - **Data Collection**: In qualitative research, includes observation, interviews, journal notes, newspapers, diaries, video recordings, audio recordings, artifacts, etc. Methods are generally qualitative.
    - **Data Analysis and Interpretation**: In qualitative research, data is analyzed through reading and reviewing observation notes, interview transcripts, and documents.
    - **Writing the Report**: In qualitative studies, researchers present findings in a descriptive, narrative, and non-statistical form.

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Plagiarism and Ethics: An Overview in Social Science Research Perspective

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Abstract
In the educational sector, and particularly in research, the rapid development of ICT, software, text editors, and online resources has increased the prevalence of plagiarism in academic work. Unethical practices and violations of publication ethics significantly impact the integrity of research. In the present era, teachers, students, and researchers often fail to uphold fundamental research ethical principles, including those outlined in the UGC Regulation 2018. As a result, publication misconduct and unethical practices are frequently observed across research publications. This paper provides an overview of plagiarism and highlights the various ethical codes of conduct that researchers should follow while conducting their work to ensure honesty, credibility, and academic integrity.

Keywords: *Plagiarism, Research, Ethics, Plagiarism Detection, Duplicity*

Introduction

'Research Plagiarism' and 'Research Ethics' are interrelated, especially in social science research. Rapid technological advancements have made these topics highly sensitive. The word 'plagiarism' originates from the Latin *plagiarius*, meaning kidnapper. In the context of research, it refers to academic dishonesty where a researcher copies data or ideas from another source without proper citation, thus violating academic and research ethics. Such misconduct hampers creativity and is considered an academic offense.

Research ethics, on the other hand, is defined by philosophers and practitioners as 'good' or 'right' conduct and is crucial in maintaining the integrity of research. Both plagiarism awareness and ethical conduct are integral to scholarly work.

Objectives of the Study

- To explore students' understanding of plagiarism and its impact on their ability to write research papers.
- To raise awareness of academic misconduct rules and regulations among researchers.

Methodology

This study adopts an analytical and descriptive approach, relying on secondary data from journals, online resources, and other literature. A document-based historical method followed by a qualitative approach has been applied.

Discussion

Scientific Misconduct:

The United States Department of Health and Human Services defines scientific misconduct as fabrication, falsification, plagiarism, or other practices that seriously deviate from commonly accepted research practices (42 CFR §50102, 1999). The National Science Foundation (NSF) defines misconduct similarly and includes retaliation against those reporting suspected misconduct (45 CFR §689, 1998).

Research Misconduct:

According to the US Office of Science and Technology Policy, research misconduct includes fabrication, falsification, or plagiarism in proposing, performing, reviewing, or reporting

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research (Federal Research Misconduct Policy, 2000).

Key Terms:

1. **Fabrication:** Making up data or results and reporting them.
2. **Falsification:** Manipulating materials, equipment, processes, or omitting data so that the research is inaccurately represented.
3. **Plagiarism:** Using another person's ideas, processes, results, or words without giving proper credit (ORI, 2020a).

Plagiarism undermines academic integrity and is considered an offense. The UGC Regulation 2018 allows up to 14 consecutive words as common knowledge or coincidental similarity without being considered plagiarism.

Types of Plagiarism

1. Direct Plagiarism – Copying text from another author without appropriate permission, attribution, or acknowledgement.
2. Intentional Plagiarism – Copying someone else's research ideas deliberately.
3. Unintentional Plagiarism – Redoing other people's research and representing it as one's own without referring to the original work.
4. Self-Plagiarism – When one copies his or her own published writings without referring to them.
5. Mosaic Plagiarism – Plagiarism done carefully to avoid detection or allegations.
6. Accidental Plagiarism – When one's writing coincidentally shows similarity with another work.
7. Internet Plagiarism – Using data or writings from the internet without proper citation.
8. Minimal Plagiarism – A certain percentage of similarity is allowed as per standard norms.
9. Substantial Plagiarism – Inserting verbatim sentences or longer passages from a source, combining sentences to create paragraphs, or repeatedly engaging in minimal plagiarism without attribution.
10. Self-Plagiarism – Using one's previously prepared work without the instructor's consent.

Levels of Plagiarism

Level	Description
Level-0	Up to 10% similarity, no penalty
Level-1	10–40% similarity
Level-2	40–60% similarity
Level-3	Above 60% similarity

Research Ethics

Publication ethics guide writing and publishing to prevent misconduct. Principles include:

- Honestly- Scientist should communicate honestly with each other research sponsors and institutions, govt. agencies and the public.
- Due Care- Scientists should avoid careless errors and strive to reduce or control biases in research.
- Openness- Researcher should share data results methods and tools.
- Fair credit- Researcher should allocate credit fairly.
- Respect for peers and students- Scientists should treat their students and colleagues with respect.

- Respect for property- Scientists should respect physical and intellectual property.
- Respect for research subject- Researcher should show appropriate respect toward human and animal research subject.
- Respect for the law- Researcher should obey institutional policies and legal rules that apply to their work and promote compliance with policies and rules.
- Non discrimination-Researcher should not unfairly discriminate against peers or students.
- Freedom- Researcher should respect the right to freedom of inquiry and debate.

Conclusion

In research work of research done by students, researchers, faculty etc should have to present their work in creative and innovative manner, copying it or paraphrasing is not correct manner without giving proper citation. So due to various types of plagiarisms every person must respect the thoughts and ideas others and should not present them as their own ideas. So in research area to avoid the duplicity or plagiarisms work even for the students as well as the researchers must present their work with authenticity and must follow the norms and ethics.

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21
Introduction to Research Methodology

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Abstract
Research is the systematic collection of data and its analysis for the advancement of knowledge on any subject. Research is also about trying to find answers to intellectual and practical questions through the application of methods. It is a methodical journey of discovery and discovery. People are just looking forward to the search. People are interested in knowing unknown things. That inquiry leads him to the path of truth and to the desired goal. The researcher wants to be satisfied by gaining a full and complete understanding of the unknown subject. Research is the mother of all knowledge and the method used by man to gain knowledge of anything unknown can be called research. The purpose of research is to discover answers to questions through the application of the scientific method. The main aim of research is to find out the truth which is hidden and which is not yet discovered. Types of research can be classified in various ways. Some of the main ways to classify research include 1) descriptive vs. analytical research, 2) applied vs. basic research, 3) qualitative vs. quantitative research, and 4) conceptual vs. empirical research. As a researcher we often identify a problem. This is the first step of a research. But, to identify a problem, it simply means that the researcher has to define certain boundaries within which he has to study the problem with a predetermined objective in mind. The researcher must then restate the problem into a workable proposition. Reframing the problem means putting the problem into specific terms that can help develop possible and actionable hypotheses. Once the researcher systematically goes through the above steps, it is easy to restate the problem in analytical and operational terms. As a result, the researcher can reach a conclusion. This is how research progresses towards perfection. This article will describe the path to truth discovery through each step of the research.

Keywords*: Research, Knowledge, Method, Descriptive, Applied, Qualititive, Quantirative, Hypothesis*

Introduction

Research method is a structured and scientific method used to collect, analyze and interpret quantitative or qualitative data to answer research questions or hypotheses. A research method is like a plan for conducting research and helps keep the researcher on track by limiting the scope of the research. Several aspects must be considered before selecting an appropriate research method, such as research limitations and ethical concerns that may affect your research.

The research approaches section of a methodical paper describes various organizational choices, such as data collection and study methods, and why these choices were selected. Reasons should clarify why the methods selected are best suitable to answer the research question. A good research methodology helps safeguard the dependability and rationality of research findings. There are three types of research methods – quantitative, qualitative and mixed-methods, which can be chosen based on the research objectives.

What is Research Methodology?

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A research method describes the procedures and systems used to identify and evaluate data related to a specific research theme. It is the procedure by which researchers strategy their studies so that they can achieve their purposes using the chosen research tools. It covers all significant characteristics of research, including research design, data collection methods, data analysis methods and the overall framework within which the research is piloted. While these topics can help you recognize what research methods are, you also need to know why selecting the correct method is essential. A moral research methodology has the following benefits:

1. Helps other researchers who want to replicate your research; Explanation will be beneficial for them.
2. One can easily answer any questions about his research if they come up at a later stage.
3. A research methodology provides a framework and procedures for researchers to clearly define research questions, hypotheses and objectives.
4. It helps researchers identify the most appropriate research design, sampling strategy, and data collection and analysis methods.
5. A sound research methodology helps researchers ensure that their findings are valid and reliable and free from bias and error.
6. It helps to ensure that ethical guidelines are followed while conducting research.
7. A good research methodology helps researchers to plan their research efficiently ensuring optimal use of their time and resources.

Types of Research Methods

There are three types of research methods based on the type of research and data required:

1. **Quantitative Research Methods**: Focus on measuring and examining numerical data. This method is good for reaching a large number of people in a short period of time. Such research helps test causal relationships between variables, make predictions, and generalize findings to larger populations.
2. **Qualitative Research Methods**: Examine people's opinions, behaviors and experiences. It collects and analyzes sound and text data. This research method requires fewer participants but is still more time-consuming because the time spent per participant is quite large. This method is used in exploratory research where the problem of investigation is not clearly defined.
3. **Mixed-Methods Research Methodology**: Uses features of both quantitative and qualitative research methods in the same study. This method allows researchers to verify their results, to verify that the results observed using both methods are complementary, and to explain any unexpected results obtained from one method using the other method.

What Are the Types of Sampling Designs in Research Methods?

Sampling is an important part of a research method and involves selecting a representative sample of the population to conduct the study, making statistical inferences about them and estimating the characteristics of the entire population based on these inferences. There are two types of sampling designs in research methodology – probability and non-probability.

1. **Probability Sampling**: In this type of sampling design, a sample is selected from the larger population using some random selection, that is, each member of the population has an equal chance of being selected. Examples of different types of probabilities are:
    1. **Simple Random**: Each single member is selected at random.
    2. **Systematic**: Sample members are selected at regular intervals. This requires selecting a starting point for determining the sample and sample size that can be repeated at regular intervals. Such sampling methods have a predefined range; Hence, it is least time consuming.
    3. **Stratified**: Researchers divide the population into smaller groups that do not

overlap but represent the entire population. When sampling, these groups can be organized and then a sample taken from each group separately.

4. **Cluster**: The population is divided into clusters based on demographic parameters such as age, gender, location, etc.

2. **Non-Probability Sampling**: Probability sampling involves feedback based on a researcher's sample selection ability, not on a specific selection process. Different types of probability sampling methods are:
    1. **Convenience**: Selects the participants most easily accessible to the researcher due to geographical proximity, availability at a particular time etc.
    2. **Purposive**: Participants are selected at the discretion of the researcher. Researchers consider the purpose of the study and the understanding of the target audience.
    3. **Snowball**: Already selected participants refer the researcher to other potential participants using their social networks.
    4. **Quota**: When designing a study, researchers decide how many people to include as participants. Features help select individuals who are most likely to provide insight into the topic.

What Is the Data Collection Method?

During research, data is collected using different methods depending on the research method and research method followed. Both qualitative and quantitative research has different data collection methods, which are listed below.

Qualitative Research

1. **One-on-One Interview**: Helps interviewers understand a respondent's subjective views and experiences regarding a particular topic or event.
2. **Document Study/Literature Review/Record Keeping**: Review by researchers of already existing written materials such as archives, annual reports, research articles, guidelines, policy documents etc.
3. **Focus Group**: Constructive discussion to understand the views of participants on a given topic that usually includes a small sample of about 6-10 people and a moderator.
4. **Qualitative Observation**: Researchers collect data using their five senses (sight, smell, touch, taste and hearing).

Quantitative Research

1. **Sampling**: The most common type is probability sampling.
2. **Interview**: Usually conducted telephonically or in person.
3. **Observation**: Structured observations are commonly used in quantitative research. In this approach, researchers make observations about specific behaviors of individuals in a structured setting.
4. **Document Review**: Reviewing existing research or documents to gather evidence to support the research.
5. **Surveys and Questionnaires**: Surveys can be conducted both online and offline depending on the need and sample size.

What Are Data Analysis Methods?

Qualitative and quantitative research requires data collected using different methods to be analyzed in order to draw meaningful conclusions. These data analysis methods also differ between quantitative and qualitative research.

Quantitative Research

Quantitative research involves a deductive approach to data analysis where hypotheses are formulated at the beginning of the research and specific measurements are required. Methods include the application of statistical analysis to analyze numerical data and are divided into

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two categories – descriptive and inferential.

- **Descriptive Analysis**: Used to represent the basic characteristics of different types of data in such a way that patterns become meaningful. The different types of descriptive analysis methods are:
    1. Frequency measurement (count, percentage, frequency)
    2. Measures of central tendency (mean, median, mode)
    3. Measures of dispersion or variation (range, variance, standard deviation)
    4. Measures of position (percentile rank, quartile rank)
- **Inferential Analysis**: Used to make predictions about a larger population based on the analysis of data collected from a smaller population. This analysis is used to study the relationship between different variables.

Qualitative Research

Qualitative research involves an inductive approach to data analysis where hypotheses are developed after data collection. Methods include:

1. **Content Analysis**: To analyze information recorded from text and images by determining the presence of specific words or concepts in the text.
2. **Narrative Analysis**: For analyzing content obtained from sources such as interviews, field observations and surveys. Stories and opinions shared by people are used to answer research questions.
3. **Discourse Analysis**: To analyze human interaction by considering the social context, i.e. lifestyle and environment, under which the interaction takes place.
4. **Grounded Theory**: Involves developing hypotheses through data collection and analysis to explain why a phenomenon occurred.
5. **Thematic Analysis**: Identifying important themes or patterns in data and using these to solve a problem.

How to Choose a Research Method?

Here are some important points to consider while choosing a research method:

1. Research objectives, goals and questions—these will help shape the research design.
2. Review existing literature to identify any gaps in knowledge.
3. Examine Statistical Requirements – Quantitative research is best if data-driven or statistical results are required. If the research questions can be answered based on people's opinions and perceptions, then qualitative research is most appropriate.
4. Sample Size – Sample size can often determine the feasibility of a research method. For a larger sample, less effort- and time-intensive methods are appropriate.
5. Constraints - time, geography and resource constraints can help define appropriate methods.

How to Write a Research Method?

A research methodology should include the following elements:

1. **Research Design**: Should be selected based on research questions and required data. Common research designs include experimental, quasi-experimental, correlational, descriptive, and exploratory.
2. **Research Methodology**: It can be quantitative, qualitative or mixed-methods.
3. **Reasons for Choosing a Particular Method**: Explain why this method is best suited to answer your research problem.
4. **Research Instruments**: Explain the research instruments you plan to use, mainly referring to data collection methods such as interviews, surveys, etc. Here too a reason for selecting the particular instrument should be mentioned.
5. **Sampling**: Involves selecting a representative subset of the population to be studied.
6. **Data Collection**: Involves collecting data using various data collection methods, such

as surveys, interviews etc.

7. **Data Analysis**: Describe the data analysis methods you will use after collecting the data.
8. **Limitations of the Research**: Mention any limitations you foresee while conducting your research.
9. **Validity and Reliability**: Validation helps to identify the accuracy and authenticity of the results; Reliability refers to the consistency and stability of results over time and under different conditions.
10. **Ethical Considerations**: Research should be conducted ethically. Considerations include obtaining consent from participants, maintaining confidentiality, and resolving conflicts of interest.

The methodology section is an important part of the research paper, allowing researchers to understand your findings and use it to replicate your work as they pursue their own research. However, this is usually the hardest section to write.

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22
Plagiarism in Research

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Abstract
There are divergent interpretations on what is plagiarism and what makes plagiarism deplorable. Plagiarism should be viewed as someone using someone else's intellectual product and thereby implying that it is their own. Intentional plagiarism involves treachery. According to the recent studies, plagiarism has become more common in educational institutions. There are various important factors which leads to plagiarism by scholars i.e. lack of understanding, time management, moral ethics and values, defiance scholars attitude towards facilitators denial of neutralization, temptation and opportunity, lack of deterrence etc. Plagiarism involves a deliberate attempt to mislead others as to the ownership and originality of text. The literary theft in academic settings happen due to mainly lack of awareness of plagiarism, lack of training, support and guidance, lack of training in report writing and citing, lack of time management skills, academic and peer pressure and also pressure from family and friends. PlagTracker.com, Plagiarism Detector, Viper Plagiarism Checker, Dupli Checker, Safe Assign are some of the approaches that researchers can use to identify plagiarism. It is highly suggested to read more, explore the field of knowledge, introspect to avoid plagiarism. Types of plagiarism verbatim, mosaic, paraphrasing translational plagiarism are most common, however others are equally used by scholars. As uniqueness is the basis to achieve good position, one must take pledge to plagiarism and follow established guidelines to work in a defined path to avoid misconduct.
Finally, the authors advocate methods to prevent plagiarism by utilizing proper citations, academic writing tools and step to avoid plagiarism among students, improve their academic integrity of research works and point toward future strategies.

Keywords*: Plagiarism, Research Scholar.*

INTRODUCTION

Plagiarism is the act of using someone else's work, ideas, or words without giving proper credit, essentially presenting them as one's own. The word plagiarsim is derived from the Latin word which means to "hijack". It is illegal because it is basically intellectual robbery. The different forms of plagiarism include Direct plagiarism which means copying text as it is or word to word without quotation marks or citation. Self- Plagiarism is reusing one's own previously submitted work without acknowledging that it is not new. Mosaic Plagiarism is binding together ideas from different sources without proper citation. Accidental Plagiarism includes falling to cite sources correctly due to negligence or misunderstanding. Plagiarism is considered a serious ethical violation in academic and professional arenas.

FACTORS OF PLAGIARISM

1. Lack of Understanding: Some researchers accidentally plagiarize because they are unaware of the correct methods of quoting, paraphrasing, citing and reference techniques.
2. Time Management: Not planning beforehand or last minute planning leads to poor time

management. The scholars fail to understand and therefore plagiarize as the last minute solution. Interest in co-curricular activities, peer pressure, pressure from family and relatives to complete the given task before time tempts the schlolars to cheat.

3. Fear of Failure: Scholars may plagiarize because they fear failing or not meeting the desired expectations.
4. Efficiency gain: Researchers sort to plagiarism because it takes less time and improves their grades. Grades should be gain on the basis of one's intellect and ability.
5. Personal values and ethics: Some researchers plagiarize because they feel that there is no reason why they should not. They apply shortcuts rather than hard-work and efforts. Plagiarizing for them suitable and practical.
6. Pressure to succeed: In this high competitive world, high parental expectations including academic pressure can drive students to take shortcuts, thus forcing them to cheat.
7. Behavior of scholars towards teacher: Research scholars cheat thinking their work would not be closely scutinized. The scholars have a negligent attitude towards assignments because they believe it to be unimportant.
8. Temptation: As the Internet and search engines are on the finger tips to handle, it is both simpler and more pleasing for the research scholars to plagiarize. The digital resources make it easy to copy and paste information without proper attribution.
9. Cultural differences: Students from different cultural and educational backgrounds may have different understandindgs and thought-process of intellectual property and plagiarism.
10. Denial: Acceptance is the key but some research scholars blame others for their cheating and moreover try ways to justify their act.

TYPES OF PLAGIARISM

1. Clone: Submitting other's work, word-to-word as one's own.
2. Remix: Paraphrases from multiple sources, made to fit together.
3. Hybrid: Combines perfectly cited sources with copied passages without citation.
4. 404 Error: Includes citation to non-existent or inaccurate information about sources.
5. Find-Replace: Changing key words and phrases but retaining the essential content of the source.
6. Mashup: Mixes copied material from different sources.
7. Re-tweet: Includes proper citation, but relies too closely on text's original wording.
8. Aggregator: It includes proper citation to sources but the paper contains almost no original work.
9. Bluffing: This is one of the worst kinds of plagirism in which the research scholar pretends to own certain concepts in order to deceive others into thinking more than he/she does. Transforming the text into a new notion, implying that they are different from them when, in fact, they are the same is also plagiarism.
10. Paraphrasing: Reading a few works, jotting down a few essential passages, changing terms and phrases around and making a fe quotes and citations to form an ideal essay is also plagiarism.
11. Patchwork Paraphrasing: This is similar to Paraphrasing, however it entails reading additional books and 'Patching' their ideas together.
12. Deliberate Plagiarism: Deliberate plagiarism is the simple and totally unethical act of attempting to pas off someone else's work as your own.
13. Self-Plagiarism: When someone plagiarizes his/her own work, it is known as self-plagiarism. The author can combine his previous work with his current work to create a successful hybrid. Itis considered plagiarism because one cannot receive grades twice

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for the same work.

REASONS FOR PLAGIARISM

- Low confidence
- Time management issues
- No interest in the assignment
- Lethargic
- Perceived low risk
- Peer pressure
- Lack of awareness
- Lack of training and proper guidance
- Pressure from family and friends
- Academic pressure
- Fear of failure

DETECTING PLAGIARISM

Detecting plagiarism involves various tools and techniques to ensure the originality of a piece of writing. This is a challenging process when there has been bluffing, paraphrasing, rephrasing, when non-electronic sources have been utilized. Some of the approaches that research scholars use to identify plagiarism are listed below.

1. Grammarly: This tool offers a comprehensive check along with advanced grammar and writing assistance. It provides real-time feedback on grammar, punctuation and style.
2. Plagium: It is free for occasional use.. This feature allows to perform a basic plagiarism check by pasting the text into the search window. Plagium inte
3. Dupli Checker: Dupli Checker offers a free plagiarism checking service that scans the texts against millions of web pages and documents. It supports multiple language, making it accessible to a wider audience. This tool ensures privacy as it uses advanced AI to detect even minor traces of plagiarism.
4. Viper Plagiarism Checker: Viper is a robust online plagiarism checker that offers both freeand premium options. It checks documents against over 10 billion sources, including essays, journals and web pages. It is user friendly and generates comprehensive report highlighting matched content.
5. Plagiarism Detector: This is a piece of software can identify plagiarism in both online and offline papers. It is a rapid and relaible plagiarism analyzer. Its major duty is to detect digital plagiarism also known as unauthorized copy-paste that originates on the internet.
6. Ivy Panda: A free plagiarism checker that provides quicker and accurate results by simply copying and pasting the text.
7. PlagTracker.com: It is an excellent free online utility. The free version allows users to paste the text and and check for plagiarism, while the premium version offers additional features lile documnet uploads,faster checks and professional editing assistance.
8. iThenticate: iThenticate is the top source of plagiarism detection and prevention software for academics across the world. Publishers and research institutions check that written content is original before it is published.. It allows sharing and collaboration between users.
9. JPlag: JPlag is a tool used to detect similarities in source code to identify potential plagiarism. It supports multiple programming languages, including Java, C, C++ and Python. We can use it through its Command Line Interface (CLI) or Java API.
10. WriteCheck: WriteCheck was a plagiarism detection service provided by Turnitin, designed to help students check their work for potential plagiarism and improve their writing. It also has a resource centre for checking the paperand pointing the scholar in

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the appropriate path. WriteCheck mainly worked for student to check grammar,style,usage,mechanics,spelling and originality.

IS PLAGIARISM A CRIME?

Plagiarism itself is generally not considered a crime, but it can have severe consequences. If we plagiarize,we are fooling ourselves. We don't learn to express ourselves in our own terms and don't get personalized feedback to improve ourselves. In schools and workplaces, plagiarism is often treated as a violation of honor or ethics codes. If plagiarism involves copying someone else's copyrighted work without permission, it can lead to civil lawsuits. In some cases, plagiarism can lead to criminal charges,especially if it involves fraud or forgery. Plagiarism does not only involves words but also ideas.Using different words or even a diiferent language but expressing the same idea is plagiarism. Plagiarism is a sin.

LEVELS OF PLAGIARISM IN NON-CORE AREAS

Plagiarism in non-core areas is generally treated with more leniency compared to core areaslike hypotheses,conclusions and results. Following are the typical levels or plagiarism and their corresponding penalties:

1. Level 0 (Up to 10%): No penalty.
2. Level 1 (10%-40%): Resubmission of the work withina specified period,such as six months.
3. Level 2 (40%-60%): One-year deebarment from resubmission and withdrawal of the manuscript.
4. Level 3 (Above 60%): Severe penalties,which can include revocation of degrees or other significant actions. Non-core areas might include sections like literature reviews or background information, where some overlap is more tolerable. Maintaining academic integrity,values and ethics is crucial and proper citation is always necessary to avoid any form of plagiarism.

STRATEGIES TO TACKLE PLAGIARISM

1. A detailed list of all the sources should be maintained while doing the research work so that it can be cited for later.
2. When an information or piece of idea is used,we should either paraphrase it in our own words oruse direct quotes for it. In either of the cases proper citation should be provided.
3. Before submitting the work, one should always use plagiarism detection tools to recognize accidental and unintential plagiarism.
4. Research scholars should be familiar with the guidelines of the journal's author.
5. . One should fully understand the topic and use own words when paraphrasing.
6. Scholars should always give credits to the sources utilized in the text.
7. Credits should always be given to other people's contributions in any cases.

POINTS TO AVOID PLAGIARISM

Avoiding plagiarism is essential for maintaining academic integrity and respecting the author's original work. Here are some points to help avoid plagiarism:

1. Keeping track of sources diligently during our research helps us the remember from from that particular information came from.
2. Rephrasing the information properly in our own words when we use the information from a source. We should make sure that our text is different from the original one.
3. While using the exact words from a source, we should remember to put them in quotation marks and also cite the source.
4. Using plagiarism detection tools before submitting our work to ensure unintential plagiarism.
5. We should plan our notes,prepare the outline of the paper or the raw data before we

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start writing so as to avoid accidental plagiarism and to ensure the smooth working of the sources.

6. We must provide a reference page of works at the end of our reseach piece which statyes author information, publication date, title and source. We should always follow the instructions to obtain the correct reference.

CONCLUSION

Plagiarism is the act of incorporating someone else's ideas,works, or work into your own work with no proper acknowledgement., and that can have more serious impact of losing your credibility, facing legal charges or breaking the rules of your school/university but it can also have less severe consequences. This act is considered as a breach of trust and a violation of academic integrity.

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23
Writing Hypothesis

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Abstract
The word hypothesis is taken from Greek word - 'hypo' and 'tithanai'. Hypo mean under and tithenai means place. As a whole which describe- place. under known facts of the problem to explain relationship between them. Actually, a hypothesis is a statement that explain the prediction and reasoning of your research. A hypothesis is one of the earliest stage of the scientific method. It is primary a guess - based on the observation and what the result of your experiment will be. A hypothesis always discusses about the variables or about the element which are arising under testing or experiment. Variable maybe objects events concepts and any kind of matter which are observable. Hypothesis determine the trajectory of the research work and the method. Ultimately the reader follow your hypothesis was proven right or wrong. Many kind of hypothesis are simple hypothesis, complex hypothesis, null hypothesis, alternative hypothesis, logical hypothesis , empirical hypothesis , statistical hypothesis. For writing a good hypothesis you must find a logical question which help you to choose a research topic. Then you study hard or conduct primary research. Then collect some background information on your topic. After getting some idea about your hypothesis must select variable and briefly define them. You must be collecting data supporting your hypothesis as a result find your possible outcome.

Keyword*: hypothesis, research, variable, logical question, data, outcome.*

Introduction:

We can not take a single step forward in any inquiry unless we begin with a suggested explanation or solution of the difficulty which originated it. such tentative explanation are suggested to us by something in the subject- matter and by our previous knowledge. When they are formulated as propositions, they are called hypotheses.
-Morris R Cohen and Earnest Nagel.

When a research work done we go through hypothesis. The term forward research is constructed with two term- Re + search which means repetitions take place in the searching process. So a hypothesis is a accepted or reconstructed. Research is the process of collection evidence or information for accepting or nulifying a hypothesis. So hypothesis is a important mechanism in research. Hypothesis is Principal instrument in research. It main function is to suggest new experiment and observation. Many experiment are carried out with the deliberate object of testing hypothesis. Decision makers often face situations where in they are interested in testing hypothesis on the basis of available information and then take decision on the basis of testing.

If we go origin of the word it is from Greek word 'hypotithenai' meaning to 'put under' or 'to suppose'. If we split the word hypothesis we get hypo+thesis which means less than or less certain than a thesis. Hypothesis must be presumptive statement of a reasonable guess , based upon the available evidence which the researcher seek to proof through his study.

The Claude Bernard stated as, - 'The idea are the seed; the method is the soil which provides it with the condition to develop to prosper and give better fruits following its nature. But just

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as the soil will never produce anything other than what has been sown, similarly only those idea which have been put to the experimental methods will be developed by the latter'.

Meaning: A set of assumption to be proved or disproved is called hypothesis. A Hypothesis is a proposed explanation for a phenomenon. For a hypothesis to be scientific hypothesis the scientific method requires that one can test it. Scientist generally base scientific hypothesis on previous observations that cannot satisfactory be explained with the available scientific theories. A different meaning of the term hypothesis is used in formal logic, to denote the antecedent of a proposition; thus in the proposition- 'if P , then Q' P denote the hypothesis (or antecedent) ; Q can be called a consequent.

The word meaning of the term hypothesis is a tentative statement about the solution of the problem. Ordinarylyi hypothesis is plausible statement or generalization that is susceptible to empirical testing in a scientific manner. When one talk about hypothesis one simply means a mere assumption or some suposition to be proved or disproved. But for a researcher hypothesis is a formal question that he intentds to resolve. Thus a hypothesis may be defined as a proposition or a set of proposition set forth as an explanation for the occurrence of some specified group of phenomena either asserted merely as a provisional conjecture to guide some investigation or accepted as highly probable in the light of establised facts.

Definition: 'a hypothesis can be defined as a tentative explanation of the research problem, a possible outcome of the research or an educated guess about the research outcome'

According to Goode and Hatt –

'A hypothesis state what we are looking for. A hypothesis looks forward. It is a proposition which can be put to a test to determine its validity. It may prove to be correct or incorrect.'

Lungberg define as-

'A hypothesis is a tentative generalisation the validity of which remains to be tested. In its most elementary stage, the hypothesis maybe any hunk, guess , imaginative idea which becomes the basis for the father investigation.'

According to A.D. Carmichael:

'Science employs hypothesis in guiding the thinking process. When our experience tells us that a given phenomenon follow regularly upon the appearance of certain other phenomena, we conclude that the former is connected with the later by some sort of relationship and we form a hypothesis concerning this relationship.

According to oyster new international dictionary:

- 'a proposition, condition or principal which is assumed perhaps without belief, in order to draw out its logical consequences and by this method to test its accord with facts which are known or maybe determine'

According to John W. Best define as-

'It is a shrewd guess or inference that is formulated and provisionally adopted to explain observed facts or conditions and to guide in further investigations.'

Characteristics of Hypothesis:

Hypothesis must poses the following characteristics:

1. **Hypothesis should be conceptually cleare**: Hypothesis should be clear and precise. If the hypothesis is not clear and precise, the inferences drawn on its basis cannot be taken as reliable. An undefined or ill-defined concepts make it difficult or rather impossible for the researcher for test his hypothesis as there will not be any standard basis for him to know the observable fact . How ever, a researcher, while defining concepts, should use,as far as possible in most simple terms so that it can be easily understandable to all concerned.
2. **Capable of being rested**: Hypothesis should be capable of being tested. In a swamp of untestable hypothesis, many a time the research programs have bogged down. Some

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prior study may be done by research in order to make hypothesis a testable one. A hypothesis is testable if other deduction can be made from it which, in turn, can be confirmed or disproved by observations.

3. **Hypothesis should be specific**: Hypothesis should be limited in scope and must be specific. No Vogue -judgmental term should be used in formulation of a hypothesis. It should specifically state the posited relationship between variables. It should include a clear statement of all the prediction and operations indicated therein and they should be precisely spelledout. Specific formulation of a hypothesis assures that research is practicable significant.
4. **Hypothesis should be related to available techniques**: A hypothesis need to be empirically tested. This requirement obviously makes it necessary that a hypothesis should be related to a available techniques of data collection.
5. **Hypothesis should be related to a body of theory or theoretical orientation**: It is needless to re-emphasize here that a researcher, through testing his hypothesis, intends to contribute to the existing fact, theory of science. While formulating his hypothesis, he has to take a serious pause to see the possible theoretical gains of testing the hypothesis.

Importance of Hypothesis:

Hypothesis is an important part of research. But in all type of research work may not be required. Which research are based on fact finding like historical or descriptive research do not need any kind of hypothesis. Hilway also says that 'When fact finding alone is the aim of the study, a hypothesis is not required.' Whenever possible, a hypothesis is recommended for all major studies to explain observed facts, Condition or behaviour and to serve as a guide in research process.

Hypothesis facilitates the extension of knowledge in an area. They provide tentative explanation of fact and phenomena and can be tested and validated. It sensetizes to investigator to certain aspects of the situation which are relevant from the standpoint of the problem in hand.

Hypothesis provide the research with rational statements, consisting of elements expressed in a logical order of relationship which seeks to describe or to explain condition or events, that have yet not been confirmed by facts.

Hypothesis provide direction to research. It defines what is relevant and what is irrelevant. The hypothesis tells the researcher what he needs to do and find out in his study. Hypothesis implies the statistical techniques needed in the analysis of data, and the relationship between the variables to be tested. It also helps to delimit his study in scope so that it doesn't become broad or unwidely.

Hypothesis provide the outline for seeting conclusion in a meaningful way. So hypotheses has a very important place in research.

The Type of Hypothesis:

The Research Hypothesis could be understood in terms of simple research hypothesis and complex research hypothesis. A simple research hypothesis predict the relationship between a single independent variable and a single dependent variable. A complex hypothesis predicts the relationship between two or more dependent variable.A research hypothesis must be stated in a testable form for its proper evaluation and it should be indicate a relationship between variables in clear, concise and understandable language.

Research hypothesis are classified as being directional and non directional –

- **Directional Hypothesis**: This are usually derived from theory. They may imply that the researcher is intelectualy committed to a particular outcome. They specify the expected direction of all relationship between variables i. e. The researcher predicts not only the

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existence of a relationship but also its nature.

● **Non- directional Hypothesis**: used when there is little or no theory or when finding of previous studies are contradictory. They may imply impartiality.

Associative and Causal Hypothesis:

Associative Hypothesis: propose relationship between variables - when one variable changes, the other changes.

Causal Hypothesis: propose a cause and effect interaction between two or more variable. The independent variable is manipulated to cause effect on the dependent variable. The dependent variable is measured to examine the effect created by the independent variable.

Statistical Hypothesis:

To test whether the data suport or refute the research hypothesis, it need to be translated into a statistical hypothesis. It is given in statistical term. In the context of inferential statistics, it is statement about one or more parameters that are measures of the population under study.

Null Hypothesis:

These are used when the researcher believes there is no relationship between two variable or when there is inadequate theoretical or emperical information to state a research Hypothesis. The null Hypothesis represent a theory that has been put forward, either because it is believed to be true or because it is to be used as a basis for arguments, but has not been proved.

Alternative Hypothesis:

Alternative Hypothesis is a statement that suggest a potential outcome that the researcher may expect. Designated by: H1 or Ha. It is opposite of null Hypothesis. It is only reached if 'Ha' is rejected. Frequently ' alternative' is actual desired conclusion of the researcher.

Creating Hypothesis:

To begin formulating a hypothesis -

1. Review all the information gathered during research.
2. Figure out what is the main question of the study is.
3. Form a general statement outlining this question and overall expectation of the experiment.

The 'PICOT' model –

After a general statement is formulated, the picot model can be used to shape it into a proper hypothesis.

Population - for the specific group or individual the research pertain to.

Interest - the main concern of the study.

Comparison - the main alternative group.

Outcome - what result is expected.

Time - the length of the experiment.

Hypothesis can pertain to virtually anything, for example - cigarette smoking increase the incidence of coronary heart deases, now a day youth are addicted through mobile game, poverty causes criminality, after lockdown period student dropouts rate increases day by day. There can be no restriction whatever about what can be hypothesized. Formulation of Hypothesis differ with the method of research conducted such as 1) qualitative method 2) quantitative method.

There are no precise rules for formulating hypothesis and there are some difficulties that arise in formulating the hypothesis. Hypothesis can be formulated correctly by person who have rich experience and academic background. Formulation of proper hypothesis depends on one's experience and logical insight.

Conclusion:

Hypothesis is important for bringing clarity, specificity, and focus to research study. A hypothesis is never proved; it is merely sustained or rejected. If it fails to meet the test of its

validity, it must be modified or rejected.

‘ A hypothesis serves as a powerful beacon that lights the way for the research worker.”

- Van Dalen.

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24
Plagiarism in Research

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Abstract
Plagiarism has been defined in various ways, but most common of all is copying someone else's work and representing it as your own. Plagiarism is a major problem in the research field. Plagiarism is also defined as the stealing of an already existing work that results in a violation of the principles of academic integrity and fairness. Plagiarism can be intentional or unintentional, but regardless of the intent, it is considered a violation of scientific ethics. It is important to improve the awareness among researchers about plagiarism so that unacceptable writing practices can be avoided. Earlier, the only method to detect plagiarism was the ability, knowledge, or experience of the editor, but nowadays, as technology has advanced, there are various plagiarism-detecting sites, tools, and software available online that provide paid as well as free services. One of the major reasons for plagiarism is the lack of knowledge of technology, as many people are not so fluent in the use of these technologies, nor do they have much knowledge about the advancement of technologies and the existence of these tools, sites, and software. Academic institutions and universities can generate awareness about plagiarism among students and research scholars by providing them with training on the use of plagiarism detection tools and software. Academic institutions and universities can also generate awareness about plagiarism-free work among students and research scholars by conducting workshops and training programs regularly offering sessions on plagiarism, citation practices, and academic integrity.

Keywords*: Plagiarism, Academic Integrity, Scientific ethics, Plagiarism detection tools.*

Introduction

The word Plagiarism originated from the Latin word "plagiarius," which means "kidnapper." This word originated from the Latin word Plaga, which means "a net used by hunters to catch game," and its extended Latin meaning is "to include a person who stole the words." Plagiarism is a major problem in the research field. Plagiarism is defined as representing a part of someone else's work as their own or copying the entire work of someone and representing it as their own. The plagiarism type depends on two aspects: the writer's intention and the extent to which the contents of the original work are plagiarized.

Plagiarism is defined by Encyclopedia Britannica as "the act of taking the writings of another person and passing them as their own." Plagiarism is also considered as an act of forgery, piracy, and fraud, and it is also considered a violation of Copyright law. In many instances, plagiarism is intentional, whether by direct copying or paraphrasing. But sometimes it happens unintentionally.

A work is considered to have been plagiarized when:

- Someone else's work is used without giving them proper credit.
- Information from a source is plagiarized without providing correct citing.

Types of Plagiarism:

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• **Complete or Global plagiarism**

Complete or global plagiarism is considered when entire work of any person is copied. It is equal to stealing. Complete or global plagiarism is always done deliberately and knowingly. This type of plagiarism is also considered as copyright infringement and leads to the abuse of intellectual property rights and is also a reason for legal battles.

• **Verbatim or Direct Plagiarism**

If someone copies word to word of a part of someone's already published work without providing credits to the real author then it is called Verbatim or Direct plagiarism. The ideas, word, and structure of one's work would match the original one, even after changing few words or position of sentences the final work would resemble the already published one. The best way to avoid this type of plagiarism is to minimise copy pasting and if doing so then to use the quotation marks and proper citations or credits should be given to the original author.

• **Source-based plagiarism**

In case an author is trying to mislead or disguise the original source of work either by providing irrelevant citations or incorrect information or by citing the reference of only half of the data or information.

• **Data Manipulation and Counterfeiting**

Data Manipulation is creating your own data. Data Counterfeiting is skipping or alternating the key data findings as per expected outcomes. It leads to legal issues due to wrong data representation. This type of plagiarism results in false clinical trial which is an offense.

• **Paraphrasing Plagiarism**

It is a type of plagiarism where the ideas and thoughts are copied, and the sentences are rephrased to claim ownership. Paraphrasing plagiarism is said to be done when words or sentences are changed, or the texts are translated. When author copies the already published work in their own name without proper citation then they are considered to commit paraphrasing plagiarism.

• **Mosaic or Patchwork Plagiarism**

When author gathers information from various sources and combine them together to form a single article or paper of their own, then it is called Mosaic or Patchwork Plagiarism. Mosaic or Patchwork Plagiarism is difficult to detect.

• **Ghost-writing**

Ghost-writing is said to be done when the paper or article is completed by the assistance of an unacknowledged person who has good knowledge about that field. Ghost-writing is a breach of conduct. Ghost-writing is considered when:

- Author does the research work on their own and later pays someone else for writing their paper or articles and for editing or proofreading them. Or,
- When they pay someone else to write the complete article or paper from scratch. In both the cases, since it does not exhibit the original thoughts or ideas of the author, so they are unacceptable.

• **Self-Plagiarism**

Copying your own previously published work is known as self-plagiarism. It is considered wrong because an author is trying to claim credit for something that already belong to them and they have already received the credit of the same before. Authors uses their past data or experimental results in their new work. If proper declaration, reference or citation is provided for the old data or results used and if proper quotation marks are used then it is not considered as self- plagiarism.

Self-plagiarism is divided into four categories:

- **Duplicate publication**

  When someone submits the exact or almost same work to different journals or

publishers, then it is known as duplicate publication. It is dealt as per COPE guidelines.

- **Augmented publication**
  If additional data or experimental results are added to the previously published work of the author and if the author changes the title and modifies the contents of the article and add new recalculated results then it amounts to augmented publications. It is difficult to detect it by plagiarism detection software. The publication of this article or paper depends on the editor and the editor follows the following criteria to check if the article or paper can be published or not- if the previous work of author is referred by them, if the methods cannot be written in any other form, if it is clearly stated by the author that their new manuscript contains the data from the previous one.
- **Segmented publication**
  It is also known as "Salami Sliced publication." It is said to be done when two or more papers are derived from same experiment or research. It cannot be detected easily. The publication of this article or paper depends on the editor- where the author is asked to give proper reason for the connection between the segmented paper and their already published work.
- **Text recycling**
  If an author uses a large portion of their already published work in their new manuscript, then it is known as text recycling. It can be easily detected by plagiarism checking tools. It is dealt as per COPE guidelines.

• **Cyber plagiarism**
If one copies a part or entire article or paper or ideas for their work from internet without providing proper attribution to the original author, then it is known as cyber plagiarism.

• **Image plagiarism**
If someone uses an image or video without taking proper permission from its original owner or without providing proper citation of those image or video, then it is known as image plagiarism.

• **Accidental plagiarism**
Accidental plagiarism happens when the author accidentally copies the already published work without proper citation or quotation marks. It is unintentional, as the author accidentally missed out to mention the references. The best way to avoid this is to be cautious while writing your article and to recheck and proofread your article or paper numerous times and to always check for missing citations.

Reason for Plagiarism:
There are many reasons for plagiarism. A few of them are listed below:
• Urge of being successful in your field.
• Lack of knowledge of advanced technology.
• Lack of knowledge of plagiarism checking tools.
• Fear of failure.
• Desire of advantage i
n a job or promotion.
• Pressure of a large number of publication criteria.
• Poor English or writing skills.
• Lack of innovation or creativity.
• To increase academic performance.
• Lack of ideas.
• Desire to gain research funding.
• Demand of publication from universities to get admission.
• Desire of getting one's work published in research journals.

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• To gain acknowledgement in the social circle.
• Competition among peers to publish more papers.
• Lack of desire to work hard.

Detection of Plagiarism:

Earlier, the only method to detect plagiarism was the ability, knowledge, or experience of the editor, but nowadays, as technology has advanced, there are various plagiarism-detecting sites, tools, and software available online that provide paid as well as free services. One of the major reasons for plagiarism is the lack of knowledge of technology, as many people are not so fluent in the use of these technologies, nor do they have much knowledge about the advancement of technologies and the existence of these tools, sites, and software.

Penalties for Plagiarism:

The author can be blacklisted for his life as a punishment for plagiarism. The student can be expelled from the institute or university. Criminal charges can be framed against the author who plagiarized the work. The penalty or punishment depends on the author of the original work, editor, or editorial-based policies. The extent of plagiarism and punishment or penalty of plagiarism depends on the level of contents plagiarized, such as copying of text or plagiarism of ideas. Mostly in mild text copying plagiarism, an explanation letter and corrected version of the article or paper is considered a penalty.

Avoiding Plagiarism in Writing Articles:

Plagiarism can be avoided by doing your own research and by keeping track of your research data. It can be avoided by writing your paper based on your own ideas and data. While searching for data and information about your research, keep track of the references and cite them in your paper.

To avoid plagiarism, one can incorporate the following tips:

• **By paying adequate attention to your references**

Paper writing requires lots of research, due to which sometimes the researchers may skip some of the references, which leads to accidental plagiarism. So, it is important to track and maintain the list or take note of the references while searching for contents for your research.

• **By finding credible sources**

Refer and extract contents from a credible source. Use credible sources to clear your doubts and find reliable and true facts to support your experiments or research ideas.

• **By reviewing and checking your work multiple times**

Checking your work multiple times results in less chances of falling under accidental Plagiarism. Ensure your final work by checking that:

- You have not missed any citations.
- Reassure that your content is not similar to the one already published.
- You have not mentioned any reference that is not related to your work.
- Make sure to check for corrections and missing quotations.
- Make sure to use a plagiarism checker.

Using online tools

Before submitting the paper or article for publication, the students, institutions, or universities should run the paper or article through the plagiarism checking software to avoid plagiarism. The software uses AI detectors to detect the plagiarism. These software checks the content based on finding the similarities between the contents of the said paper or article and the ones that were previously published. If similarities are found, then they show the result of the plagiarism percentage and the part that is similar to the online published content.

Role of Education in Promoting Academic Integrity

• **Awareness Program on Citation**: The institutions or universities should include seminars

or awareness program in their course work about citation and should encourage the practice of citations.

• **Knowledge about the Plagiarism Detection Tools**: The institutions or universities should include seminars or awareness program in their course work about the use of Plagiarism Detection tools to avoid plagiarism.

• **Assigning proper guidance or assistance**: The institutions or universities should offer mentors to the student to help and guide them in their research or thesis papers.

• **Practicing of time management**: The institutions or universities or mentors should provide guidance about time and management and ask the students to plan their research work or thesis writing accordingly to avoid copy and paste due to last minute rush.

Conclusion

Plagiarism is considered unethical and is a punishable offense as it is considered as violation of Intellectual Property Right. Plagiarism is a common practice but it can be avoided. Plagiarism results in copyright infringement. Academic institutions and universities can generate awareness about plagiarism among students and research scholars by providing them with training on the use of plagiarism detection tools and software. Academic institutions and universities can also generate awareness about plagiarism-free work among students and research scholars by conducting workshops and training programs regularly offering sessions on plagiarism, citation practices, and academic integrity. Academic institutions and universities should assign mentors to the research scholars or students. The mentors can provide feedbacks to the students about their research work or thesis paper to improve the quality of their papers and to avoid plagiarism. The research scholars or students should keep a track of their references while searching for the contents online. The research scholars or students should run their paper or thesis once through the plagiarism detection software or tools before submitting their paper or thesis to avoid plagiarism. The research scholars or students should check for the citations and quotation marks before submitting their paper or thesis to avoid plagiarism.

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Combating Plagiarism in Research: Navigating Obstacles and Implementing Effective Measures

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Abstract
Plagiarism has become a critical issue in academic research, undermining credibility, transparency, and ethical standards. It involves the use of another person's ideas, words, or creations without proper acknowledgment. The rise of the internet has made plagiarism more prevalent, providing easy access to information while challenging the enforcement of originality and integrity. Researchers face the dual challenge of creating original work and maintaining ethical standards. Plagiarism not only damages individual reputation but also harms the academic community and society at large. This paper explores five major types of plagiarism: direct, self, mosaic, accidental, and collusion, highlighting their distinct challenges. The study further examines the repercussions of plagiarism, including reputational loss, legal consequences, and diminished trust. Finally, it discusses comprehensive strategies to combat plagiarism, emphasizing the integration of technological tools, educational initiatives, and robust institutional policies.

Keywords: *Plagiarism, Academic Integrity, Types of Plagiarism, Ethical Standards, Research Ethics, Technological Tools, Academic Reputation*

Introduction

There is a very serious issue with plagiarism in academic research. It damages the credibility and transparency of academic research. In a nutshell, using someone else's work without giving credit is plagiarism. These may include their (ideas, words, or creations). The internet has served only to make plagiarism more prevalent. The technology provides widespread access to information which diminishes the value of originality and keeps ethical standards hard to enforce. This is the age of sharing and cooperating in the digital era, but a new set of problems come with it.

The big problems that researchers face are twofold: create new work and maintain integrity. The damage of plagiarism is done to the soul and spirit of a person, the academic world as a whole, as well as society. It destroys reputation and trust and thereby hinders scholarly communication.

This paper discusses five types of plagiarism: direct, self, mosaic, accidental and collusion. Every kind is different in their challenges. We will also discuss its repercussions, including but not limited to damage to brand image, law and distrust.

It is hard to detect plagiarism today. There is an abundance of online and technological fast times. Our solutions are built on a combination of tech tools, educational initiatives and strong policies. This has become an umbrella approach of tackling complex challenges in a more effective and comprehensive way.

We want to cover as much ground on the topic of plagiarism, and we wish to understand it more holistically. We are going to give our answers through the lens of some research and examples that already exist. We will provide solutions for researchers and institutions to

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defend their own integrity, and build trust.

Understanding Plagiarism

Plagiarism comes in many forms and therefore most wily:

1. **Direct Plagiarism**: This involves duplicating text from a source without the use of quotation marks or attribution. It's the one that will get caught with help of tools such as Turnitin. Direct plagiarism, such as a student including paragraphs from a reading without any acknowledgment Activities can result in anything from expulsion to a tarnished reputation. It makes the individual and the institution look bad.
2. **Self-Plagiarism**: Reuse of self without citation (often referred to as recycling). It can give readers the wrong impression about research being new One example includes a researcher publishing similar findings in various journals without acknowledging that this was published already. It is important to provide institutions with clear policies that avoid confusion.
3. **Mosaic Plagiarism**: This is a kind of patch writing where the writer borrows phrases or ideas from slightly different works yet fails to reference them correctly. It's tricky to detect. Case 1) One could paraphrasing the full articles as many he/she wants and compile everything without submit citation list to plagiarize in purpose. This waters down innovation and misinterprets accomplishments.
4. **Unintentional Plagiarism**: This is arguably the most common form of plagiarism and occurs when writers fail to cite sources or give credit for their ideas properly. It usually comes from not realizing how to properly cite your sources. By way of example, a theory paraphrased by a student without a citation because they thought it was common knowledge. This is where training on citation practices is essential.
5. **Collusion**: People acting together without recognising they are doing so. e.g. Students sharing work but submitting all or part of the same paper unless clearly such collaboration is required by the assignment; Throwing the illusion of individual effort into the mix. Acceptable forms of collaboration (and the importance of acknowledging joint work) should be clearly defined by institutions as part of good academic practice.

Implications of Plagiarism

Plagiarism affects not just the individual researcher but has more profound implications for academia on a larger level as well:

1. **Plagiarism damages reputation**: for individual researchers and their affiliates. Plagiarism offenders are punished with a brigade of recourses: withdrawn funding opportunities, removed publications and scholars carrying their heavily compromise citation records on permanent record (Sutherland-Smith). Scandalous, high-profile cases involving well-known researchers can generate widespread media attention and undermine the public trust in university—who we are. Finally, this can be enough to ruin your whole career in the long-term — many funding bodies and academic committees check on researchers ethical conduct down the years.
2. **Legal Consequences**: If you plagiarize, you can get in legal trouble, including being sued for violating copyright. These legal disputes can prove both expensive and lengthy, depleting resources and further damaging one's professional reputation (from Lathrop & Foss). Universities are also responsible for ensuring that mechanisms to protect researchers from the legal implications of plagiarism and other ethical breaches are robust. However the chilling effect of legal repercussions with large financial penalties facing both the University and individual is in itself a strong disincentive to change.
3. **Loss of trust**: the exposure of instances of plagiarism drive down public trust in academic research. Moreover, the reliability of research findings is brought into doubt

when incidents of plagiarism emerge (Shatz). Such loss of trust may put off funders, compromise the standing of institutions and impact on the advancement of knowledge across disciplines. Trust is the base level of academic integrity, therefore once it is damaged great care needs to be taken to recover, and public misconduct must be dealt with in plain sight.

4. **Effect on The Research Integrity**: Plagiarism erodes the integrity of academic research, biasing the academic record with inaccurate or misleading information. This could translate to implications that extend well beyond our research and set an example for future policy decisions [Harris, Robert]. If work is accepted and cited by other researchers — even if plagiarised — this creates a snowball effect of misinformation, resulting in potentially incorrect conclusions and applications. These can ripple throughout the academic conversation, ultimately compromising the trustworthiness of what other researchers and practitioners might rely on as knowledge.
5. **Plagiarism Affects Creativity**: Stifling innovation in academic research fields If plagiarism happen to knock someone it can stamp the creativity and idea development out of that person. This dependence of prior research limits the growth of individuals and restricts innovation in fields of study, as people are no longer focused on knowledge construction but simply reproduction (Shatz). This lack of new ideas ends up stagnating the advancement of fields and going against what is supposed to be the purpose behind all academic research: discovering knowledge, solving problems.

Challenges in Detecting Plagiarism

Plagiarism detection is complex for multiple reasons, especially in the fast-changing digital age:

1. **Content Volume**: The amount of academic literature, online resources and grey literatures make plagiarism detection a complex process. The more sources that are out there, the tougher the task of actually determining if a particular submission is truly original or not (Bretag). Researchers and institutions are having trouble keeping up with this volume. The tools for detection have to be sophisticated enough to process large data-sets and give reliable results, which means an ongoing investment in technology and keeping the team trained.
2. **Changes in Technology**: The process of copying and pasting text has become easier due to advancements in technology that makes it more difficult to detect cases of plagiarism. Advanced paraphrasing software and AI content generators can outwit conventional detection, so institutions must update their detection systems continually (O'Neil). This is an arms race – as the technologies develop, so too do countermeasures available to those attempting to avoid detection.
3. **From a Diversity of Sources**: Researchers may draw on a variety of sources, including electronic databases, unpublished material, and grey literature. This diversity introduces new complications, as plagiarism detection tools must identify and compare all the types of content efficiently (Sutherland-Smith). With the variation of standardisation across platforms, the situ is worsened with certain databases which have very limited coverage — unless you can find a pay for version. Instead, institutions might implement an all-in-one solution of multiple databases to improve detection accuracy.
4. **Subtle Plagiarism**: Subtle forms of plagiarism such as slightly rewording and not providing proper citation along with sourced ideas within your work can sometimes be difficult to catch when using automated machines. The source must be checked against its earlier versions in order to determine if the work is original, or if it has been falsely attributed. (Howard) To get the most out of automated assessment institutions need to

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integrate auto tools as part of their solution for authentic checking purposes in combination with manual reviews, and incorporating senior academics in by enabling them to evaluate a wide perspective on submissions.

5. **Cultural differences**: Academic research is a global activity and therefore it also implies the existence of several cultural attitudes against plagiarism. While some cultures may not see communal sharing of ideas as unethical, others have normative expectations for strict adherence with citation (Harris). Such differences can create situations in which international collaborative work is inadvertently not compliant with academic standards. In preparation, institutions should provide training to create a culture of competence around cultural issues that may arise and have clear academic integrity expectations set up with the researchers.
6. **Policies and standards are ever evolving**: Academic institutions often find it hard to update themselves as the landscape of plagiarism changes, policies surrounding plagiarism change quickly as well. In response to changes in research practices, institutions need to have current guidelines that are well communicated throughout the entire academic enterprise (Lathrop and Foss). Policies should be reviewed and updated regularly in order to meet the ongoing challenges institutions face in maintaining academic integrity.
7. **Small resource packet for plagiarism education**: A significant number of institutions, especially small ones, do not have the resources to offer extensive training for either preventing or identifying cheating. As Sutherland-Smith explains, researchers may not have supportive structures if dedicated personnel and budgets for academic integrity programmes are lacking. Institutions should work to direct resources towards training programs, and develop partnerships with academic integrity organizations in order strengthen their support.
8. **Anti-Detectable**: For some researchers who do not want to use plagiarism detection tools, there are concerns about privacy breaches or being falsely positive. This hesitance can have several impacts, including impeding the proper functioning of these tools and helping to create an atmosphere of scepticism surrounding the trustworthiness of how these tools are being used (O'Neil). Open dialogue is needed on how we should balance use of detection tools with academic freedom, so that researchers feel they have space to deploy these resources legitimately for upholding integrity in research.

Strategies for Preventing and Detecting Plagiarism

We advocate for a multi-pronged approach to dealing with plagiarism, including technological tools, educational resources and broad institutional policies:

1. **Plagiarism Detection Tools**: It is essential to make use of plagiarism detection tools like Turnitin, Grammarly, Copyscape to check if the content has been copied from somewhere. These systems will compare submitted work to large databases of past essays and assignments, in search of overt instances of copy-pasting or close paraphrasing (Bretag). The use of these tools on a regular basis can help institutions and researchers to ensure academic integrity. In addition, making these tools available to students can help foster a culture of accountability by encouraging preventive checking before submission.
2. **Ensure comprehensive educational programmes on academic integrity and formatting**: this is important in the prevention of plagiarism. Workshops, online courses, and training sessions can all help improve understanding and adherence to citation rules (Bretag). One example of this could be giving precedence to continual education from different institutions and teaching researchers the abilities necessary to avoid plagiarism. By offering targeted workshops at various academic levels, specific

needs can be addressed so that all researchers, from undergraduates to seasoned academics, will come out in the know.

3. **Establishing clear plagiarism policies**: The development and implementation of a strict policy on controlling the cutting-edge research conducted at institutions. Defining plagiarism, setting procedures for dealing with it and consequences for bad behaviour need to be institutionalized (Lathrop; Foss). The clear communication of these policies is vital to developing a culture of integrity for all members of the academic community. Periodically reviewing and updating such policies is also crucial to ensure that they are still pertinent and able to tackle the new wave of challenges.
4. **Adhering to a Culture of Honesty**: Encouraging an atmosphere that both endorses and rewards integrity in research, can reduce plagiarism. Institutions must establish a climate that enforces ethical behaviour, while promoting research integrity (Shatz). This is best done through conversations about integrity, identifying virtuous OR behaviour, AND there are different ways that this could be positively framed within the community. Integrity awareness can be improved and integrity initiatives may drive the correct type of behaviour to ensure these high standards are maintained.
5. **Renewing Detection Tools**: Plagiarism detection tools need to be renew regularly with new forms of plagiary, and to raise the level of accuracy. Because this involves growing databases, fine-tuning algorithms, and responding to user feedback (O'Neil). One of the key requirements for institutions is to continually update their means of detection so that they remain valuable and current. Additionally, tool developers should work together to generate customised solutions specific to institutional requirements that may better the detection sensitivity.
6. **Enhancing peer review and employ the right mentor in academics**: Enabling better peer reviews and bringing mentorship to academic programs can install a feeling of responsibility and accountability among its researchers. Through peer review, the researchers would be able to give their insight on citation practices and material originality during the study reviews. Mentorship programmes can also match new scholars with experienced researchers, which help embed best practices at the start of an academic career (Bretag). This is to ensure the quality of the research as a joint effort, while simultaneously encouraging mutual respect when it comes to researching.
7. **Anonymous Reporting**: Anonymous reporting mechanisms can provide individuals with the confidence to report what they may suspect could be plagiarism without fear of retribution. Institutions may use these mechanisms to detect possible violations of academic integrity in order to investigate. The promotion of a culture of accountability by institutions to deter plagiarism and the cultivation of ethical skills across their communities.
8. **External Academic Association Engagement**: Institutions must be engaged with relevant academic associations in order to remain current on best practice and the latest activities in the field of academic integrity. They frequently offer resources, norms, and training to help institutions improve their efforts to prevent plagiarism. The associations that hold conferences and workshops for networking organizations can also bring together researchers doing work consistent with the ethical standards they hope to uphold.

Conclusion

Plagiarism as an important issue deserves a holistic approach to its prevention, identification and remedy. A great deal of action can be taken in order to prevent plagiarism — through awareness, understanding, consequence and prevention all authors and institutions have their roles in maintaining the academic integrity. Given the shift in research landscape, ethical

standards for what is considered to be novel and keeping the work novel are going to become even more important as we move forward with developing a culture around a new way of working. At the end of the day, policing plagiarism is not just about averting unethical conduct but also about ensuring an ecosystem that fuels innovation and the quest for knowledge.

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PLAGIARISM IN RESEARCH

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Abstract

"The process or practice of using another person's ideas or work and pretending that it is your own". Plagiarism in research is a duplication and insertion of or accidental copying of others work without giving them proper credits. The purpose of this is to understand and investigate plagiarism in research. Here, highlighting types of plagiarism, which includes Accidental plagiarism (unintentional and unaware of original sources, citing sources incorrectly, altogether forgetting to adduce); Self-plagiarism or auto-plagiarism (using one's own work without proper credit or citation); Paraphrasing plagiarism (writer uses other's work changing a few words or phrases without giving citation, at times even notations go missing from quotes taken from sources); Complete plagiarism or global plagiarism (copying and pasting everything completely from sources); Verbatim plagiarism (copy and paste of the work but text only, directly from the sources without giving citation to the source); Mosaic plagiarism (taking ideas or text from others work presenting it as one's own) and many more like these. Even unintentional paraphrasing is taken as disrespect to the original writer but people find it easy to copy and rewrite with minor changes adding one's own name on it without realizing the bad consequences of this. Plagiarism is not taken seriously or is a very loose concept in the minds of school and undergraduate students. The method followed in this work is content analysis (interpreting and analyzing the written and spoken data). Serious consequences have been seen: for students and for professionals be it academic punishments, legal actions or monetary penalties. So, this study on plagiarism answers what is plagiarism, and why do people commit plagiarism in research. How it dampens somebody's spirit when faced by consequences and solution that might be helpful to escape the plagiarism.

Keywords*: plagiarism, citation, paraphrasing, sources, unintentional, consequences, anti-plagiarism.*

Introduction

Historically plagiarism has been viewed as illegal and unethical, but to learn the real history of plagiarism we need to be in ancient Rome. 'Plagiarize (and plagiarism) comes from the Latin plagiarius "kidnapper." This word, derived from the Latin plaga ("a net used by hunters to catch game"), which later grew wider in meaning and extended in Latin to include person who stole the words or text, rather kidnapping children, of another. When plagiarius first entered English in the form plagiary, it kept its original reference to kidnapping, a sense that is now quite obsolete.' This Latin word 'plagiarius' was first used by the Roman Poet Horace back in 34 B. C. Despite the fact that plagiarism had been around for centuries, it was only in the 5th century BC that the first known case of plagiarism occurred. The poet and philosopher Heraclitus, who lived from 536 to 475 BC, was one of the major figures of the early Greek philosophical movement known as "Heracliteanism." In his writings, he asserted that all things are in a constant state of flux and that everything is connected by a cosmic Logos. In a book called "Diogenes Laertius" that is a collection of biographies of famous philosophers, the author mentions that Heraclitus's work was plagiarized by Philosophic writers. Except in

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Rome nowhere else this concept of plagiarism was considered as punishable because intellectual property was not much developed at that time.

'Plagiarism' as concept evolved during renaissance era as during this time people took a lot of interest in old or classical learning and thoughts. Scholars or learned people during those times began to value original content and ideas and accused others who copied or stole original ideas and stated as their own, of doing plagiarism. The first-time plagiarism was used in the context of literature, was sometime around 80 A. D by the Roman poet Martial for Fidentinus another poet. In his book "The Literary History of the English People," the English critic and scholar Simon Richard Green describes a similar incident that took place in around 16th century. The poet Edmund Spenser was a student at Cambridge University. Spenser's poem "The Shepherd's Calendar" was plagiarized by one of his fellow students, Thomas Colby. The early modern era saw an increase in the number of newspapers, journals, and magazines. Henceforth there was an increase in the number of cases of plagiarism. One high-profile plagiarism case from the early modern era was the dispute between the poets Samuel Taylor Coleridge and William Wordsworth Coleridge and Wordsworth were both famous poets in the early 19th century, were connected by a deep friendship. In 1806, Coleridge published an anthology of poems that included some of his new works as well as the poems he had written while living in William's house That became a case for plagiarism. The Scottish philosopher David Hume being an experimenter did not believe in only theory that are not based on experiment; As a fact finder he believed that knowledge comes from sensory experiences and observations. The emphasis he gave on individual experience suggests that Hume valued original thought and observation over just copying and pasting from other sources or authors. However, he did not explicitly discuss about plagiarism but his ideas and principles suggest about something similar to plagiarismSo, we can understand from the above-mentioned that plagiarism is not only stealing somebody else's work but also their original idea, more like intellectual dishonesty or fraud. In today's times plagiarism is considered as serious offense and can land person in serious penalties as academic suspension, expulsion, or even harm their reputation for lifetime. So, we can divide plagiarism in two groups as mentioned below:

INTENTIONAL PLAGIARISM

Copying someone's work and presenting it as own consciously with all their understanding doing it purposely, the work may include anything like text, data, images, graphs, or charts. Some of the type includes:

• **Verbatim or direct plagiarism** is copy paste of text directly from source and presenting it under one's own name but obviously not citing the sources, it can be a complete or partial copy of work, in verbatim plagiarism only text is copied and in direct plagiarism data diagram, charts, graphs are copied.

• **Paraphrasing without citing the sources**, that is, intentionally copying information and rewriting in one's own words or language, without mentioning the original sources is taken as plagiarism. At times even anti-plagiarism software may not detect it, but later on when the original writer or publications finds it out, they may charge heavy penalties on the one doing it.

• **Mosaic plagiarism** is taking different works and making one or copying texts from all different sources and making it one work presenting as one's own just as a mosaic work done on building walls or floors. Even rephrasing from different sources without citation or acknowledging original authors.

• **Ghost-writing** is also kind of plagiarism usually done by students who aren't interested into writing some original content or people who have a lot to do in really short time frame ends up doing this type of plagiarism, where one purchases someone else's work, who doesn't want to be included as a co-author. This is also a trend that some people write the content and sell

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them to others, who later presents it as their own, this is also difficult to detect as original writer gets money against the work sold.

• **Self-plagiarism** is copying text or information from one's own previous work intentionally but not citing it or reusing one's own work without proper citation or credit. Here we can include submitting one single work on different journals or with minute changes in it for publishing. This can end up people getting blacklisted or penalties.

• **Source plagiarism** is usually done by beginners, copying and pasting from different sources without even checking it and without relevant citation and put it as one's own.

UNINTENTIONAL PLAGIARISM

This usually happens unconsciously or kind of human error seen in beginner's work.

• **Incorrect or misleading citation** is when people do not provide original source, or unable to detect the original source or at times URL not working. So, one should always cross check before final submit or presentation.

• **Forgot to cite** can be intentional or unintentional, but if copying is only less than 20% then this is considered as unintentional.

• **Incorrect paraphrasing** is when rewriting the information from some source but changing the meaning of the whole, is wrong.

• **Quotes not done properly** is when either not put the quotes before and after the said thought or statement used a quote but not cited. Always quote and cite.

Research question based on the purpose is- Why is there prevalence of plagiarism among college students and scholars? What prompts people to commit plagiarism?

Methodology

Content analysis method is used here, it is a systematic research method to interpret and analyze text, visual or audio content available. Since here the aim is to understand why and what makes people do plagiarism, so this method or research design is used to examine how scholars or students perceive the concept of plagiarism and originality or academic integrity. Though content analysis is valuable method for research purpose, but it has some limitations regarding scientific research thus it should be combined with other methods for better research outcomes. The research gap seen in this topic is related to how the new technology like Artificial Intelligence will impact the rate of plagiarism. The other one is the psychological aspects, that is the level of stress or overthinking, or lack of confidence, or fear of failure. Identifying and understanding this might help in deeper understanding of committing and avoiding plagiarism

Results

The purpose of this study is to investigate and understand concept of plagiarism and why people do it. The analysis reveals that, though most of the research scholars or students do have idea about plagiarism and some do have a sense of academic integrity thus they do not try to get involved in plagiarism, but there are some who really do not understand how integrity and originality is important ultimately ends up committing plagiarism.

Discussions

People's perception of plagiarism depends on their understanding of cultural context, academic environment, and academic integrity. Plagiarism is quite prevalent maybe because people feel that they are not good enough to produce either original work or bring a novel idea on certain topic. There can be many different reasons like (a) laziness or sloppiness (b) lack of confidence or panic (c) sometimes people think they have to just reproduce what experts have stated (d) some faces difficulty in integrating already available facts with their own ideas, to make a new discovery.

Plagiarism is kind of dishonesty and fraud, can cause serious consequences, people do not understand that only citing the quotes is not enough, they need to cite the figures, facts, graphs,

charts etc. to avoid plagiarism. Most of the composition, scholars write about plagiarism will point out that it is largely a modern idea, which arouse with romantic individualism and capitalist notion of private property. “Plagiarism is perhaps one of the foremost and richest of postmodern dilemmas”

Taking from the above statement, some people follow the idea of collaborative model of production (in any field of life) it can be said that no idea is original to one person only, the same idea can grow in a lot of minds at the same time; So, this plagiarism is altogether a faulty concept. Thus, people do commit plagiarism getting support from a lot of this type of authors or philosophers.

Mentioning solutions to plagiarism, (a) **Education** – students should be taught from the beginning, about the concept of plagiarism, not only in colleges but also in high schools. How to write essays, research paper, thesis or even articles to help to develop writing skills. (b) **Citation** - students must be taught how to properly cite sources and all the information taken from different sources, be it text, graphs, charts, quotes, images with all the different citation styles. (c) **Plagiarism detection tools** – use of software like Turnitin or Grammarly and the like to detect plagiarism in work. (d) **peer review and proofreading** – Peer review is an important process that is applied before final submission of work, taking help of one’s friend or doing a proofread on their own to revisit what is written and avoid plagiarism. (e) **add value** – try to add one's own ideas or use the information taken from different sources to make something new out of it.

Other than the above-mentioned solutions there are some strategies that universities and institutions should follow; (1) Coursework should be incorporated in colleges and a variety of assessments as group discussion, collaborative projects, presentation, and practical classes. (2) Focus should be on growth mindset of students, motivate students to take up challenges and apply their own ideas in solving it, and learning new things via the process. (3) Providing technological knowledge to students fostering an atmosphere of technical learning, understanding how to use tools in favor of their work and how to detect plagiarism in work. (4) Educate students about ethics, one of the most important topics which also acts as the base of all solution to any kind of academic dishonesty or plagiarism.

University Grant Commission (UGC) in addition to anti-plagiarism policy has some other measures implemented to control and check plagiarism.

• **National Academic Depository**- UGC has established a system to maintain all the records of research works for verifying originality of the new research works.

• **Mandatory Plagiarism Checks**- It requires all universities to compulsorily check for plagiarism in thesis, dissertations, before submission.

• **Guidelines for research and publication**- UGC has provided, proper guidelines on ethical research practices and even consequences of plagiarism is mentioned properly.

• **Collaboration with software provider**- UGC collaborates with them to attain that software to facilitate institutions in detecting plagiarism.

• **Capacity building**- UGC organizes workshops, training programs for students and faculty members to make them aware of plagiarism and other ethics and research methodology.

• **Incentives to original works**- UGC incentivizes for original work or research. It also promotes funding and reorganization for original work to encourage academic integrity.

• **Penalties**- UGC has established penalties for plagiarism; But the penalty depends on severity of plagiarism.

Level of plagiarism according to UGC regulation 2018:

1. **Level 0** – similarity up to 10% or minor similarity (no penalty)
2. **Level 1**- similarity above 10% to 40% (students will be given about 6 months to revise, rewrite and submit)

3. **Level 2**- similarity above 40% to 60% (shall be debarred from submitting the work)
4. **Level 3**- similarity above 60 % (student's registration for the program shall be canceled)

Conclusion

While summarizing this research paper we understood that plagiarism is a vast concept with a lot of facets, legal, ethical and academic. We still lack in creating awareness of this concept, that everyone should know. With proper implementation of all the policies and strategies introduced by the apex institution and governing bodies, a lot of difference can be seen in this field. Plagiarism can cause severe problems not only to the person who commits it but also to the society as a whole. As the person who is not serious for their own work how will they lead others in similar situation, like if they were to be a teacher how will they be able to lead the students, or a person who works in any office what leadership they would show to their teammates if they themselves are at fault when it comes to following ethics. Creativity can also help in avoiding plagiarism, also proper citation needs to be practiced, time to time more of workshops and ethics programs should be organized in universities and institutions.

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Plagiarism in Academia: Ethical Considerations and Mitigation Approaches

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Abstract

Plagiarism in research is a pervasive issue that undermines the integrity of academic work, leading to significant ethical, professional, and legal consequences. This paper explores the multifaceted nature of plagiarism, delving into its various forms, causes, and impact on the academic community. Through a comprehensive literature review, the paper identifies the key factors contributing to plagiarism, including the pressure to publish, lack of awareness, and the availability of digital content. The methodology section outlines the research approach used to gather data on the prevalence of plagiarism and the effectiveness of existing preventive measures. The study draws on quantitative and qualitative data from surveys, interviews, and plagiarism detection tools. The findings reveal that while technological tools have enhanced plagiarism detection, there is a need for more robust educational strategies and institutional policies to prevent plagiarism effectively. The paper concludes with recommendations for fostering a culture of academic integrity, emphasizing the importance of continuous education, clear policies, and the use of advanced technology. By addressing the root causes of plagiarism and promoting ethical research practices, academic institutions can uphold the credibility and reliability of scholarly work.

Keywords*: Plagiarism, Research Ethics, Academic Integrity, Plagiarism Detection, Self-Plagiarism, Academic Misconduct*

Introduction

Plagiarism, defined as the unacknowledged use of another person's ideas, language, or work, has become a critical concern in academic research. The act of plagiarism violates the principles of academic integrity and can lead to serious consequences for both individuals and institutions. As the academic landscape becomes increasingly competitive, with a growing emphasis on publication as a measure of success, the incidence of plagiarism has risen. This paper aims to explore the issue of plagiarism in research, examining its causes, types, and consequences. By understanding the factors that contribute to plagiarism, this study seeks to propose effective strategies for its prevention and promote a culture of ethical research.

Literature Review

Defining Plagiarism

Plagiarism in research is commonly understood as the act of using someone else's work or ideas without proper attribution. The American Psychological Association (APA) defines plagiarism as "the act of presenting the words, ideas, or images of another as one's own." This definition encompasses both intentional and unintentional acts of plagiarism, highlighting the importance of proper citation and acknowledgment in academic work. Plagiarism can occur in various forms, from direct copying of text to the more subtle act of paraphrasing without proper attribution.

Types of Plagiarism

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1. **Direct Plagiarism**: This involves the verbatim copying of text from a source without quotation marks or proper citation. It is the most blatant form of plagiarism and is usually intentional.
2. **Self-Plagiarism**: Occurs when an author reuses significant portions of their previously published work without proper citation. This can mislead readers by presenting old content as new research.
3. **Paraphrasing Plagiarism**: Involves rewording or summarizing someone else's ideas without giving credit to the original source. This type of plagiarism is often unintentional but still represents a serious ethical breach.
4. **Mosaic Plagiarism**: Also known as patchwriting, this form involves piecing together text from different sources, substituting synonyms or altering sentence structures while retaining the original meaning, without proper citation.
5. **Accidental Plagiarism**: This occurs when a researcher unintentionally fails to cite sources or improperly paraphrases due to a lack of understanding of citation rules. Despite the lack of intent, it is still considered plagiarism.

Causes of Plagiarism

Several factors contribute to the occurrence of plagiarism in research:

- **Pressure to Publish**: The "publish or perish" culture in academia creates significant pressure on researchers to produce a high volume of publications, sometimes leading to unethical practices such as plagiarism. The need to meet publication targets for career advancement, tenure, or funding can drive researchers to cut corners.
- **Lack of Awareness**: Many instances of plagiarism result from a lack of understanding of what constitutes plagiarism and how to avoid it. This is particularly true for early-career researchers and students who may not have received adequate training in academic writing and research ethics.
- **Easy Access to Digital Content**: The proliferation of online resources and databases has made it easier for researchers to access and copy information. The convenience of digital content, combined with inadequate citation practices, has contributed to the increase in plagiarism cases.
- **Cultural Factors**: In some educational and cultural contexts, the concept of individual intellectual property may not be as strongly emphasized, leading to different attitudes toward citation and attribution. This can result in practices that are considered plagiarism in Western academic traditions.

Consequences of Plagiarism

The consequences of plagiarism in research are far-reaching and can be devastating for individuals and institutions:

- **Academic Penalties**: Students and early-career researchers caught plagiarizing may face severe academic penalties, including failing grades, suspension, or expulsion. For established researchers, plagiarism can result in the retraction of published papers, loss of credibility, and damage to professional reputation.
- **Legal Repercussions**: Plagiarism can lead to legal action, particularly if it involves the unauthorized use of copyrighted material. Authors and publishers may face lawsuits, financial penalties, and other legal consequences.
- **Damage to Institutional Reputation**: Academic institutions that fail to address plagiarism effectively risk damaging their reputation and credibility. This can lead to a loss of trust among students, faculty, and the broader academic community.
- **Impact on Scientific Progress**: Plagiarism undermines the integrity of the academic record and can mislead other researchers, leading to wasted resources and potentially

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flawed research. It also devalues the work of honest researchers and distorts the scholarly discourse.

Tools and Techniques for Detection

Plagiarism detection software has proliferated in recent years, functioning as a tool for identifying instances of academic dishonesty. Tools such as Turnitin provide educators with the means to check for similarities between student submissions and existing literature. However, reliance on such technologies raises ethical questions, particularly regarding student privacy and the potential for false positives. It is crucial to balance these tools with educational measures to promote understanding of plagiarism and ethical writing standards.

Methodology

Research Design

This study adopts a mixed-methods approach, combining quantitative and qualitative data to explore the prevalence of plagiarism and the effectiveness of preventive measures. The research design includes surveys, interviews, and the analysis of plagiarism detection tool data.

Data Collection

1. **Surveys**: A survey was distributed to a sample of researchers, students, and faculty members across various academic institutions. The survey aimed to gather data on participants' understanding of plagiarism, their experiences with plagiarism detection tools, and their perceptions of the effectiveness of institutional policies.
2. **Interviews**: In-depth interviews were conducted with a select group of faculty members, academic administrators, and researchers who have experience dealing with plagiarism cases. These interviews provided qualitative insights into the challenges and strategies related to plagiarism prevention.
3. **Plagiarism Detection Tool Analysis**: Data from plagiarism detection tools such as Turnitin and iThenticate were analyzed to assess the prevalence of plagiarism in submitted academic papers. The analysis focused on identifying common patterns of plagiarism and the effectiveness of these tools in detecting various forms of plagiarism.

Data Analysis

Quantitative data from surveys were analyzed using statistical methods to identify trends and correlations between factors such as academic discipline, level of experience, and attitudes toward plagiarism. Qualitative data from interviews were analyzed thematically, with key themes and patterns identified to provide a deeper understanding of the issues surrounding plagiarism.

Results

Survey Findings

The survey results indicated that 64% of participants reported encountering plagiarism in their academic experience. A significant portion, 58%, expressed uncertainty regarding the different types of plagiarism, suggesting a need for enhanced educational interventions1.

Table 1: Understanding of Types of Plagiarism

Type of Plagiarism	Percentage of Awareness (%)
Direct Plagiarism	82
Self-Plagiarism	56
Mosaic Plagiarism	48
Accidental Plagiarism	48

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Interview Insights

Qualitative insights from interviews highlighted the importance of clear communication regarding academic integrity. Participants emphasized the need for ongoing training and resources for students, particularly regarding citation practices and the use of plagiarism detection tools. Many educators expressed frustration over the lack of institutional support in fostering a culture of integrity.

Discussion

Findings

The analysis revealed several key findings:

- **Prevalence of Plagiarism**: The survey results indicated that a significant proportion of participants had encountered plagiarism in their academic careers, either directly or indirectly. Self-reported data suggested that accidental plagiarism was more common than intentional plagiarism, highlighting the need for better education on citation practices.
- **Effectiveness of Plagiarism Detection Tools**: The analysis of plagiarism detection tools showed that while these tools are effective at identifying direct plagiarism, they are less reliable in detecting more subtle forms such as paraphrasing plagiarism and mosaic plagiarism. This underscores the need for complementary strategies, such as education and training, to address these gaps.
- **Perceptions of Institutional Policies**: Interviews revealed mixed perceptions of institutional policies on plagiarism. While some participants felt that policies were clear and effective, others expressed concerns about inconsistent enforcement and the lack of support for educating students and researchers on avoiding plagiarism.

Implications

The findings of this study have several important implications for academic institutions and researchers:

- **Need for Enhanced Education**: The prevalence of accidental plagiarism highlights the importance of providing comprehensive education on academic writing and citation practices. Institutions should invest in training programs that address the nuances of plagiarism and emphasize the importance of ethical research.
- **Role of Technology**: While plagiarism detection tools are valuable, they should not be relied upon as the sole means of preventing plagiarism. Institutions should adopt a holistic approach that includes technology, education, and clear policies to effectively combat plagiarism.
- **Policy and Enforcement**: Clear, consistent policies on plagiarism, combined with fair and transparent enforcement, are essential for maintaining academic integrity. Institutions should ensure that their policies are well-communicated and that students and faculty are aware of the consequences of plagiarism.

Conclusion

Plagiarism in research is a complex issue that requires a multifaceted approach to address effectively. This study highlights the importance of understanding the various forms and causes of plagiarism, as well as the need for robust preventive measures. By combining education, technology, and clear policies, academic institutions can foster a culture of integrity and uphold the credibility of scholarly work. Moving forward, ongoing efforts are needed to adapt to the evolving challenges of plagiarism in the digital age, ensuring that ethical standards in research are maintained and reinforced.

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RESEARCH DESIGN

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Abstract
Research design is the structured framework that guides the process of investigation, linking the research problem with appropriate methods for data collection, analysis, and interpretation. It acts as a blueprint that ensures the study remains systematic, logical, and reliable. A well-prepared design minimizes errors, reduces bias, and helps achieve valid results. Different types of research designs—such as exploratory, descriptive, analytical, and experimental—are applied depending on the objectives and nature of the research. In literature studies, analytical, historical, or comparative designs are commonly used, while in scientific and social sciences, experimental and survey designs play a central role. Regardless of the field, research design provides clarity and direction, ensuring that the findings meaningfully contribute to existing knowledge.
Keywords*: Research Design, Framework, Methodology, Analysis, Knowledge, Systematic Study, Reliability, Literature*

INTRODUCTION

Research is a critical, careful, scholarly, scientific, positive, exhaustive investigation or an organized and systematic inquiry of facts or answer to questions and solution to the problems. The term 'research design' means drawing a tentative outline, a blue print and a scheme, planning or arranging a strategy of conducting research with a through knowledge about research methodology. It can enable certain guidelines and procedure to pursue authentic and relevant investigation with a professional standard. It is a logical and systematic plan for collecting data, measurement and analysis of data and prepared for a research study. The research proposal is a written plan for a study and it reveals what the researcher intends to do. In this paper the specific emphasis is given to the 'research design' keeping in mind the 'empirical studies'[1], important concepts in research design, classify the major types of designs and an attempt is also made to present a format of a research project. Any scientific investigation must begin with some structure or plan. This structure defines the number and the type of variables to be studied and their relationship to one another. Such a structure is termed a design.

DEFINATION

A research design can be defined as the preparation of conditions, for the collection and analysis of data in such a manner, which aims at combining relevance to the research purpose with economy in procedure. In other words, the design arrangement of a research project is commonly known as the "research design". Besides, the decisions like what, where, when, how, etc., in regard to a research study, creates a research design. In fact, the research design is the conceptual structure within which a research is conducted. Moreover, it comprises the outline for the collection, measurement and analysis of data. Hence, the design carries a blueprint of what the researcher will do, from composing the hypothesis and its operational implications to the final analysis of data. Overtly, the design decisions happen to be in respect of:

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BASIC CONCEPTS IN RESEARCH DESIGN

1. Variable A variable is a qualitative or quantitative entity that can vary or take on different values according to the nature of the research. Variables represent the concepts under consideration in the study. According to 'Best' "variables are the conditions or characteristics that the experimenter manipulates, controls, or observes".

2. Independent and Dependent Variables The independent variables are the conditions or characteristics that the experimenter manipulates in his/her attempt to ascertain their relationship to an observed phenomenon. The independent variable is a variable that can be used to predict or explain the values of another variable. According to Best (1984) "a variable manipulated by an experimenter who predicts that the manipulation will have an effect on another variable (the dependent variable) is called an independent variable".[10] Some authors use the term independent variable for experimental research only. Instead of independent variable these authors use the term predictor variable. Essentially, dependent variable is the behavioral or attitudinal measurement made by the experimenter. The dependent variable gets its name because it depends on what does with the independent variable. According to Best (1984), the dependent variables are the conditions or characteristics that appear, disappear, or change an experimenter introduces, removes, or changes independent variables.[11] The variable whose values are predicted by the independent variable, whether or not caused by it. In non-experimental research, instead of dependent variable some authors use the term criterion variable or outcome variable. Most commonly, however, dependent variable is used both in experimental and non-experimental research.

3. Extraneous variables Independent variables that are not related to the purpose of the study, but may affect the dependent variable are termed as extraneous variables.[12] Extraneous variables are those uncontrolled variables that may have a significant influence upon the dependent variable. Many research conclusions are invalidated by the influence of these extraneous variables. Extraneous, in this context, does not mean unimportant. Sometimes it is called as nuisance variables. Researchers usually try to control for extraneous variables by experimental isolation, by randomization, or by statistical technical techniques such as analysis of covariance or partial

CORRELATION.

4. Confounding variables When the dependent variable is not free from the influence of extraneous variables, the relationship between the dependent and independent variables is said to be confounded by an extraneous variable(s). Confounding variable is a variable that obscures the effects of another. If the independent variable is confounded with a secondary variable, the experimenter cannot separate the effects of the two variables on the dependent measure.[13]

5. Experimental group and control group In an experimental hypothesis- testing research when a group is exposed to usual conditions, it is termed a control group but when the group is exposed to some novel or special treatment condition, it is termed an experimental group. Experimental group is the group which receives some treatment in an experiment. The experimental group is exposed to the influence of the factor under consideration. Data collected about subjects in the experimental group are compared with data about subjects in a control group who received no treatment and/or anotherexperimental group who received a different treatment. In true experimental research, participants are randomly assigned to certain conditions -i. e., they have an equal chance of being assigned to either the experimental or the control group.

6. Quantitative and Qualitative studies A distinction that is often made in the context of measurement is between quantitative and qualitative methods. Quantification has been defined as a numerical method of describing observations of materials or characteristics. Quantitative approach typically involves the reduction of all verbal/nonverbal data to numerical forms and

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notations.[14] Qualitative research is generally defined as research built around the collection of analysis of the accounts or stories that people offer regarding their experience. Qualitative studies are those in which the description of observations is not numerically expressed in quantitative terms. The data of qualitative research is therefore, 'words' rather 'numbers'. However, to describe qualitative research merely in terms of an absence of quantification and statistics is to miss the point. The methods used to collect qualitative data are interviews, case studies, open-ended questionnaires, projective techniques, documentary research, and participant observation and so on. The various approaches in analyzing qualitative data are grounded theory analysis, phenomenological methods and narrative analysis. The quantitative researchers typically use techniques such as surveys, questionnaires and structured observations. Using statistics, they analyze the information they have collected to see if their ideas about patterns or relationships are supported by the facts as revealed in their research.[15] **7**.Probabilistic Equivalence When we deal with human beings it is impossible to ever say that any two individuals or groups are equal or equivalent. Clearly the important term in the phrase is "probabilistic". This means that the type of equivalence we have is based on the notion of probabilities. In more concrete terms, probabilistic equivalence means that we know perfectly the odds that we will find a difference between two groups. 8. Random Selection [16] & Assignment Random selection is how you draw the sample of people for your study from a population. Random assignment is how you assign the sample that you draw to different groups or treatments in your study. It is possible to have both random selection and assignment in a study. It is important to randomly select which participants will be included in each group. This ensures that
any difference in the outcome will not be due to the selection effects.[17] Random selection is related to sampling.[18] Therefore it is most related to the external validity (or generalizability) of your results. After all, we would randomly sample so that our research participants better represent the larger group from which they're drawn. Random assignment is most related to design. In fact, when we randomly assign participants to treatments we have, by definition, an experimental design.[19] Therefore, random assignment is most related to internal validity. After all, we randomly assign in order to help assure that our treatment groups are similar to each other (i.e., equivalent) prior to the treatment.

EMPIRICAL RESEARCH DESIGN IN PASTORAL CARE AND COUNSELING

Broadly speaking, research in pastoral care and counseling, like research in other professional fields, is of two kinds:

(1) empirical studies [20], which examine actual events of care and counseling (and the human problems to which they are addressed); and

(2) theoretical studies, which analyze or construct the concepts and images (e.g. assumptions, metaphors, meanings, values, and causal hypotheses) which define the problems and guide the practice of pastoral care and counseling. It is important to recognize the close connection in principle between these two even though many research studies give a dominant or even exclusive attention to one over the other.[21] There are basically three Methods of Empirical Research. In pastoral care and counseling there are three predominant methods of gathering information: the case study, correlation [22],
and experimental. All three involve observations of behavior. These methods differ in terms of the research questions they ask, the types of observations that are made, the circumstances surrounding the observations, and how the data from the observations are handled.

1. **Case studies**. In the case study method, an in-depth analysis of a single individual using qualitative terms and concepts is frequently used. The research question may highlight an unusual problem, or demonstrate how to work with a particular individual.[23]

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2. Correlation studies. The correlation method examines the relationship between two or more variables, quantitatively looking at the extent one variable changes with another variable. The research question is usually stated in the form: "Do variable A and variable B go in the same or opposite direction?" Usually the closer the correlation coefficient is to + 1 or -1 the more statistically significant the findings. This approach is useful for gathering information about how
variables relate to each other, but does not lend itself to making cause and effect statements.[24] Another popular form of co relational research used in pastoral care and counseling is opinion survey. The question asked here is to what extent certain options correlate, or go together with sex, social class, church affiliation, or political affiliation.

3. **Experimental studies**. The experimental method looks at the quantitative relationship between one or more conditions which are systematically varied and are expected to cause change in a person's behavior. This approach represents the greatest degree of control, which in research refers to systematically varying, randomizing, or holding constant the conditions under which observations are made. The purpose of having control within research is to reduce the number of alternative explanations for why and how behavior is influenced. In experimental research, the condition which is directly varied is called the independent variable. The dependent variable is thought to depend on the conditions varied by the experimenter. [25] An experimental hypothesis is a statement about the effect of the independent variable upon the dependent variable.[26] (For example check the footnote)

CLASSIFICATION OF RESEARCH DESIGN

1. Exploratory or Formulate design (study) This type of research designs look for patterns, ideas, or hypotheses, rather than research that tries to test or confirm hypotheses. In any explorative studies the purpose is to formulate a problem for further study that is to formulate a hypothesis. An exploratory study has other functions also. It increases the researcher's familiarity with a phenomenon that s/he wants to study, or with the situation in which the study is to be done. It also set up priorities for further research, explains more clearly the concepts, and gathers information about the practical possibility of carrying out further research or provides some idea of the problems that are considered most urgent by the people in that field. The exploratory study may also be considered as the first step in a continuous research process. It helps the researcher to design a structured investigation. The purpose of explorative studies is to achieve new insights into a phenomenon. The reason for aiming new insights or ideas is to formulate a more precise problem or to develop hypotheses for further research.

2. Descriptive design (study) Descriptive research deals with the relationship between variables, the testing of hypotheses, and the development of generalizations, principles, or theories that have universal validity. The descriptive questions need for a frame of reference is fairly obvious.[27] In contrast to the experimental design, the researcher does not manipulate the variables or arrange for events to happen. The process of research goes beyond mere collection and tabulation of data. It is essentially a fact-finding approach, which is related mainly to the present and draws generalizations from a cross sectional study of the current situation. Description is combined with comparison or contrast, which involves measurement, classification, interpretation and evaluation to show the significance of what is described. Unlike formulate studies, the descriptive studies presuppose much prior knowledge of the problem to be studied. The descriptive studies deal with the relationship between non-manipulated variables in a natural rather artificial setting. Since the events or conditions have already occurred or exist, the researcher selects the relevant variables for analysis of their relationships. They involve hypothesis formulation and testing and they use logical methods of inductive- deductive reasoning to arrive at generalizations. They often employ methods of randomization.

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3. Ex- Post Facto Research Design The ex post facto theory developed after data have been analyzed to explain the patterns in the data. Ex-post facto theories are usually consistent with the data but often are simply plausible rather than compelling since more than one ex post facto explanation is often consistent with data.[28] Any investigation using existing data rather than new data gathered specifically for the study is known as ex-post facto research design. Causes will be studied after (post) they have had their effect. Therefore, any non- experimental research design that takes place after the conditions to be studied have occurred or such research in which there is a post-test but not pre test is considered as an 'ex- post facto research design'.

4. Experimental Design Experimental designs are often touted as the most "rigorous" of all research designs or, as the "gold standard" against which all other designs are judged.[29] Experimental design is the blueprint of the procedures that enable the researcher to test hypotheses by reaching valid conclusions about relationships between independent and dependent variables.[30] The experimental design occurs when the investigator manipulates the subjects and conditions (eventsor situations) to be studied. The key to experimental design is that the investigator assigns subjects to conditions rather than observing in natural occurring. Experimental studies are more powerful than non-experimental studies if one has to study and discover causal relationship among the variables. Through control and randomization the potential confounding effects can be removed. Experimenters manipulate certain environmental condition, stimuli, and treatment, and observe how the condition or the behavior of the subject is affected or changed. Selection of the design is based on the purposes of the experiment, the type of variables to be manipulated, and the conditions or the limiting factors under which it is conducted. The design deals with practical problems such as how subjects are to be selected for experimental and control groups, the way the variables are to be manipulated and controlled, the way the extraneous variables are to be controlled, how observations are to be made, and the type of statistical analysis to be employed in interpreting data relationships. The adequacy of experimental designs is judged by the degree to which they eliminate or minimize threats to experimental validity. So also experimental studies become conclusive only when there is direct manipulation and also when the principles of control, randomization and comparison are used. There are various types of experimental designs such as pre-test-post-test control group design, post-test control group design, single factor multiple group design and so on. A discussion on these is beyond the scope of this paper.

5. Quasi-Experimental Designs Most experiments in pastoral care and counseling are really what is called quasiexperimental designs. The quasi quality comes from the inability of the researcher to control fully the scheduling of treatment or exactly who gets treated. The researcher attempts to control other possible influences on the experiment as well as possible and to interpret results in the same manner a true experiment is interpreted.[31] Any experimental situations in which experimenter does not have full control over the assignment of experimental units randomly to the treatment conditions or the treatment cannot be manipulated are called 'quasi-experimental designs. A quasi-experimental design is one that looks a bit like an experimental design but lacks the key ingredient - random assignment.[32]

6. Factorial Design Most experimental designs encountered in practice have several independent variables and are meant to determine their combined effects on the dependent variable in question. For this, the independent variables are placed into factorial for structure for ease of analysis. [33] These structures can be simple or complex, depending upon the nature and number of variables chosen. Research designs with two or more independent variables or factors, each studied at two or more levels. The goal of factorial design is to determine whether the factors combine to produce interaction effects. In factorial designs the influence of more than one independent variable upon more than one dependent variable can be observed. In factorial designs, a factor is a major independent variable.[34] Factorial design has several

important features. First, it has great flexibility for exploring or enhancing the "signal" (treatment) in our studies. Whenever we are interested in examining treatment variations, factorial designs should be strong candidates as the designs of choice. Second, factorial designs are efficient. Instead of conducting a series of independent studies we are effectively able to combine these studies into one. Finally, factorial designs are the only effective way to examine interaction effects.[35]

7. The survey Method design In the social research survey involves collecting information from a large number of people. The data may be elicited face to face interviewing or at a distance by postal questionnaires. There are various types of interview such as structured interview and ethnographic style interviewing (highly unstructured). The questions may be made of open-ended or closed ended questions.[36] 8. Cross- Sectional or correlation design The most common design used in survey research is the cross-sectional design. Using this approach we collect measures from at least two groups of people at once point of time and compare the extent to which the two groups differ on the dependent variable (eg. Level of smoking).[37]

Need for Research Design:

Research design has a significant impact on the reliability of the results obtained. It thus acts as a firm foundation for the entire research. It is needed because it facilitates the smooth functioning of the various research operations. It makes the research as efficient as possible by giving maximum information with minimal expenditure of effort, time and money. For construction of a house, we need to have a proper blueprint prepared by an expert architect. Similarly, we need a proper research design or plan prior to data collection and analysis of our research project. Preparation of research design should be done carefully as even a minute error might ruin the purpose of the entire project. The design helps the researcher to organize his ideas, which helps to identify and correct his flaws, if any. In a good research design, all the components with each other or go together with each other in a coherent manner. The theoretical and conceptual framework must with the research goals and purposes. Likewise, the data collection strategy must fit with the research purposes, conceptual and theoretical framework and approach to data analysis.

The need for research design is as follows:

- It reduces inaccuracy;
- Helps to get maximum efficiency and reliability;
- Eliminates bias and marginal errors;
- Minimizes wastage of time;
- Helpful for collecting research materials;
- Helpful for testing of hypothesis;

Gives an idea regarding the type of resources required in terms of money, manpower, time, and efforts;

- Provides an overview to other experts;
- Guides the research in the right direction.

Features of a Good Research Design: When a researcher has formulated a research problem, he/she has to focus on developing a good design for solving the problem. A good design is one that minimizes bias and maximizes the reliability of the data. It also yields maximum information, gives minimum experimental error, and provides different aspects of a single problem. A research design depends on the purpose and nature of the research problem. Thus, one single design cannot be used to solve all types of research problem, i.e., a particular design is suitable for a particular problem. A research design usually consists of the following factors:

(i) The means of obtaining information;

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(ii) The availability and skills of the researcher and his staff, if any;
(iii) The objective of the problem to be studied;
(iv) The nature of the problem; and
(v) The availability of time and money for the research work.

If a research study is an exploratory or formularize one, i.e., it focuses on discovery of ideas and insights, the research design should be flexible enough to consider different aspects of the study. Similarly, if the study focuses on accurate description or association between variables, the design should be accurate with minimum bias and maximum reliability. However, in practice, it is difficult to categorize a particular study into a particular group. A study can be categorized only on the basis of its primary function and accordingly, its design can be developed. Moreover, the above-mentioned factors must be given due weight age while working on the details of the research design.

Research Design: Important Concepts

In order to facilitate a clear and better understanding of the different research designs, it is initially necessary to define all the various important concepts of research design itself.

1) Dependent and independent variables: A variable is a concept that can take on different quantitative values. E.g., weight, height, income, etc. A dependent variable can be defined as the variable, which depends upon or is a consequence of the other variable. On the other hand, an independent variable can be defined as the variable that is antecedent to the dependent variable. E.g., if height depends upon age, then height is a dependent variable, while age is an independent variable.

2) Extraneous variable: Although, the independent variables are unrelated to the study purpose, they might however affect the dependent variables, known as extraneous variables. E.g., When a researcher investigates the hypothesis of the relationship between children's gains in moral studies achievement and their selfconcepts. The self-concept denotes an independent variable, whereas the moral
studies achievement denotes a dependent variable. However, intelligence may also affect the moral studies achievement, but as it is unrelated to the study purpose, it will thus be called an extraneous variable.

3) Control: The most significant quality of a good research design is to reduce the influence/effect of extraneous variables. Control is a technical term, which is used while designing the study, by reducing the effects of extraneous independent variables. Besides, in experimental studies, the term control refers to the restraining of experimental conditions.

4) Confounded relationship: In case the dependent variable is bound by the influence of extraneous variable, the relationship between the dependent and independent variables is known to be confused by extraneous variables.

5) Research hypothesis: This can be defined as the prediction or a hypothesised relationship that needs to be tested by scientific methods. Besides, it is a predictive statement, which connects an independent variable to a dependent variable. Moreover, a research hypothesis needs to contain, at least, one independent and one dependent variable.

6) Experimental and non-experimental hypothesis-testing research: When a research aims at investigating a research hypothesis, it is known as the hypothesistesting research. However, it can be of the experimental or the non-experimental design. On the other hand, a research in which the independent variable is manipulated is known as the experimental hypothesis-testing research, while the research in which an independent variable is not manipulated is known as the nonexperimental hypothesis-testing research.

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7) Experimental and control groups: When any group is exposed to the usual conditions of experimental hypothesis-testing research, it is known as a control group. Whereas, when the group is exposed to some other special condition, it is known as an experimental group.

8) Treatments: This can be defined as the different types of conditions under which the experimental and control groups are put. E.g., In order to determine the comparative impact of three varieties of fertilizers on a crop yield, the three different varieties of fertilizers will be treated as three different treatments.

9) Experiment: This can be defined as the process of examining the truth of a statistical hypothesis, relating to some research problem. E.g., An experiment conducted in order to research the usefulness of a newly developed medicine.

Moreover, experiments can be of two types:

i. Absolute experiment The determination of the impact of a fertilizer on a crop yield is an example of absolute experiment.

ii. Comparative experiment The determination of the impact of one fertilizer, in comparison to another fertilizer, is an example of comparative experiment. 10) Experimental units: These represent the pre-determined plots or blocks, where different types of treatments are used. Moreover, such type of experimental units must be selected, as well as defined, very cautiously and thoroughly.

DIFFERENT RESEARCH DESIGNS:

Different research designs can be conveniently described if we categorize them as:

1. research design in case of exploratory research studies;
2. research design in case of descriptive and diagnostic research studies, and
3. research design in case of hypothesis-testing research studies.

We take up each category separately.

1. Research design in case of exploratory research studies: Exploratory research studies are also termed as formulative research studies. The main purpose of such studies is that of formulating a problem for more precise investigation or of developing the working hypotheses from an operational point of view. The major emphasis in such studies is on the discovery of ideas and insights. As such the research design appropriate for such studies
must be flexible enough to provide opportunity for considering different aspects of a problem under study. Inbuilt flexibility in research design is needed because the research problem, broadly defined initially, is transformed into one with more precise meaning in exploratory studies, which fact may necessitate changes in the research procedure for gathering relevant data. Generally, the following three methods in the context of research design for such studies are talked about: the survey of concerning literature, the experience survey and the analysis of 'insight-stimulating' examples. The survey of concerning literature happens to be the most simple and fruitful method of formulating precisely the research problem or developing hypothesis. Hypotheses stated by earlier workers may be reviewed and their usefulness be evaluated as a basis for further research. It may also be
considered whether the already stated hypotheses suggest new hypothesis. In this way the researcher should review and build upon the work already done by others, but in cases where hypotheses have not yet been formulated, his task is to review the available material for deriving the relevant hypotheses from it. Besides, the bibliographical survey of studies, already made in one's area of interest may as well as made by the researcher for precisely formulating the problem. He should also make an attempt to apply concepts and theories developed in different research contexts to the area in which he is himself working. Sometimes the works of creative writers also provide a fertile ground for hypothesis formulation and as such may be looked into by the researcher. Experience survey means the survey of people who have had

practical experience with the problem to be studied. The object of such a survey is to obtain insight into the relationships between variables and new ideas relating
to the research problem. For such a survey people who are competent and can contribute new ideas may be carefully selected as respondents to ensure a representation of different types of experience. The respondents so selected may then be interviewed by the investigator. The researcher must prepare an interview schedule for the systematic questioning of informants. But the interview must ensure flexibility in the sense that the respondents should be allowed to raise issues and questions which the investigator has not previously considered. Generally, the experience collecting interview is likely to be long and may last for few hours. Hence, it is often considered desirable to send a copy of the questions to be discussed to the respondents well in advance. This will also give an opportunity to the respondents for doing some advance thinking over the various issues involved so that, at the time of interview, they may be able to contribute effectively. Thus, an experience survey may enable the researcher to define the problem more concisely and help in the formulation of the research hypothesis. This survey may as well provide information about the practical possibilities for doing different types of research. Analysis of 'insight-stimulating' examples is also a fruitful method for suggesting hypotheses for research. It is particularly suitable in areas where there is little experience to serve as a guide. This method consists of the intensive study of selected instances of the phenomenon in which one is interested. For this purpose the existing records, if any, may be examined, the unstructured interviewing may take place, or some other approach may be adopted. Attitude of the investigator, the intensity of the study and the ability of the researcher to draw together diverse information into a unified interpretation are the main features which make this method an appropriate procedure for evoking insights. Now, what sort of examples are to be selected and studied? There is no clear cut answer to it. Experience indicates that for particular problems certain types of instances are more appropriate than others. One can mention few examples of 'insight-stimulating' cases such as the reactions of strangers, the reactions of marginal individuals, the study of individuals who are in transition from one stage to another, the reactions of individuals from different social strata and the like. In general, cases that provide sharp contrasts or have striking features are considered relatively more useful while adopting this method of hypotheses formulation. Thus, in an exploratory of formulative research study which merely leads to insights or hypotheses, whatever method or research design outlined above is adopted, the only thing essential is that it must continue to remain flexible so that many different facets of a problem may be considered as and when they arise and come to the notice of the researcher.

2. Research design in case of descriptive and diagnostic research studies: Descriptive research studies are those studies which are concerned with describing the characteristics of a particular individual, or of a group, whereas diagnostic research studies determine the frequency with which something occurs or its association with something else. The studies concerning whether certain variables are associated are examples of diagnostic research studies. As against this, studies concerned with specific predictions, with narration of facts and characteristics concerning individual, group or situation are all examples of descriptive research studies. Most of the social research comes under this category. From the point of view of the research design, the descriptive as well as diagnostic studies share common requirements and as such we may group together these two types of research studies. In descriptive as well as in diagnostic studies, the researcher must be able to define clearly, what he wants to measure and must find adequate methods for measuring it along with a clear cut definition of 'population' he wants to study. Since the aim is to obtain complete and accurate informationin the said studies, the procedure to be used must be carefully planned. The research design must make enough provision for protection against bias and must maximize reliability, with due

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concern for the economical completion of the research study. The design in such studies must be rigid and not flexible and must focus attention on the following:

- Formulating the objective of the study (what the study is about and why is it being made?)
- Designing the methods of data collection (what techniques of gathering data will be adopted?)
- Selecting the sample (how much material will be needed?)
- Collecting the data (where can the required data be found and with what time period should the data be related?)
- Processing and analysing the data.
- Reporting the findings.

In a descriptive/diagnostic study the first step is to specify the objectives with sufficient precision toensure that the data collected are relevant. If this is not done carefully, the study may not provide the desired information. Then comes the question of selecting the methods by which the data are to be obtained. In other words, techniques for collecting the information must be devised. Several methods (viz., observation, questionnaires, interviewing, examination of records, etc.), with their merits and limitations, are available for the purpose and the researcher may user one or more of these methods which have been discussed in detail in later chapters. While designing data-collection procedure, adequate safeguards against bias and unreliability must be ensured. Whichever method is selected, questions must be well examined and be made unambiguous; interviewers must be instructed not to express their own opinion; observers must be trained so that they uniformly record a given item of behaviour. It is always desirable to pretest the data collection instruments before they are finally used for the study purposes. In other words, we can say that "structured
instruments" are used in such studies. In most of the descriptive/diagnostic studies the researcher takes out sample(s) and then wishes to make statements about the population on the basis of the sample analysis or analyses. More often than not, sample has to be designed. Different sample designs have been discussed in detail in a separate chapter in this book. Here we may only mention that the problem of designing samples should be tackled in such a fashion that the samples may yield accurate information with a minimum amount of research effort. Usually one or more forms of probability sampling, or what is often described as random sampling, are used. To obtain data free from errors introduced by those responsible for collecting them, it is necessary to supervise closely the staff of field workers as they collect and record information. Checks may be set up to ensure that the data collecting staff perform their duty honestly and without prejudice. "As data are collected, they should be examined for completeness, comprehensibility, consistency and reliability." The data collected must be processed and analysed. This includes steps like coding the interview replies, observations, etc.; tabulating the data; and performing several statistical computations. To the extent possible, the processing and analysing procedure should be planned in detail before actual work is started. This will prove economical in the sense that the researcher may avoid unnecessary labour such as preparing tables for which he later finds he has no use or on the other hand, redoing some tables because he failed to include relevant data. Coding should be done carefully to avoid error in coding and for this purpose the reliability of coders needs to be checked. Similarly, the accuracy of tabulation may be checked by having a sample of the tables re-done. In case of mechanical tabulation the material (i.e., the collected data or information) must be entered on appropriate cards which is usually done by punching holes corresponding to a given code. The accuracy of punching is to be checked and ensured. Finally, statistical computations

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are needed and as such averages, percentages and various coefficients must be worked out. Probability and sampling analysis may as well be used. The appropriate statistical operations, along with the use of appropriate tests of significance should be carried out to safeguard the drawing of conclusions concerning the study. Last of all comes the question of reporting the findings. This is the task of communicating the findings to others and the researcher must do it in an efficient manner. The layout of the report needs to be well planned so that all things relating to the research study may be well presented in simple and effective style. Thus, the research design in case of descriptive/diagnostic studies is a comparative design throwing light on all points narrated above and must be prepared keeping in view the objective(s) of the study and the resources available. However, it must ensure the minimisation of bias and maximisation of reliability of the evidence collected. The said design can be appropriately referred to as a survey design since it takes into account all the steps involved in a survey concerning a phenomenon to be studied. The difference between research designs in respect of the above two types of research studies can be conveniently summarised in tabular form as under:

3. Research design in case of hypothesis-testing research studies: Hypothesis-testing research studies (generally known as experimental studies) are those where the researcher tests the hypotheses ofcausal relationships between variables. Such studies require procedures that will not only reduce bias and increase reliability, but will permit drawing inferences about causality. Usually experiments meet this requirement. Hence, when we talk of research design in such studies, we often mean the design of experiments. Professor R.A. Fisher's name is associated with experimental designs. Beginning of such designs was made by him when he was working at Rothamsted Experimental Station (Centre for Agricultural Research in England). As such the study of experimental designs has its origin in agricultural research. Professor Fisher found that by dividing agricultural fields or plots into different blocks and then by conducting experiments in each of these blocks, whatever information is collected and inferences drawn from them, happens to be more reliable. This fact inspired him to develop certain experimental designs for testing hypotheses concerning scientific investigations. Today, the experimental designs are being used in researches relating to phenomena of several disciplines. Since experimental designs originated in the context of agricultural operations, we still use, though in a technical sense, several terms of agriculture (such as treatment, yield, plot, block etc.) in experimental designs. The basic principles of experimental designs:

The basic principles of experimental designs are randomization, replication and local control. These principles make a valid test of significance possible. Each of them is described briefly in the following subsections.

(1) Randomization. The first principle of an experimental design is randomization, which is a random process of assigning treatments to the experimental units. The random process implies that every possible allotment of treatments has the same probability. An experimental unit is the smallest division of the experimental material and a treatment means an experimental condition whose effect is to be measured and compared. The purpose of randomization is to remove bias and other sources of extraneous variation, which are not controllable. Another advantage of randomization (accompanied by replication) is that it forms the basis of any valid statistical test. Hence the treatments must be assigned at random to the experimental units. Randomization is usually done by drawing numbered cards from a well-shuffled pack of cards, or by drawing numbered balls from a well-shaken container or by using tables of random numbers.

(2) Replication. The second principle of an experimental design is replication; which is a repetition of the basic experiment. In other words, it is a complete run for all the treatments to be tested in the experiment. In all experiments, some variation is introduced because of the fact that the experimental units such as individuals or plots of land in agricultural experiments

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cannot be physically identical. This type of variation can be removed by using a number of experimental units. We therefore perform the experiment more than once, i.e., we repeat the basic experiment. An individual repetition is called a replicate. The number, the shape and the size of replicates depend upon the nature of the experimental material. A replication is used

(i) to secure more accurate estimate of the experimental error, a term which represents the differences that would be observed if the same treatments were applied several times to the same experimental units;

(ii) (ii) to decrease the experimental error and thereby to increase precision, which is a measure of the variability of the experimental error; and

(iii) (iii) to obtain more precise estimate of the mean effect of a treatment, since σ 2 ? σ 2 /n, where n denotes the number of replications.

(3) Local Control. It has been observed that all extraneous sources of variation are not removed by randomization and replication. This necessitates a refinement in the experimental technique. In other words, we need to choose a design in such a manner that all extraneous sources of variation are brought under control. For this purpose, we make use of local control, a term referring to the amount of balancing, blocking and grouping of the experimental units. Balancing means that the treatments should he assigned to the experimental units in such a way that the result is a balanced arrangement of the treatments. Blocking means that like experimental units should be collected together to form a relatively homogeneous group. A block is also a replicate. The main purpose of the principle of local control is to increase the efficiency of an experimental design by decreasing the experimental error. The point to remember here is that the term local control should not be confused with the word control. The word control in experimental design is used for a treatment. Which does not receive any treatment but we need to find out the effectiveness of other treatments through comparison.

SAMPLING DESIGN

CENSUS AND SAMPLE SURVEY

All items in any field of inquiry constitute a 'Universe' or 'Population.' A complete enumeration of all items in the 'population' is known as a census inquiry. It can be presumed that in such an inquiry, when all items are covered, no element of chance is left and highest accuracy is obtained. But in practice this may not be true. Even the slightest element of bias in such an inquiry will get larger and larger as the number of observation increases. Moreover, there is no way of checking the element of bias or its extent except through a resurvey or use of sample checks. Besides, this type of inquiry involves a great deal of time, money and energy. Therefore, when the field of inquiry is large, this method becomes difficult to adopt because of the resources involved. At times, this method is practically beyond the reach of ordinary researchers. Perhaps, government is the only institution which can get the complete enumeration carried out. Even the government adopts this in very rare cases such as population census conducted once in a decade. Further, many a time it is not possible to examine every item in the population, and sometimes it is possible to obtain sufficiently accurate results by studying only a part of total population. In such cases there is no utility of census surveys.

However, it needs to be emphasized that when the universe is a small one, it is no use resorting to a sample survey. When field studies are undertaken in practical life, considerations of time and cost almost invariably lead to a selection of respondents i.e., selection of only a few items. The respondents selected should be as representative of the total population as possible in order to produce a miniature cross-section. The selected respondents constitute what is technically called a 'sample' and the selection process is called 'sampling technique.' The survey so conducted is known as 'sample survey'. Algebraically, let the population size be N and if a part of size n (which is < N) of this population is selected according to some rule for studying some characteristic of the population, the group consisting of these n units is known as 'sample'.

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Researcher must prepare a sample design for his study i.e., he must plan how a sample should be selected and of what size such a sample would be.

STEPS IN SAMPLE DESIGN

While developing a sampling design, the researcher must pay attention to the following points:

1. Type of universe: The first step in developing any sample design is to clearly define the set of objects, technically called the Universe, to be studied. The universe can be finite or infinite. In finite universe the number of items is certain, but in case of an infinite universe the number of items is infinite, i.e., we cannot have any idea about the total number of items. The population of a city, the number of workers in a factory and the like are examples of finite universes, whereas the number of stars in the sky, listeners of a specific radio programme, throwing of a dice etc. are examples of infinite universes.
2. Sampling unit: A decision has to be taken concerning a sampling unit before selecting sample. Sampling unit may be a geographical one such as state, district, village, etc., or a construction unit such as house, flat, etc., or it may be a social unit such as family, club, school, etc., or it may be an individual. The researcher will have to decide one or more of such units that he has to select for his study.
3. Source list: It is also known as 'sampling frame' from which sample is to be drawn. It contains the names of all items of a universe (in case of finite universe only). If source list is not available, researcher has to prepare it. Such a list should be comprehensive, correct, reliable and appropriate. It is extremely important for the source list to be as representative of the population as possible.
4. . Size of sample: This refers to the number of items to be selected from the universe to constitute a sample. This a major problem before a researcher. The size of sample should neither be excessively large, nor too small. It should be optimum. An optimum sample is one which fulfills the requirements of efficiency, representativeness, reliability and flexibility. While deciding the size of sample, researcher must determine the desired precision as also an acceptable confidence level for the estimate. The size of population variance needs to be considered as in case of larger variance usually a bigger sample is needed. The size of population must be kept in view for this also limits the sample size. The parameters of interest in a research study must be kept in view, while deciding the size of the sample. Costs too dictate the size of sample that we can draw. As such, budgetary constraint must invariably be taken into consideration when we decide the sample size.
5. Parameters of interest: In determining the sample design, one must consider the question of the specific population parameters which are of interest. For instance, we may be interested in estimating the proportion of persons with some characteristic in the population, or we may be interested in knowing some average or the other measure concerning the population. There may also be important sub-groups in the population about whom we would like to make estimates. All this has a strong impact upon the sample design we would accept.

CONCLUSION

In this paper I have briefly discussed the important steps in a research design, the steps involved in test construction, a brief description of the terms/concepts in research design and the guidelines for presenting a research report. This will serve as a background for the understanding of the basic principles of empirical research design in social science.

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9:27 PM. Florell, J. L., "Empirical research in pastoral care and counseling" Dictionary of Pastoral Care and Counseling, p.354 CDROM.
Unpublished Material Jacob Cherian, "Empirical Research Methods", unpublished materials, Thomas Mar Athanacious Institute of counseling and Research Center, Amalagiri, Kottayam, 2005

Footnotes

[1] Research in social science is of two kinds: empirical studies and theoretical studies. Empirical research is a systematic investigation aimed at finding new or substantiating facts (or factors) that help further the understanding of a problem or problems and the rules or interactions that govern them. While empirical studies examine the actual events of the human situation, theoretical studies analyze or construct the concepts and images which define the problems.

[2] Kerlinger, F.N, Foundations of behavioral research, Delhi: Surjeet Publications, 1978, pp.300-301, cited in R.S. Dwivedi, Research Methods in Behavioral Sciences, New Delhi: Macmillan India Limited, 1997, p.39.

[3] http://www.socialresearchmethods.net/kb/constval.php.9/8/2007 9:27 PM.

[4] Jospal Singh, Methodology and techniques of social research, New Delhi: Kanishka Publishers, distributors, 2001, p.183.

[5] Jospal Singh, Methodology and techniques of social research, p.183. [6] John W. Creswell; Qualitative inquiry and Research design choosing among five approaches (second Edition), New Delhi: Sage Publications, 2007, p41.

[7] John W. Creswell; p42.

[8] John W. Creswell; p42.

[9] Best (1984) Jacob Cherian, "Empirical Research Methods", unpublished materials, Thomas Mar Athanacious Institute of counseling and Research Center, Amalagiri, Kottayam, 2005. P.4.

[10] Best (1984) Jacob Cherian, "Empirical Research Methods", unpublished materials, P.4

[11] Best (1984) Jacob Cherian, "Empirical Research Methods", unpublished materials, P.4

[12] Extraneous Variables where a bivariate relationship is spurious. An extraneous variables will operate where two variables (X and Y) co vary, not because they are causally related but because they are both outcomes of a third (extraneous) variable.
[13] The best way to describe confounding variable is with an example. Suppose the investigator is interested in determining the relationship between life satisfaction scores and family income among the clergy. The problem is that life satisfaction scores are probably related to confound with education level. It would be difficult to determine whether life satisfaction or education was the crucial variable if a relationship was found. Suppose clergy with D.Th tended to get better appointments and also tended to have higher scores. It would follow necessarily that life satisfaction is the crucial factor. Perhaps it is just the D.Th status, independent of achievement that resulted in better employment and more income.
[14] Jacob Cherian, 'Pastoral Counselling: Family Research and Family therapy: Issues and methods', Samson Prabhakar (Ed.), Methodological Issues in Theological Disciplines, Banglore: South Asia Theological Research Institute, 2002. P. 61.
[15] Margaret Alston and Wendy Bowles, Research of Social workers an introducation to methods (2nd edition), Jaipur: Rawat Publications, 2002. P.9.
[16] Random sample or selection a form of probability sample in which all population units have a known probability of selection. Random sampling enables the estimation of the likelihood of sample results reflecting population patterns.
[17] Peter Marshall, How to, Student Handbooks Research methods- How to design and conduct a successful project, Mumbai: Jaico Publishing House, 2002, p.33.
[18] http://www.socialresearchmethods.net/kb/constval.php.9/8/2007 9:27 PM.
[19] http://www.socialresearchmethods.net/kb/constval.php.9/8/2007 9:27 PM.
[20] Empirical research is a systematic investigation aimed at finding new or substantiating facts and relationships between facts (or factors) that help further the understanding of a problem or problems and the rules or interactions that govern them.
[21] J. L. Florell "Empirical research in pastoral care and counseling" Dictionary of Pastoral Care and Counseling, p.354 CDROM
[22] Co-variation of variables where values of one variable differ systematically by values of another variable, the variables are correlated or associated. Correlation does not provecausation.
[23] J. L. Florell,"Empirical research in pastoral care and counseling", Dictionary of Pastoral Care and Counseling, p.354 CDROM
[24] J. L. Florell, "Empirical research in pastoral care and counseling "Dictionary of Pastoral Care and Counseling, p.354, CDROM
[25] J. L. Florell, "Empirical research in pastoral care and counseling", Dictionary of Pastoral Care and Counseling, p.355, CDROM
[26] For example, if Doctor of Ministry students in pastoral counseling complete a course in diagnosis, then they will be able to diagnose different kinds of emotional problems. The Doctor of Ministry course work is the independent variable and ability to diagnose is the dependent variable. Control could be achieved through randomly assigning some D. Min. students to the pastoral counseling course, while others did not take the course, then testing both groups' diagnostic ability. True experiments are very difficult to achieve in pastoral care and counseling because the tight controls required do not fit well in real life. The advantage of a true experiment is that it sharply reduces rival explanations of the results.
[27] D.A. de Vaus, Surveys in Social Research Fifth Edition, Jaipur: Rawat Publications, 2003, p.31.
[28] D.A. de Vaus, Survey in Social Research Fifth Edition, p.359.
[29] http://www.socialresearchmethods.net/kb/constval.php.9/8/2007 9:27 PM.

[30] (Best, 1986) Jacob Cherian, "Empirical Research Methods", unpublished materials, P.4
[31] J. L. Florell, "Empirical research in pastoral care and counseling", Dictionary of Pastoral Care and Counseling, p.355, CDROM.
[32] Reprinted from Trochim, W. (Ed.), (1986). Editor's Notes. Advances in quasiexperimental design and analysis. New Directions for Program Evaluation Series, Number 31, San Francisco, CA: Jossey-Bass. Cited in. http://www.socialresearch methods. net/kb/ constval.php.9/8/2007 9:27 PM.
[33] Peter Marshall, How to, Student Handbooks Research methods- How to design and conduct a successful project, Mumbai: Jaico Publishing House, 2002, p.34.
[34] Http://www.socialresearchmethods.net/kb/constval.php.9/8/2007 9:27 PM.
[35] http://www.socialresearchmethods.net/kb/constval.php.9/8/2007 9:27 PM.
[36] An open-ended question is one which does not limit the answer to a yes, a no or a range of set alternatives. The closed ended question have the opposite advantages anddisadvantages having a binary choice or multiple choice. Eg. Strongly approve, Approve, Neutral disapprove< strongly disapprove!
[37] D.A. de Vaus, Surveys in Social Research Fifth Edition, p.36.
[38] E.g. Do men and women adjust differently in society?
[39] E.g. Are adolescents with higher self esteem less likely to become addicted to drugs than adolescents with lower self esteem?
[40] E.g., instead of self esteem if we use Are adolescents who come from good homes less likely to become addicted to drugs than adolescents with lower self esteem?
[41] Hunder P. Mabry, A Manuel for research and writers, Bang lore: BTESSE, 1999, P.38.
[42] The word hypothesis is a compound of two words 'hypo' and 'thesis' and literally hypo means under or below and thesis means a reasoned theory of rational viewpoint. Vatsyayan, Methods & Techniques of social survey and Research, Delhi: Kedar Nath Ram Nath,1989, P.63.
[43] Peter Marshall, How to, Student Handbooks Research methods- How to design and conduct a successful project, Mumbai: Jaico Publishing House, 2002, p.27.

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Usage of Language in Research

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Abstract
Language is the foremost and elemental aspects of and tools in research. We make use of language in order to communicate our ideas, thinking and experience in written and spoken form as they require some kind of presentation on the part of language user. Listening and reading allow the language user to receive information and a person who use language well are skilled in four forms- reading, speaking, listening and writing. Speaking and writing involves some kind of production on the part of language user and hence they are called 'productive skills.' A proficient language user is one who can convey his information, message, idea with comfort. Language is a communication process, which functions through an encoder and decoder. The communication between an encoder and decoder is possible if both are familiar in vocal sound in which structural arrangement of the words and phrases import. The influence in children's language development are recognized to be interesting and dynamic. The interdisciplinary projects must allocate time to the development of shared vocabularies and understandings. Language plays a crucial role to strengthen the relation of trust that are essential for fruitful synthesizing of work. The evolution of language in research consider broader changes in disciplinary paradigm and methodological approaches lightning the dynamic nature of scientific inquiry. The precision of language is crucial in research documentation to avoid doubtfulness and misconstruction which can influence the logic and credibility of results. Language not only simplify communication among researchers but also collision the availability and transparency of scientific knowledge to wide common public.

Keywords*: Language, Research, Academic,*

Introduction

Research involves a precise and structured language that allows researchers to communicate their findings effectively and ensure a clear understanding of their work among their peers and the wider academic community.

Language is the attire of thought. Thoughts must be expressed in language, because if we do not express our thoughts, ideas, concept in language, we will not be able to survey about them logically. Logic, which protects our minds from falling into error, finds a space for expression through language. Thoughts and concepts that qualify as right or wrong occur through language. Therefore, in order to determine the logical validity of any reasoning, it must be expressed through language and gained an argument form. There are three basic functions or three important uses of language that we discuss here. These are (a) Informative, (b) Expressive, and (c) Directive uses of language.

Informative language

Informative language are even know as declarative sentences. As we studied in grammar different types of sentences. Informative language can even be treated as the language to communicate to make someone aware about something correct or incorrect. Written and spoken language is used for many different reasons. The primary uses of language are informative, expressive, and directive in nature. Language is used to reason, to express ideas,

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argue a point, provide directions, and much more. Let's learn about the three main uses of language and how they are represented in written and spoken language. The informative use of language applies to written and spoken language that can be determined as true or false. Informative language is often seen in analytical reports, descriptions, arguments, and everyday speech. Most informative uses of language are declarative statements.

On the other hand, a person would be emphasizing information if they said, 'Isn't it raining outside?' to a child who wants to play outside. This informative use of language is rhetorical because the person knows that it is raining, but is forming it as a question to remind the child that the weather is keeping them indoors.

Expressive language

Expressive use of language describes the mood of the person. In short as we learn different types of sentences in the topic sentences. In the same way expressive language express happiness, sadness, anger, or any other emotion. In this use of language the speaker needs to understand and correlate and tries to understand the communication between them by gathering the emotions of the person. It doesn't deliver you and information but the mood. The examples can be wow! ,alas, hurray! And many more.

Researchers should have good command over the language to express their thoughts and ideas to the public. We have often seen the papers of research getting rejected due to lack of good vocabulary, language and formation of ideas in good language. English isn't a subject but skill – oriented language. English is only the language which is spoken worldwide and understood even, the language itself has its own importance. I believe the language plays an important role in deciding one's objective. As discussed earlier language in informative, expressive way and directive.

Directive language

This one gets a little more complex, but it essentially is a way to get a response from somebody that you are communicating with in a typical conversation. Some would say that directive language is typically used to give a command of some sort to somebody. "Directive language is not normally considered true or false. Examples:- this type of language include. "shut off the light", or" you are standing where it says No Loitering," This last one hints at a command because it is essentially saying, "Get away from there."

And that about sums up the three basic functions of language, which have practical application in logic, communication and writing.

Academic Language

Researcher must know the difference between academic language and the communication happening between two friends. Mostly students believe that academic language is hard to understand and write whereas academic language is used by teachers books in exams needs academic language. There are a lot of difference in written and spoken form of language. Oral language takes place face to face and it becomes interesting whereas written language is offical, formal with lots of things keeping in mind like expression, organization and logical characteristics. oral communication consists of many loops, grammatical errors and formation. Academic language refers to the word knowledge that makes it possible for the students to engage with, it. In broad term academic language alludes the language used in education to acquire new or better knowledge of topics and to communicate that information to Academic language enables the learner to think distinct type of thinking and to share the thoughts to the common people and make them understand more effectively.

Features of Academic language

The uses of academic language is accurate and error free and it's qualities are perplexity, protocol, crystal clear, fairness, authority, association, and planning.

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Perplexity – written language has longer words, and has varied vocabulary. The written text are shorter and the language has more grammatical perplexity.
Protocol- Academic writing is basically official. It means that in an essay, informal words and expression should be avoided.
Fairness- Written language is in general objective rather than personal. The main objectives should be on the particulars that you want to give and the difference of opinion you have on it rather than being personal. Academic writing be inclined to use adjectives rather than adverbs.
Crystal clear- Academic writing should be crystal clear about the topic and how the texts used in the writing are interested connected. The reader should find the matter written connected with the topic. These connections can be made by motioning words.
Authority – In any academic writing it is necessary to first have a particular point of view of any subject. A technique common in academic writing is known as linguists.
Association – Academic writing is well allianced. It flows from one section to another in a rational fashion. A good place to begin is the category of the text, once it is decided it flows on.
Planning- Academic writing is well planned. It usually takes place after a lot of research and evaluation on the topic.
Diction and style of writing
Diction is the author's word choice in writing. There are several thoughts, ideas and protocol to be followed while writing and choosing of the words. The reader should take the writing below standard even don't have to look for the dictionary every now and then. In short the diction in academic writing can be monosyllabic i.e. emphasise on the particulars you are making. It can even have polysyllabic words i.e. using of difficult content. Phrases and idioms are common used now a days in writing.
In academic diction, the goal is to convey the idea, thought in clear and concise way. The particulars should be precise, clear and not to use the words that sounds good whose meaning isn't clear. The use of specified vocabulary, point of view in strong way but not the prejudice. The sentences and structure should always show the sophistication of your thought.
Key aspects of understanding the language of research include:

1. **Scientific Terminology:** Research involves the use of specialized terms and vocabulary that may not be familiar to the general public. Understanding these terms is essential for comprehending research papers, communicating with other researchers, and conducting effective literature reviews.
2. **Research Methods and Designs**: Different research studies employ various methods and designs, such as experimental, correlational, qualitative, or mixed methods. Understanding the distinctions between these methodologies is crucial for interpreting the strengths and limitations of each study.
3. **Statistical Analysis:** Research often includes statistical analyses to draw conclusions from data. Understanding statistical terms and concepts like p-values, significance levels, regression, and sample sizes is essential for critically evaluating research findings.
4. **Literature Review:** Research often builds upon existing knowledge. Understanding how to conduct a literature review, which involves searching, evaluating, and synthesizing relevant previous studies, is an integral part of the research process.
5. **Research Ethics:** Researchers must adhere to ethical principles and guidelines while conducting studies involving human participants or animals. Understanding the language of research ethics ensures the protection of subjects and the integrity of the research.

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6. **Academic Writing Style:** Researchers communicate their findings through academic papers that follow a specific writing style, such as APA (American Psychological Association) or MLA (Modern Language Association) format. Understanding this style ensures clarity and consistency in academic writing.

By mastering the language of research, both novice and experienced researchers can effectively engage with the existing body of knowledge, contribute to the scientific community, and produce meaningful and credible research outcomes.

Construct

An abstract concept that cannot be directly observed but is inferred from observable variables. For example, "intelligence" is a construct that researchers might measure using different variables.

Definition

The specific meaning or explanation of a concept or construct used in a particular study. Defining terms precisely helps avoid confusion and ensures consistency.

Variable

Any characteristic, trait, or attribute that can vary and be measured or manipulated in research. Variables can be independent (manipulated by the researcher) or dependent.

Conclusion

English was earlier known as the second language but as of know it is the most wanted and easy language for the people all around the world to speak. English has been now the choice of many International scholarly journals. The four basic things of English language as fundamental aspects are grammar, punctuation, vocabularies and most importantly academic language.

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Thesis Writing and Planning

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Abstract
Thesis writing and planning is a systematic process that involves organizing ideas, structuring arguments, and presenting research findings in a coherent manner. A thesis reflects a scholar's ability to investigate a problem, review relevant literature, analyze data, and contribute to the body of knowledge. Careful planning is essential at every stage—selecting the topic, formulating objectives, preparing a research proposal, choosing methodology, and organizing chapters. Effective thesis writing also demands clarity of expression, logical flow of arguments, and adherence to academic standards such as citation styles and ethical guidelines. Proper planning helps maintain focus, manage time, and avoid duplication of work, while the structured format ensures that the research is both valid and reliable. Ultimately, thesis writing is not only a demonstration of academic competence but also a disciplined effort to present truth and knowledge in an accessible and scholarly way.

Keywords: *Thesis Writing, Planning, Research, Structure, Methodology, Knowledge, Academic Standards, Organization*

Introduction:

Thesis writing is one of the most crucial parts of research work and enabling students to show that they can conduct research on their own, thus adding value to their areas of study. Thus, a thesis is not only a long writing; but it is treated as a research document, which contains the in-depth study of the student, the research, his original works and all the deductions. The main goal is to provide a reasoned defense of some opinions, as well as the knowledge and skills acquired during the course by the student. The importance of thesis writing goes further than the student. It is also of use to other members of the academic society, as such documents strengthen the heap of knowledge. In this manner, students can answer difficult questions, debate accepted ideas, and present new thoughts which will help develop the level of conversation in their fields. There are different forms of thesis that are suitable for every field. For example, in the humanities, a conventional doctoral dissertation might require deep literary and theoretical work, while in science, a doctoral thesis would include more raw data empirical and results from laboratory experiments. Professional degrees, like those in business or teaching, could also call for a project-based thesis that prioritizes problem-solving and real-world application. Aspiring academics must comprehend the demands and standards of thesis writing in all academic fields. Every discipline has unique requirements for format, style, and reference, all of which have a big impact on the writing process. To create an engaging and scholarly paper that complies with the requirements specified by their universities, students starting their thesis journeys need to become acquainted with these subtleties.

Planning of a Thesis:

A crucial first step in laying the groundwork for a fruitful research study is organizing a thesis. It entails a set of methodical procedures that mentor researchers from the very beginning of concept generation to the very end of study execution. This planning framework typically contains four important components: subject selection, literature review, hypothesis

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formulation, and study design. Choosing a theme is the first and, possibly, most important stage. A carefully considered topic fits current trends and gaps in the field in addition to reflecting the interests of the student. It should be both wide enough to guarantee that adequate resources are available and specific enough to support in-depth research. To determine interest and relevancy, students can often benefit from informal surveys conducted within their academic community or by discussing relevant themes with advisers. Doing a comprehensive literature review is the next stage after choosing a topic. Gathering and evaluating prior research on the selected topic is part of this phase. Students can better grasp the current state of knowledge, spot gaps in the field that need to be filled with their study, and place their work in the context of the larger academic discourse by conducting a literature review. Thoroughly documenting sources is vital, as it will be crucial for subsequent writing phases. Hypothesis formulation follows the literature review. A precise, verifiable claim that forecasts the relationship between variables is called a hypothesis. Developing a compelling hypothesis is essential since it guides the study topic and influences the approach. Students will benefit from honing their theories considering new information discovered during the literature review process. The research design concludes by outlining the methodology for testing the hypothesis. This involves deciding on methods that are appropriate, choosing how to collect data, and creating a schedule for the research tasks. In addition to improving the validity of the results, a well-structured research design keeps the project manageable and on course. Students who carefully follow these procedures can create a thorough and workable outline that lays the groundwork for a successful thesis.

Selection of a Research Topic:

An essential first stage in the research process is selecting a suitable and pertinent thesis topic. It is imperative that students choose a subject that piques their interest and fits with their academic and professional objectives. A well-selected topic can provide inspiration and drive, which can uplift and enrich the sometimes-difficult process of writing a thesis. One of the most important factors in choosing a topic is personal interest. If students are enthusiastic about the topic, they are more likely to get involved in their research in a meaningful way. It's a good idea to think back on their interests, past assignments, or pressing problems. Their dedication to the study will be strengthened by this personal connection, which will also motivate them to look at the subject from different angles. Resource accessibility is yet another important consideration when choosing a topic. It is imperative for students to evaluate if they possess the required literature, data, and tools to carry out their research efficiently. This entails considering the accessibility of original sources, pertinent databases, and possible mentors or advisors with expertise in the field of choice. Inadequate materials on a subject can cause dissatisfaction and impede advancement. Alignment with academic objectives is also essential. Students must to think about how their selected subject relates to both their degree program and their intended job route. Taking on a subject that aligns with their career goals might help them gain important knowledge and understanding, which may improve their employability after graduation. Additionally, it might present chances for networking and teamwork within their industry. To sum up, choosing a thesis topic is a complex process that necessitates giving serious thought to one's interests, the availability of resources, and academic congruence. Through careful consideration of these variables, students can make sure that their research experience is relevant and satisfying.

Literature Review:

Since it provides the framework for the research, a literature review is a crucial step in the thesis writing process. Students are able to synthesize essential findings, theories, and procedures related to their research topic through this methodical assessment of previous scholarly work. Students who undertake thorough literature reviews have a strong theoretical

foundation that guides their own study as well as a deeper comprehension of the subject matter. It is impossible to exaggerate the significance of combining previous research. A well-written literature review highlights significant contributions to the field of study and indicates the present level of knowledge. It helps pupils recognize arguments, trends, and different points of view, which makes the intellectual landscape easier to comprehend. This synthesis aids in the formulation of the student's own research question, ensuring that it fills in a particular knowledge gap or offers a fresh perspective to the corpus of existing literature. Moreover, finding knowledge gaps requires a thorough assessment of the literature. Students are able to identify areas that have been neglected or understudied through this method, which helps them to demonstrate the importance and necessity of their research. The identification of gaps serves to bolster the study's reasoning and places the research into a broader academic discourse, thereby highlighting its potential contributions and significance. The literature evaluation not only identifies gaps but also offers a theoretical framework that directs the study approach and analysis. Students can develop a cogent narrative that ties their study to prior scholarship by basing their work on well-established theories and research findings. Additionally, this framework facilitates the development of research questions and hypotheses, which makes it simpler to express the goals and anticipated results of the study. All things considered, performing a thorough literature review is an essential phase in the thesis writing process that enables students to integrate current knowledge, pinpoint research gaps, and build a strong theoretical framework for their work.

Making Argument or Statement:

Any research project's cornerstone is its thesis statement, which summarizes the primary point of contention or viewpoint the researcher hopes to make. Writing a strong thesis statement involves more than just expressing your viewpoint; it also calls for accuracy, precision, and subject-matter knowledge. A strong thesis statement should briefly describe the main idea of the work and make hints about the supporting arguments that will be covered in the investigation. A good thesis statement should, first and foremost, be precise and debatable. It should include a precise description of the research's parameters and make an argument that is backed up by data. For example, a more persuasive argument may be, "The accelerated pace of climate change due to human activity poses significant risks to global biodiversity and human health," as opposed to, "Climate change is bad." In addition to outlining a position that is unambiguous, this statement also implies that data will be gathered from both ecological and health-related perspectives, which reveals the path of the research. The thesis statement is also very important in directing the actual research process. It serves as a guide, keeping the researcher on task and well-organized. The thesis statement can be used as a guide to make sure that every component of the paper is in line with the main argument as you write. To properly engage the reader and communicate the research findings, coherence and logical flow must be maintained, and this alignment is necessary to achieve these goals. Furthermore, as research develops, a compelling thesis statement changes. The thesis can be improved upon as the researcher digs farther into the literature and collects data, even though initial drafts may just offer a general notion. It can be required to make changes to better reflect the understandings discovered during the research process, enabling a more sophisticated and knowledgeable argument. Academic writing naturally involves this iterative process of thesis statement revision, which exemplifies the dynamic nature of scholarly inquiry. In conclusion, developing a compelling thesis statement is a critical ability for all researchers. It necessitates thorough consideration, precision, and a dedication to modifying and perfecting the thesis as the investigation progresses.

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Research Methodologies:

A crucial stage in writing a thesis is choosing a suitable research approach, which has a direct impact on the caliber and applicability of the findings. Three primary categories can be used to broadly classify research methodologies: mixed, qualitative, and quantitative approaches. Every strategy has unique benefits and fits well with various study questions and goals. The goal of qualitative research is to comprehend human behavior and the interpretations people make of their experiences. With methods like focus groups, interviews, and content analysis, this methodology frequently enables researchers to go deeply into the subject matter and examine intricate social phenomena. When the objective is to produce rich, descriptive data that reflects the subtleties of individual viewpoints and social situations, qualitative methods are especially helpful. Conversely, quantitative research places more emphasis on gathering and analysing numerical data in order to spot trends, validate theories, and create predictions. This methodology often utilizes surveys, experiments, and statistical analysis to derive conclusions that can be applied to larger populations. Because quantitative research offers a defined framework that increases the dependability of the results, it is perfect for studies that aim to evaluate the scope of a phenomenon or identify causal linkages. A more thorough grasp of the study problem is made possible by the combination of qualitative and quantitative approach components in mixed methods research. Mixed approaches can yield deeper insights and validate findings through triangulation by merging multiple data sources. This method works especially well for answering complicated research issues that need for contextual knowledge in addition to statistical analysis. For any study to be successful, the methodology that is selected must be in line with the goals and research questions. Researchers need to think about the purpose of their study, the kind of data they will need, and the nature of their inquiry. In addition to making the research more credible, a well-aligned methodology guarantees that the findings are significant and useful in the field. For this reason, carefully evaluating research methodology is crucial to generating influential academic work.

Formulation of the Thesis Document:

To convey research findings in a logical and cogent way, a thesis document must be organized. A coherent thesis improves the credibility of the research while also making it easier for the reader to understand. A thesis should normally have the following main sections: introduction, methods, results, discussion, and conclusion. Every one of these elements is essential to the thesis's overall story. The introduction establishes the framework for the thesis by setting the scene for the research problem and defining the study's objectives. It should outline a precise research issue or hypothesis and discuss how it fits into the larger context of academia. It is crucial to properly state the goals and reasoning in the introduction since it draws readers in and establishes the tone for the rest of the work. The research design, including the procedures for gathering and analysing data, is then covered in detail in the methodology section. The chosen strategy, whether it be a mixed technique, qualitative, or quantitative approach, should be explained in detail in this section. Readers can evaluate the validity and dependability of the research findings with transparency in the technique, hence it is imperative that the researcher offer enough information for replication. The research findings are presented in the results section after the methodology. To improve understanding, this section should be arranged clearly and succinctly and frequently accompanied by tables, figures, and charts. Readers should be able to make their own judgments based on the supplied data by reading the results objectively and without bias or interpretation. The findings are interpreted in the discussion section considering the study question and body of prior literature. Here, the researcher might discuss any shortcomings, consider the ramifications of the results, and recommend topics for more study. To demonstrate the research's significance and place it within the broader academic debate, this section is essential. Lastly, the conclusion highlights

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the significance of the study by summarizing the major discoveries and their ramifications. It should give readers a clear understanding of the research's implications and offer ideas for future research initiatives. Students may make sure that their thesis is both cohesive and effectively communicates their research achievements to the academic community by following this standardized framework.

Strategies to Develop Thesis:

Maintaining consistency and clarity throughout the thesis writing process requires the use of effective writing techniques. A coherent thesis communicates the researcher's conclusions and draws the reader in by organizing the reasons in a clear, understandable way. Writers need to pay close attention to the editing process, appropriate reference techniques, and formatting rules in order to do this. One of the most important phases of preparing a thesis is the revision process. The writer edits their work in several rounds, checking it for general quality, coherence, and clarity. Seeking input from mentors, advisers, or peers who can offer new insights on the material might be beneficial to this process. It is quite helpful to receive constructive criticism since it points out areas that might need more clarification or simplifying. As new information becomes available through research, writers should also be ready to amend their thesis statement and arguments in favour of it. This iterative process guarantees that the finished product is polished and conveys the intended message clearly. Citations are essential to academic writing because they support the writer's claims and acknowledge the work of other researchers. To give the research credibility, precise and consistent citation methods must be maintained. Writers need to get familiar with the citation styles that are needed by their discipline, such as APA, MLA, or Chicago. Furthermore, the procedure can be streamlined by employing citation management systems, which make it simpler to keep track of sources and properly style references. In addition to preventing plagiarism, properly cited work adds to the thesis' intellectual worth by showing that the author has carefully considered the body of previous literature. Lastly, it is imperative to follow formatting requirements. Specific formatting guidelines are usually required by each school and cover everything from font size and margins to the arrangement of the table of contents. Adhering to these rules strictly guarantees that the thesis satisfies institutional requirements and has a polished appearance. Formatting with care shows the writer's dedication to their research and enhances the document's readability. By putting these writing techniques into practice, researchers can improve the coherence and clarity of their theses, increasing the impact and accessibility of their scholarly contributions.

Conclusion:

To sum up, writing a thesis is a complex process that calls for rigorous preparation, in-depth study, and a dedication to consistency and clarity. Important topics covered in this tutorial include the significance of picking a suitable research methodology, creating a compelling thesis statement, completing a comprehensive literature evaluation, and selecting a topic that is pertinent to the field. In order to create a strong thesis that makes a significant contribution to the academic community, each of these procedures is essential. Reflecting on the hurdles faced during the thesis writing process, many researchers meet obstacles such as time management, resource availability, and the need to provide fresh insights. These difficulties might frequently feel overwhelming, but they also offer chances for development and education. It is imperative that upcoming researchers handle these problems with flexibility and resilience. Getting advice and insight from mentors, peers, and advisers can be quite helpful in navigating the challenges of writing a thesis. A few pointers can improve thesis writing for those starting similar initiatives. First, creating a clear schedule with predetermined dates can aid in efficiently managing the research process and cut down on procrastination. Goals should be reviewed and modified on a regular basis to keep the project moving forward and feeling

like it is making progress. Building a solid support system with other scholars and writing groups can also help to keep you motivated and encouraged along the way. Accepting that research is an iterative process is also essential. Some pressure can be released by realizing that the approaches and thesis statement may change as the study progresses. Revisions and constructive criticism improve the final output and further the academic development of the researcher. In conclusion, writing a thesis is a pleasant and difficult process. Future researchers can successfully traverse their journeys by implementing effective tactics and learning from others' experiences.

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31
RESEARCH DESIGN

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Abstract
A research design is the blue print of a research project. It includes the methods and procedures to collect and interpret data. It ensures that the research is conducted systematically, efficiently and effectively. The research design consists of some components, the main question that the research seeks to answer. The question should be focused and concise. Research approach, Data collection methods, Sampling, Data analysis techniques are some major methods and procedures used to collect data. The researcher must follow ethical rules. There are various types of research design. These types are Experimental Design, Correlational Design, Survey Research, Case Study Research, Action Research. In Experimental design, the researcher manipulates variables and observes their effects on outcomes. Correlational Design, examines the relationship between variables without changing any situation. In Survey Research the researcher collects data from a large sample of individuals by conducting questionnaires or interviews. Case Study Research is based on any particular case or phenomenon. Action Research is also a popular type in which researchers and practitioners address practical problems. The research question plays a vital role in designing research. The resources such as time, money and staff are important factors to design a research. The design must produce valid and reliable results. The sample size depends on the type of design we choose. Descriptive studies need hundreds of subjects to give acceptable confidence intervals for small effects. The basic need for Research Design is that it facilitates the smoothness of the various research operations. It makes research efficient with minimum efforts. Some basic factors for research design are the nature and objective of the problem, the mean for gathering information, the availability and skills of the researcher and staff. Some basic concepts of research design are dependent and independent variables, extraneous variables, control, research hypothesis, experimental and non-experimental hypothesis testing research. The best design depends on research questions. It has both positive and negative sides. It deals with four problems -what questions to study, what data are relevant, what data to collect, how to analyze the results. Research Design can be divided into fixed and flexible research design. Fixed designs need not be quantitative. Flexible design need not be qualitative. A well-designed research project is necessary for reliable research findings.

Keywords*: Research questions, data analysis, data collection, survey research, dependent and independent variables, research hypothesis, quantitative.*

INTRODUCTION

Research is the search or systematic investigation of knowledge. It is all about using a scientific method to solve problems, prove new ideas or develop new theories. The researcher thinks and creates new ideas. The researcher thinks out of the box. The researcher follows various research processes such as Scientific research, Artistic Research, Historical Research etc. The overall strategy that the researcher follows to answer research questions is called research design. It guides the process of conducting research.

A research design is the blueprint of a research project. These are the methods and procedures to collect, analyze and interpret data. The logical and systematic planning and directing a piece

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of research is research design We use to convert the research question into a testing project. It ensures that the research is conducted efficiently. It deals with at least four problems --- What questions to study? What data to collect? What data are relevant? How to analyze the results?

The main components of a research design

1. **Research questions**
2. **Research objectives**
3. **Literature review**
4. **Methodology**
5. **Ethical consideration**
6. **Time frame and Budget**
7. **Research Question**
   As we know research is the search and systematic investigation of knowledge. It's all about the central question that the research seeks to answer. It should be clear, concise and focused. The best design depends mainly on research question.
8. **Research Objectives**
   A researcher uses scientific methods to achieve specific goals the research aims to achieve.
9. **Literature Review**
   It's a comprehensive study of existing research on the topic which helps to identify gaps between knowledge. It also provides a theoretical framework for the research.
10. **Methodology**
    It includes some particular methods and procedures used to collect data. These methods are:
    - **Research Approach**
    - **Data Collection Methods**
    - **Sampling**
    - **Data Analysis Techniques**

a. **Research Approach**

It is the overall strategy for conducting the research. It includes quantitative, qualitative or mixed methods.

b. **Data Collection Methods**

It includes the tools and techniques to collect data, such as surveys, interviews, experiments or observations.

c. **Sampling**

In this process, we use to select a sub set of the population to represent the whole.

d. **Data Analysis Techniques**

It includes the statistical or analytical methods we use to interpret and draw conclusions from the data.

11. **Ethical Considerations**
    It includes the ethical implications of the research, i.e, informed consent, privacy and confidentiality.
12. **Time frame and Budget**
    It is an accurate timeline and budget for completing the research.

Types of Research Design

a. **Experimental Design**

In an experimental design, the researcher manipulates variables to observe their effect on outcomes. It is generally used in psychology and natural sciences.

b. **Correlation Design**

It examines the relationship between variable without changing any situations, circumstances

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and without manipulating them. It is used in social sciences.

c. **Survey Research**

It involves collecting data from a large sample of individuals using questionnaires or interviews.

d. **Case study research**

It contains deep analysis of a particular case.

e. **Action Research**

It is a collaborative approach of both researchers and practitioners to address practical issues.

Quality of Design

The various designs provide various quality of evidence. A cross sectional or case-control study is a good starting point to decide whether it is work proceeding to better designs. Prospective studies are more convincing.

Need for Research Design

A research design facilitates the smoothness of the various research operations. It makes research efficient with minimal expenditure of efforts, time and money. We need to consider some basic factors when designing research.

- The design must be appropriate to answer the research question.
- The objective of the problem.
- The Nature of the problem.
- The availability and skill of the researcher and staff
- The design must be practical
- The availability of time and money
- The Design must follow ethical guidelines.

Effect Of Research design

The sample size depends on the type of design we choose. Descriptive studies need hundreds of subjects to give acceptable confidence intervals for small effects.

Example of Research Design

Let us understand Research Design through an example or in simple words. Here we can take an example of social media, we will try to find out the impact of social media on youth. How it effects their mental health?

Today social media is playing a vital role in everyone's life. Each and every one is doing many works with the help of internet. Students, teachers are busy with their mobile and surfing internet. Then It is obvious that social media is affecting all people. Here, Research objectives are to examine and investigate the relationship between social media use and depression symptoms, the association between social media and anxiety symptoms. Research objectives are to identify factors that may moderate the relationship between social media use and mental health. In this example, methodology such as Research approach, Data collection methods, sampling, Data analysis techniques should be used.

Research approach should be quantitative, online survey may be conducted for data collection. Random sampling of ordinary people should be applied. Required data analysis techniques may be Descriptive Statistics, Correlation Analysis, Regression Analysis. The researcher should follow ethical guidelines such as privacy, confidentiality, Informed consent, protection from harm.

Through this example we can understand easily that research design requires careful consideration of various factors. By following the foundational concepts, different research designs, sampling techniques, Data collection methods and ethical considerations, Researchers can conduct meaningful studies.

Let us understand some of the foundational concepts of research design

- **Validity**—Validity is the range to which a research study measures what it intends to

measure.
    - **Internal Validity**—Internal validity is the degree to which the study establishes a causal relationship between variables.
    - **External validity**—External validity is the range to which the findings can be generalized to other populations or settings.
- **Reliability**—Reliability is the consistency and dependability of research results.
- **Research questions**—Research questions are clear and focused questions to guide the research process.
- **Campbell and Stanley**—They introduced various experimental designs to control for threats to internal validity. For example—pretest—posttest, control group, Solomon four group design.
- **Correlational Design**—Correlational Design inputs relationships between variables without establishing causation.
- **Cohen and Cohen**—Cohen and Cohen discussed about the limitations of correlational designs. They also discussed the need for careful interpretation of findings.
- **Quasi Experimental Design**—It is similar to experimental designs but without random assignment.
- **Campbell and Stanley**—They discovered Quasi experimental design for studying real world settings. For example, interrupt time series, non-equivalent control group design.
- **Qualitative Research**—Qualitative Research refers to exploring phenomena or research question through deep investigation.
- **Creswell**—He discussed various qualitative research approaches and data analysis techniques. For example—Phenomenology, grounded theory, case study.
- **Sampling and Data collection**—Sampling includes selecting a subset of individuals or elements from a larger population.
- **Babbie**—Babbie discussed various sampling methods and their advantages, disadvantages. For example, probability sampling, non-probability sampling.
- **Data collection**—Data collection refers to gathering information through various methods.
- **Neuman**—Neuman discussed the ethical considerations in data collection and the importance of informed consent.
- **Data Analysis**—Data analysis are quantitative and qualitative. Quantitative analysis refers to numerical data using statistical techniques.
- **Howell**—Howell provided detailed explanation of statistical tests and their applications. For example, T-test, ANOVA, Regression analysis
- **Qualitative Analysis**—Qualitative analysis is concerned with analyzing non-numerical data through thematic analysis, coding and interpretation.
- **Charmaz**—He discussed the nature of qualitative data analysis. He also explained the importance of researcher reflexivity.
- **Research Ethics**
    - **Ethical principles**—It is concerned with ethical guide lines and rules to protect participants and also to maintain research integrity
    - **American psychological association**—The association maintained ethical standards for conducting research. It includes informed consent, confidentiality, avoiding harm.

Now we will study another example of research design

Research Design—A case study of consumer behavior.

Introduction—This research design studies and investigates consumer behavior towards sustainable products in India. It aims to understand various factors which influence consumer

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purchasing decisions. It identifies barriers to sustainable consumptions. The study explores strategies for promoting sustainable products.

Research Question—What are the factors which influence Indian consumers' purchasing decisions for sustainable products? What are the barriers to sustainable consumptions among Indians? What strategies should be implemented to promote sustainable products in India?

Literature Review—Conducting a comprehensive literature review is very important to explore existing research on consumer behavior, sustainability and the Indian market. The main focus will include theories of consumer behavior, such as the theory of planned behavior, theory to understand factors influencing consumer decisions. It is also necessary to explore the relationship between sustainability and consumer attitudes.

Actually Research Design is a choice of a researcher in order to investigate certain components of the project. A design of research is just a planning stage of research. The researcher keeps in mind the objectives of the research. Here, Research hypothesis provides the strong base for designing a research work. As we know, hypothesis is a tentative provisional guess which visualizes the situation under observation. That's the reason it prepares foundation for research design. The sources of the hypothesis are the same as that of the problem. These sources may be study of book related to subject, survey of existing situation, conversation with experts in the field, article of newspapers and research journals, review of research reports and references, even one's own experience can be the source of hypothesis. But a researcher has to apply his creative thinking and skill. The main two processes that a researcher uses for writing hypothesis are Inductive thinking and Deductive thinking.

A researcher should follow some of the good qualities of hypothesis. A hypothesis should be clear and precise. It should be testable. It should be limited in scope. Generally hypothesis are of two types: Directional, Non-Directional hypothesis. Directional hypothesis specify the direction of the expected differences or relationships.

Design format for a Research proposal

Title

1. **Problem statement and its clarifying components**
   a. Statement of the problem
   b. Clarification of the problem statement
      1. Definitions
      2. Delimitations
      3. Assumptions
      4. Theory base.
2. **Group components for operation**
   A. Hypothesis /Question Design
   B. Sample population -sample or group at hand design.
      1. Population delineated, delimited, and defined.
      2. Sample delineated, delimited, delimited and defined
      3. Group at hand delineated, delimited and defined.
         C. Observation design
      4. Data [evidence] collection
      5. Instrumentation—Questionnaire, Schedule, Sources, Standard measures
         D. Statistical Designs—
      - Descriptive statistical design
      - Inferential Statistics for generalization
      - Statistical randomization procedures for control design
      - Computer assistance Design
         E. Organizational Design Significance and review sections-

a. Significance of the objectives of the enquiry.
b. Review of the related literature and research report.

The researcher will be able to either accept or reject the hypothesis which will allow the researcher to control the different variables and also ensure that the controlled treatments are comparable.

There are some basic characteristics of good research design. A good research design is free from bias. It should be free from confounding effect. A good research design provides enough scope to impose the control over the situation. It can happen through the method of randomization, holding conditions or factors constant, building conditions or factors into the design as independent variables or statistical adjustment.

Sometimes while designing research, the researcher faces few problems. These problems may be inadequately stating and testing hypothesis, missing or unusable data, bias in sampling, inadequate measurement.

The researcher must keep in mind the main criteria for conducting the experiment while selecting an experimental design. The researcher must follow appropriateness, adequacy of control and validity.

Appropriateness is the main criteria for testing the hypothesis of the study. If the researcher fails to do so, the results of the study will not be beneficial. It is necessary for the researcher to select the appropriate design to arrange objectively the experimental conditions which may fulfill the needs of the particular study. Another important criteria is the adequacy of control to measure the effects of the independent variable on the dependent variable. It helps the researcher to get dependable answers to questions raised by hypothesis. The design with adequate control also provides information what observations are to be made by the researcher, how to make them, what statistical tests are feasible, how to analyze the data, what results may be drawn from the statistical analysis. The third criteria is also very important. It is essential for the purpose of testing the particular hypothesis of the study.

Thus, we can understand that design of the research has to be done after the thorough study of the thesis, hypothesis or the research problem. Here the type of data to support the thesis is also very important. The design of the research depends on the type of research. Analyzing data to draw conclusions is required after the collection of data. In the scientific experiment, data analysis methodologies include complex calculations. But while talking about social science research, data analysis needs readily available statistical software to analyze data in our survey. The approval of thesis depends on the plan structure and the soundness of thesis. As we know research design refers to converting the research question into a testing project, every design has its positive and negative sides. Fixed designs are theory-driven, flexible designs allow for more freedom during the data collection.

Quantitative research design determines the relationship between one thing and another, an independent variable and a dependent or outcome variable in a population. It may be descriptive or experimental, which means subjects usually measured once or subjects measured before and after a treatment. For this, a descriptive study needs a sample of hundreds or even thousands of subjects. An experiment needs only ten of subjects, because it is easy to see changes within subjects than differences between groups of subjects.

A researcher needs to use research methodology sample fruitfully to design the research only after studying the thesis or hypothesis thoroughly.

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Writing The Hypothesis and Its Types in Research

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Abstract
In our life we often make guesses as to why certain thing or event happen. Some of those guesses may be influenced by our believes, observation and experience. We also try to related those events to find a conclusion. A hypothesis is a statement of the researchers expectation or prediction about relationship among study variable. Hypothesis is nothing but the heart of the research. In the research without Hypothesis, research can not service properly. When we do research we too have relate our variable under study. Those relationship are all prediction because we are still searching and nothing the clear. The researcher question identifies the study concept might be related a hypothesis in the predict answer. What does hypothesis mean? Hypothesis state the expected relationship between in-dependent variables and dependent variable. In-dependent cause and dependent variable effect. In relationship we are trying to understand statistically significant relationship that's mean the different in result are statistical significant. A hypothesis ensure the entire research process remines scientific and reliable. Hypothesis, ideally should be best on sound justifiable rationales because if prediction does not express and anticipated relationship it can not be tested. On this account researcher in present paper mainly high kite the significance of the hypothesis and its importance in research methodology.

Keywords*: Research types, data analysis, data collection, survey research, dependent and independent variables, research hypothesis, quantitative.*

INTRODUCTION

Hypothesis is a tentative solution to a problem its mean the researcher believe will happen in their research study. Its mean before finding the research result best on the review of literature. We are going to formulate a hypothesis based on problem. When the researcher search or investigation by the logical reasoning or personal experience to justify the prediction. The use of hypothesis in quantitative studies tends to in in critical thinking and to facilitated understanding and interpretation and justification of data. When we are define a problem for example: problem of urbanization is more common in smaller cities compare to bigger cite based on this hypothesis based on this statement investigator can state the hypothesis.

WHAT IS A HYPOTHESIS?

Ordinarily, when one talks about hypothesis, one simply means a mere assumption or some supposition to be proved or disproved. But for a researcher hypothesis is a formal question that he intends to resolve. Thus a hypothesis may be defined as a proposition or a set of proposition set forth as an explanation for the occurrence of some specified group of phenomena either asserted merely as a provisional conjecture to guide some investigation or accepted as highly probable in the light of established facts. Quite often a research hypothesis is a predictive statement, capable of being tested by scientific methods, that relates an independent variable to some dependent variables. For example, consider statements like the following ones:
"Students who receive counselling will show a greater increase in creativity that students not receiving counselling." OR
"The automobile A is performing as well as automobile B."

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These are hypothesis capable of being objectively verified and tested. Thus, we may conclude that a hypothesis states what we are looking for and it is a proposition which can be put to a test to determine its validity.

CONCEPT OF HYPOTHESIS

The word 'hypothesis' consists of two words 'hypo'+ 'thesis'. 'Hypo' means tentative or subject to the verification. Thesis means statement about solution of the problem. Thus, the literal meaning of the 'hypothesis' is a tentative statement about the solution of the problem. Hypothesis offers a solution of the problem that is to be verified empirically and based on some rationale.

Again 'hypo' mean composition of two or more variables which are to be verified and 'thesis' means position of these variables in the specific frame reference. The 'hypothesis' is a powerful tool in research process to achieve dependable knowledge. It helps the researcher to relate theory to observation and observation to theory.

A hypothesis is a statement of the researcher's expectation or prediction about relationship among study variables. The researcher question identifies the study concepts and asks how the concepts might be related a hypothesis is the prediction answer.

When we are formulating hypothesis, we must see these aspects.

• Tentative solution to problem may or may not be correct.
• Clear, precise, testable, and consistent with facts.
• Provide answer to problem, logical simplicity with the data we are providing.

SOURCES OF HYPOTHESIS

- **Theory**: This is one of the main source of hypothesis. It gives directive to research by stating what is known. Logical deduction from theory leads to new hypothesis.
- **Observation**: Hypothesis can be derived from observation. For example, from observation of price behaviour in a market, the relationship between price and demand of an article can be hypothesised.
- **Analogies**: Analogies are another source of hypothesis Julian Hexley has pointed out that causal observation in nature or in the framework of another science may be a fertile source of hypothesis.
- **Findings and studies**: Hypothesis may be developed out of the findings of other studies in order to repeat the test.
- **Culture**: Another source of hypothesis is the culture in which the researcher is nurtured. For example, sociology as an academic discipline originated from western culture. Over the past decade, a large part of the hypothesis on American society examined by researchers were connected with violence. Indian society is caste ridden. It is riddled with inequalities and privileges.

NATURE OF HYPOTHESIS

The following are the main features of a hypothesis:

1. It is conceptual in nature. Some kind of conceptual elements in the framework are involved in a hypothesis.
2. It is a verbal statement in a declarative form. It is a verbal expression of ideas and concepts, it is not merely idea but in the verbal form, the is ready enough for empirical verification.
3. It has the empirical referent. A hypothesis contains some empirical referent. It indicates the tentative relationship between two or more variables.
4. It has forward or future reference. A hypothesis is future oriented. It relates to the future verification not the past facts and information's.
5. It is the pivot of a scientific research. All the research activities the designed for its verification.

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The nature of hypothesis can be well understood by differentiating it with other terms like assumption and postulate.

TYPES OF HYPOTHESES

Types of hypotheses are explained below:

Null Hypothesis

Null means zero. When a hypothesis is stated negatively, it is called null hypothesis. The object of this hypothesis is to avoid the personal bias of the investigator. In the matter of collection of data, a null hypothesis is used to collect additional support for known hypothesis. The statistical tests are not designated to test a directional hypothesis or nor-directional hypothesis, but rather a null hypothesis. A null hypothesis is a prediction that there will be no change, relationship or difference between two variables. A null hypothesis is designated by 'Ho'.

The following are the example of null hypothesis:

• There are no relationship between the number of books read by children and the children's scores on a reading test.

• Teenagers who attend tutoring session will make achievement test scores that are equivalent to those of comparable teenagers, who do not attend tutoring session.

Substantive vs. Statistical hypothesis

Substantive hypothesis is not operationalized and it explains a kind of expected relationship between the variables that exists. So, of we want to lay down hypothesis with the example of eating ice cream and suffering from fever, it has some kind of relation. In statistical hypothesis, hypothesis formulated here has statistically significant relation between eating ice cream and suffering from fever and that is operationalize by means of statistical parameters, this could be done using t-test.

Simple Hypothesis

There is one independent variable and one dependent variable. Example eating ice cream leads to running temperature that is kind of simple hypothesis.

Complex Hypothesis

In complex hypothesis, we have or more independent and two or more dependent variable. So, here hypothesis could be example eating ice cream in cold weather leads to running temperature and absenteeism in school.

Research hypothesis

When a prediction or a hypothesised relationship is to be tested by scientific method, it is termed as research hypothesis. The research hypothesis a predictive statement that relates an independent variable to a dependent variable. Generally, a research hypothesis must contain, at least one independent and one dependent variable. Predictive statements which are not be objectively verified or the relationship that are assumed but not to be tested termed as research hypothesis.

Directional Hypothesis

It explains and predicts the direction and existence of a specific relationship. The predicted relationship will be either positive or negative. A directional hypothesis is more specific than non-directional hypothesis. It is also known as the cause-and-effect hypothesis. For example, it is hypothesised that the co-educated student is more interactive and smarter than the non-educated student.

Non directional hypothesis

It predicts a change, relationship or difference between two variables but does not specifically designate the change, relationship or difference as being positive or negative.

Practical vs Statistical hypothesis

This is a statement that describes the practical question to be answered by the test it phrases as

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a question.

Universal vs. Existential Hypothesis

In universal hypothesis we try to explain that all variables are true at all times or at a given point of time.

CONCLUSION

Hypothesis is prediction of what study will find it is an empirical statement verified and based upon observation or experience. If the results are statistically significant and consistent with the hypothesis and the theory that was used to generate the hypothesis, then researcher can conclude that the theory is supported. Not only did the theory make an accurate prediction, but there is now a new phenomenon that the theory accounts for.

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RESEARCH DESIGN

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Abstract
With the increasing reliance on digital tools in education, digital literacy has emerged as a critical factor influencing students' academic success. This study aims to explore the relationship between digital literacy and academic performance among university students. The primary objective is to assess how varying levels of digital literacy impact students' grades and overall academic achievements. The research adopts a descriptive cross-sectional design, targeting university students from various disciplines. A stratified random sampling method will be used to ensure that the sample is representative of different faculties, year groups, and demographic backgrounds. Data will be collected through a comprehensive survey, measuring students' digital literacy using a validated scale, alongside their academic performance data obtained from university records. The study will employ quantitative data analysis techniques, including correlation analysis and multivariate regression, to explore the potential association between digital literacy and academic outcomes. The analysis will also control for confounding variables such as socio-economic status, previous academic performance, and access to digital resources. The expected outcomes of this research include a deeper understanding of how digital literacy influences academic performance, which could have significant implications for educational policies and practices. The findings could highlight the need for targeted interventions to enhance digital literacy skills, particularly for students from disadvantaged backgrounds, ultimately leading to improved academic success.

Keywords*: Digital literacy, academic performance, higher education, quantitative research, cross-sectional study, educational interventions.*

Introduction

"A research design is the arrangement of conditions for collections for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure."
— Selltiz, Deutsch, and Cook

Research approach and research design are two terms that are frequently used interchangeably. A research design is the frame work or guide used for the planning, implementation, and analysis of a study. It is a systematic plan of what is to be done, how it will be done, how the data will be analyzed. Research design basically provides an outline of how the research will be out and methods that will be used.

A research design is a strategy for answering our research question using empirical data. Creating a research design means making decisions about: our overall research objectives and approach whether we'll rely on primary research or secondary research our sampling methods or criteria for selecting subjects our data collection methods.

According to Kothari, 'research design can be divided into Sampling design, Observational design, Statistical design and Operational design'. Sampling design is concerned with the methods of selecting a sample for study from the given population. Observational design deals

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with conditions for observations. In statistical design, the researcher has to finalize the sample size, tools for data analysis, etc. Operational design specifies the techniques which are to be used in the selection of sample, sample size for recording observations, data analysis, etc. In other words, operational design has the details about the techniques to be used in the other three designs.

Preparing The Research Design

The research problem having been formulated in clear terms, the researcher will be required to prepare a research design, i.e., he will have to state the conceptual structure within which research would be conducted. The preparation of such a design facilitates research to be as efficient as possible yielding maximal information. In other words, the function of research design is to provide for the collection of relevant evidence with optimum effort, time and expenditure. But how all these can be achieved depends mainly on the research purpose. Research purpose may be grouped into four categories, viz (i) Exploration, (ii) Description, (iii) Diagnosis, and (iv) Experimentation. A flexible research design which provides opportunity for considering many different of a problem is considered appropriate if the purpose of the research study is that of exploration. But when the purpose happens to be an accurate description of a situation or of an association between variables, the suitable design will be one that minimizes bias and maximizes the reliability of the data collected and analyzed.

There are several research designs, such as, experimental and non-experimental hypothesis testing. Experimental designs can be either informal designs (such as before-and-after without control, after-only control, after-only with control, before-and-after with control) or formal designs (such as completely randomized design, randomized block design, Latin square design, simple and complex factorial designs), out of which the researcher must select one for his own project.

The preparation of the research designs, appropriate for a particular research problem, involves usually the consideration of the following:

(a) The means of obtaining the information;
(b) The availability and skills of the researcher and his staff (if any);
(c) Explanation of the way in which selected means of obtaining information will be organized and the reasoning leading to the selection;
(d) The time available for research; and
(e) The cost factor relating to research, i.e., the finance available for the purpose.

Meaning of Research Design

A research design is a broad plan that states objectives of research project and provides the guidelines what is to be done to objectives of research and provides the guidelines what is to be done to realize those objectives. It is a plan structured and strategy of investigation of answering the research question.

Research design is the framework of research methods and techniques chosen by a researcher. The design allows researchers to home in on research methods that are suitable for the subject matter and set up their studies up for success. It is overall plan or blue print, the researcher selects to carry out their study. It is a master plan for executing a research project. The research design is a framework for planning our research and answering our research question. Creating a research design means making decisions about:

- The type of data our need
- The location and timescale of the researcher
- The participants and sources
- The variables and hypotheses (if relevant)
- The methods for collecting and analyzing data

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The research design sets the parameters of your project: it determines exactly what will and will not be included. It also defines the criteria by which we will evaluate our results sand draw our conclusions. The reliability and validity of our study depends on how you collect measure, analyze, and interpret our data.

Keeping in view the above stated design decisions, one may split the overall research design into the following parts:

(a) The sampling design which deals with the method of selecting items to be observed for the given study.

(b) The observational design which relates to the conditions under which the observation is to be made.

(c) The statistical design which concerns the question of how many items are to be observed and how the information and data gathered is to be analyzed.

(d) The operational design which deals with the techniques by which the procedures specified in the sampling, statistical and observational designs can be carried out.

From what has been stated above, we can state the important features of a research design as under:

(i) It is a plan that specifies the sources and types of information relevant to the research problem.

(ii) It is a strategy specifying which approach will be used for gathering and analyzing the data.

(iii) It also includes the time and cost budgets since most studies are done under these two constraints.

In brief, research design must, at least, contain (a) a clear statement of the research problem; (b) procedures and techniques to be used for gathering information; (c) the population to be studied; and (d) methods to be used in processing and analyzing data.

Need for Research Design

Research design has a significant impact on the reliability of the results obtained. It thus acts as a firm foundation for the entire research operations. It makes the research as efficient as possible by giving maximum information with minimal expenditure of effort, time and money. For construction of a house, we need to have a proper blueprint prepared by an expert architect. Similarly, we need a proper research design or plan prior to data collection and analysis of our research project. Preparation of research design should be done carefully as even a minute error might ruin the purpose of the entire project. The design helps the researcher to organize his ideas, which helps to identify and correct his flaws, if any. In a good research design, all the components with each other or go together with each other in a coherent manner. The theoretical and conceptual framework must with the research goals and purposes, conceptual and theoretical framework and approach to data analysis.

The need for research design is as follows:

- It reduces inaccuracy;
- Helps to get maximum efficiency and reliability;
- Eliminates bias and marginal errors;
- Minimizes wastage of time;
- Helpful for collecting research materials;
- Helpful for testing of hypothesis;
- Gives an idea regarding the type of resources required in terms of money, manpower, time, and efforts;
- Provides an overview to other experts;
- Guides the research in the right direction.

Types of Research Design

Exploratory research design: It is also called formulative research design. In this, generally

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the research focus is on exploring a problem or situation. Research begins with a broader problem. There is need for greater flexibility in such research, as with progress in research the broader problem will be converted into precise one, and new perspectives have to be considered. These may result in changes in sample size, selection of sample, relevant data analysis, or even in addition of new variables to the study, change in hypothesis, etc. In this type of research, the objective is development of theory or new ideas, by formulating a research problem for in-depth analysis, or by establishing the working hypothesis. In such research, information is not clearly defined. In this, researcher collects and analyses primary or secondary data with informal procedures to draw conclusions. Such research uses qualitative and unstructured methods of research. These provide in-depth insights but the problem is that it is hard to interpret, generalize, and also difficult to test its reliability and validity. As compared to the other research designs, exploratory research design is the least scientific and rigorous. The methods of exploratory research are Review of Literature, Experience Survey, Analysis of Insight Stimulating Cases, and Focus Groups.

Conclusive Research Design:

Conclusive research is organized to test a hypothesis, that is, to test the relationship between two or more variables. It is different from exploratory research as it is more formal and structured. Data collected in this type of research is subject to quantitative analysis. Also, the finding of exploratory research can be quantified in such research and tested using data collected from sample. These are generalizable and can be tested for validity and reliability as well. Some types of conclusive research design are Causal Research Design, Longitudinal Research Design, Cross-sectional Research Design, etc.

Experimental Research Design:

Experimental research design is the most scientific research design. In such research, the relationship between two or more variables is tested by performing experiments. Experiments performed may include manipulation of stimuli, environment, or an independent variable. Independent variable is manipulated in experiments and their effect on dependent variable is observed under controlled conditions to interpret the relationship. Here, it is important to have knowledge of extraneous variables and confounding variables. Conclusions are then generalized if the same result is drawn on performing the experiment again and again in the same setting. It is difficult to conduct experiments in social sciences than sciences. The experiments in sciences can be performed in laboratories, but the social science researches revolve around human behavior which a difficult to study to controlled settings. Experimental research can be categorized are pre-experimental design, Quasi-experimental design, and True-experimental design.

So, a suitable research design should be chosen on the basis of nature of the topic to finalize what data is required, how it will be collected, what will be the sample size, how sample will be chosen, how data will be analyzed, etc.

Some Important Component of Research Design

The main component of research design is:

1. **Research problem**: The core question or problem the research aims to address. It guides the entire study.
2. **Hypothesis or Research objectives**: A hypothesis is a tentative explanation, while research objectives are specific goals that the study aims to achieve.
3. **Conceptual Framework**: This outlines the theories, concepts, and variables involved in the research and how they are related.
4. **Research Methods**: The strategy for collecting and analyzing data. This includes choosing between qualitative, quantitative, or mixed methods approaches.
5. **Sampling Design**: Deciding on the population, sample size, and the method of

sampling (e.g., random sampling, stratified sampling).

6. **Data Collection Methods**: The tools and techniques used for gathering data, such as survey, interview, focus groups, observations, or experiments.
7. **Data Analysis Plan**: The strategies and techniques used for analyzing collected data. This includes statistical analysis in quantitative research or coding and thematic analysis in qualitative research.
8. **Validity and Reliability**: Ensuring that the research design measures what it intends to measure (validity) and that it produces consistent result over time (reliability).
9. **Ethical Considerations**: Addressing issues such as confidentiality, informed consent, and the ethical treatment of participant.
10. **Timeline**: The schedule for each phase of the research process, from planning to data collection and analysis.
11. **Budget**: A detailed cost estimate for conducting the research, including materials, personnel, and other resources.

    These components are interdependent and together create a solid framework for conducting a study.

Feature of a Good Research Design

When a researcher has formulated a research problem, he/she has to focus on developing a good design for solving the problem. A good design is one that minimizes bias and maximizes the reliability of the data. It also yields maximum information, gives minimum experimental error, and provides different aspects of a single problem. A research design depends on the purpose and nature of the research problem. Thus, one single design cannot be used to solve all types of research problem, i.e., a particular design is suitable for a particular problem.

A research design usually consists of the following factors:

(i) The means of obtaining information;
(ii) The availability and skills of the researcher and his staff, if any;
(iii) The objective of the problem to be studied;
(iv) The nature of the problem; and
(v) The availability of time and money for the research work.

If a research study is an exploratory or formulative one, i.e., it focuses on discovery of ideas and insights, the research design should be flexible enough to consider different aspects of the study. Similarly, if the study focuses on accurate description or association between variables, the design should be accurate with minimum bias and maximum reliability. However, in practice, it is difficult to categorize a particular study into a particular group. A study can be categorized only on the basis of its primary function and accordingly, its design can be developed. Moreover, the above-mentioned factors must be given due weight age while working on the details of the research design.

Conclusion

In conclusion, a well-structured research design serves as the blueprint for any scientific investigation, ensuring the research is systematic, logical, and coherent. By clearly defining the research problem, the design sets the foundation for the entire study, helping to guide the formulation of hypotheses or research questions. The literature review plays a crucial role in positioning the research within the existing body of knowledge, identifying gaps that the study aims to fill. Methodological choices, such as selecting qualitative, quantitative, or mixed methods, directly influence how data is collected, analyzed, and interpreted, thus affecting the research outcomes.

The careful selection of sampling techniques ensures that the study's participants or data points accurately represent the population of interest, while data collection methods align with the research objectives to provide relevant and reliable information. Validity and reliability check

further safeguard the integrity of the research by ensuring that the study measures what it is supposed to and produces consistent results. Ethical cornerstone, ensuring that the research respects participant rights and maintains transparency and honesty. Ultimately, the strength of any research lies not just in its finding but in how the research design allows for those findings to be credible and replicable. Understanding limitations, acknowledging biases, and reflecting on the broader implications of the research are also crucial to provide a comprehensive view of the study's contribution to the field and its potential impact on future research.

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Plagiarism in Research: A Menace to Academic Integrity

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Abstract

Plagiarism in research is a serious threat to academic integrity, originality, and the credibility of scholarly work. It occurs when a researcher uses another person's ideas, words, or findings without proper acknowledgment, either deliberately or unintentionally. Such practices undermine the authenticity of research, hinder the progress of knowledge, and damage the reputation of individuals as well as institutions. In the academic world, plagiarism is considered an unethical act that violates honesty, trust, and fairness. Preventing plagiarism requires awareness, proper citation practices, and the use of plagiarism-detection tools. Furthermore, cultivating ethical research habits and respecting intellectual property rights are essential to maintain the quality and reliability of academic contributions. Upholding originality not only safeguards academic standards but also strengthens the value of research as a truthful search for knowledge.

Keywords: *Plagiarism, Research, Academic Integrity, Originality, Ethics, Citation, Knowledge, Authenticity*

INTRODUCTION

Plagiarism is a serious issue in research, threatening the validity and credibility of scholarly work. The ease of access to information and pressure to publish has created an environment conducive to plagiarism. It involves the unauthorized use or reproduction of someone else's work without proper acknowledgment. In research, plagiarism undermines the integrity of scholarly work and can have severe out-turn for researchers. Research plagiarism can take many forms, from verbatim copying to subtle paraphrasing, and can occur in various contexts, including academic papers, theses, dissertations, and published articles. The results of plagiarism are wide and broad that affect individual researchers, institutions, journals, and the broader scientific community. The stakes are high, particularly in fields where research informs policy, practice, or clinical decision-making. Plagiarism can have serious repercussions, including damage to reputations, loss of credibility, and financial consequences. Furthermore, it undermines the principles of academic integrity, which are essential for maintaining public trust in research. By understanding the scope and implications of plagiarism, we can work towards a research environment that facilitates originality, transparency, and accountability.

CAUSES OF PLAGIARISM

Plagiarism is a complex issue, and its causes are multifaceted. Understanding these underlying factors is crucial for developing effective strategies to prevent and address plagiarism. Also, it helps in developing targeted solutions to prevent plagiarism.

1. **Lack of Understanding**
   Inadequate knowledge of proper citation practices and plagiarism guidelines contributes to unintentional plagiarism. Researchers may not fully comprehend the nuances of plagiarism or may be unfamiliar with citation styles. This lack of

comprehension can stem from various factors, such as language barriers, insufficient research skills, or a limited understanding of academic integrity principles. Without a clear understanding of how to ethically incorporate and credit external sources in their work, individuals may resort to copying content verbatim or paraphrasing without proper acknowledgment. Addressing this issue requires researchers to communicate their work effectively, use precise and accessible language, provide adequate context, and offer support for those seeking to grasp the research content. Enhancing understanding in research is crucial for knowledge dissemination, collaboration, and the advancement of science and academia.

2. **Pressure to Publish**
   The pressure to publish research unwillingly leads to shortcuts. The "publish or perish" culture prevalent in academia creates an environment where researchers feel compelled to prioritize quantity over quality. It often creates stress and impact the mental well-being of researchers, as the pressure to constantly publish can be profusely tiring. It's the constant demand to churn out papers, articles, and studies to keep up with the academic race. This pressure can make researchers feel like they're on a never-ending treadmill, always rushing to publish without taking the time to ensure the quality and integrity of their work. It's a tough balancing act between producing quantity and maintaining the rigor and ethics of research. Ultimately, finding a way to navigate this pressure while upholding the standards of good research is crucial for the advancement of knowledge and the well-being of researchers.
3. **Inadequate Institutional Policies**
   Weak institutional policies and lack of clear guidelines on plagiarism contribute to its prevalence. Without well-defined consequences for plagiarism, researchers may feel less inclined to adhere to academic integrity standards. These are like leaving the door wide open for academic dishonesty to stroll right in. When institutions don't have robust guidelines and consequences in place for plagiarism, it's like giving a free pass to those looking to cut corners and steal others' work. Without clear guidelines and consequences, it's easy for researchers to get lost in a sea of uncertainty. One significant impact of inadequate institutional policies on plagiarism is the lack of awareness and understanding among students about what actions constitute plagiarism. Without explicit guidelines and educational initiatives on proper citation methods and attribution practices, students may struggle to navigate the complexities of academic writing and inadvertently commit acts of plagiarism. The absence of comprehensive policies can create a gray area regarding what is considered acceptable in terms of using external sources, leading to unintentional breaches of academic integrity. These lax policies create a breeding ground for academic misconduct, undermining the very foundation of scholarly integrity. Institutions should invest in educational initiatives, training programs, and resources that promote a culture of ethical scholarship and provide individuals with the tools and knowledge needed to avoid plagiarism. Strong institutional policies on plagiarism are essential to maintain academic honesty, uphold scholarly standards, and ensure that credit is given where it's due in the research community.
4. **Technological Advancements**
   The Technological advancements are like a fast-paced rollercoaster ride through the world of innovation. From artificial intelligence to virtual reality, technology is constantly evolving, reshaping how we live, work, and interact with the world around us. The ease of accessing and copying information online has made plagiarism more convenient. The internet's vast resources and cut-and-paste functionality can facilitate

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plagiarism. As we witness the rapid evolution of technology, it's prominent to adapt, learn, and harness these advancements to balance with the current world. With the development of plagiarism detection software and tools, researchers can now easily cross-check their work against a vast database to ensure originality and integrity. These technological solutions help maintain academic honesty, uphold research standards, and promote ethical publishing practices in the digital age. So, technology is not only advancing research but also aiding in combating plagiarism effectively.

5. **Contract Cheating**
   The rise of contract cheating, where researchers commission others to produce work on their behalf, has become a significant concern. This phenomenon undermines academic integrity and can lead to widespread plagiarism. Furthermore, the reliance on contract cheating services can perpetuate a cycle of academic dishonesty that extends beyond the initial outsourcing of work. Students who opt for contract cheating may become accustomed to using external sources to complete assignments, leading them to overlook the importance of conducting their research, critically analyzing information, and properly citing sources. This dependency on external assistance can blur the lines between original work and borrowed content, making it easier for individuals to inadvertently engage in plagiarism when they attempt to integrate external material into their own writing. This deceitful practice not only undermines the learning process but also devalues the hard work of honest students. Combating contract cheating requires a collective effort from educational institutions, teachers, and students to promote academic integrity and uphold the true essence of learning. To address the intertwined issues of contract cheating and plagiarism, educational institutions must take a comprehensive approach that includes implementing strict policies against academic dishonesty, promoting academic integrity through education and awareness campaigns, and providing support services to help students develop essential research and writing skills. By fostering a culture of honesty, originality, and ethical conduct, institutions can combat the detrimental effects of contract cheating and plagiarism, safeguard the integrity of academic work, and uphold the values of scholarship and intellectual honesty. By shining a light on this issue and fostering a culture of honesty, we can preserve the integrity of education for all.
6. **Language Barriers**
   Language barriers in plagiarism refer to situations where individuals may inadvertently plagiarize content due to difficulties in understanding the language in which the original work was written. This can happen when someone tries to paraphrase or summarize information from a source in a language they are not fully proficient in, leading to unintentional plagiarism. The complexities of academic writing, citation styles, and referencing conventions in a foreign language can pose challenges for individuals, making it difficult to distinguish between their original thoughts and external sources. In academic settings, where precise citation and acknowledgment of sources are paramount, language barriers can hinder individuals from effectively integrating external material into their work while maintaining academic integrity. This can result in unintentional acts of plagiarism due to a lack of clarity on how to properly cite and reference sources in a language they are not fully proficient in. To mitigate the impact of language barriers on plagiarism, individuals can take proactive steps to enhance their language skills, seek assistance from language experts or translators when needed, and familiarize themselves with the academic conventions of the language in which they are working. By improving language proficiency, gaining a better understanding of citation norms, and actively engaging in language learning strategies, individuals can

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effectively navigate language barriers and reduce the likelihood of unintentional plagiarism in their academic endeavours. Understanding the nuances of a language is crucial to accurately interpreting and citing sources to avoid plagiarism. It's essential to be aware of these language challenges to maintain academic integrity and properly attribute sources in one's work.

7. **Lazy or Unmotivated**
   When someone is lazy or unmotivated, they may fall into plagiarism. Such individuals may not properly research sources and instead copy-paste content from others into their work without giving any attribution. Laziness or a lack of motivation can result in individuals taking shortcuts when completing assignments or projects, such as copying information directly from sources without proper citation or paraphrasing. This behaviour stems from a reluctance to put in the necessary effort to conduct thorough research, critically analyze information, and create original work. When individuals feel unmotivated or overwhelmed by academic tasks, they may resort to plagiarism as a way to meet deadlines or achieve desired grades without investing the required time and energy into their work. Moreover, laziness or a lack of motivation can hinder individuals from developing essential research and writing skills that are crucial for academic success. By avoiding the effort required to conduct independent research, critically evaluate sources, and articulate their own ideas, individuals miss out on valuable learning opportunities. Plagiarism becomes a convenient way to bypass the learning process and receive academic credit without demonstrating a genuine understanding of the subject matter. This is an unethical practice and reflects academic dishonesty. To avoid this situation, it's important to improve motivation, time management, and research skills. To prevent plagiarism, creating original work and properly crediting sources is crucial.

TYPES OF PLAGIARISM

Plagiarism, the act of passing off someone else's work as one's own, is a serious academic offense (Belter and du Pré 12). Oxford Dictionary says, Plagiarism is defined as "The practice of taking someone else's work or ideas and passing them off as one's own" (Oxford Dictionary, n.d.). Understanding the various types of plagiarism is important to identify and avoid it. Plagiarism can take various forms:

1. **Direct plagiarism**: It means copying word-for word without quotation marks.
   Direct plagiarism involves copying verbatim from a source without quotation marks or proper citation (Lipson 15). As given by Howard and Tagliabue, "direct plagiarism is the most obvious and egregious form of plagiarism" (23).
2. **Paraphrasing plagiarism**: Rewording without proper citation.
   Paraphrasing plagiarism involves rewording someone else's work without proper citation (Belter and du Pré 17). The Council of Science Editors defines that, "Paraphrasing plagiarism can be just as serious as direct plagiarism" (Council of Science Editors 12).
3. **Mosaic plagiarism**: Mixing original and plagiarized work.
   Mosaic plagiarism combines original and plagiarized work, making it difficult to detect (Lipson 20). The International Journal of Educational Integrity defines mosaic plagiarism as "mixing one's ideas with someone else's without proper citation" (International Journal of Educational Integrity 4).
4. **Self-Plagiarism**
   Self-plagiarism, also known as duplicate publication, involves reusing one's own previously published work without proper citation (Council of Science Editors 15). This practice can be considered unethical, especially in academic and professional

settings, as it can mislead readers into thinking the work is original when it's actually reused from a previous source. It's important to always give credit where it's due, even if the work is your own, to maintain transparency and academic integrity.

5. **Source-Based Plagiarism**
   Source-based plagiarism involves failing to cite sources properly, often using misleading or fake citations (Council of Science Editors 18). It involves directly lifting content from a source, such as a book, article, or website, and passing it off as your own without giving credit to the original author. It is a serious ethical violation as it involves stealing someone other's ideas, words, or research without permission. Properly citing sources is crucial to avoid source-based plagiarism and to show respect for the original creators of the content.
6. **Collaborative Plagiarism**
   Collaborative plagiarism occurs when two or more individuals work together to produce content that includes plagiarized material, intentionally or unintentionally. This type of plagiarism can happen in various settings, including:
   Academic Collaborations
7. Group projects
8. Research papers
9. Dissertations
10. Theses
    Professional Collaborations
11. Co-authored articles
12. Business reports
13. Marketing materials
14. Research studies

CONSEQUENCES OF PLAGIARISM

Plagiarism undermines research integrity, compromising trust and credibility. Consequences include:

Legal Consequences

1. Copyright infringement lawsuits.
2. Intellectual property theft charges.
3. Financial penalties and damages.
4. Criminal charges.
5. Imprisonment.

Social Consequences

1. Loss of social credibility.
2. Damage to personal relationships.
3. Social isolation.
4. Decreased social standing.
5. Public embarrassment.

Institutional Consequences

1. Damage to institutional reputation.
2. Loss of accreditation or funding.
3. Increased scrutiny and monitoring.
4. Decreased enrollment.
5. Financial penalties.

Academic Consequences

1. Failure or expulsion from academic programs.
2. Loss of scholarships or financial aid.

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3. Damage to academic reputation.
4. Reduced career opportunities.
5. Loss of credibility.

Emotional and Psychological Consequences

1. Guilt, shame, and anxiety.
2. Loss of self-confidence and self-respect.
3. Strained relationships with colleagues and peers.
4. Emotional distress.
5. Decreased motivation.

SOLUTIONS TO PLAGIARISM

Education on proper citation practices, technology to detect plagiarism, and strict policies and penalties are essential solutions. Some of them are:

Academic Solutions

1. Proper Citation: Accurately cite sources using recognized citation styles.
2. Paraphrasing: Rewrite information in original words.
3. Quoting: Use quotation marks for direct quotes.

Technological Solutions

1. Plagiarism Detection Tools: Utilize tools like Turnitin, Grammarly, and PlagScan.
2. Originality Checkers: Use software like Quetext and Copyscape.

Educational Solutions

1. Workshops and Seminars: Conduct workshops on plagiarism and citation.
2. Online Resources: Provide access to plagiarism guides and tutorials.
3. Academic Integrity Policies: Establish clear policies and consequences.

Individual Solutions

1. Time Management: Allow sufficient time for research and writing.
2. Note-taking: Keep accurate records of sources.
3. Original Work: Strive to produce original ideas and content.

Institutional Solutions

1. Plagiarism Prevention Programs: Implement campus-wide programs.
2. Faculty Training: Educate faculty on plagiarism detection.
3. Student Education: Integrate plagiarism education into curriculam.

CASE STUDIES

Here are some notable case studies on plagiarism cases and their consequences.

1. **Kaavya Viswanathan (Literature)**
    - **Case**: Plagiarism faced by the novel- "How Opal Mehta Got Kissed".
    - **Consequence**: Book recalled, publisher sued, and career damaged.
2. **Martin Luther King Jr. (Theology)**
    - **Case**: Plagiarized sections in doctoral dissertation.
    - **Consequence**: Criticized, but degree not revoked.
3. **Fareed Zakaria (Journalism)**
    - **Case**: Plagiarized articles in Time Magazine.
    - **Consequence**: Suspended, apologized, and faced criticism.
4. **Jayson Blair (Journalism)**
    - **Case**: Plagiarized articles in The New York Times.
    - **Consequence**: Resigned, lost book deal, and faced public scandal.

These case studies highlight the consequences of plagiarism in research, including:

- Loss of credibility.
- Career damage.
- Financial penalties.

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- Public scandal.
- Academic sanctions.

BEST PRACTICES

Strategies for maintaining academic integrity:

1. Proper citation practices.
2. Originality checks.
3. Collaboration and peer review.
4. Paraphrasing.
5. Quotation Marks.
6. Plagiarism detection tools.

RECOMMENDATIONS

The key to prevent plagiarism is originality, integrity and proper citations. Here are brief recommendations to prevent and address plagiarism:

For Researchers/Writers

1. Understand plagiarism.
2. Use citation tools.
3. Paraphrase & quote properly.
4. Conduct original research.
5. Seek permission.

For Educators

1. Teach plagiarism prevention.
2. Use detection tools.
3. Encourage originality.
4. Provide resources.
5. Set clear policies.

For Institutions

1. Develop plagiarism policies.
2. Implement detection tools.
3. Provide training.
4. Promote academic integrity.
5. Investigate allegations.

For Students

1. Understand plagiarism.
2. Use citation tools.
3. Seek guidance.
4. Practice originality.
5. Check work.

For Publishers/Editors

1. Conduct thorough reviews.
2. Use detection tools.
3. Verify sources.
4. Establish guidelines.
5. Retract plagiarized work.

CONCLUSION

Plagiarism is a pervasive problem requiring a comprehensive solution. It poses a significant threat to academic integrity, research credibility, and professional reputation. By promoting originality, implementing preventive strategies, adhering to best practices, and leveraging technology, we can mitigate this threat. Ultimately, maintaining academic integrity requires a collective effort from educators, researchers, and professionals. By upholding the values of

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honesty, originality, and credibility, we can ensure the authenticity and reliability of information, advance knowledge, and foster a culture of excellence.

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VARIABLES IN RESEARCH

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Abstract
In research, variables are fundamental elements that represent measurable traits or characteristics subject to change or variation. They play a critical role in defining and guiding the study's design, data collection, and analysis. Variables are typically categorized into three main types: independent variables, dependent variables, and controlled variables. The independent variable is the one manipulated or changed by the researcher to observe its effect on the dependent variable, which is the outcome of interest being measured. For instance, in a study examining the impact of different teaching methods (independent variable) on student performance (dependent variable), the teaching method is altered to see how it influences performance.
Controlled variables, or constants, are the elements kept the same throughout the experiment to ensure that the results are attributable only to the manipulation of the independent variable. Additionally, extraneous variables, which are not of primary interest but could influence the dependent variable, should be minimized or accounted for to avoid skewed results. Operational definitions are crucial in research, as they specify how variables are measured or manipulated within the study. This clarity ensures that the research is replicable and that the findings are valid and reliable.
In sum, understanding and appropriately managing variables is essential for the integrity and success of any research project, as they directly impact the study's conclusions and the ability to generalize findings.
***Keywords**: Variables, independent variable, dependent variable, controlled variables, extraneous variables, confounding variables, categorical variables, operational definitions, research design, data analysis.*

INTRODUCTION

In research, the focus is usually on trying to understand the relationship between two activities or to analyze the effect of one activity on another. These activities are the variables and it is pertinent to define and identify the variables while designing quantitative research project. A variable incites excitement in any research than constants. It is therefore critical for beginners in research to have clarity about this term and the related concepts. Suppose, an experiment is conducted to know about the time taken by different employees who have slept 2,4,6 and 8 hours, respectively to complete a task. Here, the variables will be the number of sleeping hours and the time taken to complete the task. An entity which can be measured is a variable or in other word we can say that a variable is a property that takes on different values. Here the sleeping hours as well as time taken can be measured qualitatively, so the variables in this case will be ‘time taken to complete the task’ and ‘sleep hours’. Qualitative concept can also be quantified on the basis of absence or presence, scales from 1 to 5, etc.
Variable, to put in layman statement is something that can change and or can have more than one value.” A variable as the name implies, is something that varies”. It may be weight, height, anxiety level, income, body temperature, subject marks and so on. Each of these properties

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varies from one person to another and also has different values along a continuum. It could be demographic, physical or social and includer religion, income, occupation, temperature, humidity, language, food, fashion, etc. Some variables can be quite concrete and clear, such as gender, birth order, types of blood group etc., while other can be considerably more abstract and vaguer.

Variable is a property that takes on different values. It is also a logical grouping of attributers. Attributes are characteristic or qualities that describe an object. For example, if gender is a variable, then male and female are the attributes. If residence is the variable, then urban, semi urban, rural become the attributes. So, the attributes here describe the residence of an individual.

DEFINITION OF VARIABLE

• In Research, Variables refer to characteristics or attributes that can be measured, manipulated, or controlled. They are the factors that researchers observe or manipulate to understand the relationship between them and the outcomes of interest. OR

• In research, a variable is any characteristic, attribute, or factor that can be measured or observed and that can vary across individuals, groups, situations, or over time. Variables are central to the design and analysis of research because they are the entities that researcher's study to understand relationships, causes, and effects.

MEANING OF VARIABLE

Referring the above definitions of variable, we can say that any such characteristic or attributes, possessed by any living or non-living unit or thing, is called variable whose values may change per unit or per groups of units. Such characteristic is called variable characteristic in research study.

Some examples of variable are given below.

If we want to study the number of members in families of a village, the number of members will be variable characteristic, because value of this number will change per family and family will be considered as a unit of study.

In the same way, if we want to study Mathematical Reasoning Ability (MRA) of students, MRA will be considered as a variable characteristic and students will be considered as units of study.

MEANING OF SUBJECT OF STUDY

The unit that possesses variable characteristic to be studied is called subject of study. Employee, in our above mentioned, will be considered as subject of study.
In the same way, if we want to study Teaching Aptitude (TA) of high school teachers, the high school teacher will be subject of our study and TA will be considered as variable characteristic under study.

Generally, in research studies, if the variables are taken care of, interrelationship among the variables or impact of one or more variables on other variables is studied. Sometimes, interactive effect of some variable/s is studied through research. If variable based study ids to be done through research activity, researcher must have the understanding of types of variables.

TYPES OF VARIABLES IN RESEARCH

Continuous Variable	**Non-Continuous Variable or Discrete Variable**
These can be expressed continuously i.e. in decimal as well. Example: Height, Weight, percentage of marks, etc.	These can only be expressed as whole numbers. Example: Number of students in a class, family members, etc.

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Extraneous Variables

These are the variables which are not the part of the study but their presence influences the dependent variable, say, time taken to complete a task may be dependent on health, etc. Because in this study we are to check the effect of sleeping hours on working efficiency, other variables have been excluded from the system; so, all these are extraneous variables. Their effect is not considered in the study, but they do affect the time taken to complete the task; so, their effect will be termed as "experimental error". All these omitted variables are included in 'Error term' in Economics.

Confounding Variables

These are also similar to extraneous variables as they are also not part of the system. But these differ in the extent of their influences. These have stronger influences than the extraneous variables.

Active Variables vs. Attributed Variables

Active Variables	Attributed Variables
These can be changed and are under the control of researcher. Example: Monthly expenditure of the household on vegetables.	These cannot be changed and are not under the control of the researcher. Example: Age, gender of respondents.
Active and attributed variables are types of independent variables.	

Categorical Variables

Variables	Examples
Dichotomous Variables	Gender: Male and female Types of property: Commercial and residential Pregnant and non-pregnant Alive and dead HIV positive and HIV negative Education: Literate and illiterate
Trichotomous Variables	Residence: Urban, semi urban and rural Religion: Hindu, Muslim, Christianity and Buddhism, etc.
Multiple Variables	Blood Groups: A, B, AB and O

MEASURING VARIABLES

In order to do an analysis, the variables have to be quantified; this means measuring giving values and the scales. Sometimes identification of variables and determining how to measure them looks quite simple but due to vaguely defined variables measuring can be difficult too. There are four levels of measurements on a continuum of discrete and continuous: Nominal scale, Ordinal Scale interval scale and ratio scale. Now we discuss these four scales in detail below:

• **Nominal Scale**: It is used for variables which can be categorized, but cannot be ranked. For example, blood group of the respondent can have response A, B, AB or O. Here, responses can be categorized, but cannot be ranked.

• **Ordinal Scale**: It is used for the variables which can be categorized as well as ranked, that

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is, where one choice is superior to another; so, these can be ranked on the basis of their levels. It is usually used to measure nonnumeric or qualitative concepts like happiness, sadness, satisfaction, level of pain, and so on. For example, when asked about the satisfaction of the service respondents can reply by choosing one of these very satisfied, satisfied, neutral, dissatisfied and very dissatisfied. Similarly, any statement can have options strongly disagree, disagree, neither agree nor disagree, agree and strongly agree. Marks scored by students in a test can be categorized qualitatively as above average, average below and average.

• **Interval Scale**: It is used for the variables involving the quantity which can be categorized rank as well as can be expressed in increments with known measurable consistent and equal intervals. These types of variables include time, temperature, percentage of marks scored by the students, etc. Time like sleeping hours can be expressed in equal interval of 1 hour as 1, 2, 3, 4, 5, 6, 7, 8 hours.

• **Ratio Scale**: It is used when a variable which can be categorized, rank, and expressed in equal intervals, can have an absolute zero value, that is, the starting point of the scale is taken as zero. Ratios can be calculated using these measurement variables say monthly views on YouTube channel can be expressed as "this month we had thrice the number of views than the last month".

E.g. gender, marital status, race, diagnosis, blood group etc. Ordinal scale is one where the variables are categorized that can be ranked. E.g. Levels of pain mid, moderate or severe. Interval scale measures equal numerical distances between the intervals. It can be categorized, as well as ranked. difference between 70 degree and 80 degrees will be the same as the difference between the 30 degree and 40 degrees. So, the interval is of 10 degrees in both the categories. Ratio scale measures the variables which can be categorized, ranked, have equal intervals and can represent continuum of the values.

DEFINITION OF HYPOTHESIS

• It (Hypothesis) is a suggested answer to the problem under investigation – John T. Townsend

• A hypothesis is a tentative generalization, the validity of which remains to be tested – J.W. Best

• A hypothesis is a proposition which can be put to test to determine its validity. It may be proved correct or incorrect – Good & Hatt

• A hypothesis is a conjectural statement of the relation between two or more variables – F.N. Kerlinger

FUNCTIONS OF HYPOTHESIS

The main functions of the hypothesis are given below:

• It brings clarity, precision, and focus in research process.
• It facilitates the formulation of theory.
• It provides a direction to the research defining the variables.
• It enhances the objectivity.
• It prevents blind research.
• It provides a temporary theory or generalization which after verification becomes a well-accepted theory.

TYPES OF HYPOTHESIS

Null Hypothesis: It is the best of study. this signifies that is no difference between two phenomenon or situation. It is denoted by H0 or HN. For example,

• H0: There is no difference between the effect of a drug A and B.
• H0: Skin problem is not caused by the Chemicals in makeup products.
• H0: Girls and boys are from equally well in the mathematics test.

Alternative Hypothesis: Alternative hypothesis is considered to be true if the null

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hypothesis is rejected. It is the opposite of null hypothesis. It is denoted by H1 or HA. For example,

• H1: There is a difference of effectiveness of drug A and B or
• H1: Drug A is more effective than drug B
• H1: Skin problems are caused by the chemicals is make up products.
• H1: Girls and boys do not perform equally well in mathematics test. Hypothesis test can be positive or negative statement.

Suppose the hypothesis is 'women perform better in administrative jobs than men'. It will not be a null hypothesis, as null hypothesis is of hypothesis of no difference. This will be an alternate hypothesis. Null hypothesis, in this case, will be 'women and men perform equally well in administrative jobs', this mean that there is no difference in their performance.

• H0: Women and men perform equally well in administrative jobs.
• H1: Women perform better in administrative jobs than men

CHARACTERISTICS OF HYPOTHESIS

• It should act as stimulus to research.
• It should be expressed simply, specifically, and should be conceptually clear.
• It should be a verbal statement of the relationship between two or more variables.
• It should be future oriented, that is, should have the ability to predict future events.
• It should have the ability to enhance objectivity.
• It should be verifiable. If it cannot be verified, then conclusions cannot be drawn from it without checking its validity.

OPERATIONAL DEFINITIONS

Operational Definitions refer to the specific criteria, procedures, or measurements used to define and quantify variables in a research study or experiment. Here's a concise breakdown:

• **Purpose**: To ensure clarity and consistency in how variables are measured or observed. It standardizes terms and concepts to avoid ambiguity.

• **Types**:

- **Measurable Variables**: Numerical values, e.g., "height is measured in centimetres."
- **Observable Behaviours**: Specific actions or reactions, e.g., "aggression defined as the number of times a person shouts during a 10-minute interaction."

• **Characteristics**:

- **Specific**: Clearly details how a concept is measured or observed.
- **Replicable**: Enables other researchers to replicate the study with the same criteria.
- **Objective**: Minimizes subjectivity by using clear criteria.

• **Example**:

- **Abstract variable**: Intelligence.
- **Operational definition**: "Intelligence is defined as the score obtained on a standardized IQ test."

DATA ANALYSIS

It involves the systematic application of statistical or logical techniques to describe, summarize, and evaluate data. Here are key points:

Purpose:

- To identify patterns, relationships, and trends within data.
- To draw meaningful conclusions and support decision-making based on evidence.

Types:

- **Quantitative Analysis**: Uses numerical data and statistical methods (e.g., averages, correlations).
- **Qualitative Analysis**: Analyses non-numerical data like interviews or observations to identify themes or insights.

- **Mixed Methods**: Combines both quantitative and qualitative approaches.

Steps:

- **Data Cleaning**: Removing errors or inconsistencies.
- **Descriptive Statistics**: Summarizing data (e.g., mean, median, mode).
- **Inferential Statistics**: Making predictions or inferences about a population based on sample data (e.g., t-tests, regression).
- **Interpretation**: Analysing results to draw conclusions related to research questions or hypotheses.

Tools: Software like SPSS, R, Excel, or NVivo for data processing and analysis.

Importance: Provides empirical evidence to support research findings. Facilitates understanding of complex data through visualization and statistical summaries.
In research, data analysis is crucial for transforming raw data into actionable insights and validating hypotheses. Operational definitions are critical for empirical research as they bridge the gap between abstract concepts and practical measurement.

The next step is to prepare the research design and it is the most difficult part of planning a research study is identifying the research variables and research design. Considerable time and thought needs to give this step. Once the variables have been identified, then the research study can be developed until the research problem, its objectives, variables have been decided and the hypothesis is formulated after a detailed review of literature and then the research study can be developed.

Summary

In the above topic "Variables in Research", I have discussed in due course about the variables, their nature, classifications and uses in the research field. This is an important step in the research methodology. Also here here discuss about the different types of data, measure of data and a rigorous concept of data analysis, testing of hypothesis. Henceforth I reached in conclusion that every research scholar has a fruitful idea about the variables, data and data analysis for their research works onwards.

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INTRODUCTION TO RESEARCH METHODOLOG

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Abstract
Research methodology is the systematic framework that guides the process of conducting research. It provides the principles, methods, and procedures necessary to identify problems, collect data, analyze information, and arrive at valid conclusions. An introduction to research methodology helps learners understand not only the techniques used in research but also the logic behind selecting them. It emphasizes the importance of objectivity, reliability, and ethical practices in the research process. Whether the study is scientific, social, or literary, a well-defined methodology ensures that the investigation is structured, transparent, and contributes meaningfully to the advancement of knowledge. By offering clarity of purpose and direction, research methodology becomes the foundation for producing original, authentic, and academically valuable work.

Keywords: *Research, Methodology, Systematic Process, Knowledge, Objectivity, Ethics, Data Analysis, Framework*

Meaning Of Research

Research is search for knowledge. Research as a Scientific & Systematic search for information on a specific topic. Research is a careful investigation /Inquiry specially through search for new facts in any branch of knowledge and it is a journey of discovery. A research methodology describes the techniques and procedures used to identify and analyze information regarding a specific research topic. It is a process by which researchers design their study so that they can achieve their objectives using the selected research instruments.

Research is an academic activity and as such the term should be used in a technical sense. According to Clifford Woody research comprises defining and redefining problems, formulating hypothesis or suggested solutions; collecting, organizing and evaluating data, making deductions and reaching conclusions, and at last carefully testing the conclusions to determine whether they fit the formulating hypothesis.

Research is, thus, an original contribution to the existing stock of knowledge making for its advancement. It is the pursuit of truth with the help of study, observation, comparison and experiment. In short, the search for knowledge through objective and systematic method of finding solution to a problem is research. The systematic approach concerning generalization and the formulation of a theory is also research. As such the term 'research' refers to the systematic method consisting of enunciating the problem, formulating a hypothesis, collecting the facts or data, analyzing the facts and reaching certain conclusions either in the form of solutions(s) towards the concerned problem or in certain generalizations for some theoretical formulation.

Objectives Of Research

1. To gain familiarity with a phenomenon or to achieve new insights into it (Formulative research studies).
2. To portray accurately the characteristics of a particular individual, situation or a group (descriptive research studies).

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3. To determine the frequency with which something occurs or with which it is associated with something else (diagnostic research studies).
4. To test a hypothesis of a causal relationship between variables (Hypothesis-testing research studies).

Types of Research

Types of research can be classified in many different ways. Some major ways of classifying research include the following:

1. **Descriptive versus Analytical Research**: Descriptive research concentrates on finding facts to ascertain the nature of something as it exists. In contrast Analytical research is concerned with determining validity of hypothesis based on analysis of facts collected.
2. **Applied versus Fundamental Research**: Applied research is carried out to find answers to practical problems to be solved and as an aid in decision making in different areas including product design, process design and policy making. Fundamental research is carried out as more to satisfy intellectual curiosity, than with the intention of using the research findings for any immediate practical application.
3. **Qualitative versus Quantitative Research**: Qualitative research studies such aspects of the research subject which are not quantifiable, and hence not subject to measurement and quantitative analysis. In contrast Quantitative research makes substantial use of measurements and quantitative analysis techniques.
4. **Conceptual versus Empirical Research**: Conceptual research is involves investigation of thoughts and ideas and developing new ideas or interpreting the old ones based on logical reasoning. In contrast empirical research is based on firm verifiable data collected by either observation of facts under natural condition or obtained through experimentation.
5. **Some Other Types of Research**: All other types of research are variations of one or more of the above stated approaches, based on either the purpose of research, or the time required to accomplish research, on the environment in which research is done, or on the basis of some other similar factor. From the point of view of time, we can think of research either as one-time research or longitudinal research. In the former case the research is confined to a single time-period, whereas in the latter case the research is carried on over several time-periods. Research can be field-setting research or laboratory research or simulation research, depending upon the environment in which it is to be carried out. Research can as well be understood as clinical or diagnostic research. Such research follow case-study methods or in depth approaches to reach the basic causal relations. Such studies usually go deep into the causes of things or events that interest us, using very small samples and very deep probing data gathering devices.

The research may be exploratory or it may be formalized. The objective of exploratory research is the development of hypotheses rather than their testing, whereas formalized research studies are those with substantial structure and with specific hypotheses to be tested. Historical research is that which utilizes historical sources like documents, remains, etc. to study events or ideas of the past, including the philosophy of persons and groups at any remote point of time. Research can also be classified as conclusion-oriented and decision-oriented.

While doing conclusion, a researcher is free to pick up a problem, redesign the enquiry as he proceeds and is prepared to conceptualize as he wishes. Decision-oriented research is always for the need of a decision maker and the researcher in this case is not free to embark upon research according to his own inclination. Operations research is an example of decision oriented research since it is a scientific method of providing executive departments with a quantitative basis for decisions regarding operations under their control.

Research Approaches

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The above description of the types of research brings to light the fact that there are two basic approaches to research, viz., quantitative approach and the qualitative approach. The former involves the generation of data in quantitative form which can be subjected to rigorous quantitative analysis in a formal and rigid fashion. This approach can be further sub-classified into inferential, experimental and simulation approaches to research. The purpose of inferential approach to research is to form a data base from which to infer characteristics or relationships of population.

This usually means survey research where a sample of population is studied to determine its characteristics, and it is then inferred that the population has the same characteristics. Experimental approach is characterized by much greater control over the research environment and in this case some variables are manipulated to observe their effect on other variables. Simulation approach involves the construction of an artificial environment within which relevant information and data can be generated. This permits an observation of the dynamic behavior of a system under controlled conditions.

The term 'simulation' in the context of business and social sciences applications refers to "the operation of a numerical model that represents the structure of dynamic process. Given the values of initial conditions, parameters and exogenous variables, simulation is run to represent the behavior of the process over time." Simulation approach can also be useful in building models for understanding future conditions.

Qualitative approach to research is concerned with subjective assessment of attitudes, opinions and behavior. Research in such a situation is a function of researcher's insights and impressions. Such an approach to research generates results either in non-quantitative form or in the form which are not subjected to rigorous quantitative analysis. Generally, the techniques of focus group interviews, projective techniques and depth interviews are used.

Research Process

Before embarking on the details of research methodology and techniques, it seems appropriate to present a brief overview of the research process. Research process consists of series of actions or steps necessary to effectively carry out research and the desired sequencing of these steps. The chart shown in Figure well illustrates a research process. The chart indicates that the research process consists of a number of closely related activities, as shown through I to VII. But such activities overlap continuously rather than following a strictly prescribed sequence.

At times, the first step determines the nature of the last step to be undertaken. If subsequent procedures have not been taken into account in the early stages, serious difficulties may arise which may even prevent the completion of the study. One should remember that the various steps involved in a research process are not mutually exclusive; nor are they separate and distinct. They do not necessarily follow each other in any specific order and the researcher has to be constantly anticipating at each step in the research process the requirements of the subsequent steps. However, the following order concerning various steps provides a useful procedural guideline regarding the research process:

1. **Formulating the research problem**: There are two types of research problems, vi., those which relate to states of nature and those which relate to relationships between variables. The must decide the general area of interest or aspect of a subject-matter that he would like to inquire into. Initially the problem may be stated in a broad general way and then the ambiguities, if any, relating to the problem be resolved. Then, the feasibility of a particular solution has to be considered before a working formulation of the problem can be set up. The formulation of a general topic into a specific research problem, thus, constitutes the first step in a scientific enquiry. Essentially two steps are involved in formulating the research problem, vi., understanding the problem

thoroughly, and rephrasing the same into meaningful terms from an analytical point of view.

2. **Extensive literature survey**: Once the problem is formulated, a brief summary of it should be written down. It is compulsory for a research worker writing a thesis for a Ph.D. degree to write synopsis of the topic and submit it to the necessary Committee or the Research Board for approval. At this juncture the researcher should undertake extensive literature survey connected with the problem.
3. **Developing the hypothesis**: After extensive literature survey, researcher should state in clear terms the working hypothesis or hypotheses. Working hypothesis is tentative assumption made in order to draw out and test its logical or empirical consequences. As such the manner in which research hypotheses are developed is particularly important since they provide the focal point for research.
4. **Preparing the research design**: The research problem having been formulated in clear cut terms, the researcher will be required to prepare a research design, i.e., he will have to state the conceptual structure within which research would be conducted. The preparation of such a design facilitates research to be as efficient as possible yielding maximal information.
5. **Determining sample design**: The researcher must decide the way of selecting a sample or what is popularly known as the sample design. In other words, a sample design is a definite plan determined before any data are actually collected for obtaining a sample from a given population. Thus, the plan to select 12 of a city's 200 drugstores in a certain way constitutes a sample design. Samples can be either probability samples or non-probability samples.
6. **Collecting the data**: In dealing with any real life problem it is often found that data at hand are inadequate, and hence, it becomes necessary to collect data that are appropriate. There are several ways of collecting the appropriate data which differ considerably in context of money costs, time and other resources at the disposal of the researcher. Primary data can be collected either through experiment or through survey. If the researcher conducts an experiment, he observes some quantitative measurements, or the data, with the help of which he examines the truth contained. But in the case of a survey, data can be collected by any one or more of the following ways:
   (i) By observation
   (ii) Through personal interview
   (iii) Through telephone interviews
   (iv) By mailing of questionnaires
   (v) Through schedules
7. **Execution of the project**: Execution of the project is a very important step in the research process. If the execution of the project proceeds on correct lines, the data to be collected would be adequate and dependable. The researcher should see that the project is executed in a systematic manner and in time. If the survey is to be conducted by means of structured questionnaires, data can be readily machine-processed. In such a situation, questions as well as the possible answers may be coded. If the data are to be collected through interviewers, arrangements should be made for proper selection and training of the interviewers.
8. **Analysis of data**: After the data have been collected, the researcher turns to the task of analyzing them. The analysis of data requires a number of closely related operations such as establishment of categories, the application of these categories to raw data through coding, tabulation and then drawing statistical inferences. The unwieldy data should necessarily be condensed into a few manageable groups and tables for further

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analysis. Thus, researcher should classify the raw data into some purposeful and usable categories. Analysis work after tabulation is generally based on the computation of various percentages, coefficients, etc., by applying various well defined statistical formulae. In the process of analysis, relationships or differences supporting or conflicting with original or new hypotheses should be subjected to tests of significance to determine with what validity data can be said to indicate any conclusion(s). For instance, if there are two samples of weekly wages, each sample being drawn from factories in different parts of the same city, giving two different mean values, then our problem may be whether the two mean values are significantly different or the difference is just a matter of chance.

9. **Hypothesis-testing**: After analyzing the data as stated above, the researcher is in a position to test the hypotheses, if any, he had formulated earlier. If the researcher had no hypotheses to start with, generalizations established on the basis of data may be stated as hypotheses to be tested by subsequent researches in times to come.
10. **Generalizations and interpretation**: If a hypothesis is tested and upheld several times, it may be possible for the researcher to arrive at generalization, i.e., to build a theory. As a matter of fact, the real value of research lies in its ability to arrive at certain generalizations. If the researcher had no hypothesis to start with, he might seek to explain his findings on the basis of some theory. It is known as interpretation. The process of interpretation may quite often trigger off new questions which in turn may lead to further researches.
11. **Preparation of the report or the thesis**: Finally, the researcher has to prepare the report of what has been done by him. Writing of report must be done with great care keeping in view the following: The layout of the report should be as follows:

• **The Preliminary Pages**
• **The Main Text**
• **The End Matter**

In its preliminary pages the report should carry title and date followed by acknowledgements and foreword. Then there should be a table of contents followed by a list of tables and list of graphs and charts, if any, given in the report.

The main text of the report should have the following parts:

Introduction: It should contain a clear statement of the objective of the research and an explanation of the methodology adopted in accomplishing the research. The scope of the study along with various limitations should as well be stated in this part.

Summary of findings: After introduction there would appear a statement of findings and recommendations in non-technical language. If the findings are extensive, they should be summarized.

Main report: The main body of the report should be presented in logical sequence and broken-down into readily identifiable sections.

Conclusion: Towards the end of the main text, researcher should again put down the results of his research clearly and precisely. In fact, it is the final summing up.

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Hypothesis: Importance and Its Types

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Abstract

A hypothesis is a fundamental element of scientific research, serving as a proposed explanation or prediction that can be tested through empirical investigation. This article explores the concept of a hypothesis, emphasizing its critical role in guiding research design and inquiry. We begin by defining what constitutes a hypothesis and its significance in formulating research questions and testing theoretical propositions. The paper categorizes hypotheses into various types, including null hypotheses, alternative hypotheses, directional hypotheses, and non-directional hypotheses, providing a detailed examination of each type's purpose and application. By analyzing the nuances of these different hypotheses, the article highlights their impact on the validity and reliability of research findings. This comprehensive overview underscores the importance of selecting the appropriate type of hypothesis to enhance the robustness of scientific investigations and contribute to the advancement of knowledge across diverse fields.

Keywords*: Null Hypothesis, Level of significance, type-I and type-II error.*

Introduction

Scientific research aims to uncover the underlying principles governing various phenomena in the world. A crucial element in this pursuit is the development and testing of hypotheses. A hypothesis is a testable prediction about the relationship between two or more variables, often formulated as a statement that suggests an expected outcome. It is not merely a guess or an assumption, but a reasoned prediction based on existing knowledge and prior research.

Importance of Hypotheses in Research

Hypotheses play a vital role in research by:

- **Focusing Research**: By defining a specific area of inquiry, hypotheses guide researchers towards relevant data collection and analysis.
- **Directing Data Collection**: Hypotheses inform researchers about the variables to measure and the type of data needed to test the proposed relationship.
- **Facilitating the Advancement of Knowledge**: Testing and verifying hypotheses contribute to the accumulation of knowledge and the refinement of existing theories.
- **Providing a Framework for Interpretation**: Hypotheses provide a framework for interpreting the findings and drawing meaningful conclusions from the collected data.

Types of Hypotheses

Hypotheses can be categorized into different types depending on the nature of the proposed relationship between variables and the direction of the prediction:

- **Directional Hypothesis**: This type of hypothesis specifies the direction of the relationship between variables. For example, "Students who attend regular study sessions will score higher on exams."
- **Non-Directional Hypothesis**: This type of hypothesis predicts a relationship between variables but does not specify the direction. For example, "There is a relationship between the amount of time spent studying and exam scores."
- **Null Hypothesis**: This hypothesis states that there is no relationship between the

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variables. For example, "There is no relationship between the amount of time spent studying and exam scores."

- **Alternative Hypothesis**: This hypothesis proposes an alternative to the null hypothesis, suggesting that there is a relationship between the variables. It can be directional or non-directional. For example, "There is a positive relationship between the amount of time spent studying and exam scores" (directional) or "There is a relationship between the amount of time spent studying and exam scores" (non-directional).

Examples

- **Directional Hypothesis**: "Exposure to violence in video games will lead to increased aggression in adolescents."
- **Non-Directional Hypothesis**: "There is a relationship between the amount of time spent on social media and levels of anxiety."
- **Null Hypothesis**: "There is no difference in the effectiveness of two different therapy techniques for treating depression."
- **Alternative Hypothesis**: "There is a significant difference in the effectiveness of two different therapy techniques for treating depression."

Conclusion

Hypotheses are the foundation of scientific research, providing a framework for investigation and enabling the advancement of knowledge. By focusing research, directing data collection, and facilitating the interpretation of findings, hypotheses play a critical role in the scientific process. Understanding the different types of hypotheses and their appropriate applications is essential for conducting effective research and making meaningful contributions to our understanding of the world.

References

1. Kumar, A. (2015). *Quantitative research*. Varanasi: Motilal Banarsidass Publication.
2. Kothari, C. R. (2023). *Research methodology: Methods and techniques*. New Delhi: New Age International Publishers.

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Thesis Writing and Style: Using LaTeX

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Abstract

Thesis writing is a critical academic task that requires several important characteristics to ensure clarity, coherence, and scholarly rigor. Here are some key characteristics:

1. *Clear Structure*
2. *Strong Argument*
3. *Originality*
4. *Critical Analysis*
5. *Precision and Clarity*
6. *Proper Citation*
7. *Methodological Rigor*
8. *Comprehensive Literature Review*
9. *Attention to Detail*
10. *Ethical Considerations*

LaTeX is well-suited to maintaining the important characteristics of thesis writing. Unlike traditional word processors, LaTeX excels in formatting, cross-referencing, and managing bibliographies, making it ideal for academic writing.

Its ability to produce professional-looking documents with precise control over layout and typography is unmatched. LaTeX supports the inclusion of mathematical equations, figures, and tables seamlessly, which is particularly beneficial for scientific and technical theses.

However, there are complications for using coding language in LaTeX, so those who want to create different documents on the computer want to keep distance from LaTeX. It was also noticed that many researchers came to LaTeX, hoping to use LaTeX, but they lost enthusiasm midway and returned to using MS Word.

In this abstract, I have tried to describe my view of the benefits and availability of latex in a thesis writing using the widely available packages; Hopefully researchers can look at the ease of using latex for complex tasks. This abstract explores the benefits of using LaTeX for thesis writing, highlighting its features, customization options, and overall impact on the quality and presentation of academic work.

Keywords: *LaTeX, thesis writing, typesetting, formatting, cross referencing, bibliographies, academic writing, mathematical equations, figures, tables, collaboration, version control.*

1 Introduction

The complexity of the thesis stems from a variety of factors, some of which are beyond the control of the researcher. In particular, the branch in which the researcher is studying his or her requires the use of special characters, shapes, or formulas that can be difficult to type into a word processor. Moreover, the thesis should be provided in a specific style.

So when a researcher sits down to write his first thesis, his first choice is the word processor with which he is most familiar. Unfortunately, word processors are generally not designed for thesis writing.

LaTeX is a TeX macro package that provides a document processing system. This allows describing the structure of the document, and the underlying text program reads the instruction and formats the document accordingly. The BibTex program helps to insert citations into documents. Latex is adept at typesetting mathematical formulas. There are other advantages as well - the LaTeX source code is a text file that is editable on almost any computer and operating system and does not run the risk of being contaminated with viruses. Finally, LaTeX is adept at producing PDF — which can be printed on any printer without any loss of formatting.

2 Structure of a Thesis:

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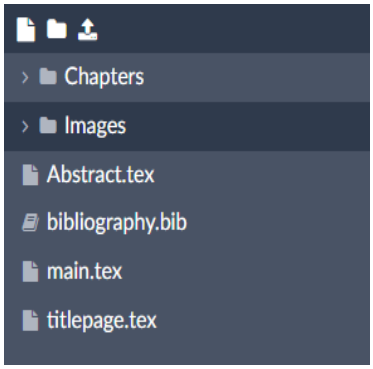
A conventional thesis has at least five chapters. The thesis can be looked upon as consisting of three basic parts: the first part is the Front Matter. In the front matter comes various parts which can be listed as follows : i) Title page - which is in most of the cases also the cover page of the thesis ii) Table of Contents iii) List of tables and iii) List of Figures.

The main matter would consist of the chapters of the thesis such as i) Introduction ii) Problem statement iii) review of literature iv) methodology v) data analysis vi) findings and conclusion. In LATEX, appendices can also be included in the main matter.

Finally at the end comes the Back Matter. This normally consist of Bibliography, the only part as we will discuss here.

LATEX, which was designed for typesetting takes care of the various aspects of the back matter in a more efficient way than any word processor and saves a lot of time and energy for the researcher. When writing a thesis we will split the document into multiple ***.tex*** files. We'll create two new folders, one for all the images used in the project and one for all the ***.tex*** files making up the main body of the thesis.



3 Laying out the Front Matter

3.1 Preamble:

The ***main.tex*** file is the root document and is the ***.tex*** file that will draw the whole document together. The first thing we need to choose is a document class. For thesis writing we'll choose the **report** class.

We can also change the font size by adding square brackets into the ***\documentclass*** command and specifying the size—we'll choose 12pt. Let's also prepare the document for images by loading the **graphicx** package. We'll also need to tell LATEX where to look for the images using the ***\graphicspath*** command, as we're storing them in a separate folder.

The start of our preamble now looks like this:

```
\documentclass[a4paper]{report}
\usepackage{graphicx} % Require for inserting images
\graphicspath{{Images/}} % To set the location of image folder

\usepackage{amsmath,amssymb} % for mathematics symbol
\usepackage{siunitx} % for units
\usepackage{fancyhdr} % Package for header and footer

\usepackage{caption}
\usepackage{subcaption}

\usepackage{multicol}
\setlength{\columnseprule}{1pt}

\usepackage{biblatex}
\addbibresource{bibliography.bib}
```

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```
\thispagestyle{plain}
\begin{titlepage}
   \begin{center}
        \includegraphics[width=\textwidth]{SDUlogo.png}\\
        \vspace*{4cm}
        \textbf{\LARGE{Thesis Writing And Style:
        \vspace{.5cm}\\Using LaTeX} }\\
        \vspace{2cm}
        \textbf{CHANDAN MONDAL}\\Research Scholar\\
        Department of Mathematics\\
        \today
        \vfill
        The Paper was presented in a Workshop\\organised by\\
        \vspace{0.6cm}
        \large
        \MakeUppercase{Sona Devi University}\\Ghatsila, Jharkhand\\
   \end{center}
\end{titlepage}

```

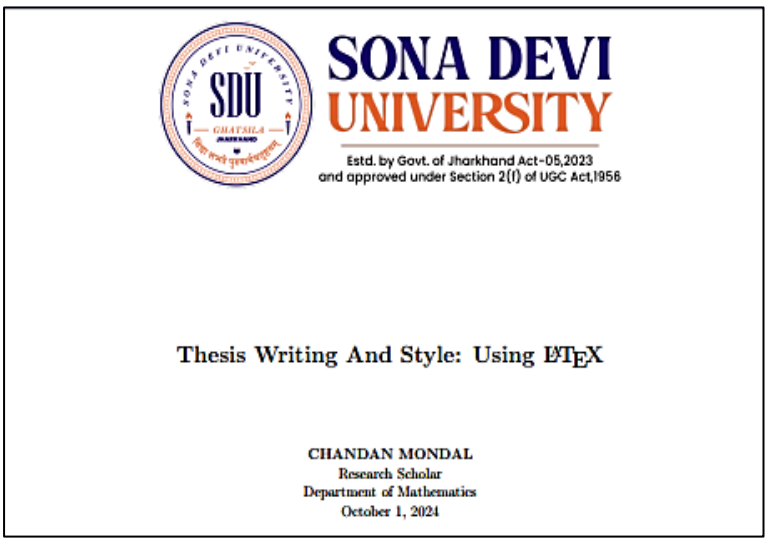
The packages ***fancyhdr*** required to change headers and footers can vary according to the document class being used; The ***amsmath*** package provides a handful of options for displaying equations. To use of some math font styles requires the package ***amssymb***. To create a document with multiple columns, the package ***multicol*** provides a set of commands for that.

3.2 The Title Page:

The title page normally requires five elements — the title of the thesis, the degree for which the thesis has been submitted, the name of the author, the department in which the work was undertaken and the year of submission.

In title page environment, we'll do a separate ***.tex*** file and then input it. The first thing we'll do is enclose everything in the title page within the center environment so it's all aligned to the centre. To leave a gap between the top of the page and the first line of text, we use the ***\vspace*** command followed by a length. Next we'll add the thesis title in bold font using the ***\textbf*** command.

To separate these two sections out we'll use the ***\vfill*** command which will automatically add in the amount of vertical space needed for the content to fill the page. To make the title as big as it can be by choosing ***\Huge***. This is what it will look like added in :



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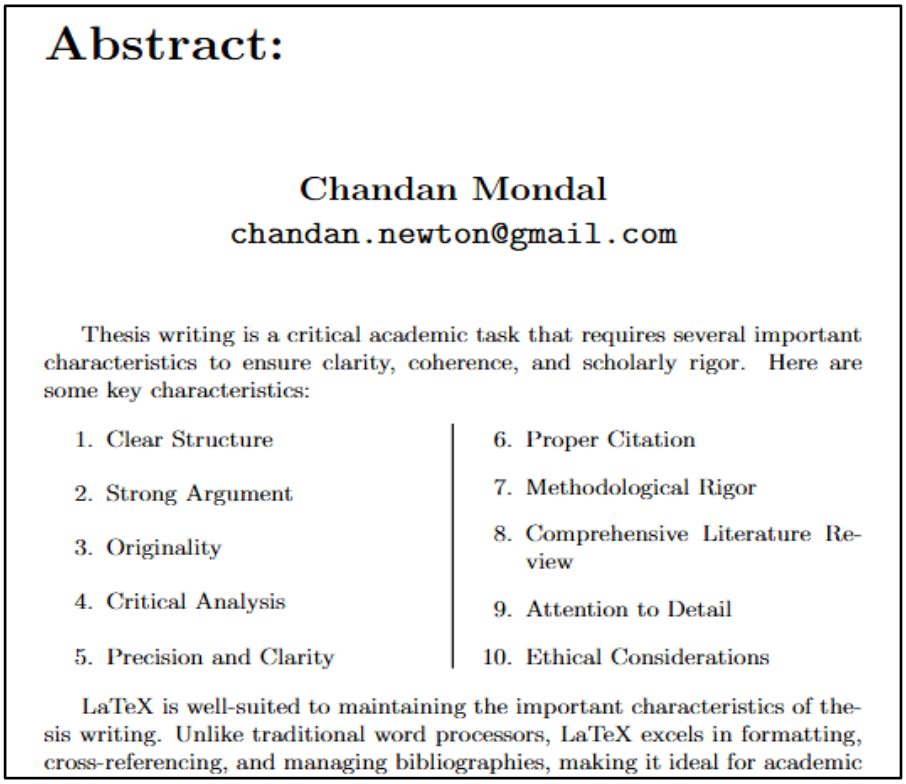
Abstract

After the title page we need to add in an abstract, dedication, declaration and acknowledgements section. Here we only discuss the abstract part only. We can add each of these in on separate pages using unnumbered chapters. To do this we use the ***\chapter*** command and add an asterisk. We'll create a new ***.tex*** file, customise the layout and then input it. To stop the headers being added in, we need to change the page style to ***plain*** in order.

```
\thispagestyle{plain}
\begin{center}
    \Large
    \vspace{0.4cm}
    \textbf{Chandan Mondal}\\
    {\texttt{chandan.newton@gmail.com}}\\
    \vspace{0.9cm}
\end{center}
\par Thesis writing is a critical academic task that requires several
important characteristics to ensure clarity, coherence, and scholarly
rigor. Here are some key characteristics:
\begin{center}
    \begin{multicols}{2}
        \begin{enumerate}
            \item Clear Structure
            \item Strong Argument
            \item Originality
            \item Critical Analysis
```

This is what it will look like added in:



Abstract:

Chandan Mondal
chandan.newton@gmail.com

Thesis writing is a critical academic task that requires several important characteristics to ensure clarity, coherence, and scholarly rigor. Here are some key characteristics:

1. Clear Structure
2. Strong Argument
3. Originality
4. Critical Analysis
5. Precision and Clarity
6. Proper Citation
7. Methodological Rigor
8. Comprehensive Literature Review
9. Attention to Detail
10. Ethical Considerations

LaTeX is well-suited to maintaining the important characteristics of thesis writing. Unlike traditional word processors, LaTeX excels in formatting, cross-referencing, and managing bibliographies, making it ideal for academic

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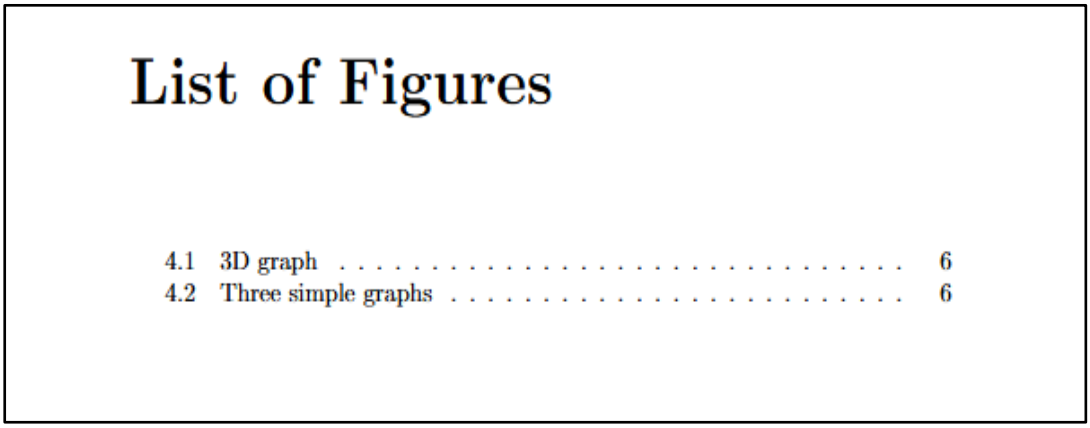
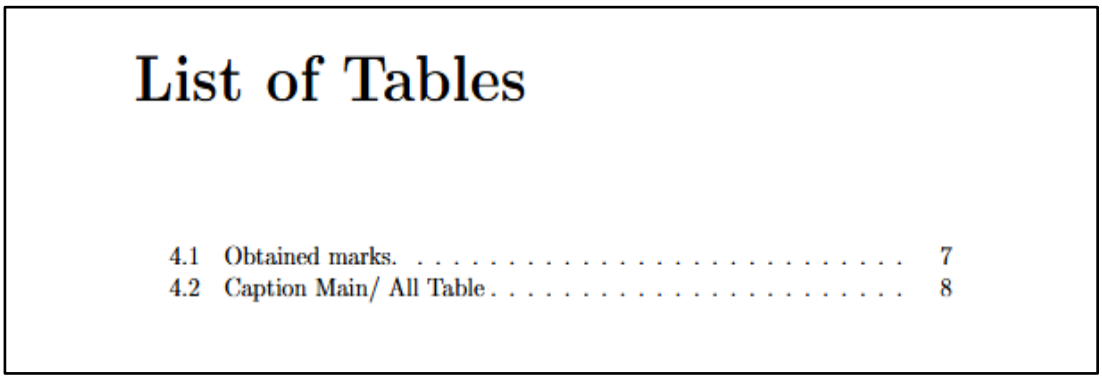
3.5 Other Elements of Front Matter

The other elements that would require to appear in the front matter are the table of contents, tables and figures. After Abstract sections we'll add a table of contents using the ***\tableofcontents, \listoftables, \listoffigures*** command. This process is fairly straightforward and uses the standard LATEX commands in ***\begin {document}*** … ***\end {document}*** environment.

```
25      \tableofcontents
26      \listoftables
27          \addcontentsline{toc}{chapter}{List of Tables}
28      \listoffigures
29          \addcontentsline{toc}{chapter}{List of Figures}
```

Here is an example in this presentation:





This brings us to the end of setting up the front matter of the thesis.

4 Laying out the Main Matter

The main body of the thesis consists of the chapters and annexure. The page numbering used is the Arabic numeral system and this continues till the end of the thesis. for the main body of the document, we will add-in five chapters, one of which will be an introduction and another will be a conclusion.

4.1 The Chapter:

Instead of just composing these chapters in the main ***.tex*** file, we'll create a separate ***.tex*** file for each chapter in the chapters folder. Each of these chapter files being with the command ***\chapter{....}*** and then has the necessary material which needs to be typeset; except for the “annexure” which starts with

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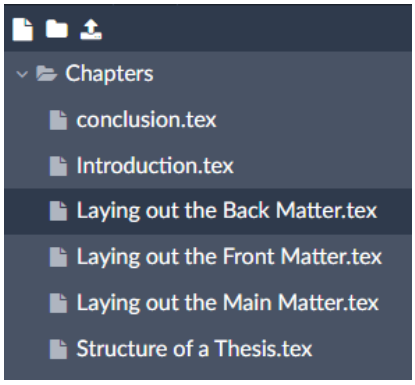
the starred version of the chapter command viz ***\chapter*{....}***. This is because, we don't want the annexure to have a chapter number. Under the assumption that there are five chapters, we can set up the main body as follows:

```
% To start arabic numbering from Main Chapter.
\newpage
\pagenumbering{arabic}

\chapter{Introduction}
    \input{Chapters/Introduction}

\chapter{Structure of a Thesis}
    \input{Chapters/Structure of a Thesis}

\chapter{Laying out the Front Matter}
    \input{Chapters/Laying out the Front Matter}

\chapter{Laying out the Main Matter}
    \input{Chapters/Laying out the Main Matter}

\chapter{Laying out the Back Matter}
    \input{Chapters/Laying out the Back Matter}

\chapter{Conclusion}
    \input{Chapters/conclusion}
```



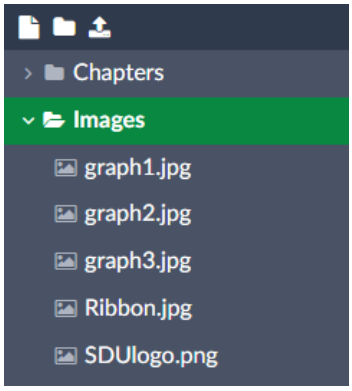
This is all there is to set up the main body of the thesis.

4.1.1 Figures, Subfigures and Tables:

4.1.1.1 Images:

For including figure, the standard package is called **graphicx**. The x in the name means it's extending the original, but outdated, graphics package. We will create a short document, and between two paragraphs, we would like to insert a picture. We can do so with the help of the following steps:
Open a figure environment and declare ***\centering***. Use the ***\includegraphics*** command with the filename as the argument and by informing LaTeX where the images are stored using the ***\graphicspath*** command. We will use example-image as the filename since that's a sample image included with TeX Live. Set a caption, close the figure environment, and end the document with filler text, as illustrated in the following code snippet:

```
\begin{figure}[h]
    \centering
    \includegraphics[scale=0.8]{Ribbon}
    \caption{3D graph}
    \label{fig:graph1}
\end{figure}
```



Notice that I've used the position specifier **[h]** to put it in the document where the code is in the text. This is what it looks like compiled:

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4.2.2 Subfigures:

When writing a thesis we may want to include some slightly more complicated figures with multiple images. We can do this using subfigure environments inside a figure environment. Before we can do this though, we need to load up the caption and subcaption packages:

\usepackage{caption}
\usepackage{subcaption}

We'll do an example with three images along side each other with separate captions and labels. Here's some example code:

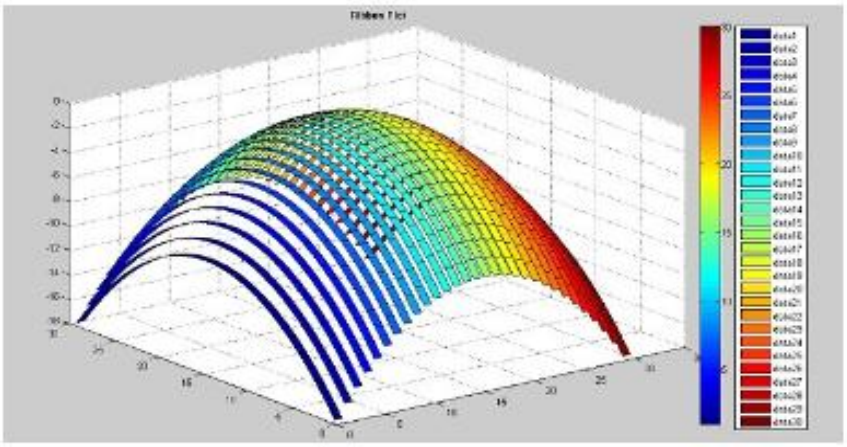

Figure 4.1: 3D graph

```
\begin{figure}
    \centering
    \begin{subfigure}[b]{0.3\textwidth}
        \centering
        \includegraphics[width=\textwidth]{graph1}
        \caption{$y=x$}
        \label{fig:y equals x}
    \end{subfigure}
    \hfill
    \begin{subfigure}[b]{0.3\textwidth}
        \centering
        \includegraphics[width=\textwidth]{graph2}
        \caption{$y=3\sin x$}
        \label{fig:three sin x}
    \end{subfigure}
    \hfill
    \begin{subfigure}[b]{0.3\textwidth}
        \centering
        \includegraphics[width=\textwidth]{graph3}
        \caption{$y=3/(5-4\cos(x))$}
        \label{fig:five over x}
    \end{subfigure}
      \caption{Three simple graphs}
      \label{fig:three graphs}
\end{figure}
```

To start with, we create a new figure, centre it and then create a new subfigure. In the subfigure command we need to add a placement specifier and then give it a width. Because we want three images

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next to each other we set a width of 0.3 times the value of ***\textwidth***. We need to make sure that the sum of the widths we specify for the subfigures is less than the text width if we want them all on the same line.

When we add the image in we need to specify the width using width= followed by the ***\textwidth*** command. The reason this works is because the text width within the subfigure is the width we specified in the \begin{subfigure} command, i.e. 0.3 times the normal text width.

Next, we give the subfigure a separate caption and label. We can then end the subfigure and add the next two in. To add some spacing between the figures we'll use the \hfill command. If we didn't want them all on the same line we could just leave blank lines instead of the \hfill commands. Please note that the indents I have used do not affect the how the code is processed, they just make it more readable.

The beauty of these subfigures is that we can refer to each of them individually in the text due to their individual labels—but we can also give the whole figure a caption and label.

This is what our figure will look like in the document:

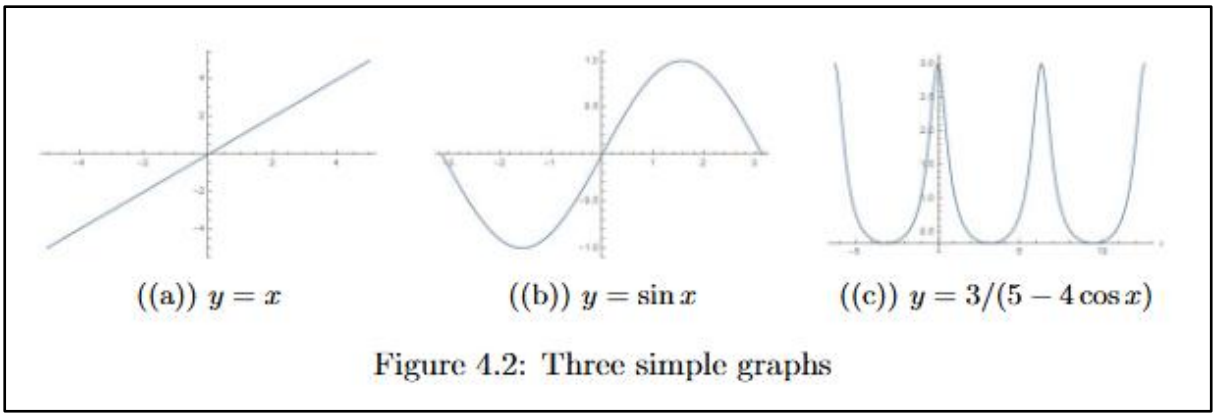

Figure 4.2: Three simple graphs

4.2.3 Tables:

We will now create a table of font family commands as in the previous example, but this time, we would like to make all entries in a column horizontally centered to each other. We will also add some horizontal lines to mark the border and the header of the table by following these steps:

Begin a tabular environment. As a mandatory argument, provide ccc, standing for three centered columns. Write the table head row, add & to separate column entries, and add \\ to end rows. Use ***\hline*** to insert horizontal lines. Continue with the table body and end the environment and the document.

```
64
65      \begin{table}[h]
66      \centering
67      \begin{tabular}{|c|c|c|c|c|}
68      \hline Name & Math & Phy & Chem & English\\
69      \hline Robin & 80 & 68 & 60 & 57\\
70      \hline Julie & 72 & 62 & 66 & 63\\
71      \hline Robert & 75 & 70 & 71 & 69\\
72      \hline
73      \end{tabular}
74      \caption{Obtained marks.}
75      \label{tab-marks}
76      \end{table}
77
```

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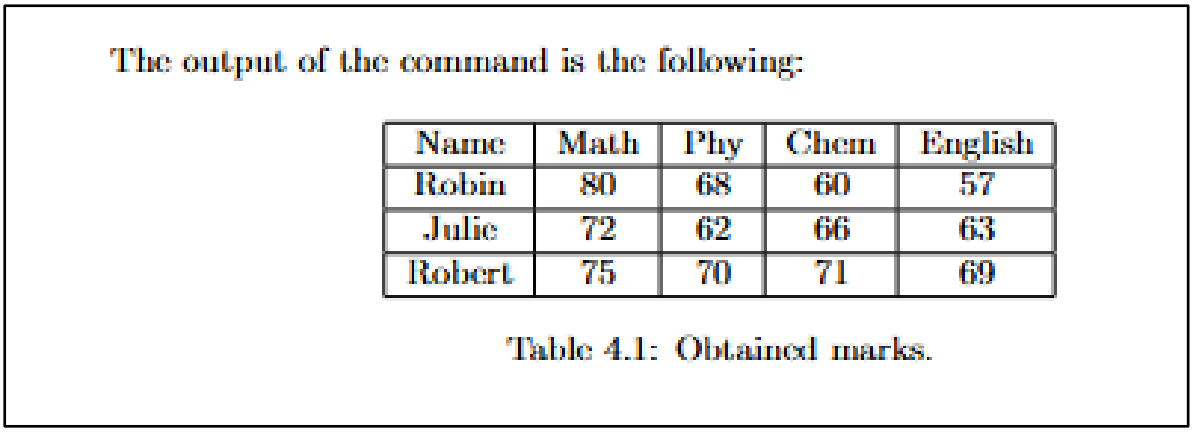
The output of the command is the following:


The output of the command is the following:

Name	Math	Phy	Chem	English
Robin	80	68	60	57
Julie	72	62	66	63
Robert	75	70	71	69

Table 4.1: Obtained marks.

4.2.4 Subtables:

We may want to group tables together into a single table environment. This can be done by using subtable environments inside a table environment using "subcaption" package. Here's an example:

```
\begin{table}[h]
    \begin{subtable}[h]{0.48\textwidth}
        \centering
        \begin{tabular}{|c|c|}
            \hline
            $R[\si{cm}]$ & $V_{\max}$[\si{\metre\per\second}]\\
            \hline
            30  &   1.43    \\ \hline
            40  &   1.02    \\ \hline
            50  &   0.91    \\ \hline
            60  &   0.77    \\ \hline
        \end{tabular}
        \caption{Caption Subtable A}
        \label{tab:label subtable A}
    \end{subtable}
    \hfill
    \begin{subtable}[h]{0.48\textwidth}
        \centering
        \begin{tabular}{|c|c|}
            \hline
            $\alpha$ & $V_{\max}$ [\si{\metre\per\second}]\\ \hline
            30  &   1.43    \\ \hline
            40  &   1.02    \\ \hline
            50  &   0.91    \\ \hline
            60  &   0.77    \\ \hline
        \end{tabular}
        \caption{Caption Sub Table B}
        \label{tab:label subtable B}
    \end{subtable}
```

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Notice that in each ***\begin{subtable}*** command we've included a position specifier and a width. Again, we can give each subtable a label and caption as well as giving the whole table figure a label and caption.

R[cm]	$V_{\max}$[m s^{-1}]
30	1.43
40	1.02
50	0.91
60	0.77

((a)) Caption Subtable A

α	$V_{\max}$ [m s^{-1}]
30	1.43
40	1.02
50	0.91
60	0.77

((b)) Caption Sub Table B

Table 4.2: Caption Main/ All Table

This concludes our discussion on images and tables.

5 Laying out the Back Matter

We are almost at the end of our thesis layout. In the back matter, assuming that the researcher has only to submit the bibliography. Bibliography can either be set up within the document or it can be done as a separate file. A **.bib** file will contain the bibliographic information of our document. I will only give a simple example, since there are many tools to generate the entries automatically. The bibliography files must have the standard bibtex syntax

```
1  @article{rohit,
2  author = {Rohit Kumar Vishal},
3  title = {Using Latex for Writing a Thesis},
4  journal = "researchgate",
5  year = {2007},
6  DOI =
   "https://www.researchgate.net/publication/228295377_Using_Latex_for_Writing_
   a_Thesis"
7  }
```

This file contains records in a special format; for instance, the first bibliographic reference is defined by:

@article{...}

This is the first line of a record entry, @article tells BibTeX that the information stored here is about an article. The information about this entry is enclosed within braces.

rohit

The label rohit is assigned to this entry, is a unique identifier that can be used to refer this article within the document.

author = { Rohit Kumar Vishal },

This is the first field in the bibliography entry, indicates that the author of this article is Rohit Kumar Vishal. Several comma-separated fields can be added using the same syntax key = value, for instance: title, pages, year, URL, etc.

To integrate the information from the **.bib** file into main LaTeX document, we generally use ***\usepackage{biblatex}*** command in BibLaTeX.

```
14
15  \usepackage{biblatex}
16  \addbibresource{bibliography.bib}
17
```

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```
66
67      \printbibliography[heading=bibintoc,title={Bibliography}]
68              \setcounter{page}{1}
69              \pagenumbering{Roman}
70
71  \end{document}
```

There are four bibliography-related commands in this example:
\usepackage{biblatex}:- Imports the package biblatex.
\addbibresource{ bibliography.bib}:- Imports the bibliography data file sample.bib: this file contains information about each referenced book, article, etc.

```
31  \textbf{Keywords}: \textit{LaTeX\cite{Cassidy}\cite{rohit}, thesis
    writing\cite{dilip}, typesetting, formatting, cross referencing,
    bibliographies, academic writing\cite{Ninja}, mathematical
    equations, figures, tables, collaboration, version control.}
```

\cite{ rohit}:- This command inserts a reference within the document, [1] in this case, that corresponds to an element in the bibliography, rohit is a keyword corresponding to an entry in *bibliography.bib*.
\printbibliography:- Prints the list of cited references, the default title is References for the article document class and "Bibliography" for books and reports.
Here is the output of our thesis writing in latex:

Bibliography

[1] Josh Cassidy. *How to Write a Thesis in LaTeX*. URL: https://www.overleaf.com/learn/latex.

[2] Dilip Datta. *LATEX in 24 Hours*. Springe, 2017. ISBN: 978-3-319-47830-2.

[3] Ninja. *LaTeX for thesis writing*. URL: https://latex-ninja.com/2021/06/13/latex-for-thesis-writing/. (accessed: 13.06.2021).

6 Conclusion:
Now we have come to the last stage of the discussion of the method of writing a thesis in LaTeX. The above format is suitable enough to meet many requirements and flexible enough to meet the needs of specific subjects. Preferred packages for a particular discipline can be included in the preamble. Another great advantage of such an approach is that researchers can work on any chapter of their choice and simply compile the desired chapter. For example, let's say that we are working on chapter 2 of a thesis. We can compile this chapter simply by issuing the \input{CHAP_0 2} command in the proposal. It is hoped that this article will encourage current researchers to use LaTeX for thesis writing.
Bibliography:
[1] Josh Cassidy. How to Write a Thesis in LaTeX. url: https : / /www.overleaf.com/learn /latex.
[2] Dilip Datta. LATEX in 24 Hours. Springe, 2017. isbn: 978-3-319-47830-2.
[3] Ninja. LaTeX for thesis writing. url: https://latex-ninja.com/2021/06/13/latex-for-thesis-writing/. (accessed: 13.06.2021).
[4] Rohit Kumar Vishal. “Using Latex for Writing a Thesis”. In: researchgate(2007). doi: https://www.researchgate.net/publication/228295377_Using_Latex_for_Writing_a_Thesis.

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Writing The Hypothesis and Its Types in Research

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Abstract
Writing a hypothesis is a crucial step in the research process as it provides a tentative explanation or prediction that guides investigation. A well-framed hypothesis narrows the scope of study, defines relationships between variables, and offers direction for data collection and analysis. Hypotheses can be broadly classified into types such as null hypothesis, alternative hypothesis, simple, complex, directional, non-directional, associative, and causal hypotheses. Each type serves a distinct purpose depending on the research design and objectives. Developing a clear, testable, and logical hypothesis ensures that the research remains focused, measurable, and scientifically valid. Thus, the formulation of hypotheses is not only a methodological necessity but also a foundation for drawing meaningful conclusions that contribute to the advancement of knowledge.

Keywords: *Hypothesis, Research, Null Hypothesis, Alternative Hypothesis, Variables, Prediction, Knowledge, Methodology*

Research Design

Introduction

Definition of Research Design

Begin with a clear and concise definition of research design, describing it as the overall plan that guides researchers in systematically collecting, analyzing, and interpreting data.

Purpose of Research Design

Explain how research design helps ensure the study's success by providing a structured approach, preventing common research pitfalls, and aligning methods with objectives.

Types of Research Design

Introduce the different types of research designs (e.g., experimental, correlational, descriptive, exploratory) and briefly explain their use in different research contexts.

Importance of Research Design

Enhancing Validity and Reliability

Explore how a strong research design ensures that the study produces reliable (consistent) and valid (accurate) results. Discuss internal and external validity.

Establishing the Scope of Study

Explain how research design defines the boundaries of the study, including time frames, population parameters, and variables.

Facilitating Ethical Research

Discuss the role of research design in ensuring that ethical issues, such as informed consent, confidentiality, and participant welfare, are considered throughout the research process.

Aligning with Research Objectives

Highlight how the design aligns with the specific objectives and questions, ensuring that the study is focused and well-organized.

Need for Research Design

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Research design is needed because it facilitated the smooth sailing a various research operation there by making research as efficient as possible yielding maximal information with minimal expenditure of export time and money. Just as for better economical and attractive construction of a house we need a blue print well thought out and prepared by the expert architect similarity we need research design or a plan in advance of data collection and analysis for our research project. It stands for advance planning of the methods to be adopted for collecting the relevant data and the techniques to be used in their analysis keeping in view the objective of the research and the availability of staff,time and money. Preparation of the research designs would be done with great care as any error in it may upset the entire project. Research design in fact has a great bearing on the reliability of the results arrived at and as such constitutes the farm foundation of the entire edifice of the research work.

Features of a Good Design

A good design is often characterised by adjectives like flexible, appropriate, efficient economical and so on. Generally the design which minimise bias and maximizes that reliability of data collected and analysed is considered a good design. The design which gives the smallest experimental error is supposed to be the best design in many investigation. Similarly a design which yields maximal information and provides an opportunity for considering many different aspects of a problem is considered more appropriate and efficient design in respect of many research problem. A research design appropriate for a particular research problem usually involves the consideration of the following factors -

a) the means of obtaining information b) the availability and the skills of researcher and his staff c) the objective of of the problem to be studied d) the nature of the problem to be studied e) the availability of time and money for research work.

Types of Research Design

Quantitative Research Design

a) **Experimental Design**: Discuss the core elements of experimental designs, including randomization, control groups, and manipulation of variables. Use examples like randomized control trials (RCTs) and quasi-experimental studies. Provide real-world examples, such as medical trials or behavioral studies, where experimental design is commonly used. Explore the importance of controlling confounding variables to ensure the integrity of results.

b) **Correlational Design**: Define and explain correlational studies, which measure the relationship between two or more variables without manipulation. Use examples of social science research that employs correlational designs to identify trends and patterns (e.g., studying the relationship between socioeconomic status and education).

c) **Descriptive Design**: Define descriptive research as the method used to describe the characteristics of a population or phenomenon without influencing it. Discuss the use of surveys and observational studies in descriptive research. Explain the limitations of descriptive design, particularly in establishing causality.

Qualitative Research Design

a) **Case Studies**: Explore case study research, which provides in-depth exploration of a particular case (individual, group, organization, etc.). Provide examples from education or psychology where case studies are commonly used. Discuss how case studies offer rich qualitative data but may lack generalizability.

b) **Ethnography**: Define ethnographic research, which involves immersing oneself in a community or culture to understand social behaviors and norms. Use examples from anthropology or sociology where ethnography is often employed. Discuss challenges such as researcher bias and the length of time required for ethnographic studies.

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c) **Phenomenology**: Explain phenomenological research, which explores the lived experiences of individuals to understand their perspectives. Discuss the use of interviews and in-depth discussions to gather data and the analytical processes involved (e.g., thematic analysis).
d) **Grounded Theory**: Introduce grounded theory as a qualitative method used to generate theories from data. Discuss its iterative process, involving constant comparison of data to refine theories.

Mixed Methods

a) **Definition and Justification**: Define mixed-methods design as an approach that combines both qualitative and quantitative methods.
b) **Benefits**: Explore the advantages of using mixed methods, such as gaining both breadth (quantitative) and depth (qualitative) of understanding.
c) **Challenges**: Discuss the complexity of integrating two data types and the potential for conflicting findings. **Examples**: Provide examples of studies that benefit from mixed methods, such as educational research that uses surveys (quantitative) and interviews (qualitative) to gain comprehensive insights.

Elements of a Research Design

1. **Research Questions and Hypotheses**
   a) **Formulating Research Questions**: Explain the process of developing research questions, including the difference between exploratory (qualitative) and confirmatory (quantitative) questions.
   b) **Hypotheses**: Discuss the formulation of testable hypotheses in quantitative research, providing examples of null and alternative hypotheses. **Example**: Provide a detailed example of how research questions and hypotheses align with a particular research design.
2. **Variables**
   a) **Independent and Dependent Variables**: Explain these terms, emphasizing their roles in experimental designs. A concept which can take a different quantitative values is called a variable. As such the concept like weight, height income are all examples of variables. If one variable depends upon or is a consequence of the other variable it is term as a dependent variable and the variable that is antecedent to the dependent variable it is termed as an independent variable.
   b) **Control Variables**: Discuss how control variables are managed to ensure the accuracy of experimental results. One important characteristic of a good research design is to minimise the influence or effect of extraneous variables. The technical term control is used when we designed the study minimising the effect of extraneous independent variables. In experimental research the term control is used to refer a restrain experimental conditions.
   c) **Confounding Variables**: Define confounding variables and explain how they can distort the findings if not properly controlled. When the depend a variable is not free from the influence of extraneous variables the relationship between the dependent and independent variables said to be the confounded by the extraneous variables. **Examples**: Use examples to clarify the roles of different variables in real-world research, such as in health studies or educational interventions.
3. **Sampling** a) **Sampling Techniques**: Discuss different sampling methods, including probability (random, stratified) and non-probability (convenience, purposive). Explain the benefits and limitations of each method, using examples of studies that use these techniques. b) **Sample Size**: Discuss factors that influence sample size, including population size, confidence intervals, and effect sizes. Explain how larger samples increase generalizability, while smaller samples are often used in qualitative research

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for depth. **Examples**: Provide examples of how sample size and sampling methods vary across disciplines.

4. **Data Collection Methods Quantitative Methods**:
    - **Surveys**: Discuss the design of surveys, including question formats, scales (e.g., Likert scales), and pilot testing.
    - **Experiments**: Explain the role of experiments in data collection, detailing processes like random assignment.
    - **Observation**: Discuss how quantitative observation is structured and how it differs from qualitative observation.

Qualitative Methods:

- **Interviews**: Explore the different types of interviews (structured, semi-structured, unstructured), and their role in qualitative data collection.
- **Focus Groups**: Discuss the benefits of group dynamics in generating discussion and rich data.
- **Observational Studies**: Compare participant and non-participant observation, focusing on ethnographic methods. **Examples**: Provide concrete examples of how these methods are applied in real research studies.

5. **Data Analysis Quantitative Analysis**: Discuss common statistical techniques such as descriptive statistics, inferential statistics (t-tests, chi-square tests), and regression analysis. Explain the importance of ensuring data normality and the use of statistical software like SPSS or R for data analysis.
   Qualitative Analysis: Discuss techniques like coding, thematic analysis, and narrative analysis. Explain how qualitative data is often subjective and requires iterative review to draw meaningful conclusions. Discuss tools like NVivo for qualitative data management and analysis.
   Mixed-Methods Analysis: Discuss how researchers integrate qualitative and quantitative findings, such as triangulation.
6. **Ethical Considerations**
    - **Informed Consent**: Explain the necessity of informing participants about the nature of the research and obtaining their consent.
    - **Confidentiality and Anonymity**: Discuss how researchers protect the identities of participants and ensure data security.
    - **Avoiding Harm**: Highlight the importance of minimizing harm, discomfort, or risk to participants.
7. **Treatments** The different conditions under which experiment and control groups are put our usually referred to as treatments. The two treatments are the usually studies programme and the special studies programme. Similarly if we want to determine through an experiment the comparative impact of three varieties of fertilizers of yield of wheat in that case of the three varieties of fertilizers will be treated as three treatments.
8. **Research Hypothesis** When a prediction or hypothesized relationship is to which tested by scientific method it is term as a research hypothesis. Research hypothesis is a predictive statement that related an independent variables to a dependent variable.

Strengths and Limitations of Research Design

Research design forms the blueprint of any scientific inquiry, determining how data is collected, measured, and analyzed to answer a research question. A well-structured design enhances the validity, reliability, and generalizability of results. However, no single research design is without flaws. Each approach has its strengths and limitations that researchers must carefully consider when conducting a study. Below, we examine some common research

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designs—quantitative, qualitative, and mixed methods—along with their respective strengths and limitations.

1. **Quantitative Research Design** Quantitative research design is used to quantify a problem by generating numerical data or data that can be transformed into statistics. It focuses on objectivity and typically involves large sample sizes to generalize results across populations.

Strengths:

a) **Objectivity**: The primary strength of quantitative research is its objectivity. By relying on numerical data and statistical analysis, the researcher minimizes bias, ensuring that the findings are more likely to be valid.

b) **Generalizability**: Quantitative designs often involve large, randomly selected samples, which increases the generalizability of the results to a broader population. This is particularly important when aiming to derive findings that can be applied universally.

c) **Precision**: Because quantitative research relies on standardized methods of data collection (e.g., surveys, experiments), it allows for precise measurement of variables. This precision enables researchers to test hypotheses and identify relationships between variables with high accuracy.

d) **Replicability**: One of the hallmarks of quantitative research is its replicability. Other researchers can repeat the same study using the same methods to verify or challenge the original findings, contributing to scientific rigor.

Limitations:

a) **Lack of Context**: While quantitative data can tell us "what" is happening, it may not provide insights into "why" or "how" these phenomena occur. As such, the richness of human experience is often lost in quantitative designs.

b) **Artificiality**: In experimental quantitative research, controlling variables in a highly controlled environment can create an artificial setting that may not accurately reflect real-world situations. This threatens the external validity of the results.

c) **Inflexibility**: Once a quantitative research design is implemented, it is often difficult to modify. The structured nature of data collection tools like surveys and tests does not allow researchers to explore emerging themes or questions that may arise during the research process.

d) **Reductionism**: Quantitative designs often reduce complex phenomena into variables that can be measured. This simplification can overlook important nuances, leading to incomplete or misleading conclusions.

2. **Qualitative Research Design** Qualitative research, in contrast, seeks to understand human behavior and the reasons that govern such behavior. It relies on non-numerical data, such as interviews, focus groups, and observations, to provide rich, detailed insights into the phenomena being studied.

Strengths:

a) **Rich, Detailed Data**: One of the main advantages of qualitative research is its ability to provide in-depth insights into complex social phenomena. It captures the lived experiences, emotions, and meanings that participants attach to their experiences, offering a holistic understanding of the subject.

b) **Flexibility**: Qualitative research designs are highly flexible. Researchers can adapt their data collection strategies as new themes or patterns emerge, allowing for a more exploratory approach to inquiry.

c) **Contextual Understanding**: Qualitative research places significant emphasis on context. By studying phenomena within their real-life settings, qualitative designs allow researchers to understand how social, cultural, and environmental factors influence behavior.

d) **Subjectivity as a Strength**: Unlike quantitative research, which seeks objectivity, qualitative research embraces subjectivity. The researcher's interpretations and perspectives are valued as integral parts of the data analysis process, allowing for deeper engagement with the data.

Limitations:

a) **Limited Generalizability**: Because qualitative research typically involves small, non-random samples, its findings are not easily generalizable to larger populations. Instead, the results are often specific to the individuals or groups being studied.

b) **Time and Resource Intensive**: Collecting, transcribing, and analyzing qualitative data is time-consuming and labor-intensive. Researchers may spend months or even years gathering and interpreting data, which can limit the scale of the study.

c) **Subjectivity as a Weakness**: While subjectivity can be a strength, it also introduces potential bias. The researcher's interpretations may be influenced by personal beliefs, experiences, or assumptions, leading to a lack of objectivity.

d) **Difficulty in Replication**: Because qualitative research is often highly context-specific, replicating studies is challenging. The unique interactions between the researcher and participants, as well as the dynamic nature of qualitative inquiry, can make it difficult for others to reproduce the same study.

3. **Mixed Methods Research Design** Mixed methods research combines both quantitative and qualitative approaches to capitalize on the strengths of each while mitigating their weaknesses. This design is increasingly popular in fields like education, healthcare, and social sciences.

Strengths:

a) **Comprehensive Data**: By combining quantitative and qualitative data, mixed methods research provides a more comprehensive understanding of a research problem. Quantitative data can offer breadth, while qualitative data provides depth and context.

b) **Triangulation**: Mixed methods allow for triangulation, where multiple methods are used to cross-verify results. This strengthens the validity of the findings by confirming the data through different lenses.

c) **Flexibility in Addressing Research Question**: Mixed methods can address a wider range of research questions. For example, a study can begin with qualitative research to explore a phenomenon and follow up with quantitative methods to measure its prevalence or test hypotheses.

d) **Enhanced Interpretation**: The combination of numerical and narrative data allows for a richer interpretation of the results. Researchers can explain unexpected results or discrepancies in the data by exploring qualitative insights.

Limitations:

a) **Complexity**: Mixed methods research is inherently complex. Designing a study that effectively integrates both quantitative and qualitative elements requires advanced skills in both research paradigms, as well as careful planning to ensure that the methods complement each other.

b) **Time-Consuming**: Because mixed methods involve both qualitative and quantitative data collection and analysis, they are often more time-consuming than single-method studies. The increased time demands can also translate into higher resource costs.

c) **Potential for Conflicting Results**: In some cases, the quantitative and qualitative results may conflict, making it difficult to draw definitive conclusions. Researchers must carefully interpret such discrepancies to ensure that they enhance rather than undermine the study's findings.

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d) **Resource Intensive**: Like qualitative research, mixed methods require substantial resources, including time, funding, and expertise. The dual data collection and analysis processes increase the overall burden on the researcher.

Conclusion

1. Summarize the critical role of research design in ensuring that research is systematic, ethical, and aligned with the research objectives.
2. Emphasize that the choice of design should be tailored to the specific research question and the nature of the phenomenon being studied.
3. Reflect on the importance of understanding research design for producing credible and impactful research.
4. There are several research designs and the researcher must decide in advance of collection and analysis of data as to which design would prove to be the more appropriate for his research project.

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अनुसंधान डिज़ाइन

मनतशा हसन*

***इतिहास विभाग, सोना देवी विश्वविद्यालय, घाटसीला, पूर्वी सिंघभूम, झारखंड**

सारांश

शोध तभी मान्य होता है जब निष्कर्ष सटीक या सत्य हो और शोध डिजाइन वह वैचारिक खाका होता है जिसके अंतर्गत शोध किया जाता है। एक विद्वान अपने शोध के लिए एक कार्य योजना तैयार करता है, इसमें डेटा के संग्रह, मापन और विश्लेषण की रूपरेखा तैयार की जाती है। शोध डिजाइन डेटा संग्रह की किसी विशेष तकनीक या किसी विशेष प्रकार के डेटा से जुड़ा नहीं है। शोध डिजाइन करते समय, यह आवश्यक है कि हम शोध प्रश्न का उचित तरीके से उत्तर देने के लिए आवश्यक साक्ष्य के प्रकार को पहचानें। इस अध्याय में उद्देश्य, इसके महत्व और शोध डिजाइन के प्रकारों का खाका खींचा गया है।

कीवर्ड: मूल, खोजपूर्ण, वर्णनात्मक, व्याख्यात्मक।

परिचय

अनुसंधान डिज़ाइन को अनुसंधान की संरचना के रूप में माना जा सकता है, यह "गोंद" है जो एक अनुसंधान परियोजना के सभी तत्वों को एक साथ रखता है, संक्षेप में यह प्रस्तावित अनुसंधान कार्य की एक योजना है।

अनुसंधान डिज़ाइन को विभिन्न सामाजिक वैज्ञानिकों द्वारा अलग-अलग शब्दों में परिभाषित किया गया है; कुछ परिभाषाएँ इस प्रकार हैं: जहोदा, डच और कुक के अनुसार "एक शोध डिजाइन डेटा के संग्रह और विश्लेषण के लिए स्थितियों की व्यवस्था है, जिसका उद्देश्य अर्थव्यवस्था और प्रक्रिया के साथ अनुसंधान उद्देश्य की प्रासंगिकता को जोड़ना है"।

अनुसंधान डिजाइन योजना, संरचना और रणनीति और जांच है ताकि प्रश्न की खोज और नियंत्रण भिन्नता को सुनिश्चित किया जा सके। हेनरी मैनहेम का कहना है कि अनुसंधान डिज़ाइन न केवल डेटा संग्रह, प्रसंस्करण और विश्लेषण से जुड़े प्रतीत होने वाले अनगिनत निर्णयों का अनुमान लगाता है और निर्दिष्ट करता है, बल्कि यह इन निर्णयों के लिए एक तार्किक आधार भी प्रस्तुत करता है।

शोध डिज़ाइन निम्नलिखित आरक्षित प्रश्नों के उत्तर प्रदान करने में सक्षम होना चाहिए:

1. अध्ययन किस बारे में है और किस प्रकार के डेटा की आवश्यकता है?
2. अध्ययन का उद्देश्य क्या है?
3. आवश्यक डेटा के स्रोत क्या हैं?
4. अध्ययन का स्थान या क्षेत्र क्या होना चाहिए?
5. अध्ययन के लिए लगभग कितना समय आवश्यक है?
6. अध्ययन के लिए सामग्री की मात्रा या मामलों की संख्या क्या होनी चाहिए?
7. किस प्रकार के नमूने का उपयोग किया जाना चाहिए?
8. डेटा संग्रह की कौन सी विधि उपयुक्त होगी?
9. डेटा का विश्लेषण कैसे किया जाएगा?
10. अनुमानित व्यय कितना होना चाहिए?
11. अध्ययन की विशिष्ट प्रकृति क्या होनी चाहिए?

अनुसंधान डिजाइन की परिभाषाएँ –

1. सेल्टिज्डेउश और कॉक के अनुसार, "एक शोध डिजाइन डेटा के संग्रह और विश्लेषण के लिए स्थितियों की व्यवस्था है, जिसका उद्देश्य अनुसंधान उद्देश्य के लिए प्रासंगिकता को जोड़ना है जो प्रक्रिया में अर्थव्यवस्था है"।
2. कर्लिंगर के अनुसार, "शोध डिजाइन जांच की योजना, संरचना और रणनीति है, जिसे शोध प्रश्नों के उत्तर प्राप्त करने और भिन्नता को नियंत्रित करने के लिए तैयार किया जाता है।" शोध डिजाइन वास्तव में वह वैचारिक ढांचा है, जिसके अंतर्गत शोध किया जाता है।

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3. बर्नार्ड फिलिप्स के अनुसार, अनुसंधान डिजाइन "डेटा के संग्रह, माप और विश्लेषण के लिए एक ब्लू प्रिंट" है।
4. क्लेयर सेल्टिज़ के अनुसार, "शोध डिज़ाइन डेटा के संग्रह और विश्लेषण के लिए स्थितियों की व्यवस्था है जिसका उद्देश्य प्रक्रिया में अर्थव्यवस्था के साथ अनुसंधान उद्देश्य के लिए प्रासंगिकता को जोड़ना है"।
5.एस.एल. गुप्ता और हितेश के अनुसार, "एक शोध डिजाइन समस्या निर्माण से लेकर परिकल्पना विकास, डेटा संग्रह, डेटा विश्लेषण, अंतिम परिणाम और निहितार्थ तक गतिविधियों का प्रवाह प्रदान करता है"। एक शोध डिजाइन समस्या निर्माण से लेकर परिकल्पना विकास, डेटा संग्रह, डेटा विश्लेषण और अंतिम परिणाम तक गतिविधियों का प्रवाह प्रदान करता है।

अनुसंधान डिजाइन के घटक

एक शोध डिज़ाइन के घटकों को कई तरीकों से व्यवस्थित किया जा सकता है। निम्नलिखित रूपरेखा को एक उदाहरण के रूप में प्रस्तुत किया गया है कि एक शोध डिजाइन की संरचना कैसी दिख सकती है

- शीर्षक
- विषय /समस्या का विवरण
- उद्देश्य और लक्ष्य
- शोध प्रश्न और उद्देश्य
- साहित्य की समीक्षा
- अनुसंधान रणनीतियाँ
- अवधारणाएं, सिद्धांत, परिकल्पनाएं और मॉडल
- डेटा स्रोत, प्रकार और रूप
- डेटा स्रोतों का चयन
- डेटा संग्रह और समय
- डेटा में कमी और विश्लेषण
- समस्याएँ और सीमाएँ

अनुसंधान प्रस्तावों और अनुसंधान डिजाइनों के लिए संभावित संरचनाएं और सामग्री प्रस्तावित करने के बाद, अगला कार्य यह पता लगाना है कि उन्हें कैसे तैयार किया जाए। यह तीनों पर चर्चा करके किया जाएगा
मुख्य घटक: मूल तत्व, जो अनुसंधान डिजाइन की संरचना के लिए उपयोग किए गए शीर्षकों का बारीकी से पालन करते हैं; प्रत्येक तत्व के लिए, विकल्पों की श्रेणी जिससे चुनाव किए जाते हैं; और वह संदर्भ जिसमें ये विकल्प चुने गए हैं, यानी वे कारक जो विकल्पों को प्रभावित कर सकते हैं।
एक शोध छात्र के रूप में आपको अपने अनुसंधान\समस्या के बारे में अच्छी समझ होनी चाहिए ,वह विधि जिसे आप अपने काम में उपयोग करना चाहते हैं, अपने शोध प्रश्नों के बारे में स्पष्ट रहें और वह क्या है जिसे आप स्थापित करना चाहते हैं। कभी भी किसी डिज़ाइन का चयन न करें और फिर शोध प्रश्नों को डिज़ाइन में फिट करने का प्रयास करें! यह दूसरा तरीका होना चाहिए, आपके लिए यह देखना बहुत महत्वपूर्ण है कि क्या डिज़ाइन आपके शोध का उत्तर दे सकता है

अनुसंधान डिजाइन का उद्गम

अनुसंधान डिजाइन 1960 के दशक में अध्ययन के एक पहचानने योग्य क्षेत्र के रूप में उभरा, सबसे पहले 1962 में इंपीरियल कॉलेज, में डिजाइन रिसर्च सोसाइटी (डीआरएस) की स्थापना की। जॉन क्रिस्टोफर जोन्स ने स्थापना की यूनिवर्सिटी मैनचेस्टर इंस्टीट्यूट ऑफ साइंस एंड टेक्नोलॉजी में एक स्नातकोत्तर डिजाइन अनुसंधान प्रयोगशाला (जिसने 1962 के सम्मेलन की शुरुआत की) और एल. ब्रूस शेर ने रॉयल कॉलेज ऑफ आर्ट, लंदन में स्नातकोत्तर डिजाइन अनुसंधान विभाग की स्थापना की और अनुसंधान डिजाइन के पहले प्रोफेसर बने।

अनुसंधान डिजाइन के प्रकार

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शोधकर्ता को विभिन्न प्रकार के शोध डिजाइन की स्पष्ट समझ होनी चाहिए ताकि वह यह तय कर सके कि किसी अध्ययन के लिए किस प्रकार के शोध डिजाइन को लागू किया जाए। शोध डिजाइन को मात्रात्मक और गुणात्मक शोध डिजाइन में वर्गीकृत किया जा सकता है।

1. गुणात्मक शोध डिजाइन: गुणात्मक शोध उन मामलों में लागू किया जाता है जहां गणितीय गणनाओं के आधार पर एकत्रित डेटा और अवलोकन के बीच संबंध स्थापित किया जाता है। प्राकृतिक रूप से मौजूद घटना से संबंधित सिद्धांतों को गणितीय गणनाओं का उपयोग करके सिद्ध या अस्वीकृत किया जा सकता है। शोधकर्ता गुणात्मक शोध डिजाइन पर भरोसा करते हैं, जहां उनसे यह निष्कर्ष निकालने की अपेक्षा की जाती है कि कोई विशेष सिद्धांत "क्यों" मौजूद है और साथ ही उत्तरदाताओं का इसके बारे में "क्या" कहना है।

2. मात्रात्मक अनुसंधान डिजाइन: मात्रात्मक अनुसंधान उन मामलों में लागू किया जाता है जहां शोधकर्ता के लिए कार्रवाई योग्य अंतर्दृष्टि एकत्र करने के लिए सांख्यिकीय निष्कर्ष होना महत्वपूर्ण है। संख्याएँ महत्वपूर्ण व्यावसायिक निर्णय लेने के लिए बेहतर परिप्रेक्ष्य प्रदान करती हैं। मात्रात्मक अनुसंधान डिजाइन किसी भी संगठन के विकास के लिए महत्वपूर्ण है क्योंकि संख्याओं और विश्लेषण के आधार पर निकाला गया कोई भी निष्कर्ष व्यवसाय के लिए ही प्रभावी साबित होगा।

इसके अलावा, अनुसंधान डिजाइन को पांच प्रकारों में विभाजित किया जा सकता है –

1. वर्णनात्मक शोध डिजाइन: वर्णनात्मक शोध डिजाइन में, शोधकर्ता केवल अपने शोध अध्ययन के तहत स्थिति या मामले का वर्णन करने में रुचि रखता है। यह एक सिद्धांत-आधारित शोध डिजाइन है जो एकत्रित डेटा को इकट्ठा करके, उसका विश्लेषण करके और प्रस्तुत करके बनाया जाता है। इस तरह के गहन शोध डिजाइन को लागू करके, शोधकर्ता शोध के कारण और तरीके के बारे में जानकारी दे सकता है।

2. प्रायोगिक अनुसंधान डिजाइन: प्रायोगिक अनुसंधान डिजाइन का उपयोग किसी स्थिति के कारण और प्रभाव के बीच संबंध स्थापित करने के लिए किया जाता है। यह एक कारणपरक अनुसंधान डिजाइन है जहाँ स्वतंत्र चर द्वारा आश्रित चर पर होने वाले प्रभाव का अवलोकन किया जाता है। उदाहरण के लिए, कीमत जैसे स्वतंत्र चर का ग्राहक संतुष्टि या ब्रांड निष्ठा जैसे आश्रित चर पर प्रभाव की निगरानी की जाती है। यह एक अत्यधिक व्यावहारिक शोध डिजाइन विधि है क्योंकि यह हाथ में मौजूद समस्या को हल करने में योगदान देती है। आश्रित चर पर होने वाले परिवर्तन की निगरानी के लिए स्वतंत्र चर में हेरफेर किया जाता है। इसका उपयोग अक्सर सामाजिक विज्ञानों में दो समूहों के एक समूह के दूसरे पर प्रभाव का विश्लेषण करके मानव व्यवहार का निरीक्षण करने के लिए किया जाता है।

3. सहसंबंधी शोध डिजाइन: सहसंबंधी शोध एक गैर-प्रयोगात्मक शोध डिजाइन तकनीक है जो शोधकर्ताओं को दो निकट से जुड़े चरों के बीच संबंध स्थापित करने में मदद करती है। इस शोध डिजाइन पद्धति को संचालित करने के लिए दो अलग-अलग समूहों की आवश्यकता होती है। दो अलग-अलग चरों के बीच संबंध का मूल्यांकन करते समय कोई धारणा नहीं बनाई जाती है और उनके बीच संबंध की गणना करने के लिए सांख्यिकीय विश्लेषण तकनीकों का उपयोग किया जाता है।

दो चरों के बीच सहसंबंध का निष्कर्ष सहसंबंध गुणांक का उपयोग करके निकाला जाता है, जिसका मान 1 से +1 के बीच होता है। यदि सहसंबंध गुणांक +1 की ओर है, तो यह चरों के बीच सकारात्मक संबंध को दर्शाता है और 1 दो चरों के बीच नकारात्मक संबंध को दर्शाता है।

4. डायग्नोस्टिक रिसर्च डिज़ाइन: डायग्नोस्टिक रिसर्च डिज़ाइन में, शोधकर्ता किसी विशिष्ट विषय के मूल कारण का मूल्यांकन करने की ओर प्रवृत्त होता है। इस शोध डिज़ाइन विधि में उन तत्वों का मूल्यांकन किया जाता है जो किसी परेशानी वाली स्थिति में योगदान करते हैं। डायग्नोस्टिक रिसर्च डिज़ाइन के तीन भाग हैं:

मुद्दे की शुरुआत

समस्या का निदान

समस्या का समाधान

5. व्याख्यात्मक शोध डिजाइन: खोजपूर्ण शोध डिजाइन में, शोधकर्ता के विचार और सोच महत्वपूर्ण होते हैं क्योंकि यह मुख्य रूप से किसी विशेष विषय के बारे में उनके व्यक्तिगत झुकाव पर निर्भर करता है।

अनुसंधान डिजाइन के कार्य-

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एक शोध डिज़ाइन एक अध्ययन शुरू करने के लिए प्रक्रियाओं और तार्किक व्यवस्थाओं की पहचान से संबंधित है और साथ ही अनुकूलित शोध परिणाम तैयार करने में गुणवत्ता के महत्व पर जोर देता है। यह एक शोध परियोजना में सभी घटकों और उपघटकों को एक साथ जोड़ता है। विशिष्ट प्रयोगात्मक अनुसंधान डिजाइन में, कुछ प्रतीक होते हैं जो एक शोधकर्ता को पता होना चाहिए जिनका अध्ययन के डिजाइन को दिखाने के लिए व्यापक रूप से उपयोग किया गया है।

सामान्यतः हम शोध डिजाइन के कार्यों को दो भागों में विभाजित कर सकते हैं:

(क) परिचालन प्रक्रिया का निर्माण: अपने शोध कार्य को पूरा करने के लिए आवश्यक कार्यों को निष्पादित करना।

(ख) यह सुनिश्चित करना कि ये प्रक्रियाएं पर्याप्त हैं: शोध कार्य में पूछे गए प्रश्नों के लिए वैध, वस्तुनिष्ठ और सटीक उत्तर प्राप्त करना।

शोध डिजाइन के सबसे बुनियादी पहलुओं में से एक है हर चीज को गहराई से और स्पष्ट रूप से निर्दिष्ट करना। यह सुनिश्चित करना है कि पाठक समझ सके कि किस पद्धति का पालन करना है और उसका पालन कैसे करना है। शोध डिजाइन में निम्नलिखित बातें होनी चाहिए:

(i) अध्ययन डिज़ाइन का नामकरण (उदाहरण: तुलनात्मक, क्रॉस-सेक्शनल, या यादृच्छिक नियंत्रण)

(ii) अध्ययन जनसंख्या की पहचान कैसे की जाएगी?

(iii) नमूनाकरण के लिए कौन सी विधियाँ प्रयुक्त की जाती हैं?

(iv) शोध कार्य में डेटा संग्रहण की कौन सी विधि का उपयोग किया जाएगा?

(v) नैतिक मुद्दों पर कैसे विचार किया जाएगा?

अनुसंधान डिजाइन की आवश्यकता-

शोध डिजाइन आवश्यक है क्योंकि यह विभिन्न शोध प्रक्रियाओं को सुचारू रूप से चलाना संभव बनाता है, जिससे शोध को यथासंभव व्यावसायिक बनाया जा सके, जिससे प्रयास, समय और धन के न्यूनतम व्यय के साथ अधिकतम जानकारी प्राप्त हो सके। एक घर के बेहतर, किफायती और आकर्षक निर्माण के लिए, हमें एक विशेषज्ञ वास्तुकार द्वारा तैयार किए गए ब्लूप्रिंट (या जिसे समुदाय घर का नक्शा कहते हैं) की आवश्यकता होती है, इसी तरह हमें चार शोध परियोजनाओं के लिए डेटा संग्रह और विश्लेषण से पहले एक शोध डिजाइन या योजना की आवश्यकता होती है। शोध डिजाइन का अर्थ है शोध के उद्देश्य और कर्मचारियों, समय और धन की श्रव्यता को ध्यान में रखते हुए प्रासंगिक डेटा एकत्र करने के लिए अपनाए जाने वाले तरीकों और विश्लेषण में उपयोग की जाने वाली तकनीकों की अग्रिम योजना बनाना। 13 शोध परियोजना को डिजाइन करने के परिणामस्वरूप शोध अभ्यास असफल हो सकता है। इसलिए, यह अनिवार्य है कि शोध प्रक्रिया शुरू करने से पहले एक कुशल और उपयुक्त डिजाइन तैयार किया जाना चाहिए। शोध डिजाइन अन्वेषक को अपने शोध को व्यवस्थित करने में मदद करता है।

अनुसंधान डिजाइन बनाम अनुसंधान पद्धति-

शोध डिजाइन उस विधि से अलग है जिसके द्वारा डेटा एकत्र किया जाता है। कई शोध विधियों के पाठ अनुसंधान डिजाइनों को विधियों के साथ भ्रमित करते हैं। शोध डिजाइन को जांच की तार्किक संरचना के बजाय डेटा संग्रह के एक तरीके के रूप में देखा जाना असामान्य नहीं है। लेकिन किसी भी शोध डिजाइन के बारे में ऐसा कुछ भी अंतर्निहित नहीं है जिसके लिए डेटा संग्रह की एक विशेष विधि की आवश्यकता होती है। हालाँकि क्रॉस-सेक्शनल सर्वेक्षणों को अक्सर प्रश्नावली के साथ और केस स्टडीज़ को अक्सर प्रतिभागी अवलोकन के साथ बराबर किया जाता है (उदाहरण के लिए व्हाइट्स स्ट्रीट कॉर्नर सोसाइटी, 1943), किसी भी डिज़ाइन के लिए डेटा किसी भी डेटा संग्रह विधि से एकत्र किया जा सकता है। डेटा कैसे एकत्र किया जाता है यह डिज़ाइन के तर्क के लिए अप्रासंगिक है। डिज़ाइन और विधि के बीच अंतर करने में विफल रहने से डिज़ाइन का खराब मूल्यांकन होता है। क्रॉस-सेक्शनल डिज़ाइनों को प्रश्नावली या केस स्टडीज़ के साथ बराबर करना, सहभागी अवलोकन का अर्थ यह है कि डिजाइनों का मूल्यांकन अक्सर विधि की शक्तियों और कमजोरियों के आधार पर किया जाता है, न कि अपेक्षाकृत स्पष्ट निष्कर्ष निकालने या प्रतिद्वंद्वी संभावित परिकल्पनाओं के बीच चयन करने की उनकी क्षमता के आधार पर।

अनुसंधान डिजाइन

1. अंतिम उत्पाद पर ध्यान केंद्रित करें: किस तरह के अध्ययन की योजना बनाई जा रही है और किस तरह के परिणाम प्राप्त करने का लक्ष्य है। उदाहरण के लिए ऐतिहासिक तुलनात्मक अध्ययन, व्याख्यात्मक दृष्टिकोण या खोजपूर्ण अध्ययन, आगमनात्मक और निगमनात्मक आदि।

2. अनुसंधान के तर्क पर ध्यान केंद्रित करता है: समस्या का समाधान करने के लिए क्या साक्ष्य आवश्यक हैं?

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शोध पद्धति

1. अनुसंधान प्रक्रिया और उपयोग किए जाने वाले उपकरणों और प्रक्रियाओं पर ध्यान केंद्रित करता है।
उदाहरण के लिए दस्तावेज़ विश्लेषण, सर्वेक्षण विधियाँ, मौजूदा (द्वितीयक) डेटा/आँकड़ों का विश्लेषण आदि।)
2. अनुसंधान प्रक्रिया में व्यक्तिगत (रैखिक नहीं) चरणों और नियोजित की जाने वाली सबसे अधिक वस्तुनिष्ठ (निष्पक्ष) प्रक्रियाओं पर ध्यान केंद्रित करता है।

अच्छे शोध डिजाइन की प्रकृति

एक अच्छे शोध डिजाइन को नियमित रूप से लचीला, उपयुक्त, कुशल और किफायती जैसे विशेषणों द्वारा चिह्नित किया जाता है। आम तौर पर, वह डिजाइन जो पूर्वाग्रह को कम करता है और एकत्रित और विश्लेषण करता है, उसे एक अच्छा डिजाइन माना जाता है। वह डिजाइन जो सबसे छोटी प्रयोगात्मक त्रुटि देता है, उसे कई जांचों में सबसे अच्छा डिजाइन माना जाता है; इसी तरह; एक डिजाइन जो किसी समस्या के कई अलग-अलग पहलुओं के बारे में अधिकतम जानकारी देता है, उसे कई शोध समस्याओं के संबंध में सबसे उपयुक्त और कुशल डिजाइन माना जाता है।अच्छे शोध डिजाइन की कुछ रणनीतियाँ इस प्रकार हैं:

सिद्धांत – आधारित

अच्छा शोध उन सिद्धांतों को प्रतिबिंबित करता है जिनकी जांच की जा रही है, जहां विशिष्ट सैद्धांतिक अपेक्षाओं की परिकल्पना की जा सकती है, इन्हें डिजाइन में शामिल किया जाता है।

संभव

अच्छे डिजाइन को लागू किया जा सकता है। घटनाओं की श्रृंखला और समय को पूरी तरह से सावधानी से रख कर । मापन में संभावित समस्याएं, परियोजना डेटाबेस निर्माण के प्रति समर्पण और इसी तरह की अन्य चीजें पूर्वानुमान योग्य हैं।

अनावश्यक

अच्छे शोध डिजाइनों में कुछ लचीलापन अंतर्निहित होता है, अक्सर यह लचीलापन आवश्यक डिजाइन विशेषताओं की पुनरावृत्ति से उत्पन्न होता है।

निष्कर्ष

ऊपर दिए गए परिभाषित नोट्स से हम कह सकते हैं कि डिज़ाइन का मतलब है "रूपरेखा बनाना" या विवरणों को व्यवस्थित करना या योजना बनाना। यह ऐसी स्थिति आने से पहले निर्णय लेने की विधि है जिसमें डिज़ाइन के लिए कोई भी व्यक्ति किसी भी तरह की योजना बनाने में सक्षम नहीं होता।

शोध डिजाइन शोध करने की रणनीति की तैयारी है ये किसी भी शोध को तैयार करने में विचार किए जाने वाले महत्वपूर्ण बिंदु हैं। बाद के चरण में अस्पष्टता से बचने के लिए इन सभी चरणों को कागज पर लिखा जाना चाहिए। इस प्रकार, शोध डिजाइन में काम समस्या के चयन के बाद शुरू होता है और पहले समाप्त होता है

डेटा का संग्रह। दोनों के बीच के अंतर को एक सुनियोजित शोध डिजाइन के साथ सावधानीपूर्वक पढ़ा जाना चाहिए। इस प्रकार, यह कहा जा सकता है कि एक शोध डिजाइन में शोध विषय, उद्देश्य,अवधारणाएँ और उनकी परिचालन परिभाषा, चर, परिकल्पना, डेटा संग्रह की विधि और डेटा प्रक्रिया की विधि, विश्लेषण और व्याख्या के बारे में विस्तृत जानकारी होनी चाहिए।

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अनुसंधान प्रतिवेदन की योजना एवं प्रस्तुतीकरण

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सारांश

अनुसंधान प्रतिवेदन की योजना एवं प्रस्तुतीकरण किसी भी शोध कार्य का अत्यंत महत्वपूर्ण चरण होता है। यह शोधकर्ता के विचारों, निष्कर्षों तथा अध्ययन की प्रक्रिया को सुव्यवस्थित और वैज्ञानिक ढंग से प्रस्तुत करने का माध्यम है। प्रतिवेदन की योजना बनाते समय शोध की भूमिका, उद्देश्य, परिकल्पना, कार्यप्रणाली, डेटा विश्लेषण और निष्कर्षों को स्पष्ट रूप से व्यवस्थित करना आवश्यक होता है। प्रस्तुतीकरण के दौरान भाषा की सटीकता, तार्किक अनुक्रम, वस्तुनिष्ठता और प्रामाणिकता का विशेष ध्यान रखा जाता है। एक व्यवस्थित प्रतिवेदन न केवल शोध की गुणवत्ता को प्रदर्शित करता है, बल्कि पाठक के लिए विषय को सरल और प्रभावी ढंग से समझने में भी सहायक होता है। इस प्रकार अनुसंधान प्रतिवेदन की योजना एवं प्रस्तुतीकरण शोध कार्य को विश्वसनीय, उपयोगी और अकादमिक दृष्टि से सार्थक बनाने का आधार प्रदान करता है।

मुख्य शब्द: *अनुसंधान, प्रतिवेदन, योजना, प्रस्तुतीकरण, निष्कर्ष, प्रामाणिकता*

अनुसंधान का प्रतिवेदन तैयार करने की अपनी एक वैज्ञानिक विधि है, जो न्यूनाधिक रूप से सभी शिक्षण संस्थानों एवं सार्वजनिक शोध संस्थानों के द्वारा एक मानदंड के रूप में स्वीकृत की गई है। इस तरह से किसी शोध को लगभग एक निश्चित मानदंड को मानते हुए ही प्रतिवेदन या रिपोर्ट करने के उसके स्वरूप, प्रदतों के प्रस्तुतीकरण, विश्लेषण तथा शोध अभिकल्प को पढ़ने समझने की एकरूपता बनी रहती है इस एकरूपता के परिणाम स्वरूप यह शोध ग्रंथ एवं लेख अपेक्षाकृत अधिक ग्राहय एवं संप्रेषण योग्य हो जाते हैं। साथ ही साथ इनकी सामग्री को उद्धारित करने तथा उसका आदान-प्रदान करने में भी सुगमता बनी रहती है।[1]जॉन डब्लू. वेस्ट ने स्पष्ट किया है की "शैक्षिक क्षेत्र में प्रचलित स्वरूप तथा शैली का अनुगमन सही प्रतिवेदनों में समान रूप से किया जाता है।[2]

शोध प्रबंध को चाहे अकादमी उपलब्धियों के लिए किया जाए या फिर किसी सार्वजनिक या केंद्रीय एजेंसी के द्वारा सामाजिक हित के लिए किया जाए प्रत्येक परिस्थिति में उसके लाभान्वित होने वाले लोग उसके प्रभाव उत्पादकता तथा प्रस्तुतीय गुणों की प्रशंसा करते हैं। अतः शोध ग्रंथ लेखन एक ऐसी कला है जो संपूर्ण शोध अवयव को प्रशंसनीय ढंग से एकत्रित, संकलित एवं सुसंगठित करती है।[3]

कोई भी शोध कार्य तब तक पूर्ण नहीं होता जब तक कि इसका प्रतिवेदन ना हो जाए। एक सर्वोत्तम उपकल्पना, सुनियोजित अभिकल्प तथा एक महत्वपूर्ण निष्कर्ष यह सभी उस समय तक व्यर्थ होते हैं जब तक कि उन्हें दूसरों तक न पहुंचा जाए। यह कार्य रिपोर्ट द्वारा ही संभव होता है। प्रतिवेदन लेखन के लिए अनुसंधान के विभिन्न चरणों से अलग एक विशेष क्षमता की जरूरत होती है। आंकड़ों के विश्लेषण से प्रतिवेदन तैयार करने तक शोधार्थी की ज्यादातर जिज्ञासा तो शांत हो जाती है। परंतु अपने परिणामों को अन्य लोगों तक पहुंचाना भी एक शोधकर्ता का अनिवार्य दायित्व है। इसलिए इस पर भी उतना ही ध्यान दिया जाना चाहिए जितना कि शोध के अन्य चरणों पर दिया जाता है। यदि रिपोर्ट की तैयारी के लिए उचित समय व रुचि दिखाई जाए तो अनुसंधानकर्ता को वही संतुष्टि मिलती है जो किसी कारीगर को किसी कलाकृति बनाने में प्राप्त होती है।

प्रतिवेदन लिखते समय सबसे महत्वपूर्ण बात जो ध्यान में रखनी चाहिए वह प्रतिवेदन के कार्य हैं। प्रतिवेदन का उद्देश्य स्वयं से संचार करना नहीं अपितु श्रोताओं एवं पाठकों तक अपने विचारों को पहुंचना है। इस संबंध में जहोदा तथा अन्य ने लिखा है। "The purpose of a report is not communication with oneself but communication with the audience." [4]

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[1] लाल जैन एवं के.सी. वशिष्ठ, शिक्षण एवं शोध अभियोग्यता, उपकार प्रकाशन, आगरा-2, 2010, पृ.सं. 156.

[2] रामपाल सिंह व ओ. पी. शर्मा, शैक्षिक अनुसंधान एवं सांख्यिकी, श्री विनोद पुस्तक मंदिर, आगरा-2, 2009, पृ.सं. 340.

[3] वही, पृ.सं. 156.

[4] विपिन अस्थाना, शिक्षा अनुसंधान, मूल तत्व एवं शोध प्रक्रिया, अग्रवाल पब्लिकेशन,2005, पृ.सं. 423.

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इस तरह से लिखते समय यह भी ध्यान रखना चाहिए कि प्रतिवेदन किस प्रकार के लोगों के लिए लिखा जा रहा है। एक प्रतिवेदन जो कि साथी वैज्ञानिकों के लिए लिखा गया है आम लोगों के लिए लिखे गए प्रतिवेदन से भिन्न होगा। प्रतिवेदन किसी भी प्रकार के लोगों के लिए लिखा गया हो दो सामान्य प्रश्न प्रतिवेदन की योजना बनाते समय ध्यान में रखनी चाहिए-

1 पाठक अध्ययन के संबंध में क्या जानना चाहते हैं या उनकी आवश्यकता क्या है?

2 यह सूचना सर्वोत्तम रूप में किस प्रकार से प्रस्तुत की जा सकती है?

इसके अलावा कुछ अन्य बिंदुओं पर भी ध्यान देना चाहिए-

- प्रतिवेदन लेखन में शुरू से अंत तक सभी क्रियायो की प्रवाहमय प्रस्तुति होनी चाहिए ताकि उसमें एक क्रमबद्धता बनी रहे।
- भाषा तथा प्रस्तुतीकरण वैज्ञानिक आधार पर होनी चाहिए।
- शोध प्रबंध के मुख्य अंग में किसी विद्वान के नाम के पूर्व श्री, श्रीमती का प्रयोग नहीं करना चाहिए।
- शोध प्रबंध को समान्यत: भूतकाल में लिखना चाहिए।
- शोध प्रबंध लेखन के समय तथा टंकण में लेखा तकनीकी का प्रयोग समुचित रूप से करना चाहिए।

साथ ही शोध प्रबंध का लेखन सृजनात्मक रूप से होना चाहिए, जिसमें विचारों की अभिव्यक्ति स्पष्ट एवं सरल हो।

इसके अलावा अनुसंधान प्रतिवेदन का उद्देश्य पाठकों की समस्या को हल करने के लिए प्रयुक्त विधि, अनुसंधान के परिणाम तथा इन परिणामों से निकाले गए अनुमानों के बारे में बताना है। अनुसंधान के वरदानों को बताना शोधार्थी का कार्य नहीं है। उसे तो केवल यह प्रतिवेदन करना है कि उसने क्या, क्यों और कैसे किया। उसके परिणाम और निष्कर्ष क्या है? रिपोर्ट इस तरह से लिखा जाना चाहिए कि पाठक स्वयं अनुसंधान की उपयुक्तता तथा उसकी वैधता से संबंधित निष्कर्ष पर पहुंच सके।[5]

प्रतिवेदन लेखन के उद्देश्य[6]

अनुसंधान प्रतिवेदन निम्नलिखित उद्देश्यों की प्राप्ति के लिए लिखा जाता है-

- अनुसंधान का शीर्षक तथा क्षेत्र बताने के लिए।
- शोध कार्यों को व्यवस्थित तथा स्थाई रूप से प्रस्तुत करने के लिए।
- शोध निष्कर्ष को संबंधित विद्वानों को पढ़ने हेतु उपलब्ध करने के लिए।
- अन्य शोधकर्ताओं द्वारा एक कक्षा पुनरावृति से बचने के लिए।
- अनुसंधान के क्षेत्र में संबंधित मूल्य, संभाव्य तथा भावी समस्या का ज्ञान करने के लिए।
- समस्या का समाधान प्रस्तुत कर पाठकों की ज्ञानकोष में वृद्धि करने के लिए।
- अन्य अनुसंधानकर्ताओं को संबंधित साहित्य तथा संबंधित क्षेत्र में अंतर्दृष्टि करने के लिए।

अनुसंधान प्रतिवेदन का स्वरूप[7]

आम तौर पर अनुसंधान प्रतिवेदन को निम्नलिखित तीन भागों में बांटा जाता है-

अ) प्राथमिकताएं

1 शीर्षक पृष्ठ
2 अनुमोदन पत्र पर्यवेक्षक/संस्थागत पंजीकरण सर्टिफिकेट
3 प्राक्कथन तथा आभार प्रदर्शन
4 विषय सूची
5 सारणी सूची
6 चित्र सूची

ब) शोध का प्रमुख भाग

1 भूमिका/विषय प्रवेश/प्रस्तावना
2 अध्याय करण
i संबंधित साहित्य का सर्वेक्षण
ii शोध अभिकल्प
iii समस्या तथा अध्ययन विधि
iv प्रदत्त विश्लेषण एवं विवेचना
v शोध उपलब्धियां, निष्कर्ष एवं सामान्यकरण
vi उपसंहार, सुझाव एवं एवं संस्कृतियों
3 सारांश

[5] वही, पृ.सं. 423.
[6] रामपाल सिंह और ओ.पी. शर्मा, अनुसंधान एवं सांख्यिकी, पृ.सं. 340.
[7] वही, पृ.सं. 341; लाल जैन और के.सी. वशिष्ठ, उपरोक्त, पृ.सं. 156.

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स) संदर्भ ग्रंथ सूची

1 परिशिष्ट

2 शब्द भंडार सूची

प्राथमिकताएं

प्राथमिकताएं संपूर्ण शोध प्रबंध की वह आधारभूत रूप रेखा को तैयार करती हैं, जो उसके आकार-प्रकार को व्यक्त करती हैं। इसमें सर्वप्रथम शोध ग्रंथ का मुख्य पृष्ठ सम्मिलित किया जाता है। किसी भी शोध ग्रंथ का मुख्य पृष्ठ उसके संपूर्ण स्वरूप का चित्र प्रस्तुत करता है। यह हमारे चेहरे की तरह है। अतः इसकी सुंदरता, स्वच्छता, स्पष्टता एवं वैज्ञानिकता आदि का समुचित ध्यान रखना आवश्यक है। इसके अलावा यह आकर्षक एवं सौंदर्य बोध (अक्षरों की बनावट आकार-प्रकार) व्यवस्था आदि से युक्त होना चाहिए। मुख्य पृष्ठ पर लिखे जाने वाले शोध शीर्षक छोटे शीर्षक छोटे, स्पष्ट, शुद्ध तथा बड़े अक्षरों में होना चाहिए।[8]

अनुमोदन पत्र - प्राय: जब शोध प्रतिवेदन एम. ए., एम.फिल., एम. एड. तथा पीएच.डी. जैसे डिग्रियों के लिए लिखा जाता है तो एक अनुमोदन पत्र की जरूरत होती है। इस पत्र के द्वारा पर्यवेक्षक, विभाग तथा अंत में विश्वविद्यालय इस तथ्य को प्रमाणित करते हैं कि शोध पत्र उक्त उपाधि के संदर्भ में अनिवार्य अहर्ताओं को पूरा किया है। अतः यह शोध के मानदंड को सुव्यवस्थित ढंग से क्रियान्वित करने के लिए आवश्यक कदम है।

प्राक्कथन और आभार प्रदर्शन - इस पृष्ठ का पाठक के लिए कोई विशेष महत्व नहीं होता। इसमें शोधार्थी अध्ययन के विकास में प्राप्त की गई सहायता एवं निर्देशन के लिए संबंधित व्यक्तियों तथा संस्थाओं के प्रति कृतज्ञता व्यक्त करता है। अपने शोध प्रबंध के संदर्भ में शोधकर्ता उन विशिष्ट प्रसंगों, जटिलताओं, अनुभूतियों, मर्यादाओं तथा मूल्य का जिक्र करता है जिन्हें उसने अपने शोध कार्यकाल में अनुभव किया। साथ ही प्राक्कथन के माध्यम से शोधार्थी विभिन्न व्यक्तियों, सहायकों, परिजनों, विश्वविद्यालय के विभिन्न वर्ग के कर्मचारियों तथा विभिन्न स्रोतों एवं प्रसंगों आदि की विस्तृत जानकारी प्रस्तुत करता है तथा उनका आभार प्रदर्शन करता है। ज्यादातर अनुसंधानकर्ता को अपना आभार प्रदर्शन संक्षिप्त, सधे हुए शब्दों में तथा विनम्रता के साथ प्रस्तुत करना चाहिए। शोध छात्र को प्रत्येक आभार प्रदर्शन के बाद स्वयं का हस्ताक्षर करना अनिवार्य है ताकि उसकी हार्दिक विचारों की यथार्थता में भी पुष्टि हो सके।[9]

प्राक्कथन - कभी-कभी एक या दो पृष्ठ लंबा प्राक्कथन आभार स्वीकृति पृष्ठ के बाद ही होता है। इसमें कुछ प्रारंभिक टिप्पणियां तथा कदाचित अनुसंधान के क्षेत्र, उद्देश्य एवं सामान्य स्वरूप का संक्षिप्त विवरण प्रस्तुत किया जाता है।

विषय सूची - एक विकसित विषय सूची का सबसे बड़ा लाभ यह होता है कि पाठक शीघ्रता से व उचितढंग से, क्रमानुसार ले जाने वाले योग्य अंश का चुनाव कर लेता है। अतः इसमें केवल अध्याय के शीर्षक ही अंकित करना वांछनीय नहीं होता वरन अध्यायों के प्रमुख उप-विभागों के शीर्षक को भी सम्मिलित किया जाना चाहिए। कभी-कभी तो उप-विभागों के अंदर प्रकरणों को भी सम्मिलित किया जाता है। इन सभी शीर्षकों, उपशीर्षकों तथा प्रमुख बिंदुओं में कंप्यूटर राइटिंग के विभिन्न फोंट साइज का सहारा लिया जाता है। जिससे कि वह स्पष्ट एवं व्यवस्थित नजर आ सके।[10]

सारणी सूची - विषय सूची के बाद एक नए पृष्ठ पर सारणी सूची तैयार की जाती है। इसमें विभिन्न अध्यायों के अंतर्गत आने वाली सारणीयों एवं आकृतियों की सूची उनके उपयुक्त नंबर के साथ क्रमिक ढंग से अंकित किया जाता है। साथ ही उनके पृष्ट संख्या लिखना चाहिए। यह तालिका सूची शोध ग्रंथ की संपूर्ण सारणीयों की जानकारी तो प्रस्तुत करती ही है, साथ ही यह भी बताती है कि किस अध्याय की विशेष सारणी कौन सी शोध सामग्री प्रस्तुत कर रही है।

ग्राफ एवं चित्र तालिका - ज्यादातर शोध प्रतिवेदन में ग्राफ एवं चित्रों का प्रदर्शन इसलिए किया जाता है ताकि उसमें व्यक्त तथ्यों निष्कर्ष एवं अभिकल्प आदि को सुगमता से व्यक्त किया जा सके तथा उनमें लोगों के लिए अवबोध पैदा किया जा सके। इसमें शोध अध्याय में लगाए जाने वाले ग्राफ एवं चित्रों को समग्र रूप से प्रस्तुत करने के लिए तालिका का निर्माण आवश्यक होता है।

प्रतिवेदन का प्रमुख भाग

विषय प्रवेश - यह प्रारंभिक अध्याय अत्यधिक महत्वपूर्ण है क्योंकि शोध अध्ययन का संपूर्ण वैज्ञानिक प्रारूप इसी में सम्मिलित होता है। इसमें मुख्यतः समस्या के चयन करने में सहायक घटकों का विवरण, अध्ययन के उद्देश्य, समस्या की उत्पत्ति, प्रकृति, आवश्यकता, उपादेयता- शिक्षा के क्षेत्र में, साथ ही शोधार्थी की कर्तव्यनिष्ठा को व्यक्त करने वाली अन्य जानकारी भी सम्मिलित होती है। इसी में परिकल्पनाएं तथा अध्ययन विधि का भी उल्लेख रहता है।

समस्या - हालांकि समस्या का कथन तथा उसका स्पष्टीकरण कभी-कभी विषय प्रवेश के अंतर्गत ही सम्मिलित कर देते हैं। परंतु इसको पृथक इकाई के रूप में स्थान दिया जाना अधिक वांछनीय है। अगर समस्या का कथन से स्पष्ट व तर्क संगत ढंग से किया जाता है तो पाठक को बिल्कुल प्रारंभ से ही अध्ययन के लिए पर्याप्त रूप से स्पष्ट अंतर्दृष्टि प्राप्त हो जाती है। समस्या

[8] लाल जैन और के.सी. वशिष्ठ, पृ.सं. 156.

[9] वही, पृ.सं. 157.

[10] रामपाल सिंह और ओ.पी. शर्मा पृ.सं. 342.

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को विस्तृत रूप से परिभाषित करना चाहिए। जिस क्षेत्र में शोध किया जाता है उसका निश्चित क्षेत्र भली प्रकार निर्धारित किया जाना चाहिए। विभिन्न तथ्यों को प्राप्त करने के लिए चुने गए स्रोतों तथा उनकी प्रकृति और सीमाओं का उल्लेख एवं सार्थकता का उल्लेख करना चाहिए। तकनीकी शब्द एवं पद या जो शब्द एवं पद सामान्य पाठक को अस्पष्ट लगता हो उनकी व्याख्या सावधानीपूर्वक कर देना चाहिए।

संबंधित साहित्य का सर्वेक्षण - किसी भी शोधकर्ता को अपने शोध विषय समस्या से संबंधित अन्य शोधार्थियों द्वारा किए गए अध्ययनों के विषय में नई जानकारी प्राप्त करनी चाहिए। उसे अपनी समस्या से मिलती-जुलती तथा संदर्भित अध्ययनों के परिप्रेक्ष्य को एवं पाठक के लाभ की दृष्टि से उनका मूल्यांकन, सारांश या निष्कर्ष भी या तो विषय वस्तु वाले अध्याय में या समस्या के अध्याय में या अन्य कहीं पृथक अध्याय में अंकित किया जाता है। यही शोधकर्ता को अपने प्रयास को युक्तिसंगतता सिद्ध करने तथा उसके द्वारा चुनी गई समस्या के विषय में अद्यतन ज्ञान, अनुत्तरित प्रश्न तथा उसके समाधान के उपयोगी तत्वों पर बल प्रदान करने का एक अन्य अवसर मिल जाता है।[11]

इसे शोध की रीढ़ भी कहा जाता है क्योंकि समस्या का चयन, परिभाषीकरण, परिकल्पना निर्माण, परिचालन, अध्ययन अभिकल्प तथा परिसीमन आदि में इसका महत्वपूर्ण योगदान रहता है। अतः एक यह एक निष्कर्षात्मक खंड है। जो शोध छात्र में सभी अज्ञात मार्गो को खोलने की कुंजी प्रदान करता है।

प्रक्रिया/प्रदत्त विश्लेषण एवं विवेचन - इसके अंतर्गत शोध से संबंधित परिकल्पना के जांच की विधि तंत्र को प्रस्तुत करना होता है और संबंधित आंकड़ों तथा तथ्यों के संकलन पर प्रकाश डाला जाता है। प्रतिवेदन के इस भाग के कई अंग है-

प्रतिदर्श तथा प्रतिचयन
चरों का मापन
विश्लेषण की विधि

शोध के लिए अध्ययन में प्रयुक्त विकासात्मक प्रक्रिया करने के लिए शोधार्थी को अपने प्रदतों का संग्रहण, संगठन, विश्लेषण आदि करने तथा विवेचन में प्रयुक्त प्रविधियों और उपकरणों का वर्णन करना पड़ता है। इसमें प्रदतों के लिए प्रयुक्त स्रोतों तैयार किए गए या अपनाए गए तथा प्रयुक्त किए गए संग्रहित प्रदतों की प्रकृति उनकी वैधता तथा विश्वसनीयता, इन सभी का वर्णन उपयुक्त एवं स्पष्ट रूप से करना चाहिए। ऐसे प्रदत्त जिनका संकलन तो किया गया था, परंतु अध्ययन में उपयोग नहीं किया गया, विधियां जिनका परीक्षण तो किया गया, परंतु अध्ययन में प्रयोग नहीं किया गया हो - इन्हें भी अपने प्रतिवेदन में स्थान देना चाहिए। प्रतिवेदन तैयार करते समय उनकी उपेक्षा नहीं की जानी चाहिए। संग्रहण, संगठन, विश्लेषण और व्याख्या करने की असामान्य और जटिल प्रविधियों का विवरण विस्तार से किया जाना चाहिए। [12]

यह शोध ग्रंथ का प्राय: तृतीय अध्याय होता है। जिसमें प्रदत्तों के विश्लेषण का उद्देश्यों के अनुरूप विभिन्न तालिकाओं में व्यवस्थित किया जाता है और उनकी विवेचना की जाती है। इसमें विश्लेषित सामग्री का ग्राफ एवं चित्रों की सहायता से प्रदर्शन किया जाता है। यह मुख्यतः प्रायोगिक एवं सर्वेक्षणर्णात्मक अनुसंधानों में पूर्ण रूपेण अनुसंधानकर्ता की सांख्यिकी जागरूकता पर आधारित होती है। शोधार्थी को सांख्यिकीय प्रविधियों का जितना अधिक उत्तम ज्ञान होगा वह उतनी अधिक से सुस्पष्ट ढंग से उनका विश्लेषण व विवेचन कर सकेगा। [13]मौलिक प्रदतों को शोध प्रबंध के मुख्य भाग में स्थान दिया जाए या उन्हें परिशिष्ट में डाला जाए इसका निर्धारण प्रदतों की प्रकृति पर निर्भर करता है। यदि वे अत्यधिक विस्तृत नहीं है और चर्चा को स्पष्ट करने के लिए उनका प्रस्तुत करना आवश्यक है तो उन्हें प्रमुख पाठ्यवस्तु के साथ या पद टिप्पणी में स्थान निश्चित ही देना चाहिए। लेकिन यदि वे अत्यधिक विस्तृत और आकार में बड़े हैं तो उन्हें परिशिष्ट में सम्मिलित किया जाना चाहिए। प्रतिवेदन के मुख्य भाग में परिशिष्ट का संदर्भ अवश्य देना चाहिए।[14]

उपर्युक्त सभी जानकारी कभी-कभी सोपानानुसार अलग-अलग व्यवस्थित उपविभागों में एक अध्याय में प्रस्तुत की जाती है। अन्यथा प्रदतों का संकलन, विश्लेषण व व्याख्या अलग-अलग अध्यायों में भी प्रस्तुत किए जा सकते हैं। जानकारी को प्रस्तुत करने की व्यवस्था जानकारी की मात्रा पर निर्भर करती है, जो कि अध्ययन की विकासात्मकता प्रक्रिया की विभिन्न अवस्थाओं के संबंध में पाठक तक पहुंचानी है।

शोध उपलब्धियां, निष्कर्ष और सामान्य कारण - यह अध्याय संपूर्ण शोध कार्य का सार तत्व प्रस्तुत करता है तथा उद्देश्यों की पूर्ति कहां तक हो चुकी और परिकल्पनाएं सत्य/असत्य सिद्ध हुई है - इनकी पुष्टि करता है। यह अध्याय पूरी तरह से सांख्यिकी रहित विद्या में लिखा जाता है ताकि एक सामान्य शिक्षित व्यक्ति भी अनुसंधान संबंधित निष्कर्ष को पढ़ व समझ सके तथा अपने विचार व्यक्त कर सके। इसमें अध्ययन की खोजें और निष्कर्ष के आधार पर निरूपित समान्यकरण शामिल होते हैं। एक शोधार्थी को इसमें स्पष्ट रूप से संकेत करना चाहिए कि अध्ययन के क्षेत्र में उसका क्या योगदान रहा। यह

[11] वही, पृ.सं. 343.
[12] वही पृ.सं. 343-344.
[13] लाल जैन व के. सी. वशिष्ठ पृ.सं. 158.
[14] रामपाल सिंहऔरओ.पी. शर्मा पृ.सं. 344.

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उल्लेख भी करना चाहिए कि उसके निष्कर्ष किन प्रदतों पर आधारित है। निष्कर्ष में नकारात्मक व सकारात्मक दोनों ही प्रकार के परिणामों को स्थान देना चाहिए। निष्कर्ष का प्रसार स्रोतों की सीमाओं, न्यादर्श, प्रदत्त संकलन और विश्लेषण आदि में प्रयुक्त उपकरणों एवं प्रविधियों के आधार पर ही निर्भर होनी चाहिए। ऐसे निष्कर्ष नहीं देने चाहिए जिनके बारे में शोध द्वारा ही प्राप्त कोई साक्ष्य या आधार प्रस्तुत ना किया गया हो।

उपसंहार, सुझाव एवं संस्तुतियां -

उपयुक्त अध्याय का अनुसरण करते हुए पृथक रूप से या पूर्ण अध्याय के साथ ही हर शोधार्थी अपने शोध संबंधी सुझाव दे सकते हैं। इन सुझावों का क्षेत्र उक्त विषय क्षेत्र में शोधपरक समस्याओं का उल्लेख करता है और उनसे बचाव के उपाय भी बताता है तथा नए शोधार्थियों के लिए नवीन शोध समस्याओं की संस्तुति करता है। इस तरह से यह अध्याय संपूर्ण शोध कार्य के अंतर्गत आने वाले समस्याओं एवं कठिनाइयों की अंतर्दृष्टि पर भविष्यगत शोध के लिए ऊर्जा व प्रेरणा भी प्रदान करता है।

सारांश - किसी भी शोध कार्य के प्रतिवेदन का यह अंतिम चरण होता है। मुख्यतः इसे शोध कार्य की मूल्यांकन तथा मौखिक परीक्षा के समय प्रस्तुत किया जाता है। इसमें शोध प्रतिवेदन के प्रारंभ से लेकर अंतिम अध्याय तक की प्रमुख बातों को सारांश के रूप में प्रस्तुत किया जाता है। इस चरण में सारांश लेखन में निम्न बातों का ध्यान रखना चाहिए-

क्या इसमें संपूर्ण प्रतिवेदन का निचोड़ है? कहीं कोई प्रमुख तथ्य या बातें छूट तो नहीं गई है?

सारांश की भाषा कैसी है? इसे सदैव सरल, बोधगम्य तथा क्रमबद्ध होनी चाहिए।

क्या सारांश संपूर्ण शोध कार्य का ज्ञान कराता है?

संदर्भ विभाग -

पाद टिप्पणियां[15]- हालांकि पाद टिप्पणियां जो प्राय: पृष्ठ के नीचे लिखी जाती हैं, संपूर्ण प्रतिवेदन में प्रयुक्त की जाती हैं, तथापि यह कार्य की दृष्टि से यथार्थ में संदर्भ विभाग का एक अंग मात्र है। वास्तविक पाठ्य वस्तु में उसके अंग के रूप में तो नहीं किंतु अन्य प्रकार से वे कई प्रयोजनों की पूर्ति करते हैं। उनमें प्रमुख दो प्रयोजन निम्नलिखित हैं -

- लेखक द्वारा किए गए उद्धरणों के स्रोत, व्याख्या तथा अनुवाद या विचार ग्रहण को स्वीकार करना।
- ऐसे व्याख्यात्मक कथनों, उद्धरणों तथा पूरक विषय वस्तुओं को प्रस्तुत करना जो महत्वपूर्ण तो होती हैं किंतु जिन्हें शोध प्रबंध के प्रमुख भाग में रखने से पाठ्यवस्तु के प्रवाह में व्यवधान उत्पन्न होने का डर होता है।

संदर्भ ग्रंथ सूची[16]- सुसंगठित संदर्भ ग्रंथ सूची जिसके अंतर्गत संबंधित साहित्य के सभी संदर्भ सम्मिलित होते हैं, शोध प्रबंध के एक प्रमुख अंग के रूप में होती हैं। संदर्भ ग्रंथ सूची प्रतिवेदन के स्तर का संकेत करती है तथा उन लोगों को सहायता प्रदान करती है जो कि समस्या का आगे विकास करना चाहते हैं या समस्या के अन्य पक्ष का अध्ययन करना चाहते हैं।

प्राय: शोधार्थी ग्रंथ सूची में संदर्भों को वर्णमाला क्रम के अनुसार संगठित करते हैं। परंतु कभी-कभी इस व्यवस्था को प्रकरण के अनुसार, भौगोलिक स्थिति के अनुसार या अन्य किसी योजना के अनुसार प्रस्तुत करना अधिक उपयुक्त समझा जाता है। लंबी संदर्भ ग्रंथ सूची में संदर्भों को पुस्तक, सामयकी प्रतिवेदन बुलेटिन आदि में विभाजित कर दिया जाता है। व्याख्या युक्त संदर्भग्रंथ सूची जिनमें की संदर्भ तथा प्रकरणों की प्रकृति का स्पष्ट अर्थ दिया होता है संदर्भ ग्रंथ सूची की उपयोगिता और भी बढ़ती जाती है।[17]

इस संदर्भ ग्रंथ सूची में केवल उसे सभी प्रकाशित अप्रकाशित संबंधित साहित्य को सम्मिलित करना चाहिए जिसका प्रतिवेदन में कहीं भी उल्लेख अथवा संदर्भ हुआ है। इसके अलावा किसी भी अन्य ग्रंथ आदि को स्थान नहीं देना ही उचित है।

परिशिष्ट - परिशिष्ट वह सहायक अंग है जिसका प्रयोग अध्ययन का संपूर्ण चित्र प्रस्तुत करने में सहायक होता है। इसके अंतर्गत पद्धतों को संकलित करने हेतु प्रयुक्त सभी प्रकार के पत्र, प्रश्नावलियां, परीक्षण या उपकरण सम्मिलित होते हैं। तालिकाओं को बहुधा परिशिष्ट में स्थान दिया जाता है क्योंकि इससे उन व्यक्तियों को सहायता मिलती है जो अध्ययन का विश्लेषण अधिक गहनता के साथ करना चाहते हैं। परिशिष्ट में किसी सामग्री को प्रस्तुत करते समय यह सावधानी बरतनी चाहिए कि जिस रूप में इनका उपयोग अध्ययन ने किया गया हो ठीक उसी रूप में यह परिशिष्ट में होनी चाहिए।अनावश्यक सामग्री इसमें नहीं भरनी चाहिए। बस वे ही बातें जो शोध को समझने में सहायक होते हैं। परंतु जिनको शोध प्रबंध में डालने में प्रवाह में बाधा आती है या जो मुख्य बात को समझने में बाधक हो सकती है उन्हें इसमें रखा जाता है। इसे शोध प्रबंध का वह पाठक जिसे इसमें रुचि है वह देख सकते हैं।[18]

[15] वही, पृ.सं. 345.
[16] वही, पृ.सं. 345.
[17] वही, पृ.सं. 345.
[18] वही, पृ.सं. 346.

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अनुसंधान में भाषा का उपयोग

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सारांश

अनुसंधान में भाषा का उपयोग अत्यंत महत्वपूर्ण है क्योंकि भाषा ही विचारों और तथ्यों को संप्रेषित करने का प्रमुख साधन है। शोधकर्ता अपने उद्देश्य, परिकल्पना, पद्धति, निष्कर्ष और सुझावों को स्पष्ट एवं प्रभावी ढंग से भाषा के माध्यम से प्रस्तुत करता है। अनुसंधान प्रतिवेदन में भाषा न केवल शुद्ध, सरल और सुसंगत होनी चाहिए बल्कि वस्तुनिष्ठ और तर्कसंगत भी होनी चाहिए। भाषा का चयन विषय की प्रकृति और शोध के स्तर के अनुसार किया जाता है। अकादमिक लेखन में सटीकता, स्पष्टता और औपचारिकता का विशेष ध्यान रखना आवश्यक होता है, जिससे पाठक को विषय को समझने और निष्कर्ष तक पहुँचने में सुविधा हो। इस प्रकार भाषा अनुसंधान को वैज्ञानिक स्वरूप प्रदान करती है और उसके परिणामों को व्यापक स्तर पर स्वीकार्य एवं उपयोगी बनाती है।

***मुख्य शब्द**: अनुसंधान, भाषा, प्रतिवेदन, सटीकता, स्पष्टता, औपचारिकता*

भूमिका – खोज एवं आविष्कार मनुष्य की मूल प्रवृत्तियां है । मनुष्य ने अपने भौतिक एवं बौद्धिक जीवन को इन्हीं मूल्य प्रवृत्ति के विकास से समृद्ध बनाया है और अपनी क्षमताओं को भी परखा है। आज के समय में हो रहे नवीन शोध सत्य को स्थाई बना रहे हैं और अपने युग के एक अलग सत्य को दुनिया के सामने रख रहे हैं। यह सारा संभव हो रहा है मनुष्य के खोज वृत्ति के कारण और यही खोजी वृत्ति हमें उसे करती है की खोज या शोध क्या है?

इसी शोध को अनुसंधान का नाम प्राप्त हुआ अनुसंधान इस संकल्पना को स्पष्ट करते हुए S.N गणेशन अपनी बात रखते हैं कि अनुसंधान अथवा शोध उस प्रक्रिया या कार्य का नाम है जिसमें बौद्ध पूर्वक पर्यटन से तथ्यों का संलग्न कर सूक्ष्म ग्राही एवं विवेचन बुद्धि से उनका अवलोकन विश्लेषण करके नए तथ्यों या सिद्धांतों का उद्घाटन किया जाता है। दूसरे शब्दों में पहले आज मनुष्य वस्तुओं तथ्यों या सिद्धांतों के आविष्कार की बौद्ध पूर्वक क्रिया ही अनुसंधान है। सिद्धांतों के आविष्कार की यह बौद्ध पूर्वक क्रिया ही आज हमें अनुसंधान के विभिन्न चरणों में क्षेत्र में अपनी भूमिका निभाती दिखाई देती है फिर यह विज्ञान अनुसंधान हो तकनीकी अनुसंधान हो मानवीय अनुसंधान हो सामाजिक सांस्कृतिक साहित्यिक या भाषिक अनुसंधान।

भाषा– अनुसंधान परिचय – हम भाषिक अनुसंधान की बात करेंगे भाषिक अनुसंधान के भी अनेक पहलू हैं। इन पहलुओं में से हम केवल भाषा अनुसंधान के सांस्कृतिक पहलुओं पर बात करेंगे जिसे शोध प्रपत्र में आगे सांस्कृतिक संदर्भ कहा गया है तो इस सुधा लेख में हम देखेंगे कि क्या भाषा अनुसंधान में सांस्कृतिक संदर्भ अपना महत्व रखते हैं? वह कौन से सांस्कृतिक संदर्भ है जिसकी सहायता से भाषा अनुसंधान में मदद मिल सकती है। क्या उनकी वजह से प्रचलित सत्य बदल सकते हैं? ऐसे अनेक प्रश्नों के उत्तर पाने का छोटा सा प्रयास है यह शोध– प्रपत्र।

भाषा अनुसंधान केवल भाषा का ही नहीं वह संस्कृति का भी अनुसंधान होता है। संस्कृति का अभिन्न अंग भाषा है और भाषा का अभिन्न अंग संस्कृति है। दोनों में से एक का नष्ट होना दूसरे की मृत्यु है। इसलिए इस सुधा लेख में भाषा और संस्कृति दोनों को एक दूसरे के पूरक रूप में देखकर विचार किया जाने वाला है। भाषा पर अनुसंधान करते समय भाषा के अंगों को समझना जरूरी होता है जिसमें स्वर व्यंजन शब्द शब्दों की रचना वाक्य निर्माण वाक्य के अंग पद्य रूप रचना अर्थ प्राप्ति अर्थ परिवर्तन व्याकरण लिपि आदि का समावेश है। इन सभी को सामने रखकर भाषा अनुसंधान किया जाता है। भाषा अनुसंधान के अंगों को समझने के बाद जरूरी हो जाता है की संस्कृति और सांस्कृतिक संदर्भो को समझना। संस्कृति का स्वरूप स्पष्ट करते हुए जवाहरलाल नेहरू रामधारी सिंह दिनकर के संस्कृति के चार अध्याय इस किताब की प्रस्तावना में लिखते हैं संस्कृति है क्या? शब्दकोश उलटने पर इसकी अनेक परिभाषाएं मिलती हैं। एक बड़े लेखक का कहना है कि संसार भर में जो भी सर्वोत्तम बातें जानी या कहीं गई हैं उनसे अपने आप को परिचित करना संस्कृति है एक दूसरी परिभाषा में यह कहा गया है की संस्कृति शारीरिक या मानसिक शक्तियों का प्रशिक्षण दृष्टि कारण या विकास अथवा उससे उत्पन्न अवस्था है या मन आचार्य अथवा रुचियां की परीकृष्टि या शुद्ध है या सभ्यता

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का भीतर से प्रकाशित हो उठाना इस अर्थ में संस्कृत कुछ ऐसी चीज का नाम हो जाता है जो बुनियादी और अंतरराष्ट्रीय है। इससे स्पष्ट होता है की संस्कृति में मूर्त और अमूर्त दोनों का समावेश होता है। मूर्त भौतिक जगत से संबंधित होता है तो अमूर्त मानसिक जगत से संबंधित होता है जिसे हम मूल्य कहते हैं।

संस्कृति के अंगों संदर्भों को स्पष्ट करें तो यह कह सकते हैं कि जीवन आचरण से संबंधित सकारात्मक बात ही संस्कृति है। यह सकारात्मक बातें स्थूल रूप में इस प्रकार हो सकती हैं संबंधित समूह के आचार विचार, रहन-सहन, खान रीति– रिवाज, परंपराएं, पर्व, उत्सव, त्यौहार, संस्कार, लोक कथाएं, लोकगीत, लोकोक्तियां, लोकधारणाएं, ललित कलाएं, आध्यात्मिक धारणाएं, देवी देवताएं, धर्म ग्रंथ, मानवीय मूल आदि।

भाषा अनुसंधान के अंगों और संस्कृति के अंगों के संदर्भों को समझने के बाद देखते हैं की भाषा अनुसंधान में सांस्कृतिक संदर्भ अपनी भूमिका कहां तक निभाते हैं।

भाषा का सिद्धांत — भाषा अनुसंधान के सांस्कृतिक संदर्भों को देखते समय सबसे पहले संदर्भ हमारे सामने आता है भाषा उत्पत्ति से संबंधित सिद्धांतों में भाषा उत्पत्ति के बारे में सही-सही वैज्ञानिक सिद्धांत जब तक स्थापित नहीं हुआ किसी भी विद्वान ने भाषा की उत्पत्ति निश्चित रूप से ऐसी ही हुई है या नहीं बताया तो सिद्धांत स्थापित हुए हैं। उसमें देवी उत्पत्ति का सिद्धांत, विकासवादी सिद्धांत निर्णय सिद्धांत, धातु सिद्धांत, अनुकरण सिद्धांत, मनोभावव्यक्ति सिद्धांत, आदि का समावेश है।

ऊपर दिए गए सिद्धांतों में से पहले देवी सिद्धांत देवी उत्पत्ति का सिद्धांत और अंतिम संगीत सिद्धांत तो संस्कृति से जुड़े मुखर संदर्भ है जो भाषा अनुसंधान में अपना महत्वपूर्ण स्थान रखते हैं। यह सिद्धांत केवल किसी एक ही भाषा की उत्पत्ति से संबंधित नहीं है इसके बारे में भोलानाथ तिवारी कहते हैं संस्कृत भाषा तथा उसके व्याकरण के मूलाधार परिणीति के 14 सूत्र शिव के डमरु में से निकले माने जाते हैं। बौद्ध पाली को भी इसी मूल इसी प्रकार मूल भाषा मानते रहे हैं और उनका विश्वास रहा है की भाषा अनादि काल से चली आ रही है। जैन लोग तो संस्कृत पंडितों और पौधों से भी चार कदम आगे हैं। उनके अनुसार तो 'अर्धमार्गी' केवल मनुष्यों की ही मूल भाषा नहीं है। बल्कि सभी जीवो की मूल भाषा है। ईसाई और उनमें भी प्रमुखता कैथोलिक लोग (जिसमें उनका धर्म ग्रंथ लिखा गया है) को संसार की सभी भाषाओं की जननी मानते हैं। मुसलमान लोग कुरान को खुदा का कलाम मानते हैं। मिस्र में भी वहां के प्राचीन लोगों का अपनी भाषा के संबंध में कुछ ऐसा ही विश्वास था इन सारी बातों से स्पष्ट होता है की भाषा अनुसंधान में संस्कृति से जुड़े या संदर्भ अपना महत्व रखते हैं।

सांस्कृतिक संदर्भ — भाषा उत्पत्ति के सिद्धांतों के समान ही भाषिक परिवारों के नाम भी हमें संस्कृति के सांस्कृतिक संदर्भों से जोड़ देते हैं। विद्वानों ने संस्कृति को केंद्र में रखकर ही भाषिक परिवारों का नामकरण किया है ।वह जैसे बुशमैन बंधु हेमेटिक सेमेटिक का सेन चीनी द्रविड़ ऑस्ट्रो एशियाई जापानी कोरिया भारतीय आदि इन भाषा परिवारों का अनुसंधान हम उनकी संस्कृति को समझे बगैर नहीं कर सकते। इन परिवारों का अध्ययन अनुसंधान करते समय हमें तुलनात्मक भाषा अनुसंधान का सहारा लेना पड़ता है। भाषिक परिवारों की जड़ तक पहुंचाने की दृष्टि से भी संस्कृत संदर्भ अपना महत्व रखते हैं।

जब भाषा का तुलनात्मक अनुसंधान किया जाता है और एक जैसे शब्द दूसरी भाषा में मिलने लगते हैं तो उनके कर्म की खोज में सांस्कृतिक संदर्भ हमारी मदद करते हैं। इस अनुसंधान में देखा जाता है कि क्या उनके संस्कृत में भी सामने है? अगर सामने है तो वहां उन शब्दों का अर्थ है? क्या यहां भी वही अर्थ है? ऐसे अनेक सवालों के उत्तर हमें संस्कृत संदर्भों के आधार पर मिल सकते हैं। हिंदी उर्दू बंगला मराठी गुजराती उड़िया पंजाबी असमी गोरखाली और कश्मीरी आदि भाषण आर्य भाष्य हैं। जो संस्कृत की परंपरा से उत्पन्न हुई है। भारत से बाहर आर्य भाषाओं का संबंध हिंद जर्मन भाषा समूह से है। कहते हैं! हिंद जर्मन भाषाएं बोलने वाले लोग किसी समय एक ही जगह रहते थे और इस कबीले की भाषा से संसार की समस्त आर्य भाष्य निकली हैं। हिंदू जर्मन धारी परिवार की भाषाओं में जो सामान्य है उसी से यह अनुमान किया जा गया है कि प्रयास समस्त समस्त यूरोप के लोग इस परिवार से निकले हैं। जिस परिवार के भारतीय आर्य थे और यह अनुमान लगाने में सांस्कृतिक संदर्भ मदद करते हैं ईशा से 3000 वर्ष पूर्व भूमध्य सागर से लेकर हिंदू की घाटी तक जो शब्ध्यता फैली हुई थी। वह बहुत कुछ सामान थीद्रविदों में तो मात्र मूलक परंपरा है वह ईमेल लाइट लोगों में भी थी इसी प्रकार सिर्फ पूजा और देवी माता की पूजा भी उन लोगों में प्रचलित थी। सुमेरिया में देवदासी जैसी भी कोई प्रथा थी सुमेरिया में एक ऐसे देवता की भी पूजा चलती थी। जिनका वाहन बैल था। रामधारी सिंह दिनकर की इन धारणाओं से श्री जयचंद्र विद्यालंकार और डॉक्टर सुनीति कुमार चटर्जी की धारणाएं भी मेल खाती हैं। सन 1986 में सर विलियम जॉन में यह स्थापना रखी है की यूनानी लतानी गोथिक कैथोलिक फारसी और संस्कृत यह सभी भाषाएं किसी एक ही भाषा से विकसित हुई है।

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सूक्ष्म दृष्टि से अगर हम भाषा अनुसंधान के सांस्कृतिक संदर्भों की ओर देखे तो भाषा की संरचना हमारा ध्यान खींचती है। भाषा की सबसे लघुतम इकाई स्वन या ध्वनि को माना जाता है। जिसमें स्वर और व्यंजन सम्मिलित होते हैं। जब हमें स्वन के निर्माण और उसके विकसित की खोज लेनी है तो अन्य शोध संदर्भों के साथ-साथ सांस्कृतिक संदर्भों की भी मदद लेनी पड़ती है। आज हम स्वन के उच्चारण का एकदम प्रारंभिक रूप क्या था यह कहना तो संभव है लेकिन स्वन के लिखित रूप में के बारे में कुछ कहा जा सकता है कि उनका आरंभिक रूप कैसा था देवनागरी का विचार करें तो और इस स्वन का स्वरूप हमें भारतीय संस्कृति ए से जुड़ा हुआ लगता है। हाथनूर के शिलालेख का परिचय देते हुए प्रोफेसर रघुनाथ महारुद्र बहुत सारी अपनी किताब साहित्य आणि संशोधन संशोधन में स्पष्ट करते हैं कि इस शिलालेख की लिपि देवनागरी है अक्षरों की लिखावट 12वीं सदी के अन्य शिलालेखों जैसी ही है इस शिलालेख के दो और चा इन अक्षरों को छोड़ दें तो बाकी के अक्षरों की लिखावट आधुनिक लिखावट जैसी है। उपरोक्त उदाहरण को सामने रखकर हम कह सकते हैं कि ड्ढ जैसी अनेक ध्वनियां संस्कृति से जुड़ी हुई है जो भाषिक स्वर्ण बनी होगी।

भाषा में सबसे अर्थपूर्ण लघुतम इकाई कहे जाने वाले शब्दों के अनुसंधान के बारे में जब विचार करते हैं तो अनेक शब्दों के निर्माता और विकास संस्कृति से संबंधित होने का सत्य प्राप्त होता है। फिर भी वह हिंदी का आवेश ना हो फ्रेंच का बैंक हो या अंग्रेजी का बजट हो ऐसे शब्दों की उत्पत्ति ढूंढने के लिए यहां की संस्कृति को समझना आवश्यक होता है। जैसे गवेषणा शब्द की निर्मिती गाय को खोजने से हुई है। बैंक सत्य की निर्मिती इटली के यहूदी साहूकारों के व्यापारिक संस्कृति से जुड़ी है वह बेंच पर बैठकर व्यापार करते थे तो बैंच से बैंक बना है। ब्रिटिश संसद में जब बजट पेश किया जाता था तो चमड़े के बैग लेकर जाने की संस्कृति थी उसे बैग को उसे बैग को बजट कहते थे ऐसे आने का अनेक संदर्भ है जो संस्कृति से जुड़े हुए हैं। समय-समय की प्रचलित संस्कृतियों का आधार लेकर भी शब्दों के प्रयोग को समझा जा सकता है। वैदिक संस्कृति के समय में जीव आत्मा जगत जैसे शब्दों का प्रबल था जो बुद्ध के समय में सेल अहिंसा शांति जैसे शब्दों का प्रयोग प्रयोग ज्यादा था ऐसी स्थितियों को समझने के लिए भी सांस्कृतिक संदर्भों की मद्द लेनी पड़ती है।

शब्दों के अर्थ परिवर्तन पर जब हम विचार करते हैं तब भी संस्कृति हमारी मद्द करते हैं। जैसे गोभी का कोबी होना पखाने का दिशा मैदान होना। असुर मुसलमान और हिंदू का अर्थ बदलना असुर का सबसे पहले हमारे यहां देवता अर्थ था। उस समय तक संभव होता है ईरान वालों के प्रति हम लोगों के विचार बुरे नहीं थे। किंतु जो ही विचार बदले हमने उसे शब्द का अर्थ राक्षस इसलिए कर दिया कि वह नाम ईरानियन के प्रधान देवता अघर माजदा का था यही बात यहां भी हुई हमारे देश शब्द का अर्थ उन लोगों ने अपने यहां असुर या राक्षस कर लिया। सांप्रदायिक दंगों तथा पाकिस्तान के बंटवारे के समय मुसलमान शब्द का अर्थ यहां कुछ गिर गया था। हिंदू शब्द की यही दशा पाकिस्तान में अभी है। सनातनी हिंदुओं में इसी के अर्थ की भी यही दशा है। फारसी में हिंदू का अर्थ बहुत पहले गुलाम था ।फिर और नापाक आदि है ऐसे अनेक शब्द हैं जिनके अर्थ और अर्थ परिवर्तन के कारण अर्थ परिवर्तन की दिशाएं समझने के लिए सांस्कृतिक संदर्भों का आधार लेना होता है।

वाक्य रचना में कर्ता , कर्म ,क्रिया, सर्वनाम, धातु, लिंग, वचन, कारक, उपसर्ग, प्रत्यय, समास, संधि आदि का महत्वपूर्ण स्थान होता है। इनके प्रयोग की खोज में भी सांस्कृतिक संदर्भ हमारी मदद करते हैं। हर एक समूह की संस्कृति होती है ।और वह समूह अपनी संस्कृति के अनुसार भाषा की वाक्य रचना करता है। हिंदी बोलने वाला समूह कर्ता , कर्म ,क्रिया का प्रयोग करता है ।अंग्रेजी बोलने वाला समूह कर्ता , कर्म,क्रिया का प्रयोग करता है। हिंदी बोलने वाला पिता को आप कहेगा अपने मित्र को तुम कहेगा और बेटे को तू कहेगा ।किंतु अंग्रेजी बोलने वाला व्यक्ति सबके लिए केवल you का ही प्रयोग करेगा। इसका मतलब यह नहीं की अंग्रेजी बोलने वाला अपने पिता की अवहेलना करता है। वह भी उतना ही सम्मान करता है जितना हिंदी बोलने वाला। फिर ऐसा क्यों ?इस सवाल का उत्तर पाने के लिए हमें मदद लेनी होती है संस्कृति संदर्भों की शब्द संगठन को जोड़ने वाली संस्कृति संदर्भों की बात करते हुए पीयूष कुमार श्रीवास्तव प्रोफेसर दिलीप सिंह के विचारों को व्यक्त करते हैं कि संसार की भाषा की संसार की किसी भी भाषा में रिश्ते नाते की शब्दावली शब्दावलियों का संगठन और विश्लेषण लिंग रक्त संबंध और विवाह संबंधों के आधार पर ही किया जाता है। इस आधार पर हम कह सकते हैं कि शब्द संरचना और भाषा व्यवहार के पीछे सांस्कृतिक संदर्भ जुड़े होते हैं।

बोली भाषा के अनुसंधान के लिए तो सांस्कृतिक संदर्भ प्राथमिक संदर्भ स्रोत होते हैं ।विश्व में अनेक बोलियां बोली जाती है। समूह जाति जनजाति प्रदेश आदि के अनुसार बोलियां का वर्गीकरण किया जाता है। इस वर्गीकृत बोलियां पर अगर अनुसंधान करना हो तो सबसे पहले हमें उनकी संस्कृति लोक संस्कृति को समझना पड़ता है उनके उत्सव, त्योहार पर उसमे शामिल होना पड़ता है। उनके लोकगीतों, लोक विश्वासों, लोक कलाओं, लोकोक्तियां, ललित कलाओं उनके आचार् विचारों को समझना पड़ता है ।तब जाकर हम उनकी बोली भाषा का अध्ययन अनुसंधान कर सकते हैं। बोडो समाज समूह से निकली गारो भाषा का उदाहरण

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ले लेते हैं। गारो भाषा और संस्कृति की विरासत समृद्ध है और वह भाषिक वाचन परंपरा के रूप में ही हस्तांतरित होती आई है। गारो भाषा की विविध बोलियां का शब्द भंडार भी सम्मिलित है। जिसे आज तक उसे शब्दबद्ध नहीं किया जा सकता है ।इसकी अतिरिक्त टोल कछिया (पहेलियां) कट्टा में आप (लोकोक्तियां) कट्टा रोंगछु (पारंपरिक कथाएं) मां अंबे पारंपरिक इतिहास आदि मौखिक परंपरा द्वारा हस्तांतरित साहित्य इस मौखिक साहित्य को समझने के लिए और बोली भाषा पर अनुसंधान करने के लिए उनके संस्कृत संदर्भों को समझना आवश्यक होता है।

भाषा में मिथकों, प्रतिको, कहावतें, मुहावरों, घोषणाओं, सूक्तियां आदि का भी महत्वपूर्ण स्थान होता है। जब इस पर शोध की दृष्टि से विचार किया जाता है। तो अनायास ही हमें परंपरा परंपराओं रूढ़ियों और पौराणिक संदर्भों का आधार लेना होता है। एकलव्य, कर्ण के मिथक को समझने के लिए हमें महाभारत कालीन संस्कृति को समझना आवश्यक होता है। हर हर महादेव, बम बम भोले, जो बोले सो निहाल! जैसे घोष वाक्य को समझने के लिए हिंदू और सिख संस्कृति का आधार लेना पड़ता है। साथ ही पूरे युधिष्ठिर के अवतार, भाग्य के सबसे बड़े साथी, लक्ष्मी के पति, धर्मावतार जैसी कहावतें को मुहावरों को समझने के लिए संस्कृति संदर्भों का आधार लेना पड़ता है।

भाषा के सामान्यतः दो प्रमुख अंग माने जाते हैं– एक है मौखिक और दूसरा है लिखित। इसमें से दूसरा लिपि कहलाता है। लिपि अनुसंधान में ही सांस्कृतिक संदर्भ अपनी और से मदद करते हैं। आज भी लिपि के उद्भव के बारे में शिलालेखों को संदर्भ माना जाता है। साथ ही देव देवताओं के चित्र देव देवताओं संबंधित धारणाओं, त्योहारों की झांकियां के चित्र, मूर्ति कला, मंदिर स्थापना, काल आदि को लिपि उद्भव एवं विकास के अध्ययन के साधन माने जाते हैं जो संस्कृति के अंग माने जाते हैं। साथ ही भाषा शैलियों के अनुसंधान में भी सांस्कृतिक संदर्भ अपना विशिष्ट स्थान रखते हैं।

निष्कर्ष — संक्षेप में हम कह सकते हैं की भाषा अनुसंधान के अनेक संदर्भ में सांस्कृतिक संदर्भ अपना महत्वपूर्ण स्थान रखते हैं। भाषा का अनुसंधान करने वाला व्यक्ति प्रत्यक्ष या अप्रत्यक्ष रूप से संस्कृति संदर्भों का आधार लेता ही है। कभी वह भाषा उत्पत्ति, भाषा विकास, स्वप्न ,शब्द ,पद की खोज में संस्कृति का आधार लेता है तो कभी अर्थ प्राप्ति, वाक्य संरचना, प्रतिको, प्रतिबिंबो, कहावतें, मुहावरों के संबंध में कभी तो कभी बोली भाषा की अनुसंधान में सांस्कृतिक संदर्भों का आधार लेता है। संस्कृति संदर्भों का आधार लिए बिना भाषा का अनुसंधान पूरा नहीं हो सकता और अगर हम उसे पूरा कहे तो वह "युधिष्ठिर के अर्धसत्य" जैसा होगा जैसा होगा।

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उन्नत शोध पद्धति की वर्तमान स्थिति

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सारांश

वर्तमान समय में उन्नत शोध पद्धति का महत्व तेजी से बढ़ रहा है क्योंकि यह विज्ञान, समाज और प्रौद्योगिकी से जुड़े अनुसंधान को अधिक सटीक और विश्वसनीय बनाती है। उन्नत शोध पद्धति में आंकड़ों के विश्लेषण के लिए सांख्यिकी, मशीन लर्निंग, आर्टिफिशियल इंटेलिजेंस, और क्वांटिटेटिव तथा क्वालिटेटिव तरीकों का उपयोग किया जाता है। आजकल शोधकर्ता बड़ी मात्रा में जटिल और विविध डेटा सेट्स को समझने और विश्लेषण करने के लिए उन्नत टूल्स और सॉफ़्टवेयर का इस्तेमाल कर रहे हैं। इन टूल्स की मदद से डेटा मॉडलिंग, भविष्यवाणी करना, और ट्रेंड का विश्लेषण करना आसान और सटीक हो गया है। इसके अलावा, कम्प्यूटर सिमुलेशन और मॉडलिंग का भी बढ़-चढ़ कर उपयोग हो रहा है, जिससे शोधकर्ता बिना भौतिक परीक्षण के संभावित परिणामों का अध्ययन कर सकते हैं। वर्तमान शोध में अलग-अलग क्षेत्रों की तकनीकों और सिद्धांतों का एक साथ उपयोग करना भी प्रचलित हो रहा है, जिसे इंटरडिसिप्लिनरी अप्रोच कहते हैं। इससे न सिर्फ शोध की गुणवत्ता बढ़ती है, बल्कि नए विचार और खोजें भी उभर कर आती हैं। कुल मिलाकर, उन्नत शोध पद्धति ने अनुसंधान के क्षेत्र में बड़े बदलाव किए हैं। इसके जरिए कठिन समस्याओं को हल करने की क्षमता बढ़ी है और शोध के परिणाम अधिक विश्वसनीय, प्रभावशाली और समाज के लिए उपयोगी साबित हो रहे हैं।

***मुख्य शब्द**: उन्नत शोध पद्धति, सांख्यिकी, मशीन लर्निंग, आर्टिफिशियल इंटेलिजेंस, क्वांटिटेटिव विधि, क्वालिटेटिव विधि, डेटा मॉडलिंग, ट्रेंड विश्लेषण, कम्प्यूटर सिमुलेशन, इंटरडिसिप्लिनरी अप्रोच, शोध गुणवत्ता, डेटा सेट्स, भविष्यवाणी, शोध उपकरण, अनुसंधान*

प्रस्तावना

उन्नत शोध पद्धतियाँ हाल के दशकों में तेजी से विकसित हुई हैं और यह आधुनिक वैज्ञानिक खोज का महत्वपूर्ण हिस्सा बन गई हैं। डेटा और कम्प्यूटिंग की शक्ति में वृद्धि के साथ, शोधकर्ताओं ने बड़े और जटिल डेटा सेट्स का विश्लेषण करने के लिए नए टूल्स और तरीकों को अपनाया है। यह बदलाव न केवल कंप्यूटर विज्ञान और डेटा एनालिटिक्स जैसे क्षेत्रों को प्रभावित कर रहा है, बल्कि विभिन्न तकनीकों के संयोजन से बहु-विषयक शोध को भी प्रोत्साहित कर रहा है। आजकल, शोध में आर्टिफिशियल इंटेलिजेंस (AI) और मशीन लर्निंग (ML) जैसे तकनीक-आधारित तरीकों का उपयोग बढ़ रहा है, जिससे स्वचालन और भविष्यवाणी-आधारित अनुसंधान के क्षेत्र में अधिक सटीकता और दक्षता आ रही है।

शोध पद्धतियों का विकास

प्रारंभिक शोध पद्धतियाँ

पारंपरिक शोध पद्धतियाँ मुख्य रूप से मैन्युअल डेटा संग्रह, सांख्यिकीय सैंपलिंग और परिकल्पना परीक्षण पर आधारित थीं। इन पद्धतियों में पारंपरिक सांख्यिकीय उपकरणों जैसे रिग्रेशन एनालिसिस और संभाव्यता सिद्धांत का उपयोग किया जाता था। हालाँकि ये पद्धतियाँ बुनियादी थीं, लेकिन वे बड़े डेटा सेट्स को संभालने और वास्तविक समय में भविष्यवाणियाँ करने की क्षमता में सीमित थीं। पारंपरिक पद्धतियों में स्वचालन की कमी और वास्तविक समय में फीडबैक की अनुपस्थिति के कारण शोध प्रक्रिया धीमी और समय लेने वाली होती थी।

आधुनिक शोध पद्धतियाँ

वर्तमान समय में उन्नत शोध पद्धतियाँ स्वचालन, आर्टिफिशियल इंटेलिजेंस, और मशीन लर्निंग का उपयोग करके बड़े डेटा सेट्स को अधिक प्रभावी ढंग से प्रबंधित और प्रोसेस करती हैं। ये तकनीकें शोधकर्ताओं को पैटर्न की पहचान करने, भविष्यवाणी मॉडल बनाने, और कम से कम मानवीय हस्तक्षेप के साथ परिणामों की भविष्यवाणी करने की क्षमता प्रदान करती हैं। उदाहरण के लिए,

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मशीन लर्निंग एल्गोरिदम अब अतीत के डेटा के आधार पर भविष्यवाणियाँ कर सकते हैं, जिसके लिए विशेष प्रोग्रामिंग की आवश्यकता नहीं होती।

उन्नत शोध पद्धति की विशेषताएँ

सांख्यिकी और डेटा विश्लेषण

वर्तमान उन्नत शोध पद्धतियाँ जटिल डेटा सेट्स को समझने के लिए परिष्कृत सांख्यिकीय मॉडल्स को एकीकृत करती हैं। सांख्यिकीय विश्लेषण विभिन्न क्षेत्रों में शोध का मुख्य आधार है, यह सुनिश्चित करता है कि जो निष्कर्ष निकाले जाते हैं वे अनुभवजन्य साक्ष्यों पर आधारित हों। R और Python जैसे उपकरणों के उपयोग से शोधकर्ता अब इन प्रक्रियाओं को स्वचालित कर सकते हैं, जिससे डेटा विश्लेषण तेज और अधिक विश्वसनीय हो गया है।

मशीन लर्निंग और आर्टिफिशियल इंटेलिजेंस

मशीन लर्निंग और आर्टिफिशियल इंटेलिजेंस (AI) शोध पद्धतियों में क्रांतिकारी बदलाव लाने वाले उपकरण बन गए हैं। ये तकनीकें डेटा-आधारित निर्णय लेने की क्षमता प्रदान करती हैं और भविष्य के रुझानों और व्यवहारों की भविष्यवाणी में मदद करती हैं। AI मॉडल्स प्राकृतिक भाषा प्रसंस्करण और छवि पहचान को भी सरल बनाते हैं, जिससे शोध की परिधि पारंपरिक डेटा विश्लेषण से परे बढ़ जाती है।

कंप्यूटर सिमुलेशन और मॉडलिंग

कंप्यूटर सिमुलेशन आधुनिक शोध में अत्यधिक महत्वपूर्ण हो गए हैं। सिमुलेशन शोधकर्ताओं को विभिन्न परिदृश्यों के साथ प्रयोग करने और भौतिक परीक्षणों की आवश्यकता के बिना परिकल्पनाओं का परीक्षण करने की अनुमति देता है, जिससे समय और संसाधनों की बचत होती है। MATLAB और Simulink जैसे मॉडलिंग टूल्स का उपयोग इंजीनियरिंग, भौतिकी, और यहां तक कि सामाजिक विज्ञान में भी किया जाता है, जिससे संभावित परिणामों का विस्तृत विश्लेषण किया जा सकता है।

इंटरडिसिप्लिनरी अप्रोच का महत्व

इंटरडिसिप्लिनरी अप्रोच विभिन्न विषयों के सिद्धांतों और विधियों को एक साथ लाकर उन समस्याओं के लिए नए समाधान प्रदान करती है, जो किसी एक क्षेत्र के माध्यम से हल नहीं की जा सकती थीं। इस दृष्टिकोण से शोध की गुणवत्ता न केवल बढ़ती है, बल्कि नए और नवीन समाधान भी निकलकर सामने आते हैं। पर्यावरणीय मुद्दों, स्वास्थ्य संकटों, और स्थायी विकास जैसी जटिल समस्याओं को हल करने में इस दृष्टिकोण ने शोधकर्ताओं को अधिक गहन समाधान प्राप्त करने में मदद की है।

डेटा सेट्स और भविष्यवाणी

बिग डेटा का उभार शोध के विभिन्न क्षेत्रों में क्रांतिकारी बदलाव लेकर आया है। शोधकर्ताओं के पास अब बड़े, विविध और गतिशील डेटा सेट्स तक पहुँच है, जिनका विश्लेषण करके रुझानों और व्यवहारों की भविष्यवाणी की जा सकती है। भविष्यवाणी विश्लेषण, मशीन लर्निंग एल्गोरिदम द्वारा संचालित, शोधकर्ताओं को वर्तमान डेटा के आधार पर भविष्य के परिणामों की सटीकता से भविष्यवाणी करने की अनुमति देता है। इसका उपयोग अर्थशास्त्र, स्वास्थ्य देखभाल, और पर्यावरण अध्ययन जैसे क्षेत्रों में व्यापक रूप से किया जा रहा है।

शोध उपकरणों का योगदान

SPSS, NVivo, और Tableau जैसे शोध उपकरणों ने डेटा विज़ुअलाइज़ेशन, गुणात्मक विश्लेषण, और सांख्यिकीय मॉडलिंग को शोधकर्ताओं के लिए और अधिक सुलभ बना दिया है। ये उपकरण जटिल प्रक्रियाओं को सरल बनाते हैं, जिससे शोधकर्ता कच्चे डेटा से सार्थक अंतर्दृष्टि प्राप्त कर सकते हैं। इसके अतिरिक्त, ये उपकरण शोधकर्ताओं को एक ही समय में विभिन्न स्थानों से सहयोग करने की सुविधा भी प्रदान करते हैं।

उन्नत शोध पद्धति का सामाजिक प्रभाव

उन्नत शोध पद्धतियों का एक गहरा सामाजिक प्रभाव भी है। भविष्य के सामाजिक रुझानों की भविष्यवाणी, सार्वजनिक स्वास्थ्य संकटों को समझना, और पर्यावरणीय समस्याओं के समाधान प्रदान करना, इन पद्धतियों का प्रत्यक्ष परिणाम है। इसके अलावा, ये पद्धतियाँ शोधकर्ताओं को सामाजिक असमानताओं को संबोधित करने और ऐसे समाधान उत्पन्न करने में मदद करती हैं जो समावेशी और स्थायी हों।

निष्कर्ष

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उन्नत शोध पद्धतियाँ आधुनिक शोध के परिदृश्य को अधिक सटीक, प्रभावी और महत्वपूर्ण बना रही हैं। आर्टिफिशियल इंटेलिजेंस, मशीन लर्निंग, और इंटरडिसिप्लिनरी अप्रोच जैसे उपकरणों का उपयोग करके, शोधकर्ता अधिक जटिल समस्याओं को हल करने में सक्षम हो रहे हैं। जैसे-जैसे ये पद्धतियाँ विकसित होती रहेंगी, वे शोध के निष्कर्षों की विश्वसनीयता में और सुधार करेंगी, यह सुनिश्चित करते हुए कि वे समाज के लिए उपयोगी और प्रासंगिक बने रहें।

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यह संदर्भ सूची विभिन्न स्रोतों को मिलाकर बनाई गई है, जिनमें उन्नत शोध पद्धतियों, मशीन लर्निंग, आर्टिफिशियल इंटेलिजेंस, और इंटरडिसिप्लिनरी अप्रोच पर आधारित महत्वपूर्ण साहित्य शामिल हैं।

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अनुसंधान पद्धति का परिचय

Introduction to Research Methodology

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सारांश

सारांश (Summary)

अनुसंधान किसी समस्या को हल करने का एक तरीका है। उसे वैज्ञानिक रूप से शोध करने के अध्ययन के रूप में समझा जा सकता है। आम बोलचाल की भाषा में शोध अनुसंधान का मतलब ज्ञान की खोज से है। रेडमैन और मोरी शोध की नया ज्ञान प्राप्त करने के लिए व्यवस्थित प्रयास के रूप में परिभाषित करते हैं। कुछ लोग शोध को ज्ञान से अज्ञात की ओर एक आंदोलन मानते हैं। सभी मनुष्यों में जिज्ञासा की महत्वपूर्ण वृद्धि होती है। अज्ञात हमारे सामना करते हैं तो हम आश्चर्य चकित होते हैं और हमारी जिज्ञासा हमें जांच करने और अज्ञात की पूरी समझ हासिल करने को प्रेरित करती है। यही जिज्ञासा सभी ज्ञान की जननी है और जिस विधि का उपयोग मनुष्य अज्ञात का ज्ञान प्राप्त करने के लिए करता है, उसे अनुसंधान कहा जाता है।

नए ज्ञान की खोज करने की एक प्रक्रिया जिसे शोध या अनुसंधान कहा जाता है या वैज्ञानिक विधि में आसपास के क्षेत्र का अवलोकन करके परिकल्पना तैयार जो किसी चीज या विषय के बारे में सूचित व्याख्या है। शोध प्रक्रिया के एक हिस्से में परिकल्पना का परीक्षण करना और फिर इन परीक्षणों के परिणामों की जांच करना होता है। इसे शोधकर्ता को यह पता चलता है कि अध्ययन के लिए कौन-कौन सी कारक महत्वपूर्ण है और वह एक दूसरे से कैसे संबंधित है। शोध मनुष्यों, जानवरों, पौधों अन्य जीवों और अकार्बनिक पदार्थ के साथ किया जा सकता है। चाहे जिस विषय पर अध्ययन किया जा रहा हो। शोध का मूल्य इस बात पर निर्भर करता है कि इस कितनी अच्छी तरह से डिजाइन किया गया है। इसलिए अच्छा शोध करने में सबसे महत्वपूर्ण विचारों में से एक अनुभवी शोधकर्ता द्वारा विकसित डिजाइन का पालन करना है, जिसे प्रिंसिपल इन्वेस्टिगेटर कहा जाता है।

कुंजी शब्द (Key Words): शोध ,जिज्ञासा, अनुसन्धान, परिकल्पना, अवधारणा, अवलोकन , वैज्ञानिक।

परिचय (Introduction)

'शोध' अंग्रेजी शब्द रिसर्च का पर्याय है, किंतु इसका अर्थ पुनः खोज नहीं है, बल्कि गहन खोज है। इसके द्वारा हम कुछ नया अविष्कार करते हैं। व्यापक अर्थ में शोध का अनुसंधान (Research) किसी भी क्षेत्र में ज्ञान की खोज करना होता है। वैज्ञानिक विधि से जिज्ञासा का समाधान करने की कोशिश की जाती है।

शोध अथवा अनुसंधान के उद्देश्य शोध का उद्देश्य वैज्ञानिक प्रक्रियाओं के प्रयोग के माध्यम से प्रश्नों के उत्तर की खोज करना है, जबकि मुख्य उद्देश्य उसे अज्ञात तथ्य का पता लगाना है ,जो छिपा है और जिसे अभी तक खोज नहीं गया हो।

शोध के कुछ सामान्य उद्देश्य इस प्रकार हैं

(Some of the general objectives of research are as follows)

1. **खोजपूर्ण शोध अध्ययन**
   (Exploratory Research Study)
   किसी घटना से परिचित होने के लिए या उसमें नई अंतर दृष्टि प्राप्त करने के लिए।
2. **विवरणात्मक शोध अध्ययन**
   (Descriptive Research Study)
   किसी व्यक्ति, स्थिति या समूह की विशेषताओं को सही ढंग से जांच करने के लिए।
3. **नैदानिक शोध (Clinical Research)**
   उस आवृत्ति को निर्धारण करने लिए जिसके साथ कुछ घटित हो रहा है या इसके साथ कुछ और जुड़ा होता है।

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4. **परिकल्पना परीक्षण शोध**

(Hypothesis Testing Research)

चरों के बीच एक आकस्मिक संबंध की परिकल्पना का परीक्षण करने के लिए।

अनुसंधान का महत्व

(Importance of research)

प्रगति के लिए जांच आवश्यक है। जांच ही हमें किसी आविष्कार की ओर ले जाती है। शोध के माध्यम हम वैकल्पिक नितियां तैयार कर सकते हैं और साथ ही इन विकल्पों में से प्रत्येक के परिणामों की जांच भी कर सकते हैं। किसी भी देश के विकास हेतु संसाधनों के आवंटन के लिए अनुसंधान की आवश्यकता होती है , जिसमें देश की आर्थिक और सामाजिक जानकारी एकत्र करना होता है। व्यापार और उद्योग की विभिन्न परिचालन एवं योजना समस्याओं को हल करने में शोध का विशेष महत्व है। अनुसंधान न केवल ज्ञान अर्जन के उद्देश्य से कुछ चीजों को जानने की बौद्धिक संतुष्टि प्रदान करता है बल्कि सामाजिक वैज्ञानिक के लिए कुछ बेहतर या अधिक कुशल तरीके से करने में सक्षम होने के लिए व्यवहारिक उपयोगिता भी प्रदान करता है।

अनुसंधान के महत्व इस प्रकार हैं

(The importance of research are as follows)

1. वैसे छात्र जो मास्टर या पीएचडी थीसिस लिखना चाहते हैं। समाज में प्रतिष्ठा या उच्च पद प्राप्त करने का एक तरीका होता है।
2. शोध पद्धति पेशेवरों के लिए आजीविका का माध्यम हो सकता है।
3. दार्शनिकों और विचारकों के लिए शोध ने विचारों के लिए अवसर होता है।
4. साहित्यकारों के लिए शोध द्वारा नई शैलियां और रचनात्मक काम का विकास होता है।
5. बुद्धिजीवियों द्वारा शोध नए सिद्धांतों का सामान्यीकरण हो सकता है।

अनुसंधान विधि बनाम अनुसंधान पद्धति

(Research Method vs Research Methodology)

जिन विधियों या तकनीक का प्रयोग अनुसंधान के संचालन के लिए किया जाता है। उसे अनुसंधान विधियों के रूप में जाना जाता है। अनुसंधान का उद्देश्य विशेष कर व्यावहारिक अनुसंधान में किसी ज्ञात समस्या के समाधान तक पहुंचना होता है। अनुसंधान वीडियो को निम्नलिखित तीन समूह में रखा जा सकता है -

1. पहले समूह में वे तरीके शामिल है जो डेटा संग्रह से संबंधित है। इन वीडियो को वहां उपयोग किया जाएगा जहां पहले से उपलब्ध डाटा आवश्यक समाधान पर पहुंचने के लिए पर्याप्त नहीं है।
2. दूसरे समूह में उन सांख्यिकीय तकनीकियों का समावेश रहता है। इसका उपयोग डाटा और अज्ञात के बीच संबंध स्थापित करने के लिए किया जाता है।
3. तीसरे समूह में वैसे विधियां शामिल हैं, जिनका उपयोग प्राप्त परिणामों की सटीकता का मूल्यांकन करने के लिए किया जाता है।

   अनुसंधान पद्धति अनुसंधान समस्या को व्यवस्थित रूप से हल करने का एक तरीका है। शोध वैज्ञानिक रूप से कैसे हो , यह अध्ययन करने के लिए विज्ञान के रूप में समझा जा सकता है , जो विभिन्न चरणों में किया जाता है। शोधार्थी को न केवल अनुसंधान विधियों तकनीक को बल्कि पद्धति को भी जानना उतना ही जरूरी है। उसे न केवल कुछ सूचकांक या परीक्षणों को विकसित करने, मध्य , मोड, औसत या मानक विचलन या काई - वर्ग की गणना कैसे करें या शोध तकनीक को कैसे लागू करें, यह भी जानना जरूरी है बल्कि कौन-कौन सी तकनीकियां या विधियां प्रासंगिक हैं और कौन सी नहीं है। यानि शोधकर्ता के लिए अपनी समस्या के लिए अपनी पद्धति का ज्ञान आवश्यक है।

   जैसे : उदाहरण के लिए एक मूर्तिकार, जो मूर्ति का निर्माण करता है को जानबूझकर अपने फैसलों के आधार पर विशेष आकार, मूर्ति के भागों का चयन करना होता है। वह विशेष सामग्री का उपयोग करता है। इसी प्रकार शोध में अनुसंधान निर्णय को लागू करने से पहले या उल्लेख करना पड़ता है कि मूल्यांकन के लिए उसकी पद्धति क्या होगी। उससे तय करना होता है कि कौन से फैसलों का चयन करना है ताकि उनका मूल्यांकन दूसरे द्वारा भी किया जा सके।

   अतः शोध पद्धति में कई आयाम है और अनुसंधान विधिया शोध पद्धति के एक हिस्से का निर्माण करती है। अनुसंधान पद्धतियों का दायरा अनुसंधान विधियों से काफी व्यापक होता है।

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अनुसंधान प्रक्रिया (Research Process) अनुसंधान प्रक्रिया को प्रभावी ढंग से अनुसंधान करने और इन चरणों को वांछित अनुक्रमित करने के लिए आवश्यक कार्यों या चरणों की श्रृंखला का पालन करना होता है।

1. **अनुसंधान समस्या तैयार करना**
   (Formulating the research problem)
   अनुसंधान समस्याएं दो प्रकार की हो सकती हैं जो प्रकृति की अवस्थाओं से संबंधित है और दूसरा कर के बीच संबंधों से संबंधित है। प्रारंभ में ही उसे समस्या को अलग कर लेना चाहिए। समस्या को समझने के लिए विशेषज्ञों से चर्चा कर लेना चाहिए। शोधकर्ता को एक ही समय में चयनित समस्या से परिचित होने के लिए सभी उपलब्ध साहित्य की जांच एवं उनका अध्ययन कर लेना चाहिए। इससे यह पता चलेगा कि कौन सा डाटा और अन्य सामग्री उपलब्ध है। सो समस्या को तैयार करने या परम परिभाषित करने का यह कार्य संपूर्ण शोध प्रक्रिया में सबसे महत्वपूर्ण कदम है तो समस्या को स्पष्ट रूप से परिभाषित किया जाना चाहिए ।
2. **व्यापक साहित्य सर्वेक्षण**
   (Comprehensive literature survey)
   समस्या तैयार होने के बाद संक्षिप्त सारांश लिखा जाना चाहिए। इसके लिए समस्या से जुड़े साहित्य के सर्वेक्षण करना चाहिए।
3. **परिकल्पनाओं का विकास**
   (Development of Hypotheses)
   साहित्य सर्वेक्षण के बाद शोधकर्ता द्वारा स्पष्ट शब्दों में परिकल्पना का सूत्रीकरण करना चाहिए। अधिकांश प्रकार के शोध में परिकल्पना का विकास एक महत्वपूर्ण भूमिका निभाता है। परिकल्पना शोधकर्ता की सोच को तेज करता है और समस्या के महत्वपूर्ण पहलुओं पर ध्यान केंद्रित करता है ।
4. **शोध डिजाइन तैयार करना**
   (Formulating the research design)
   शोध को आगे बढ़ाने हेतु अवधारणात्मक संरचना तैयार करना होगा जिसमें अनुसंधान आयोजित किया जाएगा। शोध डिजाइन का कार्य समय और धन्य के न्यूनतम वेज के साथ प्रासंगिक शास्त्र के संग्रह में सहायता प्रदान करता है। शोध अनुसंधान कई प्रकार के हैं जैसे प्रयोगात्मक और गैर प्रयोगात्मक परिकल्पना परीक्षण।
5. **नमूना डिजाइन निर्धारित करना**
   (Determining the sampling design)
   जांच में इकाइयों को शामिल किया जाता है तो उच्चतम सटीकता प्राप्त होती है। अक्सर हमें अपने अध्ययन उद्देश्यों के लिए ब्रह्मांड से केवल कुछ इकाइयों का चयन करना है। चयनित इकाइयों को तकनीकी रूप से नमूना पति दश कहा जाता है। शोधकर्ता द्वारा जनसंख्या से नमूना चुनने का तरीका जिसे नमूना डिजाइन के रूप में जाना जाता है। प्रतिदर्श या तो संभावना प्रतिदर्श या गैर संभावना प्रतिदर्श हो सकता है।
6. **डाटा एकत्रित करना**
   (Collecting data)
   किसी भी समस्या के निदान के लिए पर्याप्त डाटा एकत्रित होनी चाहिए। डाटा या प्रयोग या सर्वेक्षण के माध्यम से एकत्रित किया जाता है। यह डाटा अवलोकन द्वारा साक्षात्कार द्वारा प्रश्नावली द्वारा या अन्य कार्यक्रमों के माध्यम से तैयार किया जाता है।
7. **परियोजना का निष्पादन**
   (Execution of the project)
   परियोजना का निष्पादन सही तरीके से करने पर डाटा पर्याप्त और भरोसेमंद होगा। साक्षात्कार के लिए साक्षात्कार कर्ताओं के उचित चयन और प्रशिक्षण की व्यवस्था होनी चाहिए। साक्षात्कार की सावधानी पूर्वक निगरानी रखनी चाहिए। सर्वेक्षण सांख्यिकीय नियंत्रण में होना चाहिए ताकि यह सुनिश्चित किया जा सके कि एकीकृत जानकारी सटीकता के पूर्व परिभाषित मानक के अनुसार हो।

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8. **डाटा का विश्लेषण**

(Analysis of the data)

सभी डेटा एकत्र करने के बाद उसके विश्लेषण के लिए विभिन्न श्रेणियों और कोडिंग के माध्यम से सांख्यिकीय संदर्भों को चित्रित करने की आवश्यकता होती है। सभी आवश्यक डाटाओं को सारणीबद्ध करके विश्लेषण की प्रक्रिया में आगे बढ़ना चाहिए। विभिन्न प्रतिदर्श के भिन्नता के विश्लेषण की तकनीक हमें विश्लेषण करने में मदद कर सकती है। यानि शोधकर्ता द्वारा एकत्रित डाटा का विश्लेषण विभिन्न सांख्यिकीय उपायों की सहायता से कर सकता है।

9. **परिकल्पना परीक्षण**

(Hypothesis Testing)

डेटा विश्लेषण करने के बाद परिकल्पना का परीक्षण करने की आवश्यकता होती है। शोध जांच की प्रकृति और उद्देश्य के आधार पर परिकल्पनाओं का परीक्षण एक या अधिक परीक्षणों के प्रयोग के माध्यम से किया जा सकता है।

10. **सामान्यीकरण और व्याख्या**

(Generalization and Interpretation)

यदि दावों को बरकरार रखा जाता है तो शुद्ध करता के लिए सामान्य कारण पर पहुंचना संभव हो सकता है। शोधकर्ता के पास शोध शुरू करने के लिए कोई परिकल्पना नहीं होने पर सिद्धांतों द्वारा निष्कर्ष की व्याख्या की जा सकती है।

11. **रिपोर्ट तैयार करना**

(Preparation of reports)

अंत में पूरे कार्यों की रिपोर्ट तैयार करनी पड़ती है। इसके लिए खाका तैयार करने के लिए सर्वप्रथम प्रारंभिक पृष्ठ उसके बाद मुख्य पाठ और अंतिम पृष्ठ प्रारंभिक पृष्ठों में रिपोर्ट में शोध का शीर्षक और तारीख के बाद स्वीकृति और प्रस्ताव इंगित किया जाना चाहिए। मुख्य पथ में परिचय होना चाहिए। परिचयों के बाद निष्कर्ष को अच्छी तरह से लिखना चाहिए। मुख्य रिपोर्ट तार्किक रूप से सही होना चाहिए। मुख्य पथ के अंत में शोधकर्ता को फिर से अपने शोध के परिणामों की स्पष्ट और सटीकता से उल्लेख करना चाहिए।

अच्छे शोध का मानदंड

(Criteria of good research)

किसी भी शोध का उद्देश्य स्पष्ट रूप से परिभाषित करना चाहिए। इसके लिए सामान्य अवधारणाओं का उपयोग किया जाना चाहिए। शोध की प्रक्रिया इस प्रकार से आगे बढ़ानी चाहिए कि दूसरे किसी शोधकर्ता को उसके इस्तेमाल में कठिनाई न हो। शोध का डिजाइन ऐसा होना चाहिए कि परिणाम प्राप्त करने में आसानी हो। डिजाइन में त्रुटियों के साथ रिपोर्ट करना चाहिए और निष्कर्ष पर उनके प्रभाव का आकलन करना चाहिए। डाटा का विश्लेषण अच्छी तरह से होना चाहिए और विश्लेषणों का अच्छी तरह से उपयोग करना चाहिए। निष्कर्ष को अनुसंधान के डाटा तक सीमित होना चाहिए। एक शोधकर्ता को अनुभवी , ईमानदार और उसमें आत्मविश्वास होना चाहिए।

शोध की समस्याएं

(Problems in Research)

शोधकर्ता को शोध के दौरान कई प्रकार की समस्याओं का सामना करना पड़ता है। अक्सर देखा जाता है कि शोध पद्धति में वैज्ञानिक प्रशिक्षण की कमी से शोध परिपूर्ण नहीं हो पता है। कई शोधकर्ता विभिन्न विधियों को जाने बिना काम चालू कर देते हैं जिससे शोध पूर्ण नहीं हो पता है और अनुसंधान Yu नहीं हो पता है। शोध के दौरान पर्याप्त संपर्क और अपर्याप्त सामंजस्य की कमी से उत्तर सही रूप से एकत्र नहीं हो पता है। आपसी विश्वास की कमी के कारण पूर्ण जानकारी उपलब्ध नहीं हो पाती है , जिससे शोध में मुश्किल होता है। कई बार शोध अध्ययन जो का दुरुपयोग होने लगता है। कई शोधकर्ताओं को पर्याप्त समय और वित्तीय समस्याओं का भी सामना करना पड़ता है।

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निष्कर्ष

(Conclusion)

परीक्षण विधि अनुशंसाओं के कार्यान्वयन को प्रभावित करने वाले कई प्रमुख क्षेत्रों की पहचान की गई। सुविधाकर्ताओं को बढ़ाने और बाधाओं को कम करने के लिए संभावित तरीकों का सुझाव दिया गया है। इन तरीकों को परिष्कृत करने और उनकी व्यवहार्यता और स्वीकार्यता का आकलन करने के लिए भविष्य में शोध की आवश्यकता है।

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अनुसंधान अभिकल्प

शम्भु महतो*

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सारांश

एक शोध तब मान्य होता है। जब कोई निष्कर्ष सटीक या सत्य होता है और शोध डिजाइन वह वैचारिक ढांचा होता है। जिसके भीतर शोध किया जाता है। एक शोधकर्ता अपने शोध के लिए एक कार्य योजना तैयार करता है, इसमें डेटा के संग्रह, माप और विश्लेषण की रूपरेखा तैयार की जाती है। अनुसंधान डिज़ाइन डेटा संग्रह की किसी विशेष तकनीक या किसी विशेष प्रकार के डेटा से संबंधित नहीं है। शोध को डिज़ाइन करते समय यह आवश्यक है कि हम शोध प्रश्न का उचित तरीके से उत्तर देने के लिए आवश्यक साक्ष्य के प्रकार को पहचानें। इस अध्याय में अनुसंधान डिज़ाइन के उद्देश्य, उसके महत्व और प्रकारों पर प्रकाश डाला गया है।

यह अन्वेषण और उच्चतम प्रयोगशीलता का विश्वसनीय उपकरण है जो विभिन्न शोधीय मुद्दों को अध्ययन करने के लिए उपयोग किया जाता है। इस डिज़ाइन के आधारभूत सिद्धांतों का समावेश किया है जो शोध प्रश्नों को पता करने और समीक्षा करने में मदद करते हैं। इस शोध डिज़ाइन का मुख्य उद्देश्य विशेष संदर्भों में तथ्यों की मान्यता को सुनिश्चित करना और अध्ययन के परिणामों को वैज्ञानिक रूप से स्थायित्वपूर्वक सिद्ध करना है। इस अध्ययन का ढांचा शोध के नीतियों, विधियों, और तकनीकों को जोड़ने में मदद करता है, जिससे एक समझदार प्रयोग निर्माण किया जा सकता है और सामग्री को संगठित रूप से प्रस्तुत किया जा सकता है।

अनुसंधान को डिज़ाइन करते समय यह आवश्यक है कि हम किसी विशिष्ट प्रश्न का उत्तर देने के लिए आवश्यक सही प्रमाण खोजेते । थीसिस के परीक्षण के लिए अनुसंधान डिजाइन उत्तर अन्वेषण के लिए अनुसंधान के लिए रीढ़ की हड्डी की संरचना के रूप में काम करता है। विभिन्न प्रकार के शोध डिज़ाइन हैं जिन्हें रंगीन क्षेत्रों में लागू किया जा सकता है अनुसंधान कार्य करना। एक शोध डिज़ाइन को कमोबेश किसी शोध पद्धति या शोध डिज़ाइन पर आधारित होना चाहिए ।एक बार अन्वेषण की सामग्री और समस्या का नाम और सूत्रीकरण हो जाने के बाद, वस्तुओं का विधिवत निर्धारण कर दिया जाता है। सामान्यताओं को विधिवत परिभाषित किया गया है और थीसिस को विधिवत तैयार किया गया है अनुसंधान डिजाइन अनुसंधान कार्य और आदर्श को प्राप्त करने और उसे दिशा देने में महत्वपूर्ण भूमिका निभाता है। एक मार्मिक शोध आम तौर पर डेटा में न्यूनतम पूर्वाग्रह पैदा होता है और एकत्रित डेटा की नाजुकता में विश्वास बढ़ता है। एक डिज़ाइन जो उत्पन्न करता है प्रायोगिक अनुसंधान में त्रुटि की न्यूनतम सीमा को आम तौर पर अपेक्षित परिणाम माना जाता है। इस प्रकार अध्ययन आवश्यकता, महत्व और उसके प्रकार को दर्शाता है, जो कि वर्णनात्मक अनुसंधान डिज़ाइन, सहसंबंधी अनुसंधान डिज़ाइन हैं,प्रायोगिक अनुसंधान डिजाइन, नैदानिक अनुसंधान डिजाइन, व्याख्यात्मक अनुसंधान डिजाइन।

***मुख्य शब्द** : उत्पत्ति, उद्देश्य , महत्व,वर्णनात्मक, व्याख्यात्मक, प्रयोगात्मक।*

प्रस्तावना

Introduction

अनुसंधान डिज़ाइन किसी भी अनुसंधान परियोजना की नींव होता है। यह एक रूपरेखा प्रदान करता है, जो यह निर्धारित करती है कि अनुसंधान को किस प्रकार किया जाएगा, डेटा कैसे इकट्ठा किया जाएगा और विश्लेषण कैसे किया जाएगा। उचित अनुसंधान डिज़ाइन से अनुसंधान की विश्वसनीयता और वैधता में वृद्धि होती है।

अनुसंधान डिजाइन एक व्यापक योजना है जो अनुसंधान परियोजना के उद्देश्यों को बताती है और उन उद्देश्यों को प्राप्त करने के लिए आवश्यक कदमों का मार्गदर्शन करती है। इसे अनुसंधान परियोजना के संचालन के लिए एक मास्टर प्लान के रूप में भी देखा जा सकता है।

अनुसंधान डिजाइन का महत्व

अनुसंधान डिजाइन किसी भी शोध परियोजना का एक महत्वपूर्ण हिस्सा है। यह एक व्यापक योजना है जो अनुसंधान के उद्देश्यों को स्पष्ट करती है और उन उद्देश्यों को प्राप्त करने के लिए आवश्यक कदमों को निर्दिष्ट करती है। अनुसंधान डिजाइन का महत्व निम्नलिखित बिंदुओं में समझा जा सकता है:

1. स्पष्टता और दिशा प्रदान करना

अनुसंधान डिजाइन शोधकर्ता को स्पष्ट दिशा और मार्गदर्शन प्रदान करता है। यह शोध के उद्देश्यों, डेटा संग्रह की विधियों, और विश्लेषण की प्रक्रियाओं को स्पष्ट रूप से परिभाषित करता है । इससे शोधकर्ता को यह समझने में मदद मिलती है कि उन्हें क्या करना है और कैसे करना है।

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2. समय और संसाधनों की बचत

एक अच्छी तरह से तैयार अनुसंधान डिजाइन समय और संसाधनों की बचत करता है। यह शोध प्रक्रिया को सुव्यवस्थित करता है और अनावश्यक कार्यों को कम करता है। इससे शोधकर्ता अपने प्रयासों को अधिक प्रभावी ढंग से केंद्रित कर सकते हैं।

3. विश्वसनीयता और वैधता सुनिश्चित करना

अनुसंधान डिजाइन शोध के परिणामों की विश्वसनीयता और वैधता सुनिश्चित करता है। यह सुनिश्चित करता है कि डेटा संग्रह और विश्लेषण की विधियाँ वैज्ञानिक मानकों के अनुरूप हैं। इससे प्राप्त परिणामों की सटीकता और विश्वसनीयता बढ़ती है।

4. समस्या समाधान में सहायता

अनुसंधान डिजाइन शोधकर्ता को समस्या की पहचान करने और उसे हल करने में सहायता करता है। यह शोध प्रश्नों को स्पष्ट करता है और संभावित समाधानों की पहचान करने में मदद करता है। इससे शोधकर्ता को समस्या के विभिन्न पहलुओं को समझने और उनका विश्लेषण करने में सहायता मिलती है।

5. नैतिकता और पारदर्शिता

अनुसंधान डिजाइन नैतिकता और पारदर्शिता को बढ़ावा देता है। यह सुनिश्चित करता है कि शोध प्रक्रिया नैतिक मानकों के अनुरूप हो और सभी चरणों में पारदर्शिता बनी रहे। इससे शोधकर्ता और प्रतिभागियों के बीच विश्वास बढ़ता है।

6. परिणामों की पुनरावृत्ति

एक मजबूत अनुसंधान डिजाइन अन्य शोधकर्ताओं को परिणामों की पुनरावृत्ति करने में सक्षम बनाता है। यह शोध प्रक्रिया को दस्तावेजित करता है और अन्य शोधकर्ताओं को उसी प्रक्रिया का पालन करने की अनुमति देता है। इससे वैज्ञानिक समुदाय में ज्ञान का विस्तार होता है।

7. डेटा संग्रह की प्रभावशीलता

अनुसंधान डिजाइन डेटा संग्रह की प्रभावशीलता को बढ़ाता है। यह सुनिश्चित करता है कि डेटा संग्रह की विधियाँ उपयुक्त और प्रभावी हैं। इससे डेटा की गुणवत्ता और प्रासंगिकता बढ़ती है।

अनुसंधान डिजाइन के प्रकार

रिसर्च डिजाइन निम्नलिखित प्रकार के होते हैं।

1) खोजपूर्ण अनुसंधान डिजाइन (Exploratory Research Design):

इसका उद्देश्य किसी समस्या या स्थिति के बारे में प्रारंभिक जानकारी प्राप्त करना होता है।

यह अनुसंधान प्रारंभिक चरण में किया जाता है और इसमें विचारों और अंतर्दृष्टियों की खोज की जाती है।

उदाहरण: किसी नए उत्पाद के लिए बाजार की संभावनाओं का अध्ययन।

2)वर्णनात्मक अनुसंधान डिजाइन (Descriptive Research Design):

इसका उद्देश्य किसी घटना या स्थिति का विस्तृत विवरण प्रदान करना होता है।

इसमें डेटा संग्रह और विश्लेषण के माध्यम से किसी घटना की विशेषताओं का वर्णन किया जाता है।

उदाहरण: जनसंख्या जनगणना, उपभोक्ता व्यवहार का अध्ययन।

3) प्रयोगात्मक अनुसंधान डिजाइन (Experimental Research Design):

इसका उद्देश्य कारण और प्रभाव के संबंधों का परीक्षण करना होता है।

इसमें नियंत्रित परिस्थितियों में प्रयोग किए जाते हैं ताकि विभिन्न चरों के बीच संबंधों का अध्ययन किया जा सके।

उदाहरण: किसी दवा के प्रभाव का परीक्षण।

3) अर्ध-प्रयोगात्मक डिजाइन (Quasi-Experimental Design)

अर्ध-प्रयोगात्मक डिजाइन (Quasi-Experimental Design) एक शोध डिजाइन है जिसमें शोधकर्ता विभिन्न चरों को नियंत्रित नहीं कर सकता है, लेकिन उनके प्रभाव का अध्ययन करना चाहता है। यह डिजाइन प्रयोगात्मक डिजाइन की तरह है, लेकिन इसमें कुछ सीमाएँ होती हैं।

i. स्वतंत्र चर (Independent Variable): यह वह चर है जिसका प्रभाव अध्ययन किया जा रहा है।

ii. आश्रित चर (Dependent Variable): यह वह चर है जिसका माप लिया जा रहा है।

iii. नियंत्रण चर (Control Variable): यह वह चर है जिसका प्रभाव नियंत्रित नहीं किया जा सकता है।

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iv. नमूना (Sample): यह वह समूह है जिस पर अध्ययन किया जा रहा है।
v प्रयोग (Experiment): यह वह प्रक्रिया है जिसमें स्वतंत्र चर का प्रभाव आश्रित चर पर मापा जा रहा है।

4) सर्वेक्षण डिजाइन (Survey Design)

सर्वेक्षण डिजाइन (Survey Design) एक शोध डिजाइन है जिसमें शोधकर्ता लोगों के विचारों, अभिप्रायों, और व्यवहार के बारे में जानकारी इकट्ठा करने के लिए सर्वेक्षण का उपयोग करता है। यह डिजाइन विभिन्न प्रकार के शोध प्रश्नों का उत्तर देने में मदद करता है, जैसे कि:

i. सर्वेक्षण प्रश्न (Survey Questions): यह वह प्रश्न हैं जो सर्वेक्षण में पूछे जाते हैं।
ii. नमूना (Sample): यह वह समूह है जिस पर सर्वेक्षण किया जा रहा है।
iii. सर्वेक्षण विधि (Survey Method): यह वह तरीका है जिसमें सर्वेक्षण किया जा रहा है, जैसे कि ऑनलाइन, ऑफलाइन, टेलीफोन आदि।
iv. डेटा संग्रह (Data Collection): यह वह प्रक्रिया है जिसमें सर्वेक्षण के डेटा को इकट्ठा किया जा रहा है।
v. डेटा विश्लेषण (Data Analysis): यह वह प्रक्रिया है जिसमें सर्वेक्षण के डेटा का विश्लेषण किया जा रहा है।

5) मामला अध्ययन डिजाइन (Case Study Design)

मामला अध्ययन डिजाइन (Case Study Design) एक शोध डिजाइन है जिसमें शोधकर्ता एक विशिष्ट मामले या घटना का गहराई से अध्ययन करता है। यह डिजाइन विभिन्न प्रकार के शोध प्रश्नों का उत्तर देने में मदद करता है, जैसे कि:

i. मामला (Case): यह वह विशिष्ट मामला या घटना है जिसका अध्ययन किया जा रहा है।
ii. अध्ययन का उद्देश्य (Study Objective): यह वह उद्देश्य है जो मामले के अध्ययन से प्राप्त किया जा रहा है।
iii. डेटा संग्रह (Data Collection): यह वह प्रक्रिया है जिसमें मामले के बारे में डेटा इकट्ठा किया जा रहा है।
iv. डेटा विश्लेषण (Data Analysis): यह वह प्रक्रिया है जिसमें मामले के डेटा का विश्लेषण किया जा रहा है।

6) तुलनात्मक डिजाइन (Comparitive Design)

तुलनात्मक डिजाइन (Comparative Design) एक शोध डिजाइन है जिसमें दो या अधिक समूहों या वर्गों की तुलना की जाती है। इसका उद्देश्य दोनों समूहों के बीच अंतरों और समानताओं का अध्ययन करना है।

i. समूह (Groups): दो या अधिक समूह जिनकी तुलना की जा रही है।
ii. चर (Variables): जिन चरों की तुलना की जा रही है।
iii. डेटा संग्रह (Data Collection): डेटा इकट्ठा करने की प्रक्रिया।
iv. डेटा विश्लेषण (Data Analysis): डेटा का विश्लेषण करने की प्रक्रिया।

Steps of Research Design

1. समस्या की पहचान (Problem Identification): शोध के लिए समस्या की पहचान करना और उसे परिभाषित करना।
2. साहित्य समीक्षा (Literature Review): पहले से प्रकाशित साहित्य का अध्ययन करना और उसे समझना।
3. शोध प्रश्न का निर्धारण (Research Question Formulation): शोध के लिए प्रश्न तैयार करना।
4. शोध उद्देश्यों का निर्धारण (Research Objectives Formulation): शोध के उद्देश्यों को तैयार करना।
5. शोध डिजाइन का चयन (Research Design Selection): उपयुक्त शोध डिजाइन का चयन करना।
6. नमूना का चयन (Sample Selection): अध्ययन के लिए नमूना का चयन करना।
7. डेटा संग्रह विधि का चयन (Data Collection Method Selection): डेटा संग्रह के लिए उपयुक्त विधि का चयन करना।
8. डेटा संग्रह (Data Collection): डेटा इकट्ठा करना।
9. डेटा विश्लेषण (Data Analysis): डेटा का विश्लेषण करना।
10. निष्कर्ष निकालना (Conclusion Drawing): शोध के परिणामों के आधार पर निष्कर्ष निकालना।
11. रिपोर्ट लेखन (Report Writing): शोध के परिणामों को रिपोर्ट में लिखना।
12. शोध का प्रकाशन (Research Publication): शोध के परिणामों को प्रकाशित करना.

Review of literature

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शोध डिजाइन विज्ञान की जांच का एक मुख्य हिस्सा है, जो व्यवस्थित जांच और डेटा संग्रह के लिए एक ढांचा प्रदान करता है। विभिन्न शोध डिजाइन हैं, जिनमें प्रयोगात्मक, अर्ध-प्रयोगात्मक, सर्वेक्षण, मामले के अध्ययन, और गुणात्मक शोध शामिल हैं। प्रयोगात्मक और अर्ध-प्रयोगात्मक डिजाइन कारण-और-प्रभाव संबंधों की अनुमति देते हैं, लेकिन कृत्रिम सेटिंग्स और अतिरिक्त चर के संबंध में चुनौतियों का सामना कर सकते हैं।सर्वेक्षण अनुसंधान और मामले के अध्ययन वास्तविक दुनिया की घटनाओं और संदर्भात्मक कारकों का अन्वेषण करते हैं, लेकिन सामान्यता और वस्तिवाद के साथ संघर्ष कर सकते हैं।

गुणात्मक अनुसंधान डिजाइन गहन समझ और अर्थ-निर्माण को प्राथमिकता देते हैं, अमीर अंतर्दृष्टि प्रदान करते हैं लेकिन संभावित रूप से विषयवाद और समय-गहन डेटा संग्रह का सामना कर सकते हैं।

मिश्रित-विधियों वाले शोध डिजाइन गुणात्मक और मात्रात्मक दृष्टिकोणों को जोड़ते हैं, उनकी ताकत का लाभ उठाते हैं लेकिन विधियों और डेटा प्रकारों के सावधानीपूर्वक एकीकरण की आवश्यकता होती है।

विषय-विशिष्ट चुनौतियां और नैतिक विचार भी शोध डिजाइन को प्रभावित करते हैं। शोधकर्ताओं को अपने डिजाइन को चुनने और अनुकूलित करने में सक्षम बनाने के लिए विभिन्न शोध डिजाइनों की ताकत और सीमाओं को समझना आवश्यक है।

अनुसंधान डिज़ाइन किसी अध्ययन की पद्धति और संरचना का मार्गदर्शन करने वाला एक महत्वपूर्ण ढांचा है। अनुसंधान डिजाइन पर साहित्य व्यवस्थित और वैध अनुसंधान परिणामों को सुनिश्चित करने में इसकी भूमिका पर जोर देता है। इसके मूल में, अनुसंधान डिज़ाइन में अनुसंधान प्रश्नों को प्रभावी ढंग से संबोधित करने के लिए डेटा एकत्र करने, मापने और विश्लेषण करने की योजना बनाना शामिल है।

क्रिसवेल और क्रिसवेल (2017) द्वारा "अनुसंधान डिजाइन: गुणात्मक, मात्रात्मक और मिश्रित तरीके दृष्टिकोण" जैसे शास्त्रीय पाठ इस बात पर प्रकाश डालते हैं कि अनुसंधान डिजाइन प्रयोगात्मक, अर्ध-प्रयोगात्मक और गैर-प्रयोगात्मक डिजाइन सहित विभिन्न रणनीतियों को शामिल करता है। प्रायोगिक डिज़ाइन, जैसे कि यादृच्छिक नियंत्रित परीक्षण (आरसीटी), यादृच्छिक असाइनमेंट और चर पर नियंत्रण के कारण उनकी उच्च आंतरिक वैधता के लिए जाने जाते हैं। इसके विपरीत, गैर-प्रयोगात्मक डिज़ाइन, जैसे सर्वेक्षण और केस अध्ययन, को वास्तविक दुनिया की सेटिंग्स में उनकी व्यावहारिकता और प्रयोज्यता के लिए महत्व दिया जाता है, हालांकि उन्हें अक्सर कारणात्मक अनुमान के साथ चुनौतियों का सामना करना पड़ता है।

चर्चा किया गया एक अन्य महत्वपूर्ण पहलू गुणात्मक और मात्रात्मक तरीकों के बीच चयन है। गुणात्मक डिज़ाइन, जैसा कि मैक्सवेल (2013) द्वारा "गुणात्मक अनुसंधान डिजाइन: एक इंटरएक्टिव दृष्टिकोण" में विस्तृत है, प्रतिभागियों के दृष्टिकोण से घटनाओं को समझने पर ध्यान केंद्रित करते हैं और अक्सर खोजपूर्ण अनुसंधान के लिए उपयोग किए जाते हैं। सर्वेक्षण अनुसंधान और सांख्यिकीय विश्लेषण सहित मात्रात्मक डिजाइन, चर के बीच माप और सांख्यिकीय संबंधों पर जोर देते हैं, जैसा कि पोलित और बेक (2017) द्वारा "स्वास्थ्य पेशेवरों के लिए मात्रात्मक अनुसंधान विधियों" में उल्लिखित है।

दोनों दृष्टिकोणों का एकीकरण, जिसे मिश्रित पद्धति अनुसंधान के रूप में जाना जाता है, को साहित्य में भी उजागर किया गया है। ताशाकोरी और टेडली (2010) जैसे लेखक चर्चा करते हैं कि कैसे गुणात्मक और मात्रात्मक डेटा का संयोजन दोनों पद्धतियों की ताकत का लाभ उठाकर अनुसंधान समस्याओं की अधिक व्यापक समझ प्रदान कर सकता है।

कुल मिलाकर, अनुसंधान डिजाइन साहित्य विश्वसनीय और सामान्यीकरण योग्य निष्कर्ष निकालने के लिए अनुसंधान उद्देश्यों, नैतिक विचारों और व्यावहारिक बाधाओं के साथ डिजाइन विकल्पों को संरेखित करने के महत्व को रेखांकित करता है।

Objective of research Design

- शोध को परिकल्पना की पुष्टि या खंडन करना
- शोधकर्ता की विषय के बारे में समझ को व्यापक बनाना
- शोधकर्ता को विभिन्न स्थानों, समूहों और परिवेशों के बारे में जागरूक बनाना
- शोध करने की प्रक्रिया का मार्गदर्शन करना
- शोध प्रश्नों के उत्तर देने के लिए समग्र रणनीति तैयार करना
- परियोजना के अंतर्निहित सिद्धांतों और मॉडलों की रूपरेखा तैयार करना
- डेटा और जानकारी एकत्र करने की रणनीति तैयार करना
- डेटा से उत्तर तैयार करने की रणनीति तैयार करना

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Hypotheses

अनुसंधान डिजाइन में, परिकल्पनाएं चर के बीच संबंधों के बारे में विशिष्ट, परीक्षण योग्य भविष्यवाणियों या बयानों के रूप में कार्य करती हैं। वे अध्ययन की दिशा का मार्गदर्शन करते हैं और यह निर्धारित करने में मदद करते हैं कि कौन सा डेटा एकत्र करना और विश्लेषण करना है। आम तौर पर परिकल्पनाएँ दो प्रकार की होती हैं:

शून्य परिकल्पना (H_0): यह परिकल्पना बताती है कि समूहों या चरों के बीच कोई प्रभाव नहीं है या कोई अंतर नहीं है। यह एक आधारभूत या डिफ़ॉल्ट स्थिति के रूप में कार्य करता है जिसके विरुद्ध शोधकर्ता परीक्षण करना चाहते हैं। उदाहरण के लिए, "संगीत के साथ अध्ययन करने वाले छात्रों और मौन रहकर अध्ययन करने वाले छात्रों के बीच परीक्षण अंकों में कोई अंतर नहीं है।"

वैकल्पिक परिकल्पना (H_1 या Ha): यह परिकल्पना बताती है कि कोई प्रभाव या अंतर है। शोधकर्ताओं का लक्ष्य इसका समर्थन करना या साबित करना है। उदाहरण के लिए, "जो छात्र संगीत के साथ अध्ययन करते हैं उनके परीक्षा अंक उन लोगों की तुलना में अधिक होते हैं जो मौन रहकर अध्ययन करते हैं।"

Conclusion

"निष्कर्ष में, इस अध्ययन के शोध डिजाइन ने चर और चरो के बीच संबंध का प्रभावी ढंग से अन्वेषण किया और शोध प्रश्न पर विचार करने योग्य अंतर्दृष्टि प्रदान की। शोध डिजाइन दृष्टिकोण ने डिजाइन की ताकत की अनुमति दी, जिसने डेटा के प्रकार के संग्रह और विशिष्ट संबंध या घटना की जांच की अनुमति दी।

इस अध्ययन के निष्कर्ष शोध विषय पर मौजूदा ज्ञान के आधार को विशिष्ट योगदान द्वारा बढ़ाते हैं। परिणामों का व्यावहारिक अनुप्रयोग या भविष्य के शोध दिशा के लिए महत्व है।

इस अध्ययन में सीमाएं थीं, लेकिन शोध डिजाइन ने सीमाओं को कम करना सुनिश्चित किया। भविष्य के शोध में भविष्य के शोध के लिए सुझाव पर विचार किया जाना चाहिए।

अंततः, इस अध्ययन के शोध डिजाइन ने ताकत और प्रभावशीलता को शोध प्रश्न को संबोधित करने और अर्थपूर्ण परिणाम प्रदान करने में प्रदर्शित किया।"

कुछ मुख्य बिंदु जिन्हें निष्कर्ष में शामिल करना चाहिए:

- शोध प्रश्न और उद्देश्यों को पुनः कथन करें
- शोध डिजाइन और विधि का सारांश दें
- मुख्य निष्कर्ष और योगदानों को उजागर करें
- परिणामों के निहितार्थ और व्यावहारिक अनुप्रयोगों पर चर्चा करें
- सीमाओं को संबोधित करें और भविष्य के शोध दिशा का सुझाव दें

इस पेपर में मैंने शोध डिज़ाइन के महत्वपूर्ण चरणों, चरणों पर संक्षेप में चर्चा की है। परीक्षण निर्माण में शामिल, अनुसंधान डिजाइन में शब्दों/अवधारणाओं का संक्षिप्त विवरण और एक शोध रिपोर्ट प्रस्तुत करने के लिए दिशा निर्देश। यह समझ के लिए पृष्ठभूमि के रूप में काम करेगा सामाजिक विज्ञान में अनुभव जन्य अनुसंधान डिजाइन के बुनियादी सिद्धांतों की।

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शोध (अनुसंधान) विधियों की प्रकृति एवं समस्याएं

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सारांश
शोध अध्ययन की प्रारंभिक अवस्था शोध समस्या का निर्धारण करना है। शोधकर्ता के लिए एवं शोध के लिए यह एक महत्वपूर्ण कार्य है। सोच चाहे आर्थिक हो, सामाजिक हो या प्राकृतिक हो, प्रत्येक शोध को इस अवस्था से गुजरना होता है। शोध विषय का चयन कर लेने के तुरंत बाद शोधकर्ता एवं योजना नहीं बनाता कि शोध में जो भी करना है, उसे कब और कैसे करना है। बल्कि इन सभी बातों पर ध्यान देने से पूर्व उसे एक विशेष शोध अध्ययन समस्या के निर्धारण की आवश्यकता होती है। इसी के संबंध में सेलिटिज, मेरिया, जहोदा एवं अन्य अपनी कृति 'रिसर्च मेथड्स इन सोशल रिलेशन' के अंतर्गत उल्लेख करते हैं कि "शोध समस्या के रूप में विषय वस्तु का निर्धारण या सूत्रीकरण वैज्ञानिक शोध की प्रारंभिक आवश्यकता है और शोध के निर्धारण का प्रथम चरण समस्या को रूपलोकन योग्य एवं स्पष्ट बनाता है।" शोध की इस प्रथम अवस्था में प्रत्येक शोधकर्ता को रुकावटों एवं परेशानियों से जूझना पड़ता है। अतः शोध समस्या (research problem) का निर्धारण करते समय आवश्यक है कि समस्या का स्पष्टीकरण करके उसे अच्छी तरह परिभाषित करना चाहिए। जब तक शोधकर्ता समस्या की पहचान को स्थापित नहीं करता, जब तक समस्या के निर्धारण का कार्य सुव्यवस्थित रूप नहीं दे सकता है।

***मुख्य शब्द** : उत्पत्ति, अध्ययन, महत्व, निर्धारण, व्याख्यात्मक, प्रयोगात्मक।*

Introduction (परिचय)

जब शोधकर्ता किसी क्षेत्र में किये गये शोधों की समीक्षा करने पर इस निष्कर्ष पर पहुंचता है कि विभिन्न लोगों द्वारा किये गये शोधों समस्या मौजूद है। अब प्रश्न है कि शोध समस्या (research problem) से तात्पर्य क्या होता है? सामान्यतः शोध समस्या (research problem) एक ऐसी समस्या होती है जिसके द्वारा दो या दो से अधिक चरों (variables) के बीच एक प्रश्नात्मक संबंध (interrogative relationship) की अभिव्यक्ति होती है। केर्लिंगर (Kerlinger, 1986) द्वारा शोध समस्या को कुछ इसी अर्थ में परिभाषित किया गया है - "समस्या एक ऐसा प्रश्नात्मक वाक्य या कथन होता है जो पूछता है - दो या दो से अधिक चरों के बीच कैसा संबंध है?"

अनुसंधान समस्या (Research Problem)

अनुसंधान समस्या क्या है? (What is research problem?)

किसी समस्या के निवारण हेतु किया जाने वाला अनुसंधान अनुसंधानकर्ता के लिए एक समस्या के रूप में जाना जाता है। जिसे शोधकर्ता सैद्धांतिक, प्रायोगिक रूप से अनुभव करता है और उसका समाधान खोजना चाहता है। हम इसे इस तरह भी कह सकते हैं कि यह वह कथन है जिसे शोधार्थी प्रतिपादित करता है। यह एक प्रश्नवाचक प्रश्न है जिसका समाधान खोजा जाना है या यह ऐसा कथन है जिसका परीक्षण किया जाना है। केर्लिंगर के अनुसार – "समस्या एक प्रश्नवाचक वाक्य अथवा कथन है जिसमें दो या दो से अधिक चरों के मध्य सम्बन्ध ज्ञात किया जाता है|" टाउनसेंड ने भी कहा है कि – "समस्या तो समाधान के लिए प्रस्तुत एक प्रश्न है।"

समस्या का चयन करना (Selecting the Problem)

अध्ययन के लिए ली गई शोध समस्या का चुनाव बहुत सावधानी से होना चाहिए। यह एक कठिन कार्य है। हालांकि ऐसा प्रतीत नहीं होता है। इस संदर्भ में एक शोध गाइड से सहायता ली जा सकती है। फिर भी, प्रत्येक शोधकर्ता को शोध समस्याओं के चुनाव का मार्ग स्वयं प्रशस्त करना चाहिए। एक शोध समस्या शोधकर्ता के अपने दिमाग की उपज होनी चाहिए। अगर हमारी आँखों को चश्मे की आवश्यकता होती है, तो यह अकेला ऑप्टिशियन नहीं है जो हमारी आँखों के लिए आवश्यक लेंस के नंबर के बारे में फैसला

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करता है। हमें खुद को भी देखना व समझना है और उसे हमारे साथ सहयोग करके सही संख्या निर्धारित करने में सक्षम होना है। इस प्रकार, एक शोध गाइड एक शोधकर्ता को एक विषय चुनने में ही मदद कर सकता है। समस्या का अध्ययन शोधकर्ता को स्वयं द्वारा करना होता है। हालाँकि, एक शोधकर्ता द्वारा शोध समस्या या शोध के लिए विषय के चयन में निम्नलिखित बिंदुओं का अवलोकन किया जा सकता है-

(i) ऐसे विषय जो अनर्देय (overdone) हैं यानी जिन पर बहुत अधिक काम हो चुका है, सामान्य रूप से नहीं चुना जाना चाहिए, क्योंकि इस तरह के मामलों में कोई नया परिणाम पाना मुश्किल होगा। (ii) विवादास्पद विषय एक औसत शोधकर्ता की पसंद नहीं बनना चाहिए। (iii) बहुत संकीर्ण या बहुत अस्पष्ट समस्याओं से बचा जाना चाहिए। (iv) अनुसंधान के लिए, चुना गया विषय परिचित और व्यवहार्य होना चाहिए ताकि संबंधित शोध सामग्री वा शोध के स्रोत आसानी से शोधकर्ता की पहुँच में हों। फिर भी इस बारे में विचार प्रस्तुत करना बहुत ही मुश्किल है कि शोधकर्ता को अपने शोध के लिए विचार कैसे प्राप्त करना चाहिए। इस उद्देश्य के लिए, एक शोधकर्ता को विश्वविद्यालय में एक विशेषज्ञ या प्रोफेसर से संपर्क करना चाहिए जो पहले से ही शोध कार्य में लगे हुए हैं। शोधकर्ता इस विषय पर उपलब्ध मौजूदा साहित्य में प्रकाशित आलेख भी पढ़ सकता है और सोच सकता है कि अन्य समस्याओं के समाधान के लिए उसमें बताई गई तकनीकों और विचारों को कैसे लागू किया जा सकता है। शोधकर्ता के दिमाग में समस्या से संबंधित जो भी विचार हैं, वह दूसरों के साथ चर्चा कर सकता है। इस तरह उसे किसी समस्या का चयन करने हेतु सभी संभव प्रयास करने चाहिए। (v) विषय का महत्व, योग्यता और शोधकर्ता का प्रशिक्षण उसमें निहित लागत, समय कारक आदि अन्य मानदंड भी हैं जिन्हें शोधकर्ता द्वारा किसी समस्या का चयन करते समय विचार किया जाना चाहिए। दूसरे शब्दों में, किसी समस्या के अंतिम चयन से पहले, एक शोधकर्ता को स्वयं से निम्नलिखित प्रश्न पूछना चाहिए - (क) क्या वह शोध करने के लिए अपनी पृष्ठभूमि के संदर्भ में अच्छी तरह सुसज्जित है? (ख) क्या अध्ययन उसके बजट के अंदर आता है? (ग) क्या अनुसंधान में विषय के रूप में भाग लेने वाले लोगों से आवश्यक सहयोग प्राप्त किया जा सकता है? यदि इन सभी सवालों के जवाब सकारात्मक हैं, तब ही कोई भी शोधकर्ता अध्ययन को व्यवहारिकता के संबंध में सुनिश्चित हो सकता है। (vi) किसी भी समस्या का चयन प्रारंभिक अध्ययन से पहले होना चाहिए। जब समस्या को अनुसंधान के आवरण की आवश्यकता होती है जो पहले से ही किया जा चुका है, तब यह आवश्यक नहीं होता। लेकिन जब जाँच का क्षेत्र अपेक्षाकृत नया होता है और अच्छी तरह से विकसित तकनीकों का एक सेट उपलब्ध नहीं होता है, तो एक संक्षिप्त व्यवहार्यता अध्ययन (feasibility study) अवश्य किया जाना चाहिए। यदि उपयुक्त बिंदुओं को ध्यान में रखते हुए अनुसंधान के लिए विषय का चयन ठीक से किया जाता है, तो शोध कार्य मुश्किल नहीं होगा। वास्तव में, काम के लिए उत्साह जरूरी है। विषय या समस्या के चयन में शोधकर्ता की आवश्यक रूप से भागीदारी होनी चाहिए तथा वह अध्ययन के आवश्यक सभी कष्ट उठाने के लिए मानसिक रूप से तैयार होना चाहिए।

शोध समस्या को परिभाषित करने की आवश्यकता (Necessity of Defining the Research Problem)

अक्सर हम सभी सुनते हैं कि एक शोध समस्या को स्पष्ट रूप प्रकट करने से ही समस्या का आधा हल प्राप्त हो जाता है। यह कथन एक शोध समस्या को परिभाषित करने की आवश्यकता को दर्शाता है। जाँच की जाने वाली समस्या को स्पष्ट रूप से परिभाषित किया जाना चाहिए जिससे अप्रासंगिक संदर्भ से प्रासंगिक संदर्भ को अलग करने में मदद मिलती है। शोध समस्या की एक उचित परिभाषा शोधकर्ता को सक्षमता प्रदान करेगी जबकि एक अस्पष्ट परिभाषित शोध समस्या उसके आगे के शोध कार्य में बाधा उत्पन्न कर सकती है। प्रश्न जैसे किस प्रकार का संदर्भ एकत्र किया जाना है? संदर्भ की कौन-सी विशेषताएँ प्रासंगिक हैं और अध्ययन करने हेतु आवश्यक हैं? किस संबंध का परीक्षण किया जाना है? उद्देश्य के लिए किस तकनीक का उपयोग किया जाना है? और इसी तरह के अन्य प्रश्न शोधकर्ता के दिमाग में उभरते हैं जिनके आधार पर वह अपनी रणनीति की अच्छी तरह से योजना बना सकता है और वे ऐसे सभी सवालों के जवाब भी पा सकता है जब अनुसंधान समस्या (research problem) अच्छी तरह से परिभाषित की गई हो। इस प्रकार, एक शोध समस्या को ठीक से परिभाषित करना किसी भी अध्ययन के लिए एक आवश्यक शर्त है और शोध प्रक्रिया में यह एक महत्वपूर्ण चरण है। वास्तव में, किसी समस्या का निर्माण अक्सर इसके समाधान से अधिक आवश्यक होता है। यह केवल शोध समस्या के सावधानीपूर्वक विवरण पर निर्भर करता है कि हम शोध-डिज़ाइन की अगली प्रक्रिया की ओर बढ़ सकते हैं एवं शोध कार्य में शामिल सभी चरणों को आसानी से अंजाम दे सकते हैं।

शोध समस्या के प्रकार (Types of Research Problem)

सामान्यतः गणित (mathematics) तथा तर्क शास्त्र (logic) जैसे औपचारिक विषय (formal disciplines) को छोड़कर हम लोग अन्य जितने तरह के विषयों (disciplines) को पढ़ते हैं उन्हें तीन भागों में बाँटा जा सकता है- पहली श्रेणी में उन विषयों या

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शास्त्रों (disciplines) को रखते हैं जिन्हें हम विज्ञान (science) कहते हैं। इसमें रसायनशास्त्र (chemistry), समाजशास्त्र (sociology), मनोविज्ञान (psychology), भूगोल (geography), जीव विज्ञान (biology), भौतिकी (physics) आदि आते हैं। दूसरी श्रेणी में उन विषयों को रखते हैं जिन्हें हम विज्ञान (science) नहीं कहते हैं। जैसे, कला (arts), साहित्य (literature), संगीत (music), भाषा (language) आदि को इसी श्रेणी में रखते हैं। तीसरी श्रेणी वह है जिसमें हम दर्शनशास्त्र (philosophy), धर्म (religion) आदि को रखते हैं। इनको लोगों ने सुविधा के लिए एक संयुक्त नाम दिया है जिसे अभौतिक विषय (metaphysical discipline) कहा जाता है। चित्र 1 में इन तीनों विषयों को दिखाया गया है। इस चित्र में दो वृत्त (circle) हैं। भीतरी वृत्त में उन विषयों को रखा गया है जिन्हें हम विज्ञान (science) कहते हैं। उसके ऊपरी वृत्त में कला (arts) तथा साहित्य आदि को रखा गया है। वृत्त के बाहर अभौतिक विषयों (metaphysical disciplines) को रखा गया है।

इन तीनों तरह के विषयों (disciplines) में शोध (research) किये जाते हैं। अतः इन सभी में शोध समस्याएँ (research problems) होती हैं। इन सभी शोध समस्याओं को विशेषज्ञों ने दो भागों में बाँटा है- (अ) समाधेय समस्या (solvable problem) तथा (ब) असमाधेय समस्या (unsolvable problem) इन दोनों की व्याख्या निम्नानुसार है:

(अ) समाधेय समस्या (Solvable Problem)

समाधेय समस्या से तात्पर्य उन समस्याओं से होता है जिनमें वैसे प्रश्न उठाये जाते हैं जिनका उत्तर दिया जाना व्यक्ति की सामान्य क्षमताओं (common capacities) के आधार पर संभव है। इस तरह की शोध समस्या (research problem) मूलतः चित्र 1 के दोनों वृत्तों (circles) के भीतर आने वाले विषयों (disciplines) अर्थात् विज्ञान (science) तथा कला (arts) एवं मानविकी (humanities) में होती है। जहाँ तक मनोविज्ञान का प्रश्न है इसमें जो शोध समस्याएँ (research problems) होती हैं वे प्रायः इसी श्रेणी की होती हैं। शोध मनोवैज्ञानिकों (research psychologist) ने समाधेय समस्या (solvable problem) की एक खास विशेषता बतलाई है - शोध समस्या को समाधेय समस्या कहलाने के लिए उसे जाँचनीय (testable) होना चाहिए। किसी भी शोध समस्या को समाधेय समस्या (solvable problem) कहलाने के लिए आवश्यक है कि मनोवैज्ञानिक उस समस्या में उठाये गये प्रश्न (question) को आनुभाविक ढंग से (empirically) हाँ या नहीं के रूप में उत्तर दे सके। दूसरे शब्दों में एक समाधेय समस्या (solvable problem) वह है जिसके लिए एक उचित एवं जाँचनीय प्राक्कल्पना (testable hypothesis) को एक अंतिम समाधान (tentative solution) के रूप में विकसित किया जा सके। मैकग्यूगन (McGuigan, 1990) के शब्दों में, "एक समस्या को समाधेय माना जा सकता है अगर इसके अंतिम समाधान के रूप में एक प्राक्कल्पना बनाया जाना संभव है।" जैसे क्या सीखने की प्रक्रिया जीव द्वारा की गयी अनुक्रिया के परिणाम (effect) पर निर्भर करती है? यह एक ऐसी शोध समस्या है जिसके लिए तैयार किये गये अंतिम समाधान (tentative solution) के रूप में कहा जा सकता है, "यदि परिणाम पुरस्कारी (rewarding) होगा, तो जीव उस प्रक्रिया को करना सीख लेगा परन्तु यदि परिणाम दंडात्मक (punishing) होगा तो जीव उस प्रक्रिया को नहीं सीख पायेगा।"

एक उपयुक्त प्राक्कल्पना (suitable hypothesis) में अन्य बातों के अलावा दो गुणों का होना भी अनिवार्य है। पहला, उसे शोध समस्या के लिए सुसंगत (relevant) होना चाहिए अर्थात् उस विशेष प्राक्कल्पना द्वारा, यदि शोध समस्या सचमुच में सही है, तो निश्चित रूप से समाधान होना संभव हो, तथा दूसरा उस विशेष प्राक्कल्पना को जाँचनीय (testable) होना चाहिए, अर्थात् उस प्राक्कल्पना को निश्चित रूप से सही या गलत ठहराया जाना संभव हो। उपयुक्त (above) प्राक्कल्पना (hypothesis) में ये दोनों गुण हैं। अतः यह कहा जा सकता है कि संबंधित शोध समस्या समाधेय (solvable) है।

(ब) असमाधेय समस्या (Unsolvable Problem)

इस तरह की शोध समस्या पर अध्ययन चित्र 1 के उन विषयों में किया जाता है जो दोनों वृत्तों से बाहर रखे हैं। दूसरे शब्दों में इस तरह की शोध समस्या पर विचार दर्शनशास्त्र (philosophy), धर्म तथा ऐसे ही अभौतिक शास्त्रों (metaphysical disciplines) में किया जाता है। असमाधेय समस्या (unsolvable problem) का संबंध अलौकिक घटनाओं (supernatural events) या प्रश्नों से होता है जिसका सही उत्तर देना संभव नहीं होता है। मैकग्यूगन (McGuigan 1990) ने असमाधेय समस्या के स्वरूप के बारे में बहुत कुछ इसी ढंग से प्रकाश डालते हुए कहा है, "असमाधेय समस्या कुछ वैसे प्रश्न होते हैं जिनका आवश्यक रूप से उत्तर नहीं दिया जा सकता है। प्रायः ऐसे प्रश्नों का संबंध अलौकिक घटनाओं या प्रश्नों से होता है जो मूल कारणों (ultimate causes) से संबंधित होते हैं।" उदाहरणस्वरूप, यदि कोई शोधकर्ता कुछ प्रश्न जैसे संसार को किसने बनाया है? आदमी की मूल प्रकृति कैसी होती है? इस संसार का परम सत्य क्या है? का अध्ययन करना चाहता है तो यह असमाधेय समस्या (unsolvable) का उदाहरण है। मनोविज्ञान का संबंध ऐसी शोध समस्याओं से नहीं होता है।

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निम्न प्रमुख दशाएं एक शोध समस्या के निर्धारण में सहायक होती हैं-

(1) समस्या का प्राथमिक ज्ञान (Fundamental Knowledge of Problem) - शोध के लिए चयनित समस्या का प्राथमिक ज्ञान, शोधकर्ता को होना आवश्यक है। जब तक ऐसा ज्ञान न हो तब तक समस्या का चुनाव नहीं करना चाहिए। (2) उचित एवं अनुरूप शीर्षक (Adequate and Proper Title) - शोध समस्या का प्राथमिक ज्ञान लेने के पश्चात् तथा शोधकर्ता को इस पर मनन या गहन विचार करने के पश्चात् इसे उचित एवं अनुरूप शीर्षक प्रदान करना चाहिए। बिना उचित शीर्षक के समस्या की कोई पहचान नहीं है। (3) शोध उद्देश्य (Research Objective) - प्रत्येक शोध के कुछ उद्देश्य होते हैं, जिन्हें शोधकर्ता प्राप्त करना चाहता है। अतः शोध समस्या का चुनाव कुछ विशेष उद्देश्यों को लेकर करे। ऐसी शोध समस्या जिसका कोई उद्देश्य नहीं है उसकी कोई समस्या भी नहीं होती। (4) समस्या अध्ययन करने का क्षेत्र (Scope of Problem Study) - शोधकर्ता को समस्या के अध्ययन का क्षेत्र, विस्तृत या संकुचित न रखकर ऐसा रखना चाहिए जिससे कि शोध समस्या का सम्पूर्ण एवं गहन अध्ययन हो सके। (5) शोध समस्या का आधार (The Base of the Research Problem) - शोध समस्या के निर्धारण में शोधकर्ता के समक्ष यह पूरी तरह स्पष्ट होना आवश्यक है कि वह जिस समस्या को शोध का आधार बनाना चाहता है, उससे सम्बन्धित कुछ विशेष तथ्यों को ज्ञात करने का आधार क्या है? इसी की सहायता से शोधकर्ता यह पता लगा सकता है कि कुछ विशेष तथ्यों के ज्ञात हो जाने से समस्या से सम्बन्धित वर्तमान ज्ञान किस प्रकार प्रभावित हो सकता है? (6) समस्या से सम्बन्धित साहित्य का अध्ययन (Study of Relevant Literature on the Problem) - पी. वी. यंग - "शोध समस्या से सम्बन्धित साहित्य का अध्ययन करने से शोधकर्ता को उन अवधारणाओं को समझने में सहायता मिलती है, जो शोध समस्या से सम्बन्धित हैं एवं विभिन्न मान्यताओं का सत्यापन करने के सूत्रों का पता हो जाता है। इस प्रकार तथ्यों की अनावश्यक दोहराव की सम्भावना कम हो जाती है, जिससे शोध अध्ययन अधिक सुव्यवस्थित बन जाता है।" (7) परिकल्पना की रचना (Construction of Hypothesis) - प्रत्येक शोध समस्या के पीछे कुछ परिकल्पनाएँ रची जाती हैं, जिसकी वैधता की जाँच संकलित एवं निर्वाचित तथ्य सामग्री से प्राप्त निष्कर्ष के आधार पर की जाती है। अतः उस समस्या के पीछे परिकल्पनाओं को रचना होगी या नहीं यदि नहीं तो ऐसी समस्या का चुनाव नहीं करना चाहिए। (8) समय एवं धन (Time and Fund) - शोध समस्या के अध्ययन में कितना समय और धन लगेगा इसके बारे में भी शोधकर्ता को योजना बनानी चाहिए अर्थात् समय एवं धन को उपलब्धता के अनुसार ही समस्या का चयन एवं क्षेत्र निर्धारित करना चाहिए। सामान्यतः शोधकर्ता को कितना समय और धन, शोध समस्या पर करना है इसकी जानकारी उसे होती है। शोध समस्या के प्रत्येक स्तर पर निश्चित समय और धन को आवश्यकतानुसार विभक्त कर देना चाहिए। (9) सहायकों की नियुक्ति एवं प्रशिक्षण (Appointment and Training of Assistants) - शोध समस्या के अध्ययन के लिए तथ्य सामग्री की आवश्यकता होती है। प्रत्येक शोधकर्ता ऐसी सामग्री का संकलन नहीं कर सकता क्योंकि उसके पास समय का अभाव होता है। अतः इस कार्य में सहायता प्राप्त करने के लिए उसे योग्य सहायकों की नियुक्ति करनी होती है। नियुक्ति के पश्चात् उसे पर्याप्त प्रशिक्षण दिया जाता है। यह ध्यान रहे कि सहायकों की योग्यता एवं रुचि भी समस्या के निर्धारण में एक अनिवार्य कदम है। (10) विशेषज्ञों से विचार विमर्श (Guidance from Subject Experts) - शोध समस्या का निर्धारण करते समय शोधकर्ता के लिए आवश्यक होता है कि वह ऐसे व्यक्तियों से शोध समस्या के बारे में विचार-विमर्श करे जो शोध समस्या के विभिन्न पहलुओं की जानकारी रखते हों। (11) तथ्य स्रोतों की प्राप्ति (Data) - शोध समस्या के निर्धारण में तथ्य स्रोतों का भी काफी महत्व है। सहायकों से प्राप्त विभिन्न तथ्य सामग्री, जैसे- नोट्स पुस्तकें, मैप, शोध पत्रिका, अप्रकाशित दस्तावेज, ग्रन्थ, फिल्में, उपन्यास एवं शोध ग्रन्थ आदि के आधार पर शोध समस्या के चयन को एक बाहरी सहायता मिलती है, अर्थात् जिस समस्या के सम्बन्ध में स्रोतों या तथ्य सामग्री पर्याप्त मात्रा में उपलब्ध होते हैं, अधिकतर शोधकर्ता उसी को शोध समस्या के रूप में चयन कर लेता है। (12) शोध समूह (Research Group) - शोधकर्ता, शोध समस्या का अध्ययन स्वतः अकेला नहीं कर सकता, उसे बाहरी एवं आन्तरिक सहायता की आवश्यकता होती है। बाहरी सहायता तो उन्हें उत्तरदाता या सूचनादाता करते रहते हैं, परन्तु आन्तरिक सहायता उसे स्वयं के स्टाफ से ही प्राप्त होती है। अतः आन्तरिक सहायता के बिना उसे शोध-प्रशिक्षण सफलता मिलती बड़ा कठिन है अतः पर्याप्त स्टाफ का होना आवश्यक है। (13) शोध समस्या का चयन (Selection of Research Problem) – अन्त में शोधकर्ता उपयुक्त सभी बातों पर भली-भाँति विचार करके शोध समस्या का चयन कर लेता है, और उसे अन्तिम रूप देकर के शोध कराने वाली संस्था को शोध प्रस्ताव के रूप में दिया जाता है।

समस्या का सीमांकन (Delimitation of Problem)

समस्या के सीमांकन से आशय अनुसंधान के लिए चयनित समस्या या पकरण की सीमाओं के निर्धारण से है। यह सीमांकन विषय वस्तु की दृष्टि से भी हो सकता है अर्थात् विषय का कितना विस्तार लिया गया है अथवा अध्ययन की भौगोलिक सीमाओं के द्वारा

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सीमांकन किया जा सकता है। भौगोलिक सीमा गांव, कस्बा, जिला, संभाग, राज्य आदि हो सकती है। शोधार्थी के द्वारा निर्देशन में यह स्पष्ट उल्लेख किया जाता है कि निर्देशन की कौन सी विधि ली गई है और किन-किन को अध्ययन किया जाना है। समस्या का सीमांकन न केवल भौगोलिक दृष्टि से किया जाता है अपितु कालखंड को भी निर्धारित किया जाता है। इसका लाभ यह है कि अनुपयोगी आंकड़े न लेकर उपयोगी आंकड़े संकलित किए जाएं। अनुसंधान समस्या के सीमांकन के लिए निम्नलिखित चरणों का अनुपालन किया जाना चाहिए:

सामान्य रूप में समस्या का कथन (Statement of the Problem in a General Way)

समस्या का प्रतिपादन सामान्य रूप से करना चाहिए। समस्या का कथन करते समय यह ध्यान अवश्य रखें कि वह प्रायोगिक, वैज्ञानिक अथवा बौद्धिक अभिरुचि की हो। इसके लिए शोधार्थी पाइलट अध्ययन (Pilot study) कर सकता है। समस्या का कथन करते समय इस बात का भी ध्यान रखें कि उसका जो समाधान दिया जाएगा उसकी व्यावहारिकता अवश्य हो।

समस्या की प्रकृति को समझना (Understand the Nature of the Problem)

समस्या का सीमांकन करते समय स्पष्ट रूप से उसकी प्रकृति और मूल को समझना चाहिए। किसी भी समस्या को समझने का सुगम रास्ता यह है कि हम उस समस्या के उद्देश्यों को खोजें। समस्या की प्रकृति को अच्छी तरह से समझने के लिए सम्बन्धित विषय के विशेषज्ञों से परामर्श किया जाना चाहिए। शोधार्थी को जिस समस्या का अध्ययन करना है उस समस्या की प्रकृति वातावरण एवं क्षेत्र के बारे में उस विषय का ज्ञान रखने वाले विशेषज्ञों से जानकारी लेनी चाहिए।

उपलब्ध साहित्य का सर्वेक्षण करना (Surveying the Available Literature)

शोधार्थी को एक विशिष्ट अनुसंधान समस्या की सीमाओं का निर्धारण अथवा सीमांकन करने से पूर्व उस समस्या से सम्बन्धित उपलब्ध सम्पूर्ण साहित्य का सर्वेक्षण करना चाहिए। जिससे कि शोधार्थी को सम्बन्धित क्षेत्र के सिद्धान्तों, अनुसंधान प्रतिवेदनों, अभिलेखों आदि का ज्ञान हो जाए। उसे जो अनुसंधान कार्य चल रहे हैं या हो चुके हैं; उनकी समीक्षा करनी चाहिए। इससे शोधार्थी को वर्तमान संसाधनों के मध्य अन्तराल का पता चलेगा। इसके साथ-साथ उसे यह भी पता चलेगा कि प्रस्तुत अध्ययन करते समय उसे किन-किन कठिनाइयों को सामना करना होगा। विभिन्न अध्ययनों के सर्वेक्षण से शोधार्थी को न केवल उपयोगी सुझाव प्राप्त होंगे अपितु वर्तमान अध्ययन के लिए नई विधियों अथवा मार्ग का भी पता चलता है। इसके माध्यम से शोध को एक नई दिशा प्राप्त होगी।

परिचर्चाओं के द्वारा विचारों का विकास (Developing Idea through Discussion)

शोधार्थी को अपने सहयोगियों, शिक्षकों और उस विशिष्ट विषय पर विशेषता रखने वाले विशेषज्ञों से परिचर्चा करनी चाहिए। इस परिचर्चा का लाभ यह होता है कि समस्या से सम्बन्धित बहुत से नए विचार मिल जाते हैं। इसे हम अनुभव सर्वेक्षण (Experience survey) के नाम से भी जानते हैं। जिन लोगों के पास अनुभव होता है अगर उनसे बातचीत की जाएं तो कुछ न कुछ नई बात उभर कर आती है। इन विशेषज्ञों की सलाह शोधार्थी के लिए अत्यंत महत्वपूर्ण है।

अनुसंधान समस्या का पुनः अभिव्यक्तिकरण (Rephrasing of the Research Problem)

अन्तिम रूप से शोधार्थी को अनुसंधान समस्या की पुनरावृत्ति प्रस्ताव के रूप में पुनः अभिव्यक्त करनी चाहिए। एक बार यदि समस्या की प्रकृति समझ ली गई है, वातावरण को परिभाषित कर लिया गया है, परिचर्चाएं कर ली गई हैं, उपलब्ध साहित्य का सर्वेक्षण किया गया है तो समस्या को विश्लेषणात्मक या कार्यात्मक पदों में पुनः अभिव्यक्त करना कठिन कार्य नहीं है। पुनः अभिव्यक्त करने के द्वारा शोधार्थी अनुसंधान समस्या को जहाँ तक सम्भव हो सकता है विशिष्ट पदों के रूप में प्रस्तुत करता है जिससे कि यह व्यावहारिक रूप से कार्य करने में सक्षम हो जाए। साथ ही यह शोधार्थी को पेनकिया परिकल्पना (Working hypothesis) के विकास में सहायता कर सकती है। इसके अतिरिक्त अनुसंधान समस्या का सीमांकन करते समय निम्नलिखित बिन्दुओं को ध्यान में रखा जाना चाहिए: अ) जो भी तकनीकी पद, शब्द अथवा वाक्यांश प्रयोग किए जाएं उनका अनुसंधान में क्या आशय है? को स्पष्ट रूप से परिभाषित किया जाना चाहिए। ब) अनुसंधान समस्या से सम्बन्धित मूलभूत अवधारणाओं का कथन स्पष्ट रूप से किया जाना चाहिए। स) अनुसंधान के मूल्य का स्पष्ट कथन दिया जाना चाहिए। द) समस्या का सीमांकन करते समय उपलब्ध तथ्यों के स्रोत और काल खंड की उपयुक्तता पर विचार करना चाहिए। ड) अनुसंधान समस्या का निर्धारण करते समय अनुसंधान का क्षेत्र और उसकी सीमाओं का स्पष्ट उल्लेख किया जाना चाहिए।

ऐतिहासिक अनुसंधान विधि (Historical Research Method)

इतिहास मानव के क्रियाकलापों व उपलब्धियों का यथार्थ व अपूर्ण अभिलेख है। इतिहास के वल घटनाओं का वर्णन मात्र नहीं है अपितु उनका सही व परीक्षित अभिलेख है, साथ ही यह घटी घटनाओं के मध्य सहसम्बन्धों की विश्वसनीय व्याख्या भी प्रस्तुत

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करता है। इससे यह भी समझने में सहायता मिलती है कि एक विशिष्ट घटना कब, क्यों, कैसे हुई? शोधार्थी अतीत के परिदृश्य में वर्तमान को समझने का प्रयास करता है, जिससे कि भविष्य के लिए समुचित निर्णय लिया जा सके। अनुसंधानों में बहुधा ऐतिहासिक विधि का उपयोग किया जाता है।

ऐतिहासिक अनुसंधान का अर्थ

एफ.एल. विटने के शब्दों में – "ऐतिहासिक अनुसंधान में अतीत के अनुभवों का विश्लेषण किया जाता है। इसका उद्देश्य विगत की घटनाओं, तथ्य तथा अभिवृत्तियों की खोज के द्वारा अभी तक अनसुलझी सामाजिक समस्याओं के समाधान हेतु चिन्तन एवं विश्लेषण प्रस्तुत करना है। इसके द्वारा मानवीय विचारधारा में विकास की रेखा एवं गति, सामाजिक क्रियाओं के आधार पर पता लगाई जाती है।" रिचर्ड एफ. कलकर के मत में – "ऐतिहासिक सत्य को ज्ञात करने के लिए एक पद्धति या सही प्रक्रिया ही ऐतिहासिक अनुसंधान विधि है।" बेस्ट के शब्दों में – "ऐतिहासिक समस्याओं के लिए अनुसंधान की वैज्ञानिक विधि का प्रयोग करना ऐतिहासिक अनुसंधान है।"

ऐतिहासिक अनुसंधान के उद्देश्य

ऐतिहासिक अनुसंधान के निम्नलिखित उद्देश्य हैं:

1. अतीत के आधार पर वर्तमान की प्रासंगिकता ज्ञात करना। इससे पुस्तकालय विज्ञानविदों व पुस्तकालयाध्यक्षों को विगत घटनाओं एवं प्रवृत्तियों के आधार पर वर्तमान परिदृश्य को समझना आसान होगा।
2. अतीत के अध्ययन के द्वारा तत्कालीन पुस्तकालय विस्तार, नीतियां तथा आदर्श को ज्ञात करना साथ ही वर्तमान में उनकी प्रासंगिकता या उपयोगिता ज्ञात करना।
3. विगत में हुई त्रुटियों का वर्तमान में परिमार्जन।
4. गंभीरता की दिशा एवं विकास का पूर्वानुमान लगाना।
5. इतिहास के आधार पर वर्तमानकालीन शिक्षा संस्थाओं, पुस्तकालयों आदि की कमियों को ज्ञात करना।
6. यह ज्ञात करना कि विगत में एक परिस्थिति में एक समाज या समूह ने कैसा व्यवहार किया और क्यों किया? व उसके क्या परिणाम हुए?
7. अतीत में घटी घटनाओं की कमबद्धता ज्ञात करना।

ऐतिहासिक अनुसंधान का महत्व

अनुसंधान की विभिन्न विधियों में ऐतिहासिक विधि का महत्वपूर्ण स्थान है साथ ही पुस्तकालय एवं सूचना विज्ञान अनुसंधान में इसका महत्व निम्नलिखित तथ्यों से परिलक्षित होता है:

1. इतिहास भूतकाल में घटी घटनाओं के परिणामों का वर्णन करते हुए उसके गुण एवं दोषों से परिचित कराता है। इससे वर्तमान की अनसुलझी समस्याओं को हल करने में सहायता मिलती है।
2. यह विधि विषय के वर्तमान स्वरूप के ऐतिहासिक विकास को स्पष्ट करती है।
3. यह विधि समाज में पुस्तकालयों के महत्व तथा समाज एवं पुस्तकालयों के अन्तर्सम्बन्ध की व्याख्या करती है।
4. ऐतिहासिक अनुसंधान भ्रमों एवं अंधविश्वासों का निवारण करता है।

ऐतिहासिक अनुसंधान के प्रकार

ऐतिहासिक अनुसंधान के प्रकार अधोलिखितानुसार हैं:

1. शास्त्रीय अध्ययन – इसमें पारम्परिक ऐतिहासिक अध्ययन किया जाता है।
2. पलेखीय अनुसंधान – पलेखीय अनुसंधान पलेखों पर आधारित अध्ययन है जिसमें अभिलेख भी सम्मिलित हैं।
3. संदर्भ ग्रन्थ सम्बन्धित अध्ययन – इसमें शोधार्थी सम्बन्धित समस्या या विकल्पों का सूक्ष्म अध्ययन करता है और भविष्य में अनुसंधान के लिए अन्य क्षेत्रों की पहचान करता है।
4. वैधानिक अनुसंधान – इसमें शोधार्थी पुस्तकालयों या पुस्तकालय शालाओं में प्रचलित नियमों एवं विधानों का अध्ययन करता है। वैधानिक अनुसंधान एक समस्या से सम्बन्धित निर्णयों के विश्लेषण के लिए भी प्रयुक्त किया जा सकता है।

ऐतिहासिक अनुसंधान के सोपान

ऐतिहासिक अनुसंधान के निम्नलिखित सोपान हैं:

1. समस्या की पहचान एवं उसकी रूपरेखा

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2. *आँकड़ों का संकलन*
3. *परिकल्पनाओं का प्रतिपादन*
4. *संकलित आँकड़ों की ऐतिहासिक आलोचना*
5. *आँकड़ों की व्याख्या एवं विश्लेषण*
6. *प्रतिवेदन लेखन*

उपयुक्त ऐतिहासिक पद्धति के सोपान वैज्ञानिक विधि के सोपानों की तरह ही हैं तथापि इनमें घटनाओं के निरीक्षण, अवलोकन या परीक्षण सोपान नहीं हैं, क्योंकि अतीत में घटी घटनाओं को पुनः दोहराया नहीं जा सकता।

समस्या की पहचान एवं उसकी रूपरेखा

अनुसंधानकर्ता को यह ध्यान में रखना चाहिए कि प्रत्येक समस्या ऐतिहासिक अनुसंधान के लिए उपयुक्त नहीं होती है। अतः सही समस्या का चयन करना भी दुष्कर कार्य है। शोधार्थी के द्वारा जिस समस्या का अनुसंधान हेतु चयन किया जाय उसका ऐतिहासिक महत्व होने के साथ-साथ सम-सामयिक महत्व भी हो। साथ ही ऐसी समस्या का चयन किया जाना चाहिए जिस पर पर्याप्त तथ्य या आंकड़े उपलब्ध हों। समस्या का चयन इतने विस्तृत रूप में भी नहीं करना चाहिए कि अनुसंधान कार्य पूरा ही न हो सके। किसी विशिष्ट लक्ष्य या उद्देश्य को ध्यान में रखकर समस्या को चयन किया जाना चाहिए।

आंकड़ों का संकलन

उपयुक्त समस्या का चयन करने के अन्तर्गत शोधार्थी समस्या से सम्बन्धित तथ्यों या आँकड़ों का संकलन करता है। आँकड़ों के संकलन हेतु शोधार्थी दो प्रकार के स्रोतों का उपयोग करता है- 1. प्राथमिक स्रोत, 2. द्वितीयक स्रोत।

प्राथमिक स्रोत

प्राथमिक स्रोत या अभिलेख वे मानवीय अवशेष हैं जो कि किसी घटना या तथ्य के प्रत्यक्ष साक्षी होते हैं। वे ऐतिहासिक अनुसंधान के आधारभूत आँकड़ों के स्रोत होते हैं। इन स्रोतों से उपलब्ध सूचनाओं को प्राथमिक आंकड़े कहा जाता है। शोधार्थी द्वारा जो आंकड़े एकत्रित किए जाते हैं, वे भी प्राथमिक स्रोत हैं। ये प्राथमिक स्रोत दो प्रकार के होते हैं: अ) अवशेष: इसमें मानवीय अवशेष सम्मिलित हैं, यथा जीवाश्म, अब्सर्पंजर, उपकरण, हथियार, चित्र, वस्त्र, संस्कृति, बर्तन, भवन, खाद्य सामग्री, फर्नीचर आदि। ब) मौखिक अभिलेख: इसमें वे अभिलेख सम्मिलित हैं जिन्हें घटना के प्रत्यक्षदर्शी या सहभागी द्वारा लिखा एवं रखा जाता है। जो कि मौखिक, लिखित साक्ष्य या अभिलेखों के स्वरूप में हो सकते हैं। इसमें सम्मिलित हैं – संविधान, घोषणा, कानून, न्यायालयों के निर्णय, पत्र, डायरी, आत्मकथा, पुस्तकें, बिल, रसीदें, पत्रिकाएं, समाचार पत्र, कार्यालयीन अभिलेख, मानचित्र, सूचीपत्र, फिल्म, पुस्तकालय सर्वेक्षण, वैधानिक अभिलेख, ग्रन्थसूचियां आदि। उपयुक्त सामग्री ऐतिहासिक अनुसंधान के लिए बहुत जरूरी है। इसी सामग्री से ऐतिहासिक तथ्य उद्घाटित व संकलित किए जाते हैं।

द्वितीयक स्रोत

जिन व्यक्तियों ने न तो वास्तविक घटना को देखा है तथा ना ही वे उस घटना के सहभागी रहे हैं, अपितु उन्होंने दूसरों के द्वारा अभिव्यक्त या सुनाए गये वर्णन को लिपिबद्ध किया है या अपने शब्दों में वर्णित किया है। इनसे प्राप्त तथ्य या आंकड़े द्वितीयक स्रोत होते हैं। यद्यपि इनमें सत्यान्श विद्यमान रहता है परन्तु मूल वास्तविकता में परिवर्तन के साथ साथ दोषपूर्ण होने की संभावना रहती है। वैज्ञानिक अनुसंधान में इस प्रकार के आँकड़ों का बहुत कम उपयोग होता है परन्तु ऐतिहासिक अनुसंधान में इन द्वितीयक स्रोतों का उपयोग बहुतायत से होता है। एक अच्छे अनुसंधानकर्ता से यह अपेक्षित है कि वह अपने अनुसंधान में अधिकाधिक रूप में प्राथमिक स्रोतों से ही तथ्यों या आँकड़ों का संकलन करे। यदि द्वितीयक स्रोतों से तथ्य या आंकड़े संकलित करने हैं तो उनकी वैधता या सत्यता की जांच करने के बाद ही उनका उपयोग किया जाना चाहिए। उदाहरण-ऐतिहासिक पाठ्यपुस्तकें व संदर्भ ग्रन्थ / स्रोत आदि।

परिकल्पनाओं का प्रतिपादन

शोधार्थी को उचित परिकल्पना को प्रतिपादित करना चाहिए। यह ऐतिहासिक तथ्यों के मध्य सम्बन्धों को अस्वीकार रूप से वर्णित करेगी। ऐतिहासिक अनुसंधान में यदि उपयुक्त परिकल्पना का अभाव है तो आंकड़े तथा तथ्य निरुद्देश्य संग्रह मात्र प्रतीत होते हैं।

आँकड़ों की व्याख्या एवं विश्लेषण

शोधार्थी के द्वारा आँकड़ों व तथ्यों की आन्तरिक एवं बाह्य आलोचना करने के अनन्तर जो कार्य है, वह है संग्रहीत आँकड़ों का समस्या के परिप्रेक्ष्य में व्याख्या एवं विश्लेषण करना। इसमें संग्रहीत आँकड़ों की तार्किक व सहायक क्रम में व्याख्या की जाती है। शोधार्थी को अपने आँकड़ों की परिसीमाओं से संतुष्ट होना चाहिए क्योंकि ऐतिहासिक आंकड़े सत्यापन रहित एवं अधूरे होते हैं।

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इसलिए शोधार्थी में उच्च स्तरीय विद्वत्ता एवं कल्पनाशीलता का होना बहुत जरूरी है। साथ ही व्याख्या करने के स्तर पर शोधकर्ता को स्वयं में सतर्कता, निष्कर्ष व तटस्थ रहना भी बहुत जरूरी है क्योंकि आँकड़ों की व्याख्या करते समय उसके अपने पूर्वाग्रह, धारणाएं व संस्कार, व्याख्या को प्रभावित कर सकते हैं। अतः शोधार्थी को अनुसंधान में वस्तुनिष्ठता बनाए रखने का प्रयत्न करना चाहिए। साथ ही आँकड़ों के यथार्थ निष्कर्ष तक पहुंचने का प्रयत्न करना चाहिए। शोधकर्ता द्वारा आँकड़ों का विश्लेषण करते समय ऐतिहासिक कार्य-कारण सम्बन्ध को प्रमाणित करना आवश्यक होता है। यह सरल कार्य नहीं है। क्योंकि ऐतिहासिक अनुसंधान में कार्य-कारण या तो पूर्व वृत्तांत के रूप में मिलते हैं या फिर अवशेष के रूप में। जबकि वैज्ञानिक क्षेत्र में ये एक सीमाबद्ध रूप में प्रयुक्त होते हैं। मानव व्यवहार के पारस्परिक सम्बन्ध अत्यधिक जटिल होने के कारण ऐतिहासिक कार्य-कारण अत्यधिक जटिल होते हैं। अतः शोधार्थी में मानव क्रियाकलाप, व्यवहार एवं मनोविज्ञान की गहरी समझ होनी चाहिए। सभी वह जटिल मानव व्यवहार की व्याख्या कर सकता है। कृष्ण कुमार के शब्दों में - "यह प्रायः संभव है कि एक ऐतिहासिक घटना और कई दूसरी घटनाओं को समानांतर रखा जाये, जिसका आधार है - इतिहास की पुनरावृत्ति। लेकिन एक इतिहासविद् को परिकल्पना के स्रोत के रूप में अनुरूपता के उपयोग में पर्याप्त सावधानी रखनी चाहिए।" ऐतिहासिक विधि में अनुसंधानकर्ता को मात्र तथ्यों को प्रमाणित करना या ऐतिहासिक घटनाओं की सूची बना देना ही नहीं होता है, अपितु आँकड़ों के विश्लेषण के आधार पर प्राप्त निष्कर्ष को सामान्यीकरण भी करना होता है। पुस्तकालय एवं सूचना विज्ञानपरक अनुसंधान में हमारा लक्ष्य ऐसी विधियों, सिद्धांतों तथा उपायों की खोज करने से है जिनसे वर्तमान मानव समुदाय लाभान्वित हो सके। वस्तुतः सामान्यीकरण के स्तर पर इसी लक्ष्य को पूर्ण करने का प्रयास होता है।

सर्वेक्षण अनुसंधान विधि (Survey Research Method)

सर्वेक्षण विधि के द्वारा अनियंत्रित घटनाओं के स्वाभाविक स्वरूप का अध्ययन किया जाता है। सर्वेक्षण विधि में विषयवस्तु अपने स्वभाव अथवा प्रकृति के अनुसार खुले रूप में कार्य करती है और अनुसंधानकर्ता स्वयं क्षेत्र में जाकर अध्ययन वस्तु के इस प्राकृतिक रूप का निरीक्षण करता है। प्रमुख रूप से सामान्य अथवा जटिल समस्याओं को समझने अथवा किसी समुदाय या समूह को विवरणात्मक अध्ययन करने के लिए प्रयोग किया जाता है। चेनपिन ने इसे स्वाभाविक प्रयोग विधि (Nature experimentation method) का नाम दिया है। इस अनुसंधान विधि का प्रयोग सामाजिक विज्ञानों और व्यावहारिक विज्ञानों में सर्वाधिक किया जाता है। पुस्तकालय एवं सूचना विज्ञान के क्षेत्र में उपयोगिता अध्ययन, समुदाय सर्वेक्षण, कर्मचारी सर्वेक्षण के क्षेत्र में इस विधि का प्रयोग किया जा रहा है। इस विधि में उत्तरदाताओं से प्रश्नों के उत्तर प्राप्त कर समस्या समाधान का प्रयास किया जाता है। यह अनुसंधान विधि वर्तमान एवं सम-सामयिक समस्याओं के समाधान के लिए उपयोग में लाई जाती है।

परिभाषाएं

1. *एफ.एन. केर्लिंगर के अनुसार - "सर्वेक्षण अनुसंधान अध्ययन में विस्तृत एवं लघु जनसंख्याओं (अथवा समग्र) का अध्ययन उनमें से चयनित प्रतिदर्शनों के आधार पर इसलिए किया जाता है ताकि उनमें अन्तर्निहित सामाजिक और मनोवैज्ञानिक चरों की सम्बन्धित घटनाओं, वितरणों, तथा पारस्परिक अन्तर सम्बन्ध का ज्ञान प्राप्त हो सके।" "Survey research studies large and small populations (or universes) by selecting and studying sample chosen from the populations to discover the relative incidence, distribution and interrelations of sociology and psychological variables."*
2. *डोनाल्ड एस. टुली और गेराल्ड एस. अल्बौम के अनुसार - "सर्वेक्षण विधि, सूचना प्राप्ति के लिए प्रश्न पूछने और / अथवा व्यवहार अवलोकन की कला और विज्ञान है।" "In survey research, we are concerned with the art and the science of asking questions and/ or observing behavior to obtain information."*

कृष्ण कुमार ने सर्वेक्षण अनुसंधान के विभिन्न रूपों में तीन समान तत्व बताए हैं वे अधोलिखित हैं -

1. *सूचना संकलन की विधि हमेशा व्यवस्थित होती है।*
2. *हमेशा यह जनसंख्या से सम्बन्धित होता है जिसका प्रतिनिधित्व निदर्शन द्वारा किया जाता है।*
3. *हमेशा यह आबादी के सदस्यों के व्यवहार से सम्बन्धित होती है।*

विशेषताएँ

सर्वेक्षण विधि की विशेषताएँ इस प्रकार हैं -

1. *यह समकालीन और वर्तमान परिस्थितियों से सम्बन्धित होती है।*

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2. *इसमें हमेशा लक्ष्य एक समूह या समग्र होता है। इस समूह या समग्र की इकाइयों को प्रतिनिधित्व निदर्शन द्वारा किया जाता है।*
3. *यह व्यक्तिगत विशेषताओं से सम्बन्धित न होकर समग्र की विशेषताओं का सामान्यीकरण निदर्शन के आधार पर किया जाता है।*
4. *इस विधि से सार्वजनिक एवं सामाजिक समस्याओं का समाधान खोजा जाता है।*
5. *यह अनुसंधान की वैज्ञानिक विधि है क्योंकि सही निदर्शन के चयन के द्वारा त्रुटियों को कम करके, विश्वसनीय आंकड़े प्राप्त किए जा सकते हैं।*
6. *सर्वेक्षण का क्षेत्र वृहद होता है।*
7. *सर्वेक्षण द्वारा अध्ययन प्रयोगशाला आधारित अध्ययन से अधिक मितव्ययी होता है। क्योंकि सर्वेक्षण द्वारा अध्ययन में अधिक सूचना सापेक्षिक रूप से कम खर्च पर तथा कम समय में उपलब्ध होती है।*

क्षेत्र

इस विधि का प्रयोग पुस्तकालय एवं सूचना विज्ञान के निम्नलिखित क्षेत्रों में किया जा सकता है:

1. *पाठक सर्वेक्षण*
2. *समुदाय सर्वेक्षण*
3. *पुस्तकालय सर्वेक्षण*
4. *सूचना आवश्यकता*
5. *उपयोगकर्ताओं का सूचना खोजने सम्बन्धी व्यवहार*
6. *उपयोगिता अध्ययन एवं प्रवृत्ति अध्ययन*
7. *सम्प्रेषण माध्यम*
8. *सूचना उपयोग करने का ढंग*
9. *सूचना प्रचार-प्रसार में बाधक तत्व*
10. *प्रक्रिया विश्लेषण*
11. *पुस्तकालय सेवाओं और प्रणालियों का मूल्यांकन*

सर्वेक्षण के प्रकार

कृष्ण कुमार ने सर्वेक्षण के निम्न प्रकार बताए हैं:

1. *वर्णनात्मक सर्वेक्षण*
2. *तुलनात्मक सर्वेक्षण*
3. *मूल्यांकनपरक सर्वेक्षण*

अन्य सर्वेक्षणों के प्रकार निम्नलिखित हैं:

1. *सामाजिक सर्वेक्षण*
2. *शैक्षिक सर्वेक्षण*
3. *बाजार सर्वेक्षण*
4. *जनमत सर्वेक्षण*
5. *निदानात्मक सर्वेक्षण*
6. *पुस्तकालय सर्वेक्षण*

वर्णनात्मक सर्वेक्षण

वर्णनात्मक सर्वेक्षण में तथ्यों का एक निश्चित समय पर वर्णन किया जाता है। वर्णनात्मक विधि का उपयोग सिद्धांतों के परीक्षण के लिए किया जा सकता है।

तुलनात्मक सर्वेक्षण

तुलनात्मक सर्वेक्षण में किन्हीं मानदंडों के आधार पर दो या दो से अधिक अनुसंधान परिस्थितियों अथवा तथ्यों की तुलना की जाती है।

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मूल्यांकनपरक सर्वेक्षण

इसमें पूर्व में निर्धारित किए गए मानदंडों या मानकों के आधार पर किन्हीं तथ्यों या अनुसंधान परिस्थितियों का मूल्यांकनपरक अध्ययन किया जाता है।

सामाजिक सर्वेक्षण

सामाजिक सर्वेक्षण में किसी समसामयिक सामाजिक समस्या को ध्यान में रखकर सर्वेक्षण किया जाता है।

शैक्षिक सर्वेक्षण

इसमें कक्षा की समस्याएं, पाठ्यक्रम, शिक्षक शिक्षार्थी सम्बन्ध और शैक्षिक पर्यावरण से सम्बन्धित सर्वेक्षण किया जाता है।

बाजार सर्वेक्षण

विभिन्न कम्पनियां अपने उत्पादनों की स्थिति एवं विस्तार के लिए बाजार सर्वेक्षण को सहारा लेती हैं।

जनमत सर्वेक्षण

आज कल विभिन्न उद्देश्यों को ध्यान में रखकर लोगों का अभिमत जानने के लिए जनमत सर्वेक्षण किए जा रहे हैं और इनसे प्राप्त परिणामों को मीडिया द्वारा प्रचारित प्रसारित किया जाता है।

निदानात्मक सर्वेक्षण

किसी समस्या के निदान के लिए निदानात्मक सर्वेक्षण का उपयोग किया जाता है।

पुस्तकालय सर्वेक्षण

इसमें पुस्तकालयों, उनकी गतिविधियों, पाठकों, कर्मचारी, सेवाओं आदि का सर्वेक्षण किया जाता है।

उपयोगिताएं या महत्व

सर्वेक्षण विधि का पुस्तकालय एवं सूचना विज्ञान के क्षेत्र में अत्यधिक महत्व है क्योंकि-

1. *उपयोगिता की दशा, मनोवृत्ति, झुकाव, कठिनाइयां सूचना खोजने की प्रवृत्ति, सूचना आवश्यकता आदि का अध्ययन किया-जा सकता है।*
2. *इसमें पुस्तकालय की विभिन्न समस्याओं का निदान खोजा जा सकता है।*
3. *पुस्तकालय एवं सूचना विज्ञान के विभिन्न स्रोतों एवं सिद्धांतों की वैधता की जांच की जा सकती है।*
4. *पुस्तकालयाध्यक्षों की विभिन्न समस्याओं का कारण एवं समाधान ढूंढा जा सकता है।*
5. *सूचना फैलाव में आ रही कठिनाइयों का निदान ढूंढा जा सकता है।*
6. *नई तकनीकों और उपकरणों के उपयोग में आ रही कठिनाइयों को समझा जा सकता है।*

सर्वेक्षण विधि के चरण

सर्वेक्षण विधि के प्रमुख चरण इस प्रकार हैं:

1. *समस्या क्षेत्र की पहचान: अथवा अनुसंधान समस्या की पहचान एवं उसका चयन।*
2. *उद्देश्यों का प्रतिपादन: इसमें शोधार्थी को अनुसंधान के उद्देश्यों को प्रतिपादित करना चाहिए। अनुसंधान के उद्देश्य खोजे जाने वाली समस्या पर आधारित होने चाहिए।*
3. *परिकल्पना को प्रतिपादन: शोधार्थी को परिकल्पना प्रतिपादित करते समय पर्याप्त ध्यान रखना चाहिए।*
4. *आंकड़ा संकलन विधि का चयन: इसमें अवलोकन, मापन, प्रश्न में से किस विधि का प्रयोग करना है, इसे सुनिश्चित करना चाहिए।*
5. *आंकड़ा संकलन तकनीक का चयन: आंकड़ा संकलन की उपर्युक्त जिस विधि का भी उपयोग करे उसके अन्तर्गत हमें तकनीक को सुनिश्चित करना चाहिए। जैसे: अवलोकन में प्रत्यक्ष अवलोकन, अप्रत्यक्ष अवलोकन, संरचित अवलोकन, असंरचित अवलोकन, सहभागी अवलोकन, असहभागी अवलोकन आदि। इसी तरह प्रश्न में प्रश्नावली, अनुसूची, साक्षात्कार (प्रत्यक्ष, टेलीफोन आदि) होने चाहिए।*
6. *समग्र का चयन: अनुसंधान की सम्पूर्ण इकाइयां या क्षेत्र ही समग्र है। इनका चयन किया जाना चाहिए।*
7. *प्रतिदर्शन का चयन: समग्र में से शोधार्थी को प्रतिदर्शन की उपयुक्त विधि अनुसरण करते हुए प्रतिदर्शन का चयन करना चाहिए। प्रतिदर्शन ऐसा होना चाहिए जो समग्र की सभी विशेषताओं का प्रतिनिधित्व करे।*

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8. *आंकड़ा संकलन: आंकड़ा संकलन में यदि प्रश्नावली, साक्षात्कार या अनुसूची का उपयोग किया गया है और प्रतिदर्शन का क्षेत्र विस्तृत है तो शोधार्थी को सहयोगियों की सहायता लेनी चाहिए। ध्यान यह रखना चाहिए कि सहयोगियों को क्षेत्रों में भेजने से पहले उन्हें पर्याप्त प्रशिक्षण दिया जाए। आंकड़ा संकलन में कहीं भी व्यक्तिगत रुचि अरुचि का प्रभाव नहीं पड़ना चाहिए। शोधार्थी को वस्तुनिष्ठता बनाए रखना चाहिए। आंकड़ा संकलन करते समय आंकड़े परिपूर्ण, सही, विश्वसनीय हैं या नहीं, इसकी जांच बीच-बीच में करते रहना चाहिए।*
9. *आंकड़ा विश्लेषण: आंकड़ा संकलन के पश्चात् उनके विश्लेषण के लिए कोड बुक तैयार करनी चाहिए। उत्तरदाताओं से प्राप्त उत्तरों को इसमें लिखना चाहिए। यह कार्य कम्प्यूटर की सहायता से भी किया जा सकता है। उसके बाद गणनात्मक और सांख्यकीय विधियों के अनुप्रयोग से विश्लेषण करना चाहिए। यह कार्य करते समय पर्याप्त सावधानी रखनी चाहिए।*
10. *निष्कर्ष की व्याख्या: आंकड़ा विश्लेषण से प्राप्त निष्कर्ष की वर्तमान संदर्भ एवं प्रसंगों में व्याख्या करनी चाहिए। पूर्व से ज्ञात निष्कर्ष और वर्तमान अनुसंधान के निष्कर्ष में जो भी साम्यता या वैषम्यता है, को स्पष्ट किया जाना चाहिए। यह कार्य करने के लिए बहुत कौशल व अनुभव का होना अत्यन्त जरूरी है।*
11. *प्रतिवेदन लेखन: प्रतिवेदन लेखन अनुसंधान मानदंडों के अनुरूप होना चाहिए। भाषा सरल एवं सारगर्भित होनी चाहिए। अनुसंधान में आलंकारिक भाषा से बचा जाना चाहिए।*

सीमाएं

सामाजिक विज्ञानों में सर्वेक्षण विधि अत्यन्त उपयोगी होते हुए भी इसके सफल क्रियान्वयन की सीमाएं हैं। सर्वेक्षण विधि खर्चीली एवं अत्यधिक समय लेने वाली है। अगर क्षेत्र बड़ा है तो सर्वेक्षण के लिए अनेक कार्यकर्ता रखने होते हैं और उनके प्रशिक्षण आदि पर व्यय करना होता है। साथ ही आंकड़ा संकलन के लिए प्रश्नावली निर्माण, सुदूर क्षेत्रों में यात्रा के साधन और क्रियान्वयन में अधिक समय एवं लागत आती है।

सर्वेक्षण अनुसंधान के उपकरण

सर्वेक्षण विधि में आंकड़ों और तथ्यों का संकलन प्रत्यक्ष विधि द्वारा किया जाता है। ध्यान यह रखना चाहिए कि आंकड़े प्रत्यक्ष अवलोकन अथवा मूल स्रोत से ही एकत्र किए जाएं। चूंकि ये प्राथमिक स्रोत हैं इसलिए इन्हें विश्वसनीय एवं मूल स्रोत से ही एकत्र करना चाहिए। प्राथमिक आंकड़ों एवं तथ्यों का आकलन निम्नलिखित विधियों द्वारा किया जा सकता है:

1. *अवलोकन*
2. *साक्षात्कार*
3. *प्रश्नावली*
4. *टेलीफोनिक सर्वेक्षण*
5. *इलेक्ट्रॉनिक सर्वेक्षण*
6. *उपयुक्त विधियों का सम्मिश्रण*

आंकड़ा संकलन का कार्य बहुत सावधानी से करना चाहिए। क्योंकि निष्कर्ष इन्हीं मूल आँकड़ों पर आधारित होते हैं। आंकड़ा संकलन का कार्य शोधार्थी द्वारा स्वयं या इलेक्ट्रॉनिक उपकरणों की सहायता से किया जा सकता है। इसके लिए कोई एक, दो अथवा दो से अधिक विधियों की सहायता ली जा सकती है।

अवलोकन

अवलोकन विधि का उपयोग सामाजिक विज्ञानों में प्राथमिक आंकड़े एकत्र करने के लिए किया जाता है। इसमें शोधार्थी एक अनुसंधान परिस्थिति का अध्ययन करता है। इसे कई तरह से किया जा सकता है। जैसे- सहभागी अवलोकन, असहभागी अवलोकन, संरचनात्मक अवलोकन, असंरचनात्मक अवलोकन, नियंत्रित अवलोकन एवं अनियंत्रित अवलोकन। सहभागी अवलोकन में शोधार्थी अवलोकन किए जा रहे अथवा अध्ययन किए जा रहे समूह का सदस्य बनकर समूह के व्यवहार का अवलोकन करता है। इसमें शोधार्थी समूह में अन्वेषणकर्ता के रूप में न जुड़कर उस समूह के सदस्य के रूप में जुड़ता है। यह पाठकों के व्यवहारों के अध्ययन के लिए अत्यन्त उपयोगी है। पाठक के द्वारा भंडार कक्ष में पुस्तकों के साथ किए जा रहे व्यवहार का अवलोकन किया जा सकता है। सहभागी अवलोकन का दोष यह है कि कई बार शोधकर्ता भावनात्मक रूप से समूह के साथ जुड़ जाता है और अवलोकन में वस्तुनिष्ठता नहीं रह पाती है। असहभागी अवलोकन में शोधार्थी समूह का बाहरी व्यक्ति के रूप में अवलोकन करता है। अर्थात् शोधार्थी समूह से दूर रहकर घटित हो रही घटनाओं का अवलोकन करता है। इसमें दोष यह है कि समूह से भिन्न व्यक्ति की उपस्थिति

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का आभास होते ही समूह अपना व्यवहार बदल सकता है। शोधार्थी आधुनिक उपकरणों जैसे टेपरेकॉर्डर, वीडियो कैमरा आदि की सहायता ले सकता है। संरचनात्मक अवलोकन में अवलोकन की जा रही इकाइयां अच्छी तरह से परिभाषित होती हैं। इसी तरह असंरचनात्मक अवलोकन में पूर्व से बिना निर्धारित और सुपरिभाषित परिस्थितियों के प्राकृतिक परिस्थिति में घटना का अवलोकन किया जाता है। नियंत्रित अवलोकन सामान्यतः प्रयोगशालाओं में जहाँ पर विषय को नियंत्रित अवलोकन परिस्थितियों में रखकर उसका अवलोकन किया जाता है। अनियंत्रित अवलोकन वह है जहाँ परिस्थिति का प्राकृतिक वातावरण में ही अवलोकन किया जाता हो।

साक्षात्कार

साक्षात्कार को प्राथमिक आंकड़े एकत्र करने की तकनीक माना गया है। इस तकनीक के द्वारा शोधकर्ता किसी व्यक्ति से वार्तालाप करके तथ्य एवं सूचनाएं एकत्र करता है। साक्षात्कार कई प्रकार का होता है - संरचित साक्षात्कार, असंरचित साक्षात्कार, नैदानिक साक्षात्कार, केन्द्रीयभूत, टेलीफोन साक्षात्कार, व्यक्तिगत साक्षात्कार और सामूहिक साक्षात्कार।

प्रश्नावली

प्रश्नावली तकनीक का उपयोग उपयोगकर्ताओं की सूचना आवश्यकता, सूचना खोजने का ढंग, सूचना खोजने सम्बन्धी व्यवहार, पाठक संतुष्टि, पुस्तकालय उत्पाद एवं सेवाओं का प्रसार आदि विषयों पर प्राथमिक सूचनाएं एकत्र करने के लिए किया जाता है। प्रश्नावली तकनीक में उपयोगकर्ताओं से प्रश्न पूछकर तथ्य एकत्र किए जाते हैं। प्रश्नावली तकनीक के कई प्रकार हैं: संरचित प्रश्नावली एवं असंरचित प्रश्नावली प्रश्नों की प्रकृति के आधार पर इसे सीधे, खुली, चित्रमय, मिश्रित प्रश्नावली में विभाजित कर सकते हैं।

टेलीफोनिक एवं मोबाइल सर्वेक्षण

आज सामाजिक एवं व्यापारिक सर्वेक्षणों में लोगों की राय जानने एवं सूचनाएं एकत्र करने के लिए टेलीफोन का उपयोग किया जा रहा है। आज टेलीकम्यूनिकेशन प्रौद्योगिकी के विस्तार एवं सस्ता होने के कारण इस तकनीक का उपयोग उत्तरदाताओं से सूचनाएं एकत्र करने के लिए किया जा रहा है। यह तकनीक मितव्ययी होने के साथ-साथ समय भी बचाती है। सुदूर क्षेत्रों में फैले हुए उत्तरदाताओं से सूचनाएं एकत्र करने एवं उनकी राय जानने का यह अच्छा माध्यम है। इसमें उत्तरदाता से टेलीफोन अथवा मोबाइल के माध्यम से जानकारी एकत्र की जाती है। इस तकनीक का उपयोग सेवा क्षेत्र, मनोरंजन क्षेत्र एवं शैक्षिक क्षेत्रों में भरपूर किया जा रहा है। लाभ:

1. *उत्तरदाता से सजीव सम्प्रेषण सम्भव है।*
2. *प्रश्न के स्पष्ट न होने की दशा में स्पष्टीकरण दिया जा सकता है।*
3. *लोग लिखित में उत्तर देने की बजाय बोलना ज्यादा पसंद करते हैं।*
4. *प्रत्युत्तर दर उच्च है।*
5. *उत्तरदाता एवं प्रश्नकर्ता अपनी सुविधा के समयानुसार साक्षात्कार कर सकते हैं। दोष:*
6. *विस्तृत चर्चा सम्भव नहीं है।*
7. *यदि कथनों को टेप नहीं किया गया है तो उत्तरदाता अपने कथन से मुकर सकता है।*
8. *उत्तरदाता के पास टेलीफोन या मोबाइल सुविधा होना आवश्यक है।*

इलेक्ट्रॉनिक सर्वेक्षण

सूचना प्रौद्योगिकी के विकास एवं उसकी उपलब्धता ने सर्वेक्षण के कार्य को सरल, सस्ता एवं आसान कर दिया है। आज इंटरनेट एवं ई-मेल की सहायता से सर्वेक्षण का कार्य किया जा सकता है। इलेक्ट्रॉनिक स्वरूप में प्रश्नावली का निर्माण, उसे भेजना, उत्तरदाता से पुनः प्राप्त करना, आंकड़ों को वर्गीकरण, विश्लेषण एवं प्रस्तुतीकरण आसान हो गया है। साथ ही यह प्रक्रिया परिशुद्धता एवं तीव्रता के साथ की जा सकती है। लाभ:

1. *वेब आधारित सर्वेक्षण उत्तरदाता एवं प्रश्नकर्ता दोनों के लिए आसान है।*
2. *लागत अत्यन्त कम है।*
3. *उत्तरदाता अपनी सुविधा के अनुसार उत्तर दे सकता है।*
4. *प्रश्नावली के खोने का भय नहीं।*
5. *भौगोलिक सीमाओं की बाध्यता नहीं।*

उपयुक्त विधियों का सम्मिश्रण

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इसमें उपयुक्त प्रक्रियाओं में से दो या दो से अधिक प्रक्रियाओं का उपयोग किया जाता है।

वर्णनात्मक अनुसंधान विधि (Descriptive Research Method)

वर्णनात्मक अनुसंधान में वर्तमान स्थितियों, प्रणालियों, प्रवृत्तियों आदि का वर्णन किया जाता है इसलिए इसे वर्णनात्मक अनुसंधान विधि कहते हैं। सामाजिक विज्ञानों में इस विधि का प्रयोग किया गया है। कुछ विद्वान इसे अलग से अनुसंधान विधि नहीं मानते हैं क्योंकि सभी प्रकार के अनुसंधानों में वर्णनात्मक विधि का उपयोग दिखाई देता है। इस विधि की प्रमुख विशेषता यह है कि इसमें शोधार्थी को चरों पर नियंत्रण नहीं रहता है। वस्तुतः इसमें शोधार्थी जो कुछ भी घटित हो चुका है या होने वाला है उसका वर्णन मात्र करता है। अनेक विद्वान वर्णनात्मक अनुसंधान विधि को सर्वेक्षण विधि के अन्तर्गत भी रखते हैं। लेकिन वर्णनात्मक विधि मात्र आंकड़ों के संकलन एवं उनके प्रस्तुतीकरण तक ही सीमित नहीं होती है बल्कि इसमें चरों के वर्णन किए जा रहे तथ्यों एवं आँकड़ों की उपयोगिता की महत्वपूर्ण व्याख्या भी की जाती है। इस विधि में शोधार्थी वर्णन के साथ-साथ तुलना एवं मूल्यांकन भी करता है। इस विधि के प्रयोग के द्वारा पुस्तकालय एवं सूचना विज्ञान की अनेक समस्याओं को समाधान खोजा जा सकता है। पुस्तकालय एवं सूचना विज्ञान में भी इस विधि का प्रयोग पाठक सर्वेक्षण, कार्य एवं गतिविधि विश्लेषण, कर्मचारी पाठक अभिप्रेरण और अन्य अध्ययनों में किया जा सकता है। सामाजिक विज्ञानों के अलावा इस विधि का प्रयोग भौतिक एवं प्राकृतिक विज्ञानों में भी किया जा सकता है। वर्णनात्मक विधि आंकड़ा संग्रहण उपकरणों और साधनों जैसे- अनुसूची, प्रश्नावली मापनी, रेटिंग स्केल आदि के विकास के लिए भी अत्यन्त उपयोगी है। इस विधि में आगमन-निगमन तर्क विधियों का उपयोग सामान्यीकरण पर पहुंचने के लिए किया जाता है।

प्रयोगात्मक अनुसंधान विधि (Experimental Research Method)

प्रयोगात्मक अनुसंधान एक ऐसी उन्नत वैज्ञानिक पद्धति है। जिसके अन्तर्गत हम किसी सूक्ष्म समस्या का समाधान प्रस्तुत कर सकते हैं। इस अनुसंधान विधि को प्रयोगात्मक अनुसंधान के नाम से भी जाना जाता है। यह विधि अर्थ एवं उपयोगिता की दृष्टि से अत्यन्त व्यावहारिक है क्योंकि इसमें अध्ययन नियंत्रित परिस्थितियों में किया जाता है। यह अनुसंधान इस तथ्य को स्पष्ट करता है कि जब सभी सम्बन्धित चरों अथवा परिस्थितियों पर सावधानीपूर्वक नियंत्रण करके प्रयोगात्मक चर में परिवर्तन किया जाये तो क्या निष्कर्ष प्राप्त होगा? इस प्रकार के परीक्षण वैज्ञानिक प्रयोगशालाओं में नियंत्रित परिस्थितियों में किये जाते हैं क्योंकि प्रयोगशाला में स्थितियों पर पर्याप्त नियंत्रण किया जा सकता है। लेकिन यहां विद्यार्थियों को यह ध्यान रखने की आवश्यकता है कि इसका प्रयोग प्रयोगशालाओं से बाहर भी किया जा सकता है और किसी विषय या तथ्य के भविष्य का सटीक अनुमान प्रतिपादित किया जा सकता है। वस्तुतः प्रयोगात्मक अनुसंधान विधि अत्यन्त वैज्ञानिक अनुसंधान विधि है जिसके द्वारा नये ज्ञान की खोज की जा सकती है। इसमें दो चरों के मध्य कारण एवं कार्य संम्बन्ध को अध्ययन प्रत्यक्ष अवलोकन और मापन के द्वारा किया जाता है। इन चरों के मध्य कार्य एवं कारण सम्बन्ध का अध्ययन प्रयोगशालाओं और प्राकृतिक अवस्थाओं दोनों में किया जा सकता है। प्रयोगशाला परीक्षण करने के लिए आदर्श एवं सुविधाजनक स्थल है। यहां शोधार्थी की आवश्यकता के अनुसार भविष्य की परिस्थितियों का निर्माण किया जा सकता है और चरों पर नियंत्रण भी किया जा सकता है।

परिभाषा

ग्रीनवुड के अनुसार - 'प्रयोग परिकल्पना का परीक्षण करने की वह विधि है जो कि कार्य कारण सम्बन्ध को बताती है इसमें नियंत्रित परिस्थितियों में कार्य कारण सम्बन्ध का आकलन किया जाता है।' जे.डब्ल्यू बेस्ट ने प्रयोगात्मक अनुसंधान विधि को इस तरह परिभाषित किया है - 'प्रयोगात्मक अनुसंधान सावधानीपूर्वक नियंत्रित परिस्थिति में क्या होगा अथवा कब घटना घटित होगी, इसका वर्णन और विश्लेषण किया जाता है।' सारी अनुसंधान विधियों में यह सबसे अधिक विश्वसनीय किन्तु कठिन विधि है।

अनुप्रयोग के क्षेत्र

प्रयोगात्मक अनुसंधान विधि का अनुप्रयोग नए ज्ञान के सृजन के लिए किया जाता है। कृष्ण कुमार ने पुस्तकालय एवं सूचना विज्ञान के निम्नलिखित क्षेत्रों में इसके अनुप्रयोग का वर्णन किया:

1. *चरों के मध्य आकस्मिक सम्बन्धों की पहचान के लिए।*
2. *परिकल्पनाओं के परीक्षण के लिए।*
3. *सिद्धांतों के परीक्षण के लिए।*
4. *सिद्धांतों को स्थापित करने के लिए।*
5. *प्रलेखों/सूचना को अर्जित, वर्गीकृत, संग्रहण करने और पुनः प्राप्ति की नई तकनीकों के परीक्षण के लिए।*

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6. *नए पुस्तकालय एवं सूचना सेवाओं के परीक्षण के लिए।*
7. *पूर्व से अध्ययनाकर्षित अथवा कम परिभाषित पुस्तकालय और सूचना विषयों की पहचान के लिए।*
8. *पुस्तकालय और सूचना समुदायों के लिए एवं एक शोधार्थी की जिज्ञासा की संतुष्टि के लिए।*
9. *नए पुस्तकालय एवं सूचना विज्ञान, शैक्षिक प्रोग्राम की जांच / परीक्षण करने के लिए।*
10. *नए पुस्तकालय और सूचना विज्ञान पाठ्यक्रम को परीक्षण करने के लिए।*
11. *कक्षाओं को व्यवस्थित करने के लिए एक नई विधि के परीक्षण के लिए।*

चर

चर एक घटना या विषय में परिवर्तनशील तत्व है जिसका सभी प्रकार के अनुसंधान में अवलोकन या मापन किया जाता है। प्रयोगात्मक अनुसंधान विधि में शोधार्थी कुछ चरों को नियंत्रित एवं प्रभावित करता है और प्रयोगात्मक अनुसंधान विधि का प्रमुख उद्देश्य चरों के सह सम्बन्धों को ज्ञात करना है। अनुसंधान में चर अथवा तथ्य वह तत्व है जिनके कार्य-कारण सम्बन्धों को जानने का प्रयास शोधार्थी करता है। ये चर विभिन्न परिस्थितियों में भिन्न-भिन्न होते हैं और इनका मूल्य बदलता है शोधार्थी के लिए इन चरों को समझना अत्यन्त आवश्यक है।

स्वतंत्र चर

स्वतंत्र चर से आशय उस राशि से है जिसे प्रयोगकर्ता किसी घटना का अवलोकन करने के लिए प्रभावित करता है। अर्थात् घटाता एवं बढ़ाता है। पक्ष, तत्व अथवा परिस्थितियां जिन्हें प्रभावित करता है, उन्हें स्वतंत्र चर कहते हैं। स्वतंत्र चर के उदाहरण उम्र, आय, लिंग, शिक्षा, प्रेरणा का स्तर, बुद्धिमत्ता, उपलब्धि आदि हैं।

आश्रित चर

आश्रित अथवा परिवर्ती चर वह चर है जो स्वतंत्रता के घटाने, बढ़ाने पर घट, बढ़ जाए। अर्थात् स्वतंत्र चर के प्रदर्शन पर प्रदर्शित हो और हटाने पर अदृश्य हो जाए अथवा मात्रा के परिवर्तन पर परिवर्तित हो।

प्रयोगात्मक अनुसंधान विधि के सोपान

1. *समस्या का चयन और सीमांकन*
2. *सम्बन्धित साहित्य का सर्वेक्षण*
3. *प्रयोगात्मक अभिकल्प तैयार करना*
4. *अनुसंधान परिकल्पनाओं का प्रतिपादन*
5. *प्रयोग समूह का चयन इसमें सम्मिलित हैं- प्रयोग का स्थान, अवधि, विषय सामग्री का निर्धारण*
6. *परीक्षण का आयोजन*
7. *प्रयोग का अवलोकन एवं मापन करना*
8. *आंकड़ों का वर्गीकरण एवं विश्लेषण करना*
9. *निष्कर्ष की व्याख्या*
10. *प्रतिवेदन लेखन*

इसके साथ-साथ प्रतिवेदन लेखन के प्राथमिक भाग में निम्नलिखित जानकारी दी जाती है:

1. *मुख पृष्ठ*
2. *शोधकर्ता का घोषणा पत्र*
3. *अनुसंधान निर्देशक का प्रमाण पत्र*
4. *प्राक्कथन*
5. *विषय सूची*
6. *सारणी सूची*
7. *चित्रों की सूची*

अन्त में सन्दर्भ भाग दिया जाता है जिसमें सम्मिलित हैं:

1. *पाद टिप्पणी*
2. *ग्रन्थ सूची*

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3. *परिशिष्ट*
4. *अनुक्रमणिका*

शोधकर्ता को प्रयोगात्मक अनुसंधान विधि के लिए उपयुक्त समस्या का चयन अत्यन्त सावधानी से करना चाहिए। अनुसंधान समस्या से सम्बन्धित साहित्य का सर्वेक्षण विस्तार से करना चाहिए। स्वतंत्र चरों का चयन सावधानी से करना चाहिए। पुस्तकालय एवं सूचना विज्ञान के क्षेत्र में नई तकनीकों, सेवाओं का परीक्षण किया जा सकता है। नई शिक्षा प्रक्रियाओं और पाठ्यक्रमों का परीक्षण भी किया जा सकता है।

प्रयोगात्मक अभिकल्प

इसमें छात्रों या पाठकों का एक समूह होता है जिसे परीक्षण के लिए चयनित किया जाता है। इसमें यदि प्रयोगशाला में परीक्षण करना है तो स्वचालित वातावरण होता है और यदि क्षेत्र परीक्षण करना है तो प्राकृतिक वातावरण का चयन करना चाहिए। सामान्यतः प्रयोगात्मक अभिकल्प की तीन प्रमुख विधियां हैं:

1. *पाठक या एक समूह प्रयोग*
2. *समांतर अथवा समकक्ष समूह प्रयोग*
3. *क्रम आवर्तन समूह विधि द्वारा प्रयोग*

पायलट अध्ययन

शोधार्थी को प्रयोगात्मक विधि का उपयोग करने से पूर्व पायलट अध्ययन अवश्य करनी चाहिए। इसका लाभ यह है कि परीक्षण से सम्बन्धित अनेक त्रुटियों और संदेहों को दूर किया जा सकता है और गुणवत्ता एवं सफलता की दृष्टि से भी पायलट अध्ययन आवश्यक है।

परीक्षण का आयोजन

परीक्षण करते समय शोधार्थी को निम्नलिखित सावधानियां बरतनी चाहिए:

1. *अप्रयोगात्मक तत्वों अथवा चरों को नियंत्रित करना चाहिए।*
2. *निदर्शन का चयन अत्यन्त सावधानी से किया जाना चाहिए।*
3. *स्वतंत्र चरों को नियंत्रित करना आना चाहिए।*
4. *परीक्षण में पूर्व एवं पश्चात् जांच अवश्य करनी चाहिए।*
5. *परीक्षणात्मक निष्कर्ष का मापन।*
6. *खोजे गए निष्कर्ष की विश्लेषण एवं व्याख्या करनी चाहिए।*
7. *वर्तमान तथ्यों से प्राप्त निष्कर्ष का मिलान करना चाहिए।*
8. *परीक्षण से प्राप्त तथ्यों को सत्यापित करना चाहिए।*
9. *प्रतिवेदन लेखन।*

विशेषताएँ

कृष्ण कुमार ने प्रयोगात्मक अनुसंधान विधि की तीन प्रमुख विशेषताएँ बताई हैं। ये निम्न हैं: 1) नियंत्रण, 2) पुनरावृत्ति, 3) यादृच्छिकीकरण। नियंत्रण परिशुद्ध मापन उपकरणों पर आश्रित है। परीक्षणों की वैधता की जांच के लिए पुनरावृत्ति आवश्यक है। यादृच्छिकीकरण इस बात को सुनिश्चित करने के लिए जरूरी है कि परीक्षण के बाद प्राप्त परिणाम उन तत्वों के कारण नहीं हैं जो स्वतंत्र चरों से सम्बन्धित नहीं हैं। अन्य विशेषताएँ इस प्रकार हैं:

1. *यह अनुसंधान विधि जे.एस. मिल के एकल परिवर्ती नियम पर आधारित है। इस नियम के अनुसार यदि दो समान स्थितियों में कोई एक तत्व मिलाया या हटाया जाए तो उसमें होने वाला परिवर्तन उस हटाए या जोड़े गए तत्व की क्रिया का परिणाम होता है।*
2. *पुस्तकालय एवं सूचना विज्ञान में इसका कुछ सीमा तक प्रयोग किया जा सकता है। इसमें प्रयोग करते समय चरों पर पूर्ण नियंत्रण करने का प्रयास किया जाता है जिससे कि अनुसंधान परिणाम सटीक रूप से मिल सकें।*
3. *इसमें दूसरी अनुसंधान विधियों की बजाय चरों में आकस्मिक सम्बन्ध का निर्धारण बेहतर ढंग से किया जा सकता है।*
4. *इस अनुसंधान प्रक्रिया में परिस्थितियों का सृजन एवं उनका परीक्षण किया जा सकता है। इसमें वैज्ञानिक उपकरणों एवं आधुनिक यंत्रों से मानवीय त्रुटियों एवं असावधानियों को दूर किया जा सकता है।*

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5. *इसमें प्रयोगों को पुनः-पुनः दोहराया जा सकता है।*
6. *इस विधि से प्राप्त परिणाम वैज्ञानिक दृष्टि से उच्च स्तरीय होते हैं एवं उनका सही मापन किया जा सकता है।*
7. *पुस्तकालय एवं सूचना विज्ञान के क्षेत्र में पाठकों को उन स्थितियों में रखकर प्रयोग किया जा सकता है जो हानिकारक हैं।*
8. *मानव के साथ प्रयोग करना एक कठिन कार्य है।*
9. *प्रयोगात्मक प्रक्रिया का उपयोग वर्तमान अध्ययन के लिए किया जा सकता है लेकिन भूतकाल की परिस्थितियों से सम्बन्धित अध्ययन नहीं किया जा सकता है।*

प्रयोगात्मक अनुसंधान अभिकल्प

प्रयोगात्मक अनुसंधान अभिकल्प प्रयोग की अवधारणा पर आधारित है। मूलतः प्रयोग एक नियंत्रित खोज है। शोधार्थी प्रयोग में न केवल चरों पर नियंत्रण करता है अपितु वह इच्छानुसार उन्हें घटा बढ़ा सकता है। इसके अन्तर्गत शोधार्थी स्वतंत्र चरों के घटाने एवं बढ़ाने के द्वारा आश्रित चरों में आए परिवर्तनों का मापन करता है। प्रयोगात्मक अभिकल्प के तीन मूलभूत सिद्धांत हैं जो इसे प्रकार हैं:

1. *प्रत्युत्तर का सिद्धांत (The principle of replication)*
2. *यादृच्छिक का सिद्धांत (The principle of randomisation)*
3. *स्थानीय नियंत्रण का सिद्धांत (The principle of local control)*

प्रत्युत्तर का सिद्धांत

इस सिद्धांत के अनुसार एक प्रयोग को पुनः-पुनः किया जाना चाहिए। पुनः-पुनः प्रयोगों से प्राप्त परिणाम ज्यादा विश्वसनीय होते हैं। ये परिणाम उन परिणामों से ज्यादा विश्वसनीय होते हैं जिन्हें पुनः-पुनः दोहराया नहीं गया है। अतः इस प्रत्युत्तर सिद्धांत का परीक्षण करते समय ध्यान अवश्य रखा जाए जिससे अच्छे से अच्छे परिणाम प्राप्त किए जा सकें।

यादृच्छिक का सिद्धांत

यह सिद्धांत हमें यादृच्छिकीकरण के द्वारा बाहरी तत्वों के प्रभावों के विरुद्ध सुरक्षा प्रदान करता है। इसमें हमें प्रयोग करते समय यादृच्छिक नमूना तकनीक को अपनाना चाहिए। इससे लाभ यह है कि हम यादृच्छिकीकरण सिद्धांत अनुप्रयोग करते हैं तो बाहरी तत्वों के प्रभाव से स्वयं को बचा सकते हैं।

स्थानीय नियंत्रण का सिद्धांत

स्थानीय नियंत्रण के सिद्धांत की सहायता से प्रयोगात्मक दोष जो कि बाहरी तत्वों की परिवर्तनशीलता के कारण आता है, उसे दूर कर सकते हैं।

निष्कर्ष

आज अनुसंधान एवं विकास गतिविधियां संगठित एवं सरकारी प्रयास बन चुके हैं। अनुसंधान कार्य से नया ज्ञान सृजित होता है। नया ज्ञान ही समस्त विकास का आधार है। शोध के तीन प्रकार हैं - शुद्ध अनुसंधान, व्यावहारिक अनुसंधान एवं क्रियात्मक अनुसंधान। शुद्ध अनुसंधान में सिद्धांतों एवं नियमों की खोज की जाती है। व्यावहारिक अनुसंधान में राष्ट्रीय एवं अन्तर्राष्ट्रीय समस्या का समाधान खोजा जाता है। जबकि क्रियात्मक अनुसंधान में स्थानीय समस्याओं का हल खोजा जाता है। पुस्तकालय एवं सूचना विज्ञान में निरन्तर शोध की आवश्यकता है। शोध समस्या वह प्रश्न है जिसका शोधार्थी हल खोजना चाहता है। शोध कार्य को करने के लिए शोधार्थी को अनेक चरणों से होकर गुजरना पड़ता है। शोधार्थी को शोध के प्रत्येक चरण पर ध्यान देना चाहिए। पुस्तकालय एवं सूचना विज्ञान के क्षेत्र में अनुसंधान विधियों का उपयोग निरन्तर हो रहा है। ऐतिहासिक अनुसंधान के लिए शोधार्थी का निष्पक्ष होना आवश्यक है। ऐतिहासिक अनुसंधान विधि का प्रयोग भूतकाल के परिप्रेक्ष्य में वर्तमान को समझने व भविष्य के लिए भविष्यवाणी करने के रूप में करना चाहिए। इसी तरह वर्तमान परिस्थितियों के अध्ययन के लिए सर्वेक्षण अनुसंधान विधि का अनुसरण करना चाहिए। इस विधि का प्रयोग सामाजिक विज्ञानों में सबसे ज्यादा किया जाता है। वर्णनात्मक अनुसंधान में वर्तमान स्थितियों, प्रणालियों और प्रवृत्तियों का वर्णन किया जाता है। प्रयोगात्मक अनुसंधान विधि में नियंत्रित एवं अनियंत्रित परिस्थितियों में चरों के प्रभावों का विश्लेषण एवं अध्ययन किया जाता है।

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अनुसंधान पद्धति

ज्योति कुमारी
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सारांश
यह शोध लेखन अनुसंधान विधि के परिचय से जुड़ी है। इसमें अनुसंधान विधि के परिचय से जुड़ी संपूर्ण जानकारी विस्तृत रूप से दी गई है। इसे सरल तथा आसान शब्दों में समझाया गया है जिससे सभी को समझने में आसानी हो। व्यापक अर्थ में अनुसंधान किसी भी क्षेत्र में ज्ञान की खोज करना या विधिवत् गवेषणा करना होता है। वैज्ञानिक अनुसंधान में वैज्ञानिक विधि का सहारा लेते हुए जिज्ञासा का समाधान करने की कोशिश की जाती है। नई वस्तुओं की खोज और पुरानी वस्तुओं एवं सिद्धांतों का पुनः परीक्षण करना, जिससे कि नए तथ्य प्राप्त हो सके उसे शोध कहते हैं। शोध लेखन का सामान्य उद्देश्य यह है कि शोध से नए तथ्यों और सिद्धांतों की खोज होती है जिससे ज्ञान में वृद्धि होती है। शोधार्थियों को किसी विषय पर शोध करने के लिए कुछ महत्वपूर्ण तथ्यों को ध्यान में रखना चाहिए जिससे उनका शोध लेखन सरल तथा विधिवत् हो सके। शोध लेखन की शुरुआत शोध का परिचय देते हुए की गई है इसके बाद शोध का उद्देश्य, प्रमुख घटक, शोध के प्रकार, अनुसंधान विधि के चरण, इसका महत्व, साहित्य समीक्षा तथा इसका अंत अनुसंधान के निष्कर्ष देते हुए किया गया है।

***मुख्य शब्द** : अनुसंधान विधि, अध्ययन, शोध के प्रकार, सिद्धांतों,*

प्रस्तावना

शोध मानव के ज्ञान को नई दिशा देता है तथा उसे विकसित करता है। अनुसंधान ज्ञान के विभिन्न पहलुओं में गहराई और सूक्ष्मता प्रदान करता है। शोध कई नई पद्धतियों का विकास करता है, अनुसंधान वैज्ञानिक पद्धति पर आधारित विश्लेषण की अधिक तर्क संगत, व्यवस्थित, गहन प्रक्रिया है। व्यापक अर्थ में अनुसंधान किसी भी क्षेत्र में ज्ञान की नई खोज करना या विधिवत् गवेषणा करना होता है। वैज्ञानिक अनुसंधान में वैज्ञानिक विधि का सहारा लेते हुए जिज्ञासा का समाधान करने की कोशिश की जाती है। नई वस्तुओं की खोज और पुरानी वस्तुओं एवं सिद्धांतों का पुनः परीक्षण करना, जिससे कि नए तथ्य प्राप्त हो सके उसे शोध कहते हैं। शोध उस प्रक्रिया अथवा कार्य का नाम है जिसमें बोधपूर्ण तथ्यों का संकलन कर व्यवस्थित व सावधानीपूर्ण सूक्ष्म बुद्धि से तथ्यों का अवलोकन कर नए तथ्यों या सिद्धांतों का उद्घाटन किया जाता है।

उद्देश्य

अनुसंधान के उद्देश्य को विभिन्न तरीकों से परिभाषित किया जा सकता है। यह व्यापक अर्थ में ज्ञान की खोज करना या विधिवत् गवेषणा करना होता है। अनुसंधान का मुख्य उद्देश्य समस्याओं का समाधान करना, नए तथ्यों की खोज करना, और पुराने ज्ञान को अद्यतन करना है।

अनुसंधान के प्रमुख उद्देश्य हैं:-

- ***ज्ञान की खोज** - अनुसंधान के माध्यम से नए तथ्यों की खोज की जाती है और पुराने ज्ञान को अद्यतन किया जाता है।*
- ***समस्याओं का समाधान** - अनुसंधान समस्याओं का व्यवस्थित अध्ययन करने और उनका समाधान करने में मदद करता है।*
- ***नए ज्ञान की प्राप्ति** - अनुसंधान नए ज्ञान की प्राप्ति के लिए किया जाता है और इसे विभिन्न क्षेत्रों में लागू किया जा सकता है।*
- ***वैज्ञानिक विधि का उपयोग** - अनुसंधान में वैज्ञानिक विधि का उपयोग किया जाता है, जिसमें परिकल्पना का निर्माण, आंकड़ों का संकलन, और परिणामों का विश्लेषण शामिल है।*

अनुसंधान विधि के घटक

अनुसंधान विधि के घटक निम्नलिखित हैं:

- ***अनुसंधान प्रश्न** - अनुसंधान के उद्देश्यों को प्राप्त करने के लिए प्रश्न तैयार करना*
- ***साहित्य समीक्षा** - पहले से प्रकाशित साहित्य का विश्लेषण करना*

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➢ ***अनुसंधान विधि*** *- अनुसंधान के लिए उपयुक्त विधि का चयन करना, जैसे सर्वेक्षण, प्रयोग, मामला अध्ययन आदि*

➢ ***आंकड़ों का संग्रह*** *- अनुसंधान के लिए आवश्यक आंकड़ों का संग्रह करना*

➢ ***आंकड़ों का विश्लेषण*** *- संग्रहीत आंकड़ों का विश्लेषण करना*

➢ ***निष्कर्ष*** *- अनुसंधान के परिणामों के आधार पर निष्कर्ष निकालना*

➢ ***अनुसंधान डिज़ाइन*** *- अनुसंधान के उद्देश्यों को प्राप्त करने के लिए एक योजना तैयार करना*

➢ ***नमूना आकार*** *- अनुसंधान के लिए आवश्यक नमूना आकार का निर्धारण करना*

➢ ***आंकड़ों की विश्वसनीयता*** *- संग्रहीत आंकड़ों की विश्वसनीयता का मूल्यांकन करना*

➢ ***अनुसंधान की सीमाएं*** *- अनुसंधान की सीमाओं का मूल्यांकन करना*

अनुसंधान विधि के प्रकार

शोध कार्य सम्पन्न करने हेतु विभिन्न प्रक्रियाओं का प्रयोग किया जाता है अतः शोध के कई प्रकार होते हैं जैसे-

1. ***गुणात्मक अनुसंधान*** *- गुणात्मक आंकड़ों का संग्रह और विश्लेषण करता है ताकि वह अनुसंधान के विषय के बारे में गहराई से समझ पाए। गुणात्मक अनुसंधान में अनुसंधानकर्ता आमतौर पर छोटे नमूने का चयन करता है और गहराई से साक्षात्कार, अवलोकन, और दस्तावेज़ विश्लेषण जैसी तकनीकों का उपयोग करता है। ऐसी अनुसंधान विधि जिसमें गैर-मात्रात्मक आंकड़ों का संग्रह और विश्लेषण किया जाता है, जिससे अनुसंधान के उद्देश्यों को प्राप्त करने में मदद मिलती है।*
2. ***मात्रात्मक अनुसंधान*** *- मात्रात्मक अनुसंधान एक प्रकार का अनुसंधान है जिसमें अनुसंधानकर्ता मात्रात्मक आंकड़ों का संग्रह और विश्लेषण करता है ताकि वह अनुसंधान के विषय के बारे में सामान्यीकरण और निष्कर्ष निकाल सके। मात्रात्मक अनुसंधान में अनुसंधानकर्ता आमतौर पर बड़े नमूने का चयन करता है और सर्वेक्षण, प्रयोग, और आंकड़ों के विश्लेषण जैसी तकनीकों का उपयोग करता है। ऐसी अनुसंधान विधि जिसमें मात्रात्मक आंकड़ों का संग्रह और विश्लेषण किया जाता है, जिससे अनुसंधान के उद्देश्यों को प्राप्त करने में मदद मिलती है।*
3. ***मिश्रित अनुसंधान*** *- ऐसी अनुसंधान विधि जिसमें गुणात्मक और मात्रात्मक दोनों प्रकार के आंकड़ों का संग्रह और विश्लेषण किया जाता है, जिससे अनुसंधान के उद्देश्यों को प्राप्त करने में मदद मिलती है।*
4. ***ऐतिहासिक अनुसंधान*** *- एक ऐसी अनुसंधान विधि जिसमें अतीत की घटनाओं और परिस्थितियों का अध्ययन किया जाता है, जिससे ऐतिहासिक जानकारी प्राप्त करने में मदद मिलती है।*
5. ***विकासात्मक अनुसंधान*** *- ऐसी अनुसंधान विधि जिसमें नए उत्पादों या प्रक्रियाओं का विकास किया जाता है, जिससे नवाचार और विकास में मदद मिलती है।*
6. ***आकलन अनुसंधान*** *- एक ऐसी अनुसंधान विधि जिसमें किसी कार्यक्रम या नीति की प्रभावशीलता का मूल्यांकन किया जाता है, जिससे सुधार और निर्णय लेने में मदद मिलती है।*

अनुसंधान विधि के चरण

शोध प्रक्रिया कई चरणों से होकर गुजरती है। शोध प्रक्रिया के प्रमुख चरण हैं-

1. ***अनुसंधान समस्या का चयन*** *–*

   अनुसंधान समस्या का चयन एक ऐसी प्रक्रिया है जिसमें शोधकर्ता एक विशिष्ट समस्या या मुद्दे को चुनता है जिसका अध्ययन और विश्लेषण करना है। यह समस्या आम तौर पर एक प्रश्न, एक समस्या, या एक विवाद होता है जिसका उत्तर या समाधान खोजा जाना है।

   अनुसंधान समस्या का चयन के मुख्य बिंदु:

   ➢ ***समस्या का चयन*** *- अनुसंधान की शुरुआत समस्या का चयन करके की जाती है।*

   ➢ ***समस्या की परिभाषा*** *- समस्या की स्पष्ट परिभाषा करके अनुसंधान की दिशा तय की जाती है।*

   ➢ ***समस्या की महत्व*** *- समस्या का महत्व और अनुसंधान की आवश्यकता का मूल्यांकन किया जाता है।*

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➢ ***समस्या की व्यापकता*** - *अनुसंधान की व्यापकता और समस्या के संबंध की स्थापना की जाती है।*

➢ ***समस्या की जटिलता*** - *अनुसंधान में समस्या की जटिलता से तात्पर्य है समस्या के विभिन्न पहलुओं, कारणों और संबंधों की जटिलता से। यह अनुसंधान की प्रक्रिया को प्रभावित कर सकती है और अनुसंधान के परिणामों की व्याख्या को जटिल बना सकती है।*

➢ ***समस्या का अध्ययन के लिए उपयुक्तता*** - *समस्या का अध्ययन के लिए उपयुक्तता का अर्थ है समस्या की स्पष्टता, महत्व, जटिलता, आंकड़ों की उपलब्धता, समय-सीमा, संसाधनों की उपलब्धता, और नैतिकता को ध्यान में रखते हुए अनुसंधान की योजना बनाना।*

➢ ***अनुसंधान समस्या का चयन के उद्देश्य*** - *अनुसंधान समस्या के चयन के उद्देश्य से तात्पर्य है अनुसंधान के लिए समस्या का चयन करने के पीछे के मुख्य उद्देश्यों से। यह अनुसंधान के लक्ष्यों और उद्देश्यों को निर्धारित करता है और अनुसंधान की दिशा तय करता है।*

➢ ***नए ज्ञान की खोज करना*** - *नए ज्ञान की खोज करने से तात्पर्य है अनुसंधान और अध्ययन के माध्यम से नए तथ्यों, सिद्धांतों, और अवधारणाओं की खोज करना, जिससे ज्ञान की वृद्धि होती है और समस्याओं का समाधान होता है।*

➢ ***समस्या का समाधान खोजना*** - *समस्याओं का समाधान खोजने से तात्पर्य है समस्याओं के कारणों की पहचान करने, उनके प्रभावों का विश्लेषण करने, और उपयुक्त समाधानों की खोज करने की प्रक्रिया। यह समस्याओं को हल करने और उनके प्रभावों को कम करने के लिए किए जाने वाले प्रयासों को शामिल करता है।*

➢ ***नीतियों और कार्यक्रमों को विकसित करना*** - *नीतियों और कार्यक्रमों को विकसित करने से तात्पर्य है ऐसी योजनाओं और रणनीतियों का निर्माण करना, जो विशिष्ट उद्देश्यों और लक्ष्यों की प्राप्ति के लिए आवश्यक हैं। यह प्रक्रिया विभिन्न हितधारकों, विशेषज्ञों, और संबंधित पक्षों के बीच सहयोग और विचार-विमर्श के माध्यम से की जाती है।*

➢ ***समस्या के कारणों को समझना*** - *समस्या के कारणों को समझने से तात्पर्य है समस्या के मूल कारणों की पहचान करने और उनके प्रभावों का विश्लेषण करने की प्रक्रिया। यह समस्या के समाधान के लिए आवश्यक है और इसका उद्देश्य समस्या के मूल कारणों को दूर करना है।*

➢ ***समस्या के प्रभावों को समझना*** - *समस्या के प्रभावों को समझने से तात्पर्य है समस्या के कारणों से उत्पन्न होने वाले परिणामों और प्रभावों की पहचान करने और उनके प्रभाव को समझने की प्रक्रिया। यह समस्या के समाधान के लिए आवश्यक है और इसका उद्देश्य समस्या के प्रभावों को कम करना और समस्या के मूल कारणों को दूर करना है को रोका जा सकता है।*

2. ***समस्या से संबंधित साहित्य का व्यापक सर्वेक्षण*** –
साहित्य समाज का दर्पण होता है, जिसमें समाज की अच्छाइयों और बुराइयों का चित्रण होता है। यह हमें समाज की वास्तविक स्थिति को समझने में मदद करता है।
साहित्य के माध्यम से हम समाज की विभिन्न समस्याओं को समझ सकते हैं, जैसे कि आर्थिक, सामाजिक, राजनीतिक और धार्मिक समस्याएं। साहित्य में इन समस्याओं का समाधान भी प्रस्तुत किया जाता है, जिससे हमें समस्या का समाधान करने में मदद मिलती है।
3. ***परिकल्पना का निर्माण*** –
परिकल्पना (हाइपोथेसिस) एक शोध प्रक्रिया का एक महत्वपूर्ण हिस्सा है, जिसमें शोधकर्ता एक समस्या या प्रश्न के बारे में एक प्रारंभिक अनुमान या अनुमान लगाता है। यह एक तर्क संगत और व्यवस्थित तरीके से बनाया गया एक प्रस्ताव है, जो शोध के परिणामों को निर्देशित करता है।
4. ***शोध की रूपरेखा/शोध प्रारूप तैयार करना*** –
शोध की रूपरेखा महत्वपूर्ण चरण है जो शोध प्रक्रिया को व्यवस्थित और तर्क संगत बनाता है। यहाँ शोध की रूपरेखा के मुख्य घटक हैं:

- ***शोध प्रश्न*** - *शोध के मुख्य प्रश्न को स्पष्ट रूप से परिभाषित करना*

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- ***शोध उद्देश्य*** *- शोध के उद्देश्यों को निर्धारित करना, जैसे कि समस्या का समाधान करना या नए ज्ञान की खोज करना*
- ***साहित्य समीक्षा*** *- साहित्य का अध्ययन करना और शोध के लिए प्रासंगिक जानकारी इकट्ठा करना*
- ***परिकल्पना*** *- शोध प्रश्न के आधार पर एक परिकल्पना बनाना*
- ***अनुसंधान विधि*** *- शोध के लिए उपयुक्त अनुसंधान विधि का चयन करना, जैसे कि सर्वेक्षण, प्रयोग, या मामला अध्ययन*
- ***आंकड़ों का संग्रह*** *- आंकड़ों का संग्रह करने के लिए उपयुक्त तरीकों का चयन करना*
- ***आंकड़ों का विश्लेषण*** *- आंकड़ों का विश्लेषण करने के लिए उपयुक्त तरीकों का चयन करना*
- ***निष्कर्ष*** *- शोध के परिणामों के आधार पर निष्कर्ष निकालना*

5. ***आंकड़ों का संकलन*** –
   स्रोतों से आंकड़ों और तथ्यों को इकट्ठा करने, रिकॉर्ड करने और संग्रहीत करने की प्रक्रिया है, जिससे उन्हें आगे विश्लेषण, अध्ययन और निर्णय लेने के लिए उपयोग किया जा सके।
6. ***आंकड़ों एवं तथ्यों का विश्लेषण*** –
   आंकड़ों एवं तथ्यों का विश्लेषण "एक ऐसी प्रक्रिया है जिसमें आंकड़ों और तथ्यों को इकट्ठा करने, जांचने, वर्गीकृत करने और उनका अर्थ निकालने के लिए विभिन्न तरीकों और तकनीकों का उपयोग किया जाता है, ताकि उनसे उपयोगी जानकारी प्राप्त की जा सके और निर्णय लिए जा सकें।"
7. ***परिकल्पना की जाँच*** –
   परिकल्पना की जांच "एक ऐसी प्रक्रिया है जिसमें किसी परिकल्पना या धारणा की सत्यता और वैधता की जांच की जाती है, ताकि उसकी विश्वसनीयता और सटीकता का मूल्यांकन किया जा सके।"
8. ***सामान्यीकरण एवं व्याख्या*** –
   सामान्यीकरण *- "आंकड़ों और तथ्यों के आधार पर किसी विशिष्ट घटना या परिणाम को एक व्यापक सिद्धांत या नियम में परिवर्तित करने की प्रक्रिया है।"*
   व्याख्या *- "आंकड़ों और तथ्यों के आधार पर उनके अर्थ और महत्व को समझने और व्याख्या करने की प्रक्रिया है।"*
9. ***शोध प्रतिवेदन तैयार करना*** –
   शोध प्रतिवेदन तैयार करना "एक ऐसी प्रक्रिया है जिसमें शोध के परिणामों को व्यवस्थित और संरचित तरीके से प्रस्तुत किया जाता है, ताकि शोध के उद्देश्य, विधियों, परिणामों और निष्कर्षों को स्पष्ट रूप से समझाया जा सके।"

अनुसंधान विधि का महत्व

"अनुसंधान विधि का महत्व अनुसंधान के उद्देश्यों को प्राप्त करने, समस्याओं का समाधान करने, और नई जानकारी प्राप्त करने में मदद करने की क्षमता है।"

अनुसंधान विधि का महत्व निम्नलिखित हैं:

- ***समस्या समाधान में मदद*** *- अनुसंधान विधि समस्याओं का समाधान करने में मदद करती है।*
- ***नई जानकारी प्राप्त करना*** *- अनुसंधान विधि नई जानकारी प्राप्त करने में मदद करती है।*
- ***निर्णय लेने के लिए आधार तैयार करना*** *- अनुसंधान विधि निर्णय लेने के लिए आधार तैयार करती है।*
- ***अनुसंधान की गुणवत्ता में सुधार*** *- अनुसंधान विधि अनुसंधान की गुणवत्ता में सुधार करती है।*
- ***अनुसंधान के परिणामों की विश्वसनीयता बढ़ाना*** *- अनुसंधान विधि अनुसंधान के परिणामों की विश्वसनीयता बढ़ाती है।*
- ***नवाचार और विकास*** *- अनुसंधान विधि नवाचार और विकास को बढ़ावा देती है।*
- ***अनुसंधान के परिणामों का उपयोग*** *- अनुसंधान विधि अनुसंधान के परिणामों का उपयोग विभिन्न क्षेत्रों में करने में मदद करती है।*
- ***अनुसंधान की प्रभावशीलता का मूल्यांकन*** *- अनुसंधान विधि अनुसंधान की प्रभावशीलता का मूल्यांकन करने में मदद करती है।*
- ***ज्ञान का विस्तार*** *- अनुसंधान विधि ज्ञान का विस्तार करने में मदद करती है।*
- ***समाज में सुधार*** *- अनुसंधान विधि समाज में सुधार करने में मदद करती है।*

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- *इन महत्वों को समझने से अनुसंधानकर्ता अपने अनुसंधान को अधिक प्रभावी और कुशल तरीके से कर सकते हैं।*

अनुसंधान विधि के लाभ

अनुसंधान विधि के लाभ निम्नलिखित हैं:

- *नई जानकारी प्राप्त करना*
- *समस्याओं का समाधान करना*
- *निर्णय लेने के लिए आधार तैयार करना*
- *अनुसंधान की गुणवत्ता में सुधार करना*
- *अनुसंधान के परिणामों की विश्वसनीयता बढ़ाना*
- *नवाचार और विकास को बढ़ावा देना*
- *अनुसंधान के परिणामों का उपयोग विभिन्न क्षेत्रों में करना*
- *अनुसंधान की प्रभावशीलता का मूल्यांकन करना*
- *ज्ञान का विस्तार करना*
- *समाज में सुधार करना*

व्यावसायिक लाभ:

- *व्यवसाय में नवाचार और विकास*
- *समस्याओं का समाधान करना*
- *निर्णय लेने के लिए आधार तैयार करना*
- *व्यवसाय में सुधार करना*
- *प्रतिस्पर्धा में आगे रहना*

शैक्षिक लाभ:

- *ज्ञान का विस्तार करना*
- *शोध कौशल विकसित करना*
- *अनुसंधान की गुणवत्ता में सुधार करना*
- *शैक्षिक संस्थानों में सुधार करना*
- *छात्रों को अनुसंधान कौशल सिखाना*

सामाजिक लाभ:

- *समाज में सुधार करना*
- *समस्याओं का समाधान करना*
- *नई जानकारी प्राप्त करना*
- *सामाजिक नीतियों में सुधार करना*
- *सामाजिक कल्याण में वृद्धि करना*

साहित्य समीक्षा

➢ ***आचार्य जयति प्रसाद द्विवेदी*** *- "अनुसंधान ऐसी प्रक्रिया है जिसमें साहित्यकार अपनी शोधक्रिया समझाने के लिए विभिन्न विधियों और तकनीकों का उपयोग करता है।"*

➢ ***नामवर सिंह*** *- "अनुसंधान साहित्यकार के लेखन की प्रक्रिया में उपयोग की जाने वाली विधियों और तकनीकों का विश्लेषण करने का एक विज्ञान है।"*

➢ ***नागेंद्र*** *- "अनुसंधान का मुख्य उद्देश्य साहित्यकार के शोध कार्य में समर्थन और प्रभावी तरीके से विचारों का विश्लेषण करना है।"*

निष्कर्ष

अनुसंधान पद्धति के माध्यम से हम नए तथ्यों को अध्ययन करके उनके बारे में जानकारी प्राप्त करते हैं और उन्हें समझते हैं। इसके द्वारा हम विभिन्न तरीकों से अनुसंधान करते हैं ताकि हमारे द्वारा प्राप्त किए गए नतीजे सामाजिक या वैज्ञानिक समुदाय के लिए महत्वपूर्ण हो सकें। किसी भी विषय में शोध करने के लिए हमें एक उचित शोध विधि की जरूरत पड़ती है पहले हमें समस्या का चयन करना होता है, उसके बाद समस्या से संबंधित साहित्य का व्यापक सर्वेक्षण, परिकल्पना का निर्माण, शोध की रूपरेखा तैयार करना, आंकड़ों एवं तथ्यों का संकलन तथा विश्लेषण, परिकल्पना की जांच, सामान्यीकरण एवं व्याख्या तथा शोध प्रतिवेदन तैयार करना होता है इत्यादि। इस शोध लेखन में हमने यह जाना है कि शोध के कई प्रकार हैं और शोध विधियों के भी अनेकों प्रकार हैं। जैसे-जैसे व्यक्ति विभिन्न क्षेत्रों में विकास करता जाएगा तथा नए-नए तथ्यों को जानना चाहेगा वैसे-वैसे अनुसंधान के विधियों में भी बढ़ोतरी होती जायेगी।

संदर्भ

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सामाजिक शोध में उपकल्पना : एक विश्लेषण

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सारांश
सामाजिक शोध में उपकल्पना (Hypothesis) का विशेष महत्व है क्योंकि यह शोध को एक स्पष्ट दिशा और संरचना प्रदान करती है। उपकल्पना वह अस्थायी कथन या अनुमान है जो सामाजिक तथ्यों, व्यवहारों और परिस्थितियों की व्याख्या करने हेतु स्थापित किया जाता है। यह शोधकर्ता को डेटा संग्रह, विश्लेषण तथा निष्कर्ष तक पहुँचने में मार्गदर्शन देती है। सामाजिक शोध की जटिलताओं को समझने के लिए उपकल्पना परीक्षणीय, यथार्थपरक और वस्तुनिष्ठ होनी चाहिए। इसके माध्यम से शोधकर्ता कारण और परिणाम के संबंधों को पहचानता है तथा सामाजिक समस्याओं का समाधान खोजने का प्रयास करता है। अतः सामाजिक शोध में उपकल्पना केवल प्रारंभिक अनुमान न होकर वैज्ञानिक अन्वेषण का आधार और शोध की विश्वसनीयता को स्थापित करने का महत्वपूर्ण साधन है।

***मुख्य शब्द**: सामाजिक शोध, उपकल्पना, विश्लेषण, परीक्षणीयता, वस्तुनिष्ठता, विश्वसनीयता*

प्रस्तावना

आज वैश्विक समाज में नई-नई समस्याओं के कारण और शांति फैल रही है। मानव में ईर्ष्या, द्वेष, हिंसा ने मानवीय चेतना को प्रभावित किया है। समाज में व्यक्ति-व्यक्ति के बीच अमन-चैन खत्म हो रहा है, इसलिए सामाजिक सौहार्द बनाए रखने हेतु सामाजिक विज्ञान में शोध अनिवार्य और महत्वपूर्ण है। इस शोध को पूर्ण करने से पहले इसके प्रारूप तैयार की जाती है और यह तभी संभव है जब उपकल्पना की रचना ठोस एवं सामाजिक धरातल पर चिंतन करके किया जाएगा। सामाजिक विज्ञान में उपकल्पना का बहुत महत्व है, वैसे किसी भी अनुसंधान कार्य को आरंभ करने से पहले उसकी दिशा निश्चित की जाती है। उससे संबंधित विषय में अपने पूर्व ज्ञान एवं पूर्व अनुभव के आधार पर अनुसंधानकर्ता अपने पूर्व अनुमान या संभावना को लेकर चलता है। कार्य के आगे बढ़ाने के साथ-साथ यदि उसके पूर्व अनुमान में कोई गलती पाई जाती है तो उसमें परिवर्तन तथा संशोधन किया जा सकता है तथा निष्कर्ष के संबंध में इसी पूर्वानुमान को उपकल्पना या परिकल्पना कहा जाता है। उपकल्पना को दो या दो से अधिक चरों के बीच पाए जाने वाले संबंध का विवरण भी कहा जाता है।

उपकल्पना, प्रकल्पना, परिकल्पना, पूर्व कल्पना आदि शब्द पर्यायवाची हैं। इनके लिए अंग्रेजी में **हाइपोथेसिस** शब्द का प्रयोग किया जाता है। हाइपोथेसिस शब्द दो शब्दों के मेल से बना है: **hypo** और **थीसिस**, जिसमें **hypo** का अर्थ संभावित और **थीसिस** का अर्थ समस्या के समाधान का कथन है। अर्थात हाइपोथेसिस का शाब्दिक अर्थ वे संभावित कथन जो समस्या का समाधान प्रस्तुत करता है। इसे दूसरे शब्दों में यह कहा जा सकता है कि उपकल्पना का शाब्दिक अर्थ पूर्व मिलन है। इस प्रकार प्रारंभिक जानकारी के आधार पर किया गया पूर्वानुमान, जिसके आधार पर संभावित अनुसंधान को एक निश्चित दिशा प्रदान की जा सके, उसे उपकल्पना या परिकल्पना कहा जाता है।

इस शोध आलेख में मैंने "सामाजिक विज्ञान में उपकल्पना: एक समीक्षा" जैसे विषयों का अध्ययन करने की कोशिश की है।

परिकल्पना

सामाजिक शोध वह सामाजिक घटनाओं का वैज्ञानिक अध्ययन है और कोई भी अध्ययन तब तक वैज्ञानिक नहीं हो सकता जब तक उनमें वैज्ञानिक पद्धति का सदुपयोग, अपने अध्ययन विषय के संबंध में कुछ न कुछ आरंभिक ज्ञान एवं सामान्य अनुभव न हो। इस आरंभिक ज्ञान व अनुभव के आधार पर हम अपने अध्ययन विषय के विभिन्न पक्षों के संबंध में एक सामान्य अनुमान पहले से ही लगा सकते हैं। यह सामान्य अनुमान शोधकर्ता के लिए एक मार्ग निर्देशक बन जाता है। तथ्यों पर ही केंद्रित करके अनुसंधान की दिशा को निर्धारित करता है और उसे अनिश्चितता के अंधकार में भटकने से बचा देता है। इसी आरंभिक सामान्य तथा कामचलाऊ अनुमान को, जो कि आगे के अध्ययन कार्य का आधार और वैज्ञानिक के लिए एक सहारा बन जाता है, कार्य निर्वाही अथवा कामचलाऊ प्राक्कल्पना या उपकल्पना कहते हैं।

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उपकल्पना का निर्माण तो हम केवल इसलिए करते हैं कि अध्ययन कार्य में हमें निश्चित रूप से क्या करना है, उसके संबंध में हमें एक अंदाज़ा लग जाए और हम एक ही समय में एक ही विषय से संबंधित सभी पहलुओं पर अपने ध्यान को बिखरने की गलती न करें। अपने अनुसंधान क्षेत्र को सीमित करके अपने उपकल्पना या प्राक्कल्पना के अनुसार अध्ययन-विषय के एक विशिष्ट पहलू पर अपना ध्यान केंद्रित करें और उसी से संबंधित तथ्यों को एकत्रित करें। इस प्रकार उपकल्पना हमें अध्ययन कार्य के दौरान इधर-उधर भटकने से बचाता है और हम एक निश्चित दिशा में सत्य की खोज में आगे बढ़ सकते हैं।

इससे संबंधित विद्वानों की परिभाषाएँ इस प्रकार हैं:

- **श्री लुण्डवर्ग** के अनुसार: "प्राक्कल्पना एक सामाजिक अथवा कामचलाऊ सामान्यीकरण या निष्कर्ष है जिसकी सत्यता की परीक्षा अभी बाकी है। बिल्कुल आरंभिक स्तरों पर प्राक्कल्पना कोई भी अटकल पच्चू-अनुमान कर सकता है जो कि किया या अनुसंधान का आधार बन जाता है।"
- **पी. वी. यंग** के अनुसार: "एक कार्यवाहक विषय जो उपयोगी की खोज का आधार बनता है, कार्यवाहक प्राक्कल्पना माना जाता है।"
- **एम.एच. गोपाल** के अनुसार: "यह ज्ञात प्राप्त तथ्यों के सामान्य अवलोकन पर आधारित एक कार्यकारी अस्थायी उपचार अथवा हल होती है जो कि कुछ विशेष घटनाओं को समझने व अन्य खोज में मार्गदर्शन के लिए अपनाई जाती है।"
- **गुर्डे एवं हांट** के अनुसार: "प्राक्कल्पना एक ऐसी मान्यता होती है जिसकी सत्यता सिद्ध करने के लिए उसका परीक्षण किया जा सकता है।"

उपर्युक्त परिभाषाओं से स्पष्ट है कि प्राक्कल्पना एक ऐसा पूर्व निष्कर्ष, कथन, सामान्यीकरण, अमूर्तीकरण, अनुसंधान या प्रस्तावना है जिसे अनुसंधानकर्ता अपने शोध की समस्या हेतु निर्मित करता है और उसकी सत्यता की जांच करने के लिए आवश्यक सूचनाओं का संकलन करता है। एक प्राक्कल्पना सामाजिक अनुसंधान और खोज का आधार प्रदान करती है।

प्राक्कल्पना की विशेषताएँ

प्राक्कल्पनाओं का सपना हम सभी को आता है। सपनों की भाँति ही ये प्राक्कल्पनाएँ भी रात को आती और दिन को चली जाती हैं, ऐसा इसलिए होता है कि प्राक्कल्पनाएँ उपयोगी हों, इसके लिए यह आवश्यक है कि उनमें कुछ उल्लेखनीय गुण या विशेषताएँ हों।

1. **स्पष्टता**: प्राक्कल्पनाओं का अवधारणात्मक रूप में स्पष्ट होना परमावश्यक है। स्मरण रहे कि किसी स्तर पर अस्पष्टता वैज्ञानिक पद्धति के प्रतिकूल है और चूँकि प्राक्कल्पना का निर्माण उसी वैज्ञानिक पद्धति का प्रथम चरण है। अतः प्राक्कल्पनाओं में भी अस्पष्टता होना वैज्ञानिक भावना के विरुद्ध है। प्राक्कल्पनाओं की स्पष्टता में सर्वत्र **गुड** तथा **ऑट** के अनुसार ही बातें सम्मिलित हैं:
    - एक तो यह कि प्राक्कल्पना में निहित अवधारणाओं को स्पष्ट रूप में परिभाषित किया जाए ताकि किसी भी प्रकार की अस्पष्टता आगे चलकर अध्ययन कार्य में बाधा की सृष्टि न कर सके।
    - दूसरी यह कि ये परिभाषाएँ ऐसी स्पष्ट भाषा में लिखी जाएँ कि अन्य लोग भी सामान्यतः उसका सही अर्थ समझ सकें।
2. **अनुभवाश्रित संदर्भ**: इस विशेषण का तात्पर्य यह है कि वही प्राक्कल्पना वैज्ञानिक अनुसंधान में प्रयुक्त की जा सकती है जिसमें आदर्शात्मक निर्णय का पुट नहीं है। इसका अर्थ यह है कि वैज्ञानिक को अपनी प्राक्कल्पना में किसी आदर्श को प्रस्तुत करने का प्रयत्न नहीं करना चाहिए, अपितु उसका संबंध ऐसे विचार या ऐसी अवधारणा से होना चाहिए जिसकी सत्यता की परीक्षा वास्तविक प्रयोग अथवा वास्तविक तथ्यों के आधार पर की जा सके।
3. **विशिष्टता**: प्राक्कल्पना अगर अत्यंत सामान्य है तो उससे यथार्थ निष्कर्ष पर पहुँचना संभव नहीं होता है क्योंकि किसी विषय के सभी पक्षों का वैज्ञानिक अध्ययन हम एक ही समय पर नहीं कर सकते। अतः यथार्थ ज्ञान की प्राप्ति के लिए यह आवश्यक है कि प्राक्कल्पना अध्ययन विषय के किसी विशेष पहलू से संबद्ध हो। साथ ही अगर उसमें विशिष्टता का गुण नहीं हुआ तो उसकी सत्यता की जाँच करना भी कठिन हो जाता है और जो प्राक्कल्पना जाँच से परे है, वह वैज्ञानिक के लिए निर्धारक भी है। अक्सर ऐसा होता है कि प्राक्कल्पना को अधिकाधिक आकर्षक व प्रभावशाली बनाने के लिए उसे ऐसी विराट व सामान्य तौर पर व्यक्त किया जाता है कि स्वयं वैज्ञानिक की पहुँच से बाहर हो जाती है। अतः प्राक्कल्पना में विशिष्टता का होना आवश्यक है जिससे कि एक सुनिश्चित वैज्ञानिक सीमा के अंतर्गत रहते हुए सत्य की खोज संभव हो।

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4. **उपलब्ध प्रविधियों से संबंध**: प्राक्कल्पना का निर्माण इस बात को ध्यान में रखते हुए करना चाहिए कि उसकी सत्यता की जाँच उपलब्ध प्रविधियों के द्वारा संभव हो। **गुड** और **हाल्ट** के अनुसार: "सिद्धांत और पद्धति एक-दूसरे के विरोधी नहीं हैं। जो सिद्धांतकार यह नहीं जानता है कि उसकी प्राक्कल्पना की जाँच के लिए कौन-सी प्रविधियाँ उपलब्ध हैं, वह उपयोगी प्रश्नों के निर्माण में असफल रहता है।" अतः प्राक्कल्पनाएँ ऐसी होनी चाहिए जो कि प्रचलित प्रविधियों की पहुँच के भीतर हों।
5. **सिद्धांत समूह से संबद्ध**: प्राक्कल्पना ऐसी होनी चाहिए जो संबद्ध क्षेत्र में किसी पूर्व स्थापित सिद्धांत के क्रम हो क्योंकि असंबद्ध प्राक्कल्पनाओं की परीक्षा विस्तृत सिद्धांतों के संदर्भ में नहीं की जा सकती। **गुड** एवं **हॉट** ने लिखा है कि इस नियम की अवहेलना अक्सर सामाजिक अनुसंधान के आरंभिक विद्यार्थी कर जाते हैं। उनके चुनाव में इस बात की संभावना अधिक होती है कि वे इस प्रकार के अध्ययन विषय को चुन लें जो कि "रुचिकर या आकर्षक हो।"

प्राक्कल्पना के स्रोत

एक अध्ययनकर्ता अपने स्रोतों से प्राक्कल्पना ग्रहण कर सकता है। व्यक्ति अपनी स्वयं की सूझ-बूझ, विचारधारा, कल्पना अथवा अंतर्दृष्टि के आधार पर भी प्राक्कल्पना का निर्माण कर सकता है। **लुण्डवर्ग** का मत है कि हम एक उपयोगी प्राक्कल्पना की खोज कविता, साहित्य, दर्शन, समाजशास्त्रीय साहित्य, मानवजाति शास्त्र, सिद्धांत समरूपताएँ, तथा व्यक्तिगत अनुभवों के आधार पर कर सकते हैं।

प्राक्कल्पना के स्रोत निम्नलिखित हैं:

1. **सामान्य संस्कृति**: प्रत्येक समाज की एक संस्कृति होती है। उसके सदस्यों की रहन-सहन, खान-पान और वस्त्र की एक शैली होती है। परिवार, विवाह, नातेदारी और सामाजिक संस्थाओं तथा आचरण के नियमों में एकरूपता पाई जाती है जो कि उनकी एक सामान्य संस्कृति का निर्माण करती है। यह सामान्य संस्कृति भी प्राक्कल्पना के विकास में सहायक होती है। सामान्य संस्कृति के अंतर्गत तीन बातें प्रमुख हैं:
    - **सांस्कृतिक पृष्ठभूमि**: सांस्कृतिक पृष्ठभूमि भी विज्ञान के विकास और प्राक्कल्पनाओं के निर्माण में महत्वपूर्ण भूमिका निभाती है। एक देश की सांस्कृतिक पृष्ठभूमि इस प्रकार के वातावरण को जन्म देती है जो विज्ञान के उद्भव और विकास को प्रोत्साहित करता है। आधुनिक भौतिक विज्ञानों का विकास और स्वयं समाजशास्त्र का विकास पश्चिमी देशों और अमेरिका में ही क्यों अधिक हुआ, अन्य देशों में क्यों नहीं? इसका कारण भी उन देशों की सांस्कृतिक पृष्ठभूमि और सांस्कृतिक मूल्य हैं।
    - **लोक विश्वास**: प्रत्येक संस्कृति में कुछ लोग सामान्य मान्यताएँ एवं विश्वास पाए जाते हैं जिनकी अभिव्यक्ति कहावतों, मुहावरों, दोहों, तुकबंदियों, सूक्तियों आदि के द्वारा होती है। चूँकि इनका प्रचलन समाज में एक लंबे समय से होता है, अतः कई लोग तो इन्हें सहज रूप में स्वीकार कर लेते हैं। किंतु ये कहावतें और विश्वास वास्तव में कहाँ तक सत्य हैं, यह जानने के लिए अनुसंधानकर्ता इनमें से किसी को भी प्राक्कल्पना मानकर अध्ययन कर सकता है।
    - **सामाजिक परिवर्तन**: कोई भी समाज और संस्कृति स्थिर नहीं है। समय के साथ इनमें परिवर्तन होना स्वाभाविक है। यह परिवर्तन नई-नई प्राक्कल्पनाओं को भी जन्म देता है। उदाहरण के लिए, भारतीय समाज में होने वाले परिवर्तन के संदर्भ में कुछ प्राक्कल्पनाएँ इस प्रकार हो सकती हैं: भारत में औद्योगीकरण एवं नगरीकरण बढ़ता जाएगा, संयुक्त परिवार टूटेंगे, तथा जाति प्रथा का विघटन होगा।
2. **वैज्ञानिक सिद्धांत**: कई प्राक्कल्पनाओं का आधार वैज्ञानिक सिद्धांत होते हैं। **लोम्ब्रोसो** ने अपराधी जन्मजात होते हैं, इस प्राक्कल्पना को सैनिकों के अध्ययन से संबंधित अपने व्यक्तिगत अनुभवों के आधार पर ही ग्रहण किया था। **न्यूटन** की पृथ्वी की गुरुत्वाकर्षण शक्ति की प्राक्कल्पना, **डॉर्विन** की अस्तित्व के लिए संघर्ष की प्राक्कल्पना, तथा **माल्थस** की जनसंख्या वृद्धि की प्राक्कल्पना आदि उनके व्यक्तिगत अनुभव का ही परिणाम हैं।
3. **अन्य प्रज्ञा**: अनेक प्राक्कल्पनाओं का आधार मानव की अंतर्दृष्टि अथवा अंतरात्मा की आवाज़ होती है। जीवन की अनेक घटनाओं के प्रति हमारे निष्कर्ष अंतर्दृष्टि पर ही आधारित होते हैं। कई बार हम लोगों को यह कहते हुए सुनते हैं: "मेरा ऐसा कहता है।" सही उसकी अंतःप्रज्ञा कही जा सकती है। अंतःप्रज्ञा पर आधारित प्राक्कल्पनाओं का कई बार परीक्षण करना बहुत कठिन होता है। समाज में पूर्व में ही कई अन्य सामान्यीकरण करते हैं और ये सामान्यीकरण ही

प्राक्कल्पनाओं के रूप में ग्रहण कर लिए जाते हैं। जैसे, **मार्क्स** के वर्ग-संघर्ष के सिद्धांत पर ही समाज वैज्ञानिकों ने वर्ग से संबंधित अनेक प्राक्कल्पनाओं का निर्माण किया है।

4. **सादृश्यताएँ**: कई बार समरूपताएँ भी प्राक्कल्पना को जन्म देती हैं। **हरवर्ट स्पेंसर** ने सामाजिक सावयव की कल्पना जीवों की शरीर रचना से ही ग्रहण की थी। वे समाज को भी एक शरीर की भाँति मानते हैं। **जूलियन हल्सले** का मत है कि किसी विज्ञान की प्रकृति के संबंध में किए गए अवलोकन, प्राक्कल्पना के आधार हो सकते हैं।
5. **अनुसंधान एवं साहित्य**: कई बार हम अन्य व्यक्तियों द्वारा किए गए अध्ययनों के निष्कर्षों एवं साहित्य के आधार पर भी प्राक्कल्पना का निर्माण करते हैं। **लुण्डवर्ग** की मान्यता है कि हम कविता, साहित्य, दर्शन, समाजशास्त्र, नृजाति विज्ञान, वर्णनात्मक साहित्य, प्रथा, कलाकारों और विचारकों के मानव के सामाजिक संबंधों पर आधारित सिद्धांतों के आधार पर भी प्राक्कल्पनाओं का निर्माण कर सकते हैं।
6. **व्यक्तिगत अनुभव**: कई प्राक्कल्पनाएँ व्यक्तिगत अनुभवों का भी परिणाम होती हैं। व्यक्ति के अनुभव की महत्वपूर्णता किसी भी शोध में होती है।

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शोध प्रारूप
(Research Design)

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सारांश
शोध प्रारूप (Research Design) किसी भी अनुसंधान की रूपरेखा या खाका होता है, जो संपूर्ण शोध प्रक्रिया को सुव्यवस्थित और वैज्ञानिक दिशा प्रदान करता है। यह शोधकर्ता को यह निर्धारित करने में सहायता करता है कि अध्ययन किस प्रकार किया जाएगा, डेटा कैसे संकलित होगा, उसका विश्लेषण किन विधियों से होगा और निष्कर्षों को किस तरह प्रस्तुत किया जाएगा। शोध प्रारूप का उद्देश्य शोध को तार्किक, क्रमबद्ध और विश्वसनीय बनाना है। इसमें समस्या की परिभाषा, उपकल्पना, सैम्पल चयन, उपकरण, तकनीक और समय-सीमा का निर्धारण शामिल होता है। एक सुविचारित शोध प्रारूप न केवल शोध की गुणवत्ता बढ़ाता है बल्कि परिणामों को अधिक प्रमाणिक और उपयोगी बनाता है। इस प्रकार शोध प्रारूप, अनुसंधान कार्य की सफलता और प्रभावशीलता का आधार स्तंभ है।
मुख्य शब्द: शोध प्रारूप, अनुसंधान, विश्वसनीयता, डेटा विश्लेषण, प्रमाणिकता

शोध प्रारूप का अर्थ (Meaning of Research Design)

शोध प्रारूप का अर्थ उसे योजना या कार्य प्रणाली से है जिसके अनुकूल शोध किया जाता है। वास्तविक शोध करने के पहले ही शोधकर्ता एक योजना तैयार करता है कि शोध कैसे किया जाएगा, शोध परिस्थितियों को कैसे नियोजित किया जाएगा, किस प्रकार के प्रतिदर्श का उपयोग किया जाएगा, प्रतिदर्श (Sample) में कितने प्रयोज्य होंगे, स्वतंत्र चरों को कैसे नियंत्रित किया जाएगा, तथा प्राप्त आंकड़ों का निरूपण (treatment) कैसे किया जाएगा ताकि सही परिणाम प्राप्त हो सके। शोधकर्ता की इसी शोध को शोध प्रारूप कहते हैं।

शोध प्रारूप का विभिन्न वैज्ञानिकों ने अपने-अपने दृष्टिकोण से व्यक्त किया है। **करलिंगर (Kerlinger)** ने शोध प्रारूप की परिभाषा देते हुए कहा कि शोध प्रारूप अनुसंधान के लिए बनी हुई एक ऐसी परियोजना (Plan) तथा संरचना (Structure) है जिसके द्वारा शोध समस्याओं का उत्तर प्राप्त किया जाता है।

शोध प्रारूप एक परियोजना है जिसे शोधकर्ता द्वारा इस ढंग से तैयार किया जाता है कि इसमें परिकल्पना लेखन (Hypothesis writing) तथा उसका संक्रियात्मक आशय (Operational implication) से लेकर आंकड़ों का अंतिम विश्लेषण (Final analysis) तक की रूपरेखा निहित होती है। इससे स्पष्ट है कि शोध प्रारूप शोध के विषयों के बारे में एक अनुभवसिद्ध सबूत (Empirical evidence) प्रदान करने की एक वैज्ञानिक परियोजना (Scientific Evidence) है।

इसी प्रकार **मोहसिन (Mohsin)** के अनुसार शोध प्रारूप एक योजना है जिससे शोधकर्ता अवलोकन तथ्यों तथा घटनाओं से वैध निष्कर्ष प्राप्त करते हैं। इसके अंतर्गत अवस्थाओं तथा अवलोकनों की व्याख्या हम इस प्रकार से कर सकते हैं कि शोध प्रदर्शन के विकल्पी उत्तरों की संभावना समाप्त हो जाती है।

उपर्युक्त परिभाषाओं के विश्लेषण से शोध प्रारूप के संबंध में निम्नलिखित बातें स्पष्ट होती हैं:

1. प्रारूप का तात्पर्य उसे योजना से है जिसके अंतर्गत शोधकर्ता यह निर्णय लेता है कि वह अपने शोध कार्य को कैसे पूरा करेगा, परिकल्पना का निर्माण कैसे किया जाए, आंकड़े (Data) कैसे प्राप्त किया जाए, तथा उसका सांख्यिकीय विश्लेषण कैसे किया जाए। इन सारी बातों के संबंध में योजना के अंतर्गत उल्लेख किया जाता है।
2. शोध प्रारूप का दूसरा पक्ष संरचना (structure) है। करलिंगर के अनुसार, योजना की अपेक्षा संरचना में विशिष्ट होने की विशेषता पाई जाती है। इसके दो पक्ष होते हैं जिन्हें शोध व्यवस्था (Research Scheme) तथा चरों का स्वरूप (Nature of Variables) कहते हैं।

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3. शोध प्रारूप के अंतर्गत योजना तथा संरचना के साथ-साथ शोध प्रणाली (Research Strategy) का भी उल्लेख किया जाता है। इसका स्वरूप भी योजना की अपेक्षा अधिक विशिष्ट (Specific) होता है। इसके अंतर्गत उन विधियों, प्रविधियों, उपकरणों तथा परीक्षणों का उल्लेख किया जाता है जिनका उपयोग परिकल्पना परीक्षण (Hypothesis testing), प्रदत्त संग्रह (Data Collection) तथा प्रदत्त विश्लेषण (Data Analysis) के लिए करना अपेक्षित होता है।

शोध प्रारूप की आवश्यकता (Needs for Research Design)

शोध प्रारूप की आवश्यकता इसलिए होती है क्योंकि यह शोध की विभिन्न प्रक्रियाओं को सुचारु रूप से संचालन की सुविधा प्रदान करती है एवं समय व धन के न्यूनतम व्यय के साथ अनुसंधान की अधिकतम जानकारी प्राप्त करने के लिए किया जाता है। जिस तरह एक वास्तुकार द्वारा अच्छी तरह से सोच-समझकर तैयार किया जाने वाला घर का नक्शा की आवश्यकता होती है, उसी प्रकार हमें शोध परियोजना के लिए सम्यक संग्रह और विश्लेषण हेतु एक अग्रिम योजना अथवा शोध प्रारूप की आवश्यकता होती है।

शोध प्रारूप की तैयारी बहुत ध्यानपूर्वक की जाती है क्योंकि इसमें कोई भी त्रुटि पूरी शोध परियोजना (Research Project) को विचलित कर सकती है। वास्तविकता में शोध प्रारूप का परिणाम की विश्वसनीयता पर बड़ा असर पड़ता है। अतः कहा जा सकता है कि शोध कार्य के पूरे भवन की एक दृढ़ नींव का गठन है।

शोध डिजाइन के उद्देश्य (Purposes of Research Design)

कुछ निश्चित उद्देश्यों को पूरा करने के लिए शोध डिजाइन का व्यवहार किया जाता है, जिसमें निम्नलिखित उद्देश्य सबसे अधिक महत्वपूर्ण हैं:

1. **शोध-समस्या का निश्चित उत्तर देना (To provide conclusive answer to the research problem)**: शोध प्रारूप का एक मूल उद्देश्य शोधकर्ता द्वारा चयन की गई समस्या का निश्चित उत्तर देना है। प्रारूप इस तरह बनाया जाता है कि उसके आधार पर शोधकर्ता अपनी समस्या का सही तथा निश्चित समाधान प्राप्त कर सकता है। मोहसिन ने स्पष्ट शब्दों में कहा है कि "प्रारूप का उद्देश्य शोधकर्ताओं की समस्या का निश्चित उत्तर देना है।"
2. **संगत असंबंध चरों को नियंत्रित करना (To control the relevant extraneous variable)**: शोध प्रारूप का मूल उद्देश्य चरों को नियंत्रित करना है जिनके प्रभावों का अध्ययन करना। शोधकर्ता कुछ इस तरह का प्रारूप उपयोग करता है जिससे संगत असंबंध चरों का प्रभाव अध्ययन विषय पर पड़ सकता है, किंतु उस समय शोधकर्ता उनके प्रभावों का अध्ययन नहीं करना चाहता है।
3. **प्रयोगात्मक चर या चरों के प्रभाव को अलग करना (To isolate the effect of experimental variable)**: शोध प्रारूप का एक उद्देश्य उस स्वतंत्र चर के प्रभाव को अलग करना है जिसके प्रभाव को देखना शोधकर्ता का उद्देश्य होता है। ऐसे चर को प्रयोगात्मक चर कहते हैं।
4. **स्वतंत्र चर के परिचालन तथा आश्रित चर के मापन हेतु विशिष्ट विधि को निर्धारित करना (To specify the method for manipulating the independent variable and measuring the dependent variable)**: शोध प्रारूप का एक उद्देश्य ऐसी विशिष्ट विधि को बताना है जिसके द्वारा स्वतंत्र चर को समुचित रूप से परिचालित किया जा सके तथा आश्रित चर को मापा जा सके। प्रारूप के अंतर्गत ऐसी विधि का उल्लेख किया जाता है जिसकी सहायता से प्रयोगात्मक चर के रूप में किसी स्वतंत्र चर को प्रचलित करना तथा उसके प्रभाव यानी आश्रित चर को मापना संभव होता है।
5. **शोध आंकड़ों के विश्लेषण हेतु अनुकूल सांख्यिकीय विधि का सुझाव देना (To suggest statistical method for the analysis of Research Data)**: शोध प्रारूप का उद्देश्य शोध के आधार पर प्राप्त आंकड़ों के विश्लेषण के लिए अनुकूल सांख्यिकीय विधि का सुझाव देना है। प्रारूप में इस बात का संकेत मिलता है कि आंकड़ों का विश्लेषण प्रचलित सांख्यिकीय विधि से करना उचित होता है अथवा अप्रचलित सांख्यिकीय विधि से। टी-परीक्षण (t-test), एफ-परीक्षण (f-test) और आर-परीक्षण (r-test) आदि प्रचलित परीक्षण हैं, दूसरी तरफ रो-परीक्षण (rho-test), यू-परीक्षण (u-test) आदि अप्रचलित हैं।
6. **समय, श्रम तथा मुद्रा की बचत करना (To save Time, labour and Money)**: शोध प्रारूप का यह एक व्यावहारिक उद्देश्य है। अभिकल्प (प्रारूप) के माध्यम से शोधकर्ता बहुत थोड़े समय में, बहुत थोड़ा श्रम करके, बहुत थोड़ा

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धन खर्च करके किसी परिकल्पना के वैध परीक्षण की व्यवस्था करता है। मोहसिन के अनुसार, प्रारूप का उद्देश्य अनुभवसिद्ध प्रमाण के आधार पर कम से कम धन, समय तथा श्रम से परिकल्पना का एक वैध परीक्षण देना है।

इस शोध प्रारूप के उद्देश्य स्पष्ट हो जाते हैं कि शोधकर्ता इन उद्देश्यों को ध्यान में रखते हुए अनुकूल प्रारूप का उपयोग करते हुए अपने शोध कार्य को पूरा करता है।

शोध प्रारूप के सिद्धांत (Principles of Research Design)

1. **योजना (Plan)**: शोध प्रारूप में परिकल्पनाओं की रचना, आंकड़ों के संग्रह तथा उनके विश्लेषण से संबंधित सारी बातों को स्पष्ट होना चाहिए। करलिंगर के अनुसार, शोध प्रारूप में परिकल्पनाओं की रचना, आंकड़ों के संग्रह तथा उनके विश्लेषण से संबंधित सारी बातों को स्पष्ट होना चाहिए।
2. **संरचना (Structure)**: शोध प्रारूप को एक निश्चित संरचना पर आधारित होना चाहिए। प्रारूप का यह एक विशिष्ट स्वरूप है जिसके दो पक्ष हैं: शोध स्कीम तथा चरों के प्रचलन का निदर्श। यहाँ शोध का संपूर्ण रेखाचित्र तैयार किया जाता है तथा विभिन्न चरों के प्रचलन से संबंधित अनुकूल निर्देशों का उल्लेख किया जाता है।
3. **शोध नीति (Research Strategy)**: शोध प्रारूप शोध नीति पर भी आधारित होता है। इसके अंतर्गत उन विधियों, प्रविधियों, उपकरणों, परीक्षणों का उल्लेख किया जाता है जो परिकल्पनाओं को प्रमाणित करने, आंकड़ों को संग्रह करने तथा उनके विश्लेषण तथा निरूपण करने में सहायक होते हैं। ब्रूटा ने कहा कि प्रारूप का मुख्य कार्य विचलन को नियंत्रित करना है।

शोध प्रारूप 6 चरणों में देखा गया है:

i) अध्ययन किए जाने वाले विषय/समस्या को स्पष्ट करना

ii) अध्ययन शोध का प्रारूप तैयार करना

iii) प्रतिदर्श को नियोजित करना

iv) आधार सामग्री का संग्रहण

v) आधार सामग्री का विश्लेषण, संपादन, कोड निर्धारित करना, परीक्षण, सारणीकरण

vi) रिपोर्ट तैयार करना

शोध प्रारूप के प्रकार (Types of Research Design)

शोध प्रारूप को दो प्रकारों में बाँटा गया है:

1. **प्रयोगात्मक शोध डिजाइन (Experimental Research Design)**
2. **अप्रयोगात्मक शोध डिजाइन (Non-experimental Research Design)**

प्रयोगात्मक शोध में जिन शोध डिजाइनों का प्रयोग होता है, उन्हें प्रयोगात्मक डिजाइन, तथा अप्रयोगात्मक शोध में जिन शोध डिजाइनों का प्रयोग होता है, उन्हें अप्रयोगात्मक शोध डिजाइन कहा जाता है।

शोध प्रारूप चाहे प्रयोगात्मक हो या अप्रयोगात्मक, उसकी व्याख्या करने में शोध वैज्ञानिकों ने कुछ निश्चित संकेतों का वर्णन किया जा सकता है।

प्रयोगात्मक डिजाइन (Experimental Research Design)

शिक्षा के शोधों में उपयोग होने वाली डिजाइनों में प्रयोगात्मक डिजाइन का महत्व सर्वाधिक है। इस डिजाइन को मनोवैज्ञानिक शोधों में काफी शक्तिशाली भी माना जाता है क्योंकि समाजशास्त्र एक प्रकार का प्रयोगात्मक विज्ञान है। प्रयोगात्मक डिजाइन के दो भिन्न परंतु संबंधित अर्थ हैं:

- एक सामान्य अर्थ में प्रयोगात्मक डिजाइन से तात्पर्य प्रयोगात्मक शोध के उन सभी चरणों से होता है जो परिकल्पना की अभिव्यक्ति से लेकर निष्कर्ष तक पहुँचने में निहित होता है।
- दूसरे शब्दों में, इस सामान्य अर्थ में प्रायोगिक डिजाइन का तात्पर्य मनोवैज्ञानिक प्रयोग में निहित सभी कदमों या चरों से होता है।

प्रयोगात्मक डिजाइन के 7 प्रकार देखे गए हैं:

i) सिर्फ यादृच्छिकृत पोस्टटेस्ट नियंत्रित समूह डिजाइन

ii) सिर्फ यादृच्छिकृत समेकित पोस्टटेस्ट नियंत्रित समूह डिजाइन

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iii) प्रीटेस्ट-पोस्टटेस्ट नियंत्रित समूह डिजाइन
iv) यादृच्छिकृत एक मार्गीय एनोवा डिजाइन
v) यादृच्छिकृत ब्लॉक्ड एक मार्गीय एनोवा डिजाइन
vi) यादृच्छिक कारक गुणित डिजाइन
vii) सोलोमन चार समूह डिजाइन

अप्रयोगात्मक शोध डिजाइन (Non-experimental Research Design)

अप्रयोगात्मक शोध डिजाइन कई प्रकार के होते हैं, परंतु उनकी एक सामान्य विशेषता यह है कि इस तरह के डिजाइन में प्रायोज्यों का न तो यादृच्छिक चयन हो पाता है और न ही उनके विभिन्न प्रयोगात्मक अवस्थाओं में यादृच्छिक आवंटन ही हो पाता है। अप्रयोगात्मक शोध डिजाइन को मूलतः निम्नलिखित प्रमुख भागों में बाँटा जा सकता है:

i) प्राक्-प्रयोगात्मक डिजाइन या मिथ्या प्रयोगात्मक डिजाइन
ii) प्रयोग कल्प डिजाइन
iii) सहसंबंधात्मक डिजाइन
iv) वैषम्य डिजाइन
v) केस अध्ययन डिजाइन
vi) सर्वे डिजाइन

शोध के अच्छे प्रारूप की विशेषता (Characteristics of Good Research Design)

शोध के अच्छे प्रारूप से लाभ प्राप्त किया जा सकता है, यदि:

i) आधार सामग्री संग्रह के एक से अधिक विधि ध्यान में रखी जाए, जिससे अनुसंधान में समय, लागत और पेचीदगियों में वृद्धि होगी। एक से अधिक विधियों के प्रयोग से अनुसंधानकर्ता उसके निष्कर्ष की विश्वसनीयता के प्रति आश्वस्त हो सकता है।

ii) परंपरागत रूप में अनुसंधान अब तक निर्भर और स्वतंत्र दोनों ही प्रकार के चरों पर केंद्रित रहा है। व्याख्यात्मक अनुसंधान में स्वतंत्र चर निर्भर चर की व्याख्या करता है। वर्णनात्मक अनुसंधान में भी इन दोनों प्रकार के चरों के बीच संबंधों की व्याख्या की जाती है। किंतु व्याख्यात्मक अनुसंधान में अब कोई चरों के साथ-साथ अध्ययन करने की प्रवृत्ति हो गई है। उदाहरणस्वरूप, युवाओं में नशाखोरी को अब कोई चरों के रूप में व्याख्या की जाती है, जैसे माता-पिता के नियंत्रण की कमी, मित्रों का प्रभाव, अधिक जेब खर्च मिलना, उत्सुकता आदि। अब यह विश्वास किया जाता है कि निर्भर चर की व्याख्या एक स्वतंत्र चर के अर्थ में करना तर्कसंगत व्याख्या नहीं होगी।

अनुसंधान प्रारूप के कार्य में यदि अनुसंधानकर्ता निम्नलिखित पाँच कारकों को प्रमुखता देता है:

i) अनुसंधानकर्ता को यह जानकारी होनी चाहिए कि आधार सामग्री कब-कब संग्रह करना है। क्या समस्त आधार सामग्री का संग्रह एक ही समय में होना है या आधार सामग्री को विविध चरणों के बीच अंतराल दिया जाना है।

ii) अनुसंधानकर्ताओं को मालूम होना चाहिए कि कितनी अनुसंधान स्थितियों के आधार पर व्यक्ति, समूह, समुदाय, संगठन आदि में उसकी रुचि होगी और इन विभिन्न स्थितियों को किस प्रकार एक-दूसरे से जोड़ा जाएगा? क्या एक समूह, समुदाय, संगठन की तुलना दूसरे समूह, समुदाय, या संगठन से की जाती है।

iii) क्या अध्ययन में परिवर्तन सम्मिलित है? जानकारी एकत्र करने के लिए कितनी समय अवधियों का प्रयोग किया जाता है? यह ऐसा भी कहा जा सकता है कि ग्रामीण समुदाय के विकास का अध्ययन क्या अफसरशाही के निर्णय के द्वारा जब गरीबी हटाओ कार्यक्रम जैसे आई.आर.डी.पी., जवाहर रोजगार आदि को लागू किया जाता हो तब किया जाए या पंचायत राज्य योजना लागू होने के बाद या पंचायत में महिलाओं के लिए 33% स्थान आरक्षित कर स्त्रियों को सशक्तिकरण किए जाने के बाद।

iv) क्या अनुसंधान में तुलना निहित है? ऐसे मामलों में चूंकि आधार सामग्री का संकलन दो भिन्न स्थितियों में किया जाता है, इसलिए अनुसंधान का प्रारूप भी अलग तरीके का होना चाहिए। उदाहरण स्वरूप, राजस्थान में तीन अलग स्थितियों में विकासशील गाँव के आकार व विस्तार का अध्ययन करने में जहाँ एक सरकार ने विश्व बैंक प्रोजेक्ट से सहायता प्राप्त कर गरीबी उन्मूलन कार्यक्रम शुरू किया है, जिसमें ग्राम विकास संघ, सामान्य रुचि समूह, आय बढ़ाने वाली गतिविधियों, मूलभूत ढांचे को सुदृढ़ करने तथा गैर सरकारी संगठनों की सहायता लेने पर बल दिया गया है। जहाँ सरकार ने आई.आर.डी.पी., जवाहर रोजगार योजना, TRYSEM

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आदि ग्राम विकास कार्यक्रम चलाए हों और तीन, एक जनजाति और निम्न जाति प्रधान गाँव जिसमें अधिकांश किसान छोटे भूमि के टुकड़ों के मालिक हों और जो सिंचाई के लिए पूर्णतः वर्षा के पानी पर निर्भर रहते हैं।

v) अनुसंधान के लिए महत्वपूर्ण अनुसंधान वर्णनात्मक है या अन्वेषणात्मक है या व्याख्यात्मक या शुद्ध या कार्यात्मक है।

शोध प्रारूप के दो बुनियादी प्रकार

1. **गुणात्मक शोध**: गुणात्मक शोध व्यक्तिपरक और खोजपूर्ण होता है। यह एकत्रित डेटा और अवलोकनों के बीच संबंधों को निर्धारित करता है। यह आमतौर पर खुले सवालों के साथ साक्षात्कार, शब्दों में वर्णित अवलोकन आदि के माध्यम से किया जाता है।
2. **मात्रात्मक शोध**: मात्रात्मक शोध वस्तुनिष्ठ होता है और सांख्यिकीय दृष्टिकोण का उपयोग करता है। यह विभिन्न सांख्यिकीय और कम्प्यूटेशनल विधियों का उपयोग करके चरों के बीच कारण और प्रभाव संबंध स्थापित करता है। इस प्रकार का शोध आमतौर पर सर्वेक्षण और प्रयोग का उपयोग करके किया जाता है।

शोध प्रारूप के लाभ

i) **स्पष्ट दिशा**: शोध प्रारूप के लाभों में मुख्य लाभ शोध को दिशा प्रदान करना और स्पष्ट उद्देश्यों के चयन का मार्गदर्शन करना है, जो शोधकर्ता को उन विशिष्ट शोध प्रश्नों या परिकल्पनाओं पर ध्यान केंद्रित करने में मदद करता है जिनकी वे जाँच करना चाहते हैं।

ii) **नियंत्रण**: उचित शोध डिजाइन से शोधकर्ता चरों को नियंत्रित कर सकते हैं, संभावित भ्रमित करने वाले कारकों की पहचान कर सकते हैं, तथा पूर्वाग्रह को कम करने और अपने निष्कर्ष की विश्वसनीयता बढ़ाने के लिए यादृच्छिकरण का उपयोग कर सकते हैं।

iii) **प्रतिकृति**: शोध प्रारूप प्रतिकृति के लिए अवसर प्रदान करते हैं। यह अध्ययन के निष्कर्ष की पुष्टि करने में मदद करता है और यह सुनिश्चित करता है कि परिणाम संयोग या अन्य कारकों के कारण नहीं हैं। इस प्रकार की एक अच्छी तरह से चुना गया शोध डिजाइन पूर्वाग्रह और त्रुटियों को भी समाप्त करता है।

iv) **वैधता**: एक शोध प्रारूप शोध की वैधता सुनिश्चित करता है, अर्थात् क्या परिणाम वास्तव में जाँच की जा रही घटना को प्रतिबिंबित करते हैं।

v) **विश्वसनीयता**: शोध प्रारूप के लाभों में अशुद्धियों को कम करना और शोध की विश्वसनीयता सुनिश्चित करना भी शामिल है (अर्थात् समय के साथ विभिन्न नमूनों में और विभिन्न स्थितियों में शोध परिणामों की स्थिरता)।

vi) **दक्षता**: एक मजबूत शोध प्रारूप शोध प्रक्रिया की दक्षता बढ़ाने में मदद करता है। शोधकर्ता अपने शोध प्रश्नों की जाँच करने के लिए विभिन्न प्रकार के डिजाइनों का उपयोग कर सकते हैं। अपने अध्ययन के लिए सबसे उपयुक्त शोध डिजाइन और अपने डेटा का अधिकतम लाभ उठाने के लिए सांख्यिकीय विश्लेषण का उपयोग कर सकते हैं। परिकल्पनाओं के पर्याप्त परीक्षण के लिए आवश्यक डेटा का प्रभावी ढंग से वर्णन करके यह बता कर कि ऐसा डाटा कैसे प्राप्त किया जाए, जिससे शोधकर्ता का समय बचाता है।

शोध प्रारूप से संबंधित महत्वपूर्ण अवधारणाएँ (Important Concepts Relating to Research Design)

i) **आश्रित और स्वतंत्र चर (Dependent & Independent Variables)**: एक अवधारणा जो विभिन्न मात्रात्मक मानों को ले सकती है, उसे चर कहा जाता है। जैसे वजन, ऊँचाई सभी अवधारणाएँ चर के उदाहरण हैं। चर जो दशमलव बिंदुओं में भी मात्रात्मक रूप से अलग-अलग मान ले सकते हैं, उन्हें निरंतर सतत चर कहा जा सकता है। लेकिन सभी चर सतत नहीं होते हैं। अगर उन्हें केवल पूर्णांक मानों में व्यक्त किया जा सकता है, तो वे गैर-निरंतर चर या सांख्यिकीय भाषा में असतत चर कहलाते हैं।

ii) **बाह्य चर (Extraneous Variables)**: स्वतंत्र चर जो अध्ययन के उद्देश्य से संबंधित नहीं होते, लेकिन निर्भर चर को प्रभावित कर सकते हैं, उन्हें बाह्य चर के रूप में जाना जाता है। शोधकर्ता इस परिकल्पना का परीक्षण करना चाहता है कि बच्चों की सामाजिक अध्ययन उपलब्धि एवं उनके आत्मधारणाओं के लाभों के मध्य एक संबंध है।

iii) **नियंत्रण (Control)**: एक अच्छे शोध प्रारूप की एक महत्वपूर्ण विशेषता है बाह्य चर के प्रभाव को कम करना। इसके लिए तकनीकी शब्द नियंत्रण का उपयोग तब किया जाता है जब हम अध्ययन को बाह्य स्वतंत्र चरों के प्रभाव को कम करने के लिए तैयार करते हैं। प्रयोगात्मक शोध में नियंत्रण शब्द प्रयोगात्मक स्थितियों को नियंत्रित करने के लिए उपयोग किया जाता है।

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iv) **भ्रमित संबंध (Confounded Relationship)**: जब आश्रित चर बाह्य चर के प्रभाव से मुक्त नहीं होता है, तो निर्भर और स्वतंत्र चर के बीच संबंध को बाह्य चर द्वारा भ्रमित माना जाता है।

v) **शोध परिकल्पना (Research Hypothesis)**: जब किसी भविष्यवाणी या परिकल्पित संबंधों का परीक्षण वैज्ञानिक विधियों द्वारा किया जाता है, तो उसे शोध परिकल्पना कहा जाता है। शोध परिकल्पना एक अनुमानित कथन है जो एक स्वतंत्र चर को एक आश्रित चर से संबंधित करता है। शोध परिकल्पना में कम से कम एक स्वतंत्र और एक आश्रित चर अवश्य होना चाहिए।

vi) **प्रयोगात्मक और गैर-प्रयोगात्मक परिकल्पना परीक्षण अनुसंधान (Experimental and Non-experimental Hypothesis Testing Research)**: जब अनुसंधान का उद्देश्य शोध परिकल्पना का परीक्षण करना है, इसे परिकल्पना परीक्षण अनुसंधान कहा जाता है। यह प्रयोगात्मक प्रारूप या गैर-प्रयोगात्मक प्रारूप का हो सकता है। जिस शोध में स्वतंत्र चर को नियंत्रित किया जाता है, उसे प्रयोगात्मक परिकल्पना परीक्षण अनुसंधान कहा जाता है, जबकि जिस शोध में स्वतंत्र चर को नियंत्रित नहीं किया जाता है, उसे गैर-प्रयोगात्मक परिकल्पना परीक्षण अनुसंधान कहा जाता है। उदाहरण के लिए, शोधकर्ता यादृच्छिक रूप से 50 छात्रों का चयन करता है और अंकों के दो सेटों के बीच सहसंबंध गुणांक की गणना द्वारा उनकी बुद्धि और पढ़ने की क्षमता का परीक्षण करता है। यह गैर-प्रयोगात्मक परिकल्पना परीक्षण अनुसंधान का एक उदाहरण है, क्योंकि यहाँ स्वतंत्र चर बुद्धिमत्ता को नियंत्रित नहीं किया जा सकता है।

vii) **प्रयोगात्मक एवं नियंत्रण समूह (Experimental and Control Group)**: एक प्रयोगात्मक परिकल्पना परीक्षण अनुसंधान में, जब एक समूह सामान्य परिस्थितियों के संपर्क में आता है, तो उसे नियंत्रित समूह कहा जाता है, लेकिन जब समूह को किसी विशेष स्थिति के संपर्क में लाया जाता है, तो इसे प्रयोगात्मक समूह की संज्ञा दी जाती है। समूह को नियंत्रण समूह और समूह को एक प्रयोगात्मक समूह कहा जा सकता है। यदि दोनों समूह विशेष अध्ययन कार्यक्रमों के संपर्क में आते हैं, तो दोनों समूहों को प्रयोगात्मक समूह कहा जाएगा।

viii) **उपचार (Treatment)**: विभिन्न स्थितियाँ जिनके अंतर्गत प्रयोगात्मक और नियंत्रण समूहों को रखा जाता है, उन्हें आमतौर पर उपचार कहा जाता है।

ix) **प्रयोग (Experiments)**: किसी शोध समस्या से संबंधित एक सांख्यिकीय परिकल्पना की सत्यता की जाँच करने की प्रक्रिया को एक प्रयोग के रूप में जाना जाता है। प्रयोग दो प्रकार के हो सकते हैं: जैसे पूर्ण प्रयोग (Absolute Experiment) और तुलनात्मक प्रयोग (Comparative Experiment)।

x) **प्रयोगिक इकाइयाँ (Experimental Units)**: पूर्व निर्धारित क्षेत्र जहाँ विभिन्न उपचारों का उपयोग किया जाता है, प्रयोगात्मक इकाइयों के रूप में जाना जाता है। ऐसी प्रयोगात्मक इकाइयों को बहुत सावधानीपूर्वक करना चाहिए।

निष्कर्ष

शोध प्रारूप के कई प्रकार हैं और शोधकर्ता को आंकड़ों के संग्रह और विश्लेषण से पहले यह निर्णय अवश्य करना चाहिए कि कौन-सा प्रारूप उसके शोध परियोजना के लिए सबसे अधिक उपयुक्त साबित होगा। जिनके द्वारा अनुसंधान परियोजना के लिए प्रारूप के संबंध में निर्णय लेते समय अध्ययन के उद्देश्य, संसाधन, सूची या नमूना फ्रेम, सटीकता के वांछित मानक और उचित बिंदुओं पर उचित ध्यान केंद्रित करना चाहिए।

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अनुसंधान पद्धति का परिचय
Introduction to Research Methodology

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सारांश

अनुसंधान पद्धति का परिचय किसी भी शोध कार्य की नींव है। यह उन वैज्ञानिक प्रक्रियाओं, तकनीकों और उपकरणों का अध्ययन है जिनके माध्यम से शोधकर्ता अपने अध्ययन को व्यवस्थित, प्रमाणिक और तार्किक रूप से संपन्न करता है। अनुसंधान पद्धति में समस्या की पहचान, उपकल्पना का निर्माण, डेटा संग्रह, विश्लेषण और निष्कर्ष प्रस्तुत करने की संपूर्ण प्रक्रिया सम्मिलित होती है। यह शोध को एक निश्चित दिशा प्रदान करती है और परिणामों को विश्वसनीय एवं उपयोगी बनाती है। सामाजिक विज्ञान, मानविकी तथा प्राकृतिक विज्ञान सभी क्षेत्रों में अनुसंधान पद्धति का स्वरूप अलग-अलग हो सकता है, किंतु सभी का उद्देश्य ज्ञान का विस्तार और समाज के लिए सार्थक समाधान प्रस्तुत करना होता है। इस प्रकार अनुसंधान पद्धति केवल शोध की प्रक्रिया नहीं, बल्कि उसकी गुणवत्ता और प्रामाणिकता का आधार है।

***मुख्य शब्द**: अनुसंधान पद्धति, समस्या पहचान, उपकल्पना, डेटा संग्रह, विश्लेषण, निष्कर्ष*

उद्देश्य

अनुसंधान विधि से संबंधित शोध साहित्य को लिखने का मेरा यही उद्देश्य है कि, अनुसंधान विधि क्या है, अनुसंधान में इसका क्या महत्व है। इसके बारे में शोधार्थियों को विस्तृत ज्ञान हो जाए, ताकि उन्हें किसी भी प्रकार के शोध में शोध विधि से जुड़ी समस्याओं का सामना न करना पड़े।

परिचय

यह शोध लेखन अनुसंधान विधि के परिचय से जुड़ा हुआ है, जिसमें अनुसंधान विधि को सामान्य शब्दों से लेकर पूर्ण विस्तृत रूप में समझाया गया है। इस शोध लेखन को सरल हिंदी भाषा में लिखा गया है ताकि सभी को यह शोध लेखन समझने में आसानी हो। इस शोध लेखन का सामान्य उद्देश्य यह है कि इसके द्वारा शोधार्थियों को अनुसंधान विधि से अच्छे से परिचय कराया जाए, ताकि उन्हें अनुसंधान करने के दौरान अनुसंधान विधि को लेकर किसी प्रकार का संशय न हो।

इस शोध लेखन की शुरुआत अनुसंधान के बारे में बताने से हुई है ताकि शोधार्थी अनुसंधान विधि को जानने से पहले अनुसंधान को अच्छे से जान लें कि अनुसंधान क्या है, इसकी विशेषताएँ क्या हैं, कितने प्रकार होते हैं, अनुसंधान में कितने चर होते हैं, और किस चर से अनुसंधान विधि की जरूरत पड़ती है।

इस शोध लेखन में अनुसंधान विधि के लेखन की शुरुआत अनुसंधान विधि का परिचय देकर की गई है जिसमें अनुसंधान विधि को लेकर समझाया गया है ताकि शोधार्थियों को इसके बारे में गहन जानकारी मिले। इसके पश्चात् क्रम अनुसार यह बताया गया है कि अनुसंधान विधि की विशेषताएँ, अनुसंधान विधि के प्रकार क्या-क्या हैं। इस शोध लेखन में अनुसंधान विधि के चरों का भी उल्लेख है जिसमें यह बताया गया है कि कितने चरों से होकर एक अनुसंधान गुजरता है और समाप्त होता है।

अनुसंधान विधि से संबंधित शोध साहित्य को लिखने का मेरा यही उद्देश्य है कि अनुसंधान विधि क्या है, अनुसंधान में इसका क्या महत्व है। इसके बारे में शोधार्थियों को विस्तृत ज्ञान हो जाए, ताकि उन्हें किसी भी प्रकार के शोध में शोध विधि से जुड़ी समस्याओं का सामना न करना पड़े।

साहित्य समीक्षा

- **Mario John Chrish (2021)** ने अनुसंधान विधि पर शोध पत्र लिखा है। जिसमें उन्होंने मात्रात्मक शोध तथा गुणात्मक शोध के अंतर को परिभाषित किया गया तथा इनके विधियों को भी शोध पत्र में दर्शाया है।

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- **Dr. Swarooprani. K (2022)** ने रिसर्च मेथोडोलॉजी पर अध्ययन किया है। जिसमें उन्होंने शोध के उद्देश्य, प्रकार, महत्व को दर्शाया है। साथ ही साथ अनुसंधान के चरणों की संक्षिप्त व्याख्या प्रस्तुत की है।
- **Mimansha Patel, Nitin Patel (2019)** ने रिसर्च मेथोडोलॉजी के समीक्षा पर एक पत्र लिखा है जिसमें उन्होंने रिसर्च की परिभाषा, उसके प्रकार, रिसर्च की विधि, उनके प्रकार और रिसर्च के दृष्टिकोण का भी अध्ययन किया है।

नोट: अनुसंधान विधि को पूर्णरूपेण जानने से पहले हमें अनुसंधान के अर्थ, उसके प्रकार, उसके चरणों से भी भली भाँति परिचित होना अत्यंत आवश्यक है।

अनुसंधान क्या है

किसी समस्या या प्रश्न का समाधान करने का क्रमबद्ध एवं वस्तुनिष्ठ प्रयास ही वैज्ञानिक शोध कहलाता है। वैज्ञानिक शोध में शोधकर्ता एक नियंत्रित एवं अनुभवसिद्ध अनुसंधान करता है।

- **Kerlinger (1986)** ने मनोवैज्ञानिक शोध की परिभाषा देते हुए कहा है: स्वाभाविक घटनाओं का क्रमबद्ध, नियंत्रित, अनुभवसिद्ध एवं आलोचनात्मक अनुसंधान जो सिद्धांतों एवं परिकल्पना द्वारा निर्देशित होता है, उसे वैज्ञानिक शोध कहा जाता है।
- **Best एवं Kahn (1992)** ने भी वैज्ञानिक शोध को अपने शब्दों में इस प्रकार परिभाषित किया है: "शोध किसी नियंत्रित प्रेक्षण का क्रमबद्ध एवं वस्तुनिष्ठ अभिलेखन एवं विश्लेषण है जिसके आधार पर सामान्यीकरण, निर्माण या किसी सिद्धांत विकसित किया जाता है।"

वैज्ञानिक शोध की विशेषताएँ

- वैज्ञानिक शोध में किसी समस्या के समाधान का एक वस्तुनिष्ठ एवं क्रमबद्ध प्रयास किया जाता है।
- वैज्ञानिक शोध का आधार अनुभवसिद्ध सबूत होता है।
- वैज्ञानिक शोध में तथ्यों पर जोर दिया जाता है, तथ्यों का प्रेक्षण और परिशुद्ध वर्णन किया जाता है।
- वैज्ञानिक शोध में किसी निर्माण सिद्धांत एवं सामान्यीकरण के विकास पर बल दिया जाता है ताकि इनके द्वारा तथ्यों एवं चरों को लेकर पूर्वकथन किया जा सके।
- शोध की कार्यविधि क्रमबद्ध, वस्तुनिष्ठ और तार्किक होती है।

अनुसंधान के प्रकार

अनुसंधान का वर्गीकरण निम्नलिखित आधारों पर किया गया है:

1. **परिणाम के आधार पर शोध**: परिणाम के आधार पर शोध को दो भागों में बाँटा गया है: मौलिक शोध और व्यावहारिक शोध।
2. **तर्क के आधार पर शोध**: तर्क के आधार पर शोध को दो भागों में बाँटा गया है: आगमन शोध और निगमन शोध।
3. **जाँच के आधार पर शोध**: जाँच के आधार पर शोध को दो भागों में बाँटा गया है: संरचित दृष्टिकोण और असंरचित दृष्टिकोण। ये दोनों सोच बहुत हद तक निगमन विधि और आगमन विधि के ही समान हैं।
4. **प्रक्रिया के आधार पर शोध**: प्रक्रिया के आधार पर शोध को तीन वर्गों में वर्गीकृत किया गया है: गुणात्मक शोध, मात्रात्मक शोध और सममिश्र शोध।
5. **उद्देश्य के आधार पर शोध**: उद्देश्य के आधार पर शोध को पाँच श्रेणियों में विभाजित किया गया है: वर्णनात्मक शोध, सहसंबंध शोध, व्याख्यात्मक शोध, संन्वेषी शोध और प्रयोगात्मक शोध।
6. **अवधारणा के आधार पर शोध**: अवधारणा के आधार पर शोध को दो वर्गों में बाँटा गया है: वैचारिक शोध और अनुभवसिद्ध शोध।
7. **प्रकृति के आधार पर शोध**: प्रकृति के आधार पर शोध को दो वर्गों में विभाजित किया गया है: अंतर्विषयी शोध और बहुविषयी शोध।

उपरोक्त विश्लेषण से यह पता चला कि शोध को विभिन्न आधारों पर अलग-अलग प्रकारों में वर्गीकरण किया गया है, परंतु मनोविज्ञान में शोध को दो प्रकारों में बाँटा गया है।

मनोवैज्ञानिक शोध के प्रकार

मनोवैज्ञानिक शोध को दो भागों में बाँटा गया है: **सैद्धांतिक शोध और अनुभवसिद्ध शोध**।

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- **सैद्धांतिक शोध**: सैद्धांतिक शोध से तात्पर्य उन सभी शोधों से है जिनका संबंध मनोविज्ञान के विभिन्न क्षेत्रों में सिद्धांत के निर्माण एवं विकास से होता है। सैद्धांतिक शोध में दो उप-प्रकार हैं: पुस्तकालय शोध और सिद्धांत रचना।
- **अनुभवसिद्ध शोध**: अनुभवसिद्ध शोध से तात्पर्य ऐसे शोधों से होता है जिनका स्वरूप प्रयोगात्मक होता है और जिसकी विधियों से समस्या का तथ्यपूर्ण मूल्यांकन करते हैं। इस तरह से अनुभवसिद्ध शोध का आधार प्रेक्षण और प्रयोग होता है। इसके तीन प्रकार बताए गए हैं:

1. **प्रेक्षण शोध**: प्रेक्षण शोध ऐसे शोध को कहा जाता है जिसमें शोधकर्ता चरों में बिना किसी जोड़-तोड़ किए ही अध्ययन से संबंधित घटनाओं का अवलोकन करता है, उसके महत्वपूर्ण तथ्यों को लिखता जाता है और उसका एक अभिलेखन तैयार करता है। इसके दो उप-प्रकार हैं: स्वाभाविक प्रेक्षण और प्रयोगशाला प्रेक्षण।
2. **सहसंबंधात्मक शोध**: सहसंबंधात्मक शोध ऐसे शोध को कहा जाता है जिसमें शोधकर्ता चरों में जोड़-तोड़ सीधे न करके चयन प्रक्रिया द्वारा करता है और फिर वह एक स्वाभाविक परिस्थिति में अध्ययन करता है।
3. **प्रयोगात्मक शोध**: प्रयोगात्मक शोध ऐसे शोध को कहा जाता है जिसमें शोधकर्ता अध्ययन किए जाने वाले चर में जोड़-तोड़ चयन द्वारा न करके सीधे या प्रयोगात्मक रूप से करता है और उस जोड़-तोड़ का पड़ने वाला प्रभाव दूसरे चर पर देखता है।

"मनोविज्ञान में प्रयोगात्मक शोध के साथ अप्रयोगात्मक शोध भी किया जाता है। मनोविज्ञान में अप्रयोगात्मक शोध के निम्न प्रकार हैं:"

मनोविज्ञान में अप्रयोगात्मक शोध के प्रकार

- क्षेत्र अध्ययन
- प्रेक्षणात्मक अध्ययन
- सर्वे शोध
- पुरालेख शोध
- केस अध्ययन

अनुसंधान के चरण

वैद्यप शोध प्रक्रिया के चरण के संबंध में विभिन्न विद्वानों में मतभेद हैं, परंतु सामान्यतः शोध के आठ चरण निर्धारित किए गए हैं:

1. **शोध समस्या का चयन**: इसमें शोधकर्ता एक समस्या का चयन करता है। इस कार्य को पूर्ण करने के लिए वह किसी प्रोफेसर से राय ले सकता है या फिर शोध जर्नल में छपे शोध पत्र को पढ़ता है।
2. **साहित्य समीक्षा**: साहित्य समीक्षा में शोधकर्ता अपने विषय से संबंधित साहित्य, सूचनाओं एवं पत्रिकाओं आदि का सर्वेक्षण करता है।
3. **परिकल्पना निर्माण**: यहाँ शोधकर्ता अपने शोध की समस्या से संबंधित एक अस्थायी उत्तर की परिकल्पना करता है।
4. **शोध अभिकल्प**: इसमें शोधकर्ता अपने शोध के आधार पर और अपने शोध में उपस्थित चरों को पहचानकर समस्या समाधान हेतु एक शोध अभिकल्प का चयन करता है।
5. **प्रतिदर्श चयन**: इसमें शोधकर्ता शोध के लिए प्रतिदर्श का चयन करता है। इसमें प्रतिदर्श चयन हेतु शोधकर्ता संभाविता प्रतिदर्श के किसी भी एक प्रकार का उपयोग कर सकता है या फिर असंभाविता प्रतिदर्श के किसी भी एक प्रकार का उपयोग करता है।
6. **प्रदत्त संग्रहण**: इसमें शोधकर्ता प्रतिदर्श से प्रदत्त एकत्रित करता है। इसके लिए वह किसी भी एक विधि को अपनाता है। यह विधि प्रयोगात्मक और अप्रयोगात्मक हो सकती है।
7. **प्रदत्तों का विश्लेषण**: इसमें शोधकर्ता प्रदत्तों का विश्लेषण करता है। इसके लिए शोधकर्ता कुछ सांख्यिकीय प्रविधियों का सहारा लेता है। इन विधियों में माध्य, मानक विचलन, t अनुपात, काई वर्गन तुलनात्मक रूप से अधिक प्रचलित हैं।
8. **निष्कर्ष निकालना**: शोधकर्ता इस बिंदु में पहुँच जाने के बाद एक निष्कर्ष निकालता है, और वह यह तय करता है कि शोध के लिए जो परिकल्पना बनाई गई थी वह सही है या गलत।

अनुसंधान के किस चरण से अनुसंधान विधि का प्रारंभ होता है

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ऊपर किए गए व्याख्या से यह पता चलता है कि शोध के आठ चरण हैं। इन चरणों में चौथा चरण विशेष होता है, क्योंकि इसी चरण में शोधकर्ता अपने शोध के लिए एक विशेष शोध अभिकल्प का चयन करता है। यही अभिकल्प उसके पश्चात् पूरे शोध प्रक्रिया को आगे ले जाता है और शोध के समाधान तक पहुँचाता है।

नोट: अनुसंधान के बारे में जान लेने के पश्चात् अब हम "अनुसंधान विधि" को अच्छे से समझ सकते हैं कि अनुसंधान विधि क्या है, ये शोध के लिए क्यों महत्वपूर्ण है, इसके कितने चरण हैं।

अनुसंधान विधि

अनुसंधान विधि की परिभाषा

अनुसंधान विधि या फिर अनुसंधान विधियाँ वे रणनीतियाँ, प्रक्रियाएँ, तकनीक हैं जिनका उपयोग शोधों में चरों को नियंत्रण के लिए, प्रतिदर्श चयन के लिए, प्रदत्त एकत्र करने के लिए और प्रदत्त के मूल्यांकन के लिए किया जाता है।

दूसरे शब्दों में, अनुसंधान विधि ही शोध की क्रियात्मक प्रक्रिया को आरंभ करता है और समाप्ति तक ले जाता है।

शोध विधि की विशेषताएँ

अनुसंधान विधि की अपनी कुछ विशेषताएँ होती हैं, इसी वजह से हर विधि अपने आप में अलग होती है। अनुसंधान विधि की चयन की बात आती है तो शोधकर्ता सबसे पहले अपने शोध विषय के स्वरूप को समझता है, उसके पश्चात् ही शोध विषय के आधार पर एक अनुकूल अनुसंधान विधि का चयन कर लेता है।

शोध चाहे प्रयोगात्मक हो या अप्रयोगात्मक हो, सभी के अलग-अलग अनुसंधान विधियाँ होती हैं क्योंकि इसके बिना कोई शोध कार्य पूर्ण नहीं होगा। शोध की वैधता, विश्वसनीयता बनाए रखने के लिए इन विधियों का उपयोग आवश्यक है।

शोध विधि के प्रकार

शोध विधियों का वर्गीकरण विद्वानों ने अनेक प्रकार से किया है। किसी ने विषय क्षेत्र के अनुसार वर्गीकरण किया, तो किसी ने शिक्षा संबंधी, किसी ने मनोविज्ञान संबंधी या किसी ने इतिहास संबंधी शोध के रूप में शोध विधियों को वर्गीकृत किया, तो किसी विद्वान ने इसे आँकड़े प्राप्त करने की विधि के आधार पर वर्गीकृत किया है।

बेस्ट एवं काहन द्वारा किया गया वर्गीकरण सबसे अच्छा माना जाता है। उनके अनुसार शोध की छह प्रमुख विधियाँ/पद्धतियाँ मानी गई हैं:

1. **ऐतिहासिक शोध विधि (Historical Research Method)**
   जॉन डब्ल्यू. बेस्ट के अनुसार, "ऐतिहासिक शोध का संबंध ऐतिहासिक समस्या के वैज्ञानिक विश्लेषण से है। ऐतिहासिक शोध के द्वारा किसी भी वस्तु, विचार, घटना, समुदाय, समाज विशेष के बारे में उसके ऐतिहासिक तथ्यों, निर्माणों के बारे में वैज्ञानिक अध्ययन किया जाता है।"

इस विधि में ऐतिहासिक साक्ष्यों की आवश्यकता पड़ती है। ऐतिहासिक शोध विधि में ऐतिहासिक स्रोतों का विश्लेषण दो प्रकार से किया जाता है, जिसमें प्राथमिक स्रोत और द्वितीयक या गौण स्रोत प्रमुख हैं, जो निम्न हैं:

- **प्राथमिक स्रोत (Primary Sources)**: इसके अंतर्गत उन तथ्यों को शामिल किया जाता है, जो अतीत की घटनाओं के अध्ययन क्षेत्र में जाकर स्वयं से संकलित किए जाएँ; जैसे:
  - लिखित स्रोत (न्यूज़पेपर्स, शिलालेख, आत्मचरित, वर्णन, विज्ञापन पत्र, समाचार पत्र, रचनाएँ)
  - मौखिक स्रोत (भाषाएँ, कहानियाँ, दंत कथाएँ, उपाख्यान, लोक कथाएँ)
  - कलात्मक स्रोत (सिक्के, मूर्तियाँ, ललित कथाएँ, ऐतिहासिक चित्र)
- **द्वितीयक स्रोत (Secondary Sources)**: किसी ऐतिहासिक तथ्यों की जानकारी मूल स्रोत से न कर किसी अन्य स्रोत से प्राप्त करना द्वितीयक स्रोत में शामिल है।

2. **वर्णनात्मक शोध विधि (Descriptive Research Method)**
   इस शोध विधि में वर्तमान स्थिति का वर्णन एवं विश्लेषण किया जाता है; इसे अप्रयोगात्मक शोध भी कहा जाता है। इसे निम्नलिखित भागों में बाँटा गया है:

- क्षेत्र अध्ययन
- प्रेक्षणात्मक अध्ययन
- सर्वे शोध

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- एक्स पोस्ट फैक्टो शोध
- पुरालेख शोध
- केस अध्ययन

क्षेत्र अध्ययन:

अप्रयोगात्मक शोध (non-experimental research) में क्षेत्र अध्ययन (field studies) का स्थान महत्वपूर्ण है। क्षेत्र अध्ययन ऐसा अप्रयोगात्मक शोध है जिसमें वास्तविक सामाजिक परिस्थिति (real social situation) में विभिन्न तरह के समाजशास्त्रीय, मनोवैज्ञानिक और शैक्षिक चरों के बीच अंतःक्रियाओं (interactions) का अध्ययन करके इन चरों के आपसी संभावित संबंधों की खोज की जाती है। इससे स्पष्ट है कि क्षेत्र अध्ययन एक ऐसा वैज्ञानिक अध्ययन है जो अप्रयोगात्मक होता है और इसमें विभिन्न तरह के चरों (variables) के संबंधों एवं प्राक्कल्पनाओं (hypotheses) की जाँच एक वास्तविक सामाजिक परिस्थिति जैसे स्कूल, फैक्ट्री, संस्थान आदि में किया जाता है।

काज (Katz, 1953) ने क्षेत्र अध्ययन के दो मुख्य प्रकार बताए हैं:

- **संन्वेषी क्षेत्र अध्ययन (Exploratory field studies)**: संन्वेषी क्षेत्र अध्ययन ऐसे क्षेत्र अध्ययन को कहा जाता है जिसमें चरों के बीच कैसा संबंध है, और क्षेत्र परिस्थिति में किस ढंग का परिवर्तन हो रहा है, जैसे प्रश्नों का अध्ययन किया जाता है।
- **प्राक्कल्पना-जाँच क्षेत्र अध्ययन (Hypothesis-testing field studies)**: प्राक्कल्पना-जाँच क्षेत्र अध्ययन वह है जिसमें शोधकर्ता चरों के संबंधों के बारे में एक खास प्राक्कल्पना बनाकर उसकी जाँच करता है और उसकी वैधता और विश्वसनीयता के लिए अध्ययन के परिणामों के आधार पर एक ठोस सबूत प्रदान करता है।

प्रेक्षण शोध विधि:

प्रेक्षण ऐसे शोध विधि को कहा जाता है जिसमें शोधकर्ता चरों में बिना किसी तरह के जोड़-तोड़ किए ही अध्ययन से संबंधित घटनाओं के क्रम का अवलोकन करता है, उसके महत्वपूर्ण तथ्यों को लिखता जाता है और उसका एक अभिलेखन या रिकॉर्ड तैयार करता है। इस विधि में प्रेक्षणकर्ता दूर बैठकर घटनाओं को प्रेक्षण करता है, इस स्थिति को असहभागी प्रेक्षण कहा जाता है, जबकि कहीं-कहीं शोधकर्ता समूह में शामिल होकर व्यवहार का अध्ययन करता है, जिसे सहभागी प्रेक्षण भी कहा जाता है।

प्रेक्षण विधि को मनोवैज्ञानिकों ने दो प्रकार में बाँटा है:

(a) **स्वाभाविक प्रेक्षण**: इसमें प्रेक्षण स्वाभाविक परिस्थिति में किया जाता है।
(b) **प्रयोगशाला प्रेक्षण**: इसमें प्रेक्षण किसी नियंत्रित वातावरण में किया जाता है।

सर्वे विधि:

करलिंगर (Kerlinger, 1986) के शब्दों में सर्वे शोध को इस प्रकार परिभाषित किया जा सकता है: "सर्वे शोध में छोटे एवं बड़े जीवसंख्या का अध्ययन उसी जीवसंख्या से प्रतिदर्श (samples) का चयन करके किया जाता है ताकि समाजशास्त्रीय चरों और मनोवैज्ञानिक चरों के घटनात्मक (incidence), वितरण (distribution) एवं अंतर-संबंधों (interrelations) की खोज की जा सके।"

इसके कई प्रकार हैं:

- **साक्षात्कार सर्वे (Interview Survey)**: सर्वे साक्षात्कार, सर्वे शोध की एक प्रमुख विधि है जिसका उपयोग मनोविज्ञान और समाजशास्त्र में काफी किया जाता है। साक्षात्कार एक ऐसी आमने-सामने की परिस्थिति होती है जिसमें भेंटकर्ता (interviewer) प्रत्युत्तरदाता (respondent) से उसकी मनोवृत्ति (attitude), मत (opinion) और शोध के विषयों के बारे में कुछ प्रश्न करता है। प्रश्नों के उत्तर के आधार पर भेंटकर्ता विशेष निष्कर्ष पर पहुँचता है।
- **डाक सर्वे**: डाक सर्वे जिसमें शोधकर्ता डाक के द्वारा प्रश्नों की एक सूची प्रत्युत्तरदाता को भेज देता है, प्रत्युत्तरदाता उसका उत्तर दे कर पुनः शोधकर्ता को लौटा देता है।
- **दूरभाष सर्वे**: इसमें शोधकर्ता मोबाइल के द्वारा प्रश्न पूछकर समस्या का समाधान करने की कोशिश करता है।
- **पुरालेख शोध (Archival Research)**: पुरालेख शोध ऐसे शोध को कहा जाता है जिसमें लिखित रिकॉर्ड के आधार पर एक या एक से अधिक चरों के बारे में आँकड़े इकट्ठे किए जाते हैं। इस तरह के रिकॉर्ड मूलतः स्कूल, अस्पताल, पुलिस,

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सरकारी सुस्थितियाँ, पुस्तकालय आदि से प्राप्त किए जाते हैं। रिकॉर्ड का अध्ययन कर शोधकर्ता अपने अभिरुचि के चर से संबंधित आँकड़ों का संग्रहण करता है, फिर उनका विश्लेषण करके वह किसी निष्कर्ष पर पहुँचता है।

3. **प्रयोगात्मक शोध विधि (Experimental Research Method)**
   इस विधि में शोधकर्ता सदा नए तथ्यों की खोज करता रहता है और यह शोधकर्ताओं के ज्ञान को बढ़ाने में सहायक होता है। इस विधि में शोधकर्ता स्वतंत्र चर और आश्रित चर के मध्य कारण-कार्य संबंधों का अध्ययन करता है।

प्रयोगात्मक शोध में निम्नलिखित तीन चरों के आधार पर व्याख्या की जा सकती है:

- **स्वतंत्र चर (Independent Variable)**: जिस चर में प्रयोगकर्ता परिवर्तन करता है, उसे 'स्वतंत्र चर' कहते हैं। इसके दो प्रकार संचालित चर और जैविक चर होते हैं।
- **आश्रित चर (Dependent Variable)**: स्वतंत्र चर में परिवर्तन या जोड़-तोड़ के बाद उसका प्रभाव जिस चर पर देखा जाता है, उसे आश्रित चर कहा जाता है।
- **बाह्य चर (Extraneous Variable)**: ऐसे चर जिनका अध्ययन प्रयोगकर्ता अपने परीक्षण में नहीं करता है, वह 'बाह्य चर' कहलाता है। यह चर आश्रित चर को भी प्रभावित करता है।

सामान्यतः प्रयोगात्मक शोध विधि को निम्नांकित दो भागों में बाँटा गया है:

- प्रयोगशाला प्रयोग विधि
- क्षेत्र प्रयोगशाला विधि

प्रयोगशाला प्रयोग विधि में प्रयोग एक नियंत्रित वातावरण में होता है, या चर में जोड़-तोड़ किया जाता है। क्षेत्र प्रयोगशाला विधि प्रयोग एक खुले वातावरण में होता है।

4. **क्रियात्मक शोध विधि (Action Research Method)**
   सामान्यतः विद्वानों द्वारा शोध की उपरोक्त तीन विधियों (ऐतिहासिक, वर्णनात्मक और प्रयोगात्मक) का ही वर्णन किया गया है, परंतु इन विधियों से उच्च शिक्षण संस्थानों की समस्याओं का समाधान कर पाना संभव नहीं था।

अतः शिक्षण संस्थानों की समस्याओं के समाधान के लिए क्रियात्मक शोध विधि का सिद्धांत अपनाया गया। यह सैद्धांतिक ज्ञान की खोज न कर व्यावहारिक समस्याओं का समाधान प्रस्तुत करता है। इस शोध विधि के माध्यम से न केवल शिक्षा प्रणाली, बल्कि औद्योगिक समस्याओं, सामाजिक समस्याओं का निदान भी संभव है।

5. **मात्रात्मक या परिमाणात्मक शोध विधि (Quantitative Research)**
   मात्रात्मक या परिमाणात्मक शोध के अंतर्गत पहले उपकल्पना का निर्धारण होता है और सिद्धांत पहले से ही निर्धारित रहते हैं। शोध तथ्य और आँकड़ों पर आधारित होने के कारण इसका निष्कर्ष भी आँकड़ों द्वारा ही निर्धारित होता है।

यह शोध किसी भी प्रकार के भाव से रहित होता है। इस शोध में सूचना सांख्यिकीय रूप में प्राप्त होती है। यह शोध संरचित साक्षात्कार, अवलोकन, अभिलेख और रिपोर्ट की समीक्षा का डेटा संग्रहण होता है।

6. **गुणात्मक शोध विधि (Qualitative Research)**
   इस शोध का उद्देश्य मानव व्यवहार और उसे निर्धारित करने वाले कारणों को समझना होता है। इस विधि के अंतर्गत क्या, कहाँ, कब, क्यों और कैसे आदि प्रश्नों की जाँच की जाती है।

इस शोध में संकल्पना (Hypothesis) का उपयोग नहीं करते हैं, यह विकल्प खुला रखते हैं। यह शोध मात्रात्मक के स्थान पर व्यक्तिगत अनुभवों के विश्लेषण पर बल देता है।

गुणात्मक शोध/अनुसंधान के प्रकार निम्नलिखित हैं:

- **समूह केंद्रित शोध (Focus Group Research)**: इसके अंतर्गत शोधकर्ता कुछ व्यक्तियों का एक समूह बनाकर किसी स्थान पर एकत्र होता है और किसी विषय विशेष पर आपस में चर्चा करते हैं।
- **प्रत्यक्ष अवलोकन (Direct Observation)**: इसमें बाह्य पर्यवेक्षक के द्वारा डेटा संग्रह किया जाता है, जिसमें किसी विशेष स्थिति के अंदर अध्ययन की वस्तु का अवलोकन किया जाता है।
- **गहन साक्षात्कार (In-depth Interview)**: यह असंरचित होता है और इसके माध्यम से तथ्यों को गहराई अर्थात् व्यापकता से जानने का प्रयास किया जाता है।

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- **प्रदत्त आधारित सिद्धांत (Grounded Theory)**: इसके अंतर्गत शोधकर्ता आँकड़े (प्रदत्त) एकत्र करता है और उसका विश्लेषण करता है और उस विश्लेषण के आधार पर सिद्धांत विकसित होता है।

शोध विधि के चरण

हर शोध विधि अलग-अलग होने के कारण हर शोध विधि का चरण भी अलग-अलग होता है। कुछ शोध विधि के चरण निम्नलिखित हैं:

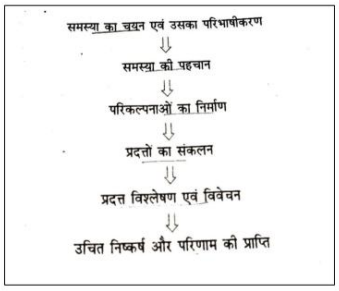
ऐतिहासिक शोध विधि के चरण:

- सबसे पहले किसी समस्या का चयन करना।
- इसके पश्चात् समस्या की सीमा का निर्धारण करना।
- समस्या से संबंधित परिकल्पनाओं का निर्माण करना।
- तथ्यों का संग्रह और प्रामाणिकता की जाँच करना।
- अंत में परिणामों की व्याख्या और विवेचना करना।

वर्णनात्मक शोध विधि के चरण:

- शोध समस्या के कारण को स्पष्ट करना।
- यह सुनिश्चित करना कि समस्या सर्वेक्षण शोध के उपयुक्त है।
- उचित प्रकार की सर्वेक्षण विधि का चयन करना।
- उद्देश्यों को निर्धारित करना।
- यह सुनिश्चित करना कि आँकड़े प्राप्त करने का उपकरण उपलब्ध है।
- प्रस्तावित सर्वेक्षण की सफलता का प्रारंभिक अनुमान लगाना।
- शोध के प्रतिनिधिकारी नमूने का चयन करना।
- नमूने, उपकरण आदि को ध्यान में रखते हुए सर्वेक्षण की सफलता का अंतिम अनुमान लगाना।
- आँकड़ों का संग्रह करना।
- आँकड़ों का विश्लेषण करना।
- प्रतिवेदन तैयार करना।
- निष्कर्ष।

प्रयोगात्मक शोध विधि के चरण



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क्रियात्मक शोध के चरण

शोध विधि की जरूरत क्यों पड़ती है

शोध की समस्या का समाधान प्राप्त करने के लिए हमें प्रतिदर्श चयन करना, आँकड़ों को इकट्ठा करना, उनका विश्लेषण करना, निष्कर्ष निकालना इत्यादि काम करने पड़ते हैं। ऐसे में अगर एक शोध कार्य को हम लोग विधिपूर्वक नहीं करते हैं तो समस्या का समाधान नहीं हो पाता है। बिना विधि के यह गया शोध का परिणाम है न तो कोई वैधता होती है न ही कोई विश्वसनीयता रहती है। इन्हीं सब कारणों के कारण हमें किसी भी शोध के लिए एक उचित शोध विधि की जरूरत पड़ती है। ताकि हम अपने शोध की समस्या को वैज्ञानिक और विधिपूर्वक रूप से समाधान कर सकें।

हमें पता है कि सभी शोध के स्वरूप एक जैसे नहीं होते हैं। हर शोध का स्वरूप अलग होने के कारण से उनके समस्या का समाधान भी एक ही तरीके से नहीं खोजी जा सकती है। इसी वजह से हमें हर एक शोध के लिए अपने शोध समस्या के अनुकूल एक शोध विधि चुनना अत्यंत आवश्यक है।

शोध विधि का वर्तमान और भविष्य की संभावना

इस शोध लेखन में हमने यह जान लिया है कि शोध के कई प्रकार हैं और शोध विधियों के भी अनेकों प्रकार हैं। जैसे-जैसे से व्यक्ति विभिन्न क्षेत्रों में विकास करते जाएँगे और नए-नए तथ्यों को जानना चाहेंगे, वैसे-वैसे अनुसंधान की विधियों में भी बढ़ोतरी होती जाएगी।

निष्कर्ष

इस शोध लेखन से महत्वपूर्ण बिंदुओं का पता चला है:

1. अनुसंधान एक वैज्ञानिक पद्धति है, जिसमें किसी घटना का सैद्धांतिक विधि द्वारा क्रमबद्ध अध्ययन किया जाता है।
2. अनुसंधान के अलग-अलग प्रकार होते हैं, उनके स्वरूप के अनुकूल शोध विधि का चयन होता है तथा हर विधि का अलग-अलग चरण भी होता है।
3. अनुसंधान विधि के भविष्य की संभावनाएँ कई अधिक हैं क्योंकि जैसे-जैसे विकास के क्षेत्र और तकनीकें बढ़ती जा रही हैं, वैसे-वैसे अनुसंधान की विधियाँ भी बढ़ती जाएँगी।

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परिकल्पना लेखन

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सारांश

परिकल्पना लेखन (Hypothesis Writing) अनुसंधान की एक महत्वपूर्ण प्रक्रिया है, जो शोध को स्पष्ट दिशा और उद्देश्य प्रदान करती है। परिकल्पना एक अस्थायी कथन या अनुमान होता है, जिसे परीक्षण और विश्लेषण के आधार पर सत्य या असत्य सिद्ध किया जाता है। यह शोधकर्ता को समस्या की गहराई में जाने, डेटा संग्रह की योजना बनाने और परिणामों का आकलन करने में मार्गदर्शन करती है। परिकल्पना लेखन में स्पष्टता, परीक्षणीयता, यथार्थपरकता और तार्किकता का विशेष ध्यान रखना आवश्यक है। सुव्यवस्थित परिकल्पना शोध को वैज्ञानिक स्वरूप देती है और निष्कर्षों की विश्वसनीयता को सुनिश्चित करती है। इस प्रकार परिकल्पना लेखन केवल शोध की प्रारंभिक अवस्था नहीं है, बल्कि संपूर्ण अनुसंधान को व्यवस्थित और सार्थक बनाने का आधार भी है।

***मुख्य शब्द**: परिकल्पना, लेखन, अनुसंधान, परीक्षणीयता, तार्किकता, विश्वसनीयता*

परिचय

उपकल्पना, प्राकल्पना अथवा परिकल्पना वैज्ञानिक अनुसंधान का अत्यंत महत्वपूर्ण चर है। परिकल्पना दो अथवा दो से अधिक चरों के बीच अनुभवमूलक संबंध का अनुमानित विवरण है। यह मात्र अनुमान है जिसका परीक्षण करना अभी बाकी है। अधिकांश अनुसंधान का उद्देश्य या तो परिकल्पनाओं का निर्माण करना होता है या निर्मित परिकल्पनाओं का संकलित सामग्री द्वारा परीक्षण करना होता है। वैज्ञानिक अनुसंधान में नई बात की खोज करनी होती है जिसमें हम पूर्ण अज्ञान की दशा में कभी भी आगे नहीं बढ़ सकते। हम सबसे पहले अपने ज्ञान, सूचना तथा अनुभव के आधार पर एक संभावित कारण-कार्य संबंध स्थापित करते हैं। इसके पश्चात् उचित सामग्री एकत्र करके उसकी परीक्षा करते हैं। हमारी कल्पना पूर्णतः सही हो सकती है अथवा केवल आंशिक रूप से या बिल्कुल निद्रा भी हो सकती है। लेकिन प्रत्येक दशा में उसके द्वारा हमें अनुसंधान कार्य में आगे बढ़ने में सहायता अवश्य मिलती है। यद्यपि केवल सही परिकल्पना ही सिद्धांतों का निर्माण में सहायक होती है।

परिकल्पना का अर्थ

परिकल्पना अंग्रेजी के शब्द **Hypothesis (हायपोथेसिस)** का हिंदी रूपांतर है। जिसे दो भागों में विभाजित किया जा सकता है - 1. **Hypo (हायपो)** तथा 2. **Thesis (थेसिस)**। "**Hypo**" (हायपो) का अर्थ "कल्पना" या "काल्पनिक" और "**Thesis**" (थेसिस) का अर्थ "प्रस्तावना" है। अतः परिकल्पना का शाब्दिक अर्थ "काल्पनिक प्रस्तावना" है। ये साधारणतः ऐसा कथन है जो किसी सिद्धांत, संस्कृति, उपमा, या व्यक्तिगत अनुभव से प्राप्त किया जाता है। पिंतु इसमें कोई नई बात कही जाती है जिसकी जाँच पहले की जानी हो। अतः परिकल्पना से अनुसंधान का विषय निहित किया जाता है। पिंतु कोई परिकल्पना सही है या गलत इसका निर्णय वास्तविक अनुसंधान के आधार पर ही किया जा सकता है।

परिभाषा

परिकल्पना को विभिन्न विद्वानों ने निम्न प्रकार से परिभाषित किया है:

- **गुड और स्टेट्स** के अनुसार: "परिकल्पना एक अनुमान है जिसे अंतिम अथवा अस्थायी रूप में किसी निदृष्ट तथ्य अथवा दशाओं की व्याख्या हेतु स्वीकार किया गया हो एवं जिसके अन्वेषण को आगे पथ प्रदर्शन प्राप्त होता हो।"
- **बार और स्टेट्स** के अनुसार: "परिकल्पना एक अस्थायी रूप से सत्य माना हुआ कथन है, जिसका आधार उस समय तक उस विषय अथवा घटना के बारे में ज्ञान होता है और इसे नए सत्य की खोज के लिए आधार बनाया जाता है।"
- **गुड और हैट** के अनुसार: "परिकल्पना इस बात का वर्णन करती है कि हम क्या देखना चाहते हैं। परिकल्पना भविष्य की ओर देखती है। यह एक तर्कपूर्ण वाक्य है जिसकी वैधता की परीक्षा की जा सकती है। यह सही भी सिद्ध हो सकती है और गलत भी।"

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- **लण्डबर्ग** के अनुसार: "परिकल्पना एक प्रयोग संबंधी सामान्यीकरण है जिसकी वैधता की जाँच होती है। अपने मूल रूप में परिकल्पना एक अनुमान अथवा काल्पनिक विचार हो सकता है जो आगे के अनुसंधान के लिए आधार बनता है।"

कुछ विशेषज्ञों ने परिकल्पना को गणितीय आधार पर भी प्रस्तुत करने का प्रयास किया है। उनमें से एक मनोविज्ञान अनुसंधान विशेषज्ञ **जॉन गालटंग** का मत है कि सभी अनुसंधानों में निम्नलिखित तीन तत्व होते हैं:

1. **इकाई**: जिसके संबंध में सूचना ग्रहण की जा सकती है।
2. **चर**: जिसके विषय में सूचना ली जा रही है।
3. **मूल्य**: किसी इकाई में प्राप्त किसी चर के गुण अथवा परिणाम।

अतः परिकल्पना चल परिमाणों के द्वारा कुछ इकाइयों के संबंध में उनके विशिष्ट मूल्यों से संबंधित कथन है। यह स्पष्ट करती है कि इकाइयों का संबंध कितने और चल परिमाणों से है।

गणितीय रूप में परिकल्पना **Ps (X1, X2, X3, X4, ……Xn)** के बारे में एक कथन है:

जहाँ **P = probability (संभावना)**

S = Set of units (इकाइयाँ)

X1, X2, X3, X4……Xn = Variables (चल परिमाणों) को प्रदर्शित करते हैं।

उदाहरण के लिए, यदि यह परिकल्पना हो कि पुरुष स्त्रियों से अधिक बुद्धिमान होते हैं, तो इसमें पुरुष और स्त्रियाँ इकाइयाँ हैं, बुद्धि चर है तथा अधिक मूल्य है। इस प्रकार इस परिकल्पना में पुरुष तथा स्त्री इकाइयों के संबंध में तथा बुद्धि, चर के मूल्यों के संबंध में वर्णन किया गया है।

परिकल्पना की प्रकृति

उपरोक्त सभी परिभाषाओं से परिकल्पना की प्रकृति का बोध होता है जो निम्न प्रकार है:

1. परिकल्पना दो या दो से अधिक चरों का सामान्य या कारण प्रभाव संभावित संबंध प्रकट करती है।
2. परिकल्पना भविष्य की ओर संकेत करती है। अतीत से इसका संबंध नहीं होता है। भविष्य की ओर केंद्रित होती है तथा भविष्य में इसकी पुष्टि की जाती है।
3. शोध की सभी क्रियाएँ परिकल्पनाएँ ही निर्धारित करती हैं जिससे इनकी पुष्टि की जाती है तथा वैज्ञानिक शोध तो परिकल्पनाओं के बिना पूरे ही नहीं किए जा सकते हैं।
4. परिकल्पना में क्रियात्मक पक्ष निहित होता है जिसका शोध में नियोजन किया जाता है।
5. परिकल्पना केवल विचार ही नहीं है अपितु इसका शाब्दिक स्वरूप भी होता है जिसके प्रमाणों से पुष्टि की जाती है।
6. इसकी प्रकृति प्रत्ययात्मक होती है जिसमें किसी भी तरह के प्रत्ययात्मक तत्वों का समावेश होता है।

परिकल्पना के उद्देश्य

परिकल्पना के निम्नलिखित उद्देश्य हैं:

i. परिकल्पना शोध के लिए दिशा प्रदान करती है, उपयोगी प्रदत्तों के संकलन में सहायक होती है।

ii. परिकल्पना अध्ययनकर्ता को संवेदनशील बनाती है जिससे वह अनावश्यक परिस्थितियों तथा प्रदत्तों के संकलन से बच जाता है और उनकी क्रियाएँ चुनी हुई होती हैं।

iii. परिकल्पना द्वारा शोधकर्ता की समस्या को सही रूप में समझने में सहायता मिलती है तथा समस्या का रूप स्पष्ट हो जाता है।

iv. परिकल्पना द्वारा शोध के निष्कर्षों के प्रतिपादन में सहायता मिलती है।

परिकल्पना के स्रोत

परिकल्पना की निम्नलिखित मुख्य स्रोत हैं:

1. **संस्कृति**: परिकल्पना का एक स्रोत संस्कृति है। सामाजिक दृष्टिकोण से यह अत्यंत महत्वपूर्ण है। प्रत्येक समाज में अनेक प्रकार की समस्याएँ होती हैं। इन समस्याओं के चिंतन से परिकल्पना का जन्म होता है। इसकी परीक्षा करके अनुसंधानकर्ता उसकी विश्वसनीयता ज्ञात करता है। उदाहरणार्थ, यदि हम ग्रामीण समाज में होने वाले परिवर्तनों के कारणों का अध्ययन करना चाहते हैं तो हमारी एक परिकल्पना यह हो सकती है कि 'ग्रामीण संस्कृति पर नगरीय संस्कृति का प्रभाव पड़ रहा है' इसकी परीक्षा करके देख सकते हैं।

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2. **विज्ञान**: सभी विज्ञान स्वयं परिकल्पना के स्रोत हैं। उदाहरण के लिए, मनोविज्ञान में ही अनेक समस्याएँ हैं। इन समस्याओं के अध्ययन के लिए हम परिकल्पनाएँ बना सकते हैं और उसकी जाँच कर सकते हैं। जाँच के आधार पर नवीन ज्ञान प्राप्त होगा तथा वैज्ञानिक सिद्धांतों में सुधार होगा।
3. **प्राप्त परिकल्पनाओं का विश्लेषण**: किसी क्षेत्र में जो परिकल्पनाएँ उपलब्ध हैं, जिस पर बहुत हद तक पूर्व कार्य हो चुका है। पुनः उन्हीं को लेकर परीक्षा द्वारा सत्यता की जाँच की जा सकती है। उदाहरण के लिए, विभिन्न व्यवसायों के प्रतिष्ठात्मक मूल्य का अध्ययन कई वर्ष पूर्व हो चुका है। अब पुनः उसे देख सकते हैं कि क्या उसमें कोई परिवर्तन आया।
4. **उपमा**: इसका तात्पर्य दो विषयों अथवा घटनाओं में समानता से है। दो व्यवहारों में समानता क्यों है और किस सीमा तक है? उदाहरण के लिए, मानव व्यवहार एवं पशु व्यवहार में समानता, मानव प्रेरणा तथा पशु प्रेरणा में समानता आदि ले सकते हैं।
5. **व्यक्तिगत अनुभव**: व्यक्तिगत अनुभव भी परिकल्पना का आधार होता है, किंतु नए अनुसंधानकर्ता के लिए इसमें कठिनाई है। किसी भी क्षेत्र में जिनका अनुभव जितना ही समृद्ध होता है, उन्हें समस्या के ढूँढने तथा परिकल्पना बनाने में उतनी ही सफलता होती है।
6. **रचनात्मक चिंतन**: रचनात्मक चिंतन परिकल्पना के बनाने का बहुत बड़ा साधन है। मनियों ने इसके ऊपर विशेष बल दिया है। उन्होंने इसके चार पड़ बताए हैं: I. तैयारी, II. विकास, III. प्रेरणा और IV. परीक्षा। कोई विचार आया, उसे विकसित किया, उस पर कार्य करने के लिए प्रेरणा मिली, परिकल्पना का निर्माण और परीक्षा किया।
7. **सुझ**: अनुसंधानकर्ता की सुझ भी अच्छी परिकल्पना के निर्माण में सहायक होती है। जिसमें जितनी अच्छी सोच होगी, वह परिकल्पना का निर्माण उतना ही अच्छा कर सकेगा।
8. **अनुभवी व्यक्तियों का परिचय**: जो व्यक्ति उस क्षेत्र में कार्य कर चुके हैं, उनसे परिचय करने से भी परिकल्पना निर्माण में सहायता मिलती है तथा उसमें स्पष्टता आती है।
9. **उस क्षेत्र में हुए अनुसंधान**: उस क्षेत्र में जो अनुसंधान कार्य हो चुके हैं, उन्हें देखने से यह ज्ञात होगा कि किस प्रकार की परिकल्पनाओं पर कार्य किया गया है, उसी आधार पर अपनी परिकल्पना बना सकते हैं।

परिकल्पना के कार्य

अनुसंधान कार्य में परिकल्पना के निम्नलिखित कार्य हैं:

1. **मार्गदर्शन**: परिकल्पना अनुसंधान कार्य के लिए मार्गदर्शन करती है। इससे यह ज्ञात होता है कि अनुसंधान कार्य में कौन-कौन सी क्रियाएँ करनी हैं तथा कैसे करनी हैं। अतः परिकल्पना के उचित निर्माण से कार्य की स्पष्ट दिशा निश्चित हो जाती है।
2. **समस्या को संनिश्चित करना**: परिकल्पना समस्या को संकुचित करती है। जिससे उसका विशिष्ट और निश्चित क्षेत्र स्थिर हो जाता है। इसके निर्धारण से अनुसंधान कार्य विशिष्ट हो जाता है तथा अपव्यय से बचते हैं।
3. **प्रमुख तथ्यों का चयन**: परिकल्पना समस्या को सीमित कर देती है तथा महत्वपूर्ण तथ्यों के चयन में सफलता होती है। मान लीजिए बाल अपराध पर कोई अध्ययन किया जा रहा है और उसके लिए पाँच परिकल्पनाएँ ली गईं। इसका तात्पर्य यह हुआ कि बाल अपराध के संबंध में और भी बातें हो सकती हैं किंतु हमें अपने अनुसंधान में इन्हीं पाँच बातों को देखना है।
4. **पुनरावृत्ति को संभव बनाना**: पुनरावृत्ति परीक्षा द्वारा अनुसंधान के निष्कर्ष की सत्यता का मूल्यांकन करते हैं। परिकल्पना के अभाव में यह पुनः परीक्षा असंभव होगा। यह ज्ञात ही नहीं होगा कि समस्या के किस विशेष पक्ष पर कार्य किया है तथा किसका नियंत्रण करके किसका परीक्षा किया है।
5. **निष्कर्ष निकालने में सहायक**: परिकल्पना अनुसंधानकर्ता को एक निश्चित निष्कर्ष पर पहुँचने में सहायता करती है। अनुसंधानकर्ता उद्देश्य तथा क्रिया में निश्चित रहता है तथा उचित मार्ग पर चलकर निश्चित उद्देश्य को प्राप्त करने में सफल होता है।

अच्छी परिकल्पना की विशेषता

1. **परिकल्पना समस्या का पर्याप्त उत्तर हो**: इसका तात्पर्य यह है कि एक अच्छी परिकल्पना एक समस्या के लिए एक उपयुक्त उत्तर का सुझाव देती है। संभव है कि कई परिकल्पनाएँ हों जो एक समस्या के समाधान हेतु सुझाव देती हों किंतु

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आवश्यक यह है कि प्रत्येक परिकल्पना किसी विशेष दृष्टिकोण से समाधान प्रस्तुत करती हो। यह चयन अनुसंधानकर्ता के अनुभव और उसकी सुझ पर निर्भर है कि अनेक परिकल्पनाओं में से किसे अपने परीक्षा का विषय बनाएँ।

2. **परिकल्पना समस्या का सरलतम उत्तर हो**: कोई भी परिकल्पना जो समस्या का सरलतम एवं स्पष्ट उत्तर प्रस्तुत करती होगी, उसके परीक्षण में कठिनाई नहीं आएगी। इसके विपरीत, जटिल एवं भ्रमपूर्ण परिकल्पना का परीक्षण बड़ा ही जटिल हो जाता है और निष्कर्ष प्राप्त संदिग्ध रहती है। इसके लिए आवश्यक यह है कि (क) परिकल्पना की शब्दावली सरल और स्पष्ट हो, (ख) परिकल्पना लंबी नहीं अपितु छोटी हो तथा (ग) भ्रमपूर्ण भाषा का प्रयोग न किया गया हो।
3. **परिकल्पना प्रत्ययात्मक दृष्टि से स्पष्ट हो**: एक अच्छी परिकल्पना के सभी प्रत्ययों का संक्रियात्मक परिभाषीकरण अत्यावश्यक है। इसका तात्पर्य यह है कि किसी विशेष प्रत्यय के संबंध में व्यक्तियों की भिन्न-भिन्न धारणाएँ हो सकती हैं किंतु अनुसंधानकर्ता किस धारणा को लेकर परीक्षण करने जा रहा है, इसका स्पष्टीकरण बहुत ही महत्वपूर्ण है। यदि स्पष्टीकरण मापन को दृष्टि में रखकर किया जाता है तो उसे संक्रियात्मक परिभाषीकरण कहते हैं।
4. **परिकल्पना प्रामाणिक करने योग्य हो**: परिकल्पना का परीक्षण कर एक निष्कर्ष निकालते हैं और यही अनुसंधान का उद्देश्य होता है। यदि परिकल्पना ऐसी होगी जिसका परीक्षण ही नहीं हो सकता अथवा उसे प्रामाणित नहीं कर सकते तो उसे लेना व्यर्थ है। उदाहरणार्थ, यदि यह परिकल्पना ले लें कि "सभी मनुष्य मर्त्शील हैं" तो इसे प्रामाणित करना असंभव है, क्योंकि जब तक सभी मनुष्य मर न जाएँ तब तक प्रतीक्षा करनी होगी; और चूँकि अनुसंधानकर्ता भी तो मनुष्य ही है, अतः निष्कर्ष कौन निकालेगा।
5. **परिकल्पना विशिष्ट होनी चाहिए**: परिकल्पना का विशिष्ट होना उसका विशेष गुण है। उदाहरणार्थ, यदि यह परिकल्पना लें कि लड़के और लड़कियों की अभियोग्यता में भिन्नता होती है, तो इसमें यह भी स्पष्ट करना आवश्यक है कि किस प्रकार की अभियोग्यता - साहित्यिक, वैज्ञानिक, यांत्रिक आदि में अंतर है। यह विशिष्टीकरण उसके मापन में सहायक होगा।
6. **परीक्षण के लिए यंत्र प्राप्त हो**: नवीन अनुसंधानकर्ताओं के लिए आवश्यक है कि वह ऐसी परिकल्पना ले जिसके परीक्षण के लिए यंत्र प्राप्त हो, क्योंकि परीक्षण संबंधी उपकरणों का बनाना स्वयं एक जटिल कार्य है जो अनुभवी व्यक्ति ही कर सकते हैं।
7. **परिकल्पना किसी सिद्धांत से समन्वित हो**: ऐसी परिकल्पना का लेना उपयुक्त होता है जिसका किसी न किसी रूप में कुछ समर्थन किसी सिद्धांत द्वारा हो चुका हो अथवा उसका विरोध हो चुका हो।
8. **आँकड़े प्राप्त हो सके**: वही परिकल्पना लेनी चाहिए जिसके लिए आँकड़े प्राप्त हो सके। यदि आँकड़े ही नहीं प्राप्त होंगे तो उसका लेना व्यर्थ होगा।
9. **शून्य परिकल्पना सर्वोत्तम होती है**: शून्य परिकल्पना सर्वोत्तम होती है। क्योंकि इसमें कोई दिशा निर्देश न होने के कारण सत्य अथवा असत्य प्रामाणित करने के लिए अनुसंधानकर्ता कटिबद्ध नहीं होता। वह स्वाभाविक रूप से परीक्षण करता है तथा उसका निष्कर्ष घोषित कर देता है।

परिकल्पना के प्रकार

मैकगुइगन के अनुसार, अनुभवाधृत परिकल्पनाएँ दो प्रकार की होती हैं:

1. **सार्वभौमिक**: इस वर्ग में वे परिकल्पनाएँ सम्मिलित की जाती हैं जिसका अध्ययन किए जाने वाला संबंध सभी चरों से सभी समय तथा सभी स्थानों पर रहता है। जैसे- किसी समस्या- बक्स पर चूहों की एक ओर (यथा दाहिनी) मुड़ने पर पुरस्कृत किया जाए तो सभी चूहे उसी ओर मुड़ेंगे।
2. **अस्तित्वात्मक**: ऐसी परिकल्पना जो कम से कम एक मामले में चरों के अस्तित्व को उचित घोषित कर सके। पिछले उदाहरण की इस वर्ग की परिकल्पना को इस प्रकार निदृष्ट किया जा सकता है कि कम से कम एक चूहा ऐसा है कि यदि उसे एक ओर (यथा दाहिनी) मुड़ने पर पुरस्कृत किया जाए तो वह समस्या बक्स में उस ओर अवश्य मुड़ेगा।

कथन के स्वरूप के आधार पर परिकल्पना के प्रकार

1. **सकारात्मक कथन**: इसमें परिकल्पना का कथन सकारात्मक रूप में करते हैं। उदाहरणार्थ:
   (क) वर्ग 'अ' की बुद्धिलब्ध वर्ग (ब) से अधिक है।
   (ख) लड़के लड़कियों से अधिक बुद्धिमान होते हैं।

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(ग) अभ्यास से सीखने में उन्नति होती है।
(घ) 16 वर्ष के पश्चात् रुचियों में स्थान्यत्व आ जाता है, आदि।

2. **नकारात्मक कथन**: इस प्रकार की परिकल्पना में कथन नकारात्मक रूप में होता है। उदाहरणार्थ:
(क) वर्ग 'अ' की बुद्धिलब्ध वर्ग 'ब' से अधिक नहीं है।
(ख) लड़के लड़कियों से अधिक बुद्धिमान नहीं होते।
(ग) अभ्यास से सीखने में उन्नति नहीं होती।
(घ) 16 वर्ष के पश्चात् रुचियों में स्थान्यत्व नहीं आता।
3. **शून्य परिकल्पना**: इसमें यह मानकर चलते हैं कि दो चर जिनमें संबंध ज्ञात करने जा रहे हैं उनमें कोई अंतर नहीं है। 'Null' जर्मन भाषा का शब्द है। इसका अर्थ होता है शून्य, अतः इस परिकल्पना को शून्य परिकल्पना भी कहते हैं। उदाहरणार्थ:
(क) वर्ग 'अ' और वर्ग 'ब' की बुद्धिलब्ध में कोई अंतर नहीं है।
(ख) एक बड़े समूह के पुरुषों की औसत बुद्धिलब्ध तथा एक बड़े समूह की स्त्रियों की औसत बुद्धिलब्ध में सार्थक अंतर नहीं है।
(ग) शहरी तथा ग्रामीण क्षेत्र के माध्यमिक विद्यालयों के अध्यापकों के समायोजन में अंतर नहीं होता।

परिकल्पना के चर

वैज्ञानिक शोध कार्यों में चरों का अत्यधिक महत्व है। चरों की प्रकृति गुणात्मक न होकर परिमाणात्मक होती है। परिकल्पना चरों की भूमिकाओं को निर्धारित करती है। शोध के अनुसार चरों की भूमिकाएँ बदलती रहती हैं। चरों को भूमिकाओं के आधार पर पाँच वर्गों में विभाजित किया जाता है:

I. **स्वतंत्र चर**: स्वतंत्र चर किसी वातावरण में क्रियाशील होता है और व्यवहार को प्रभावित करता है। स्वतंत्र चर का मापन किया जाता है और प्रयोग द्वारा उसके प्रभाव का अध्ययन किया जाता है तथा आश्रित चर से सह-संबंध स्थापित किया जाता है।

II. **आश्रित चर**: किसी स्वतंत्र चर का प्रभाव जिस चर के आधार पर ज्ञात किया जाता है उसे आश्रित चर कहते हैं जिसका मूल्य स्वतंत्र चर के मूल्य पर आधारित होता है।

III. **बाह्य चर**: बाह्य चर का निदीक्षण शोधकर्ता इसलिए करता है कि जिससे शोध की परिस्थिति ज्ञात हो जाती है तथा सामान्यीकरण का क्षेत्र अधिक व्यापक हो जाता है। जैसे – लिंग चर, सामाजिक-आर्थिक स्तर, शहरी तथा ग्रामीण चर परिवर्तन चर का कारण करते हैं। बालक तथा बालिकाओं को सम्मिलित करने से शोध की परिस्थिति परिवर्तन हो जाती है।

IV. **नियंत्रित चर**: प्रयोगात्मक शोध कार्यों में प्रयोगात्मक चर का नियंत्रित चर के रूप में अध्ययन किया जाता है। इसकी प्रभावशीलता सापेक्षिक होती है। अतः प्रभावशीलता के लिए जिस संदर्भ को प्रयुक्त किया जाता है उसे नियंत्रित कर कहते हैं।

V. **मध्यस्थ चर**: मध्यस्थ चर का स्वरूप अमूर्त होता है इसलिए इसे सुझ से ही पहचाना जा सकता है। अभिवृद्धि, अभिरुचि, पूर्व ज्ञान, अधिगम प्रक्रिया, स्वभाव आदि मध्यस्थ चर का कारण करते हैं।

परिकल्पना का परीक्षण

परिकल्पना निर्माण के पश्चात् उसका परीक्षण आवश्यक होता है अन्यथा वह एक अनुमान मात्र रह जाएगी। इसके लिए निम्नलिखित पद्धों का उपयोग करते हैं:

1. **परिणामों का निगमन**: वास्तव में परीक्षण, परिकल्पना का नहीं करते, अपितु उसके परिणामों का करते हैं। अतः सबसे पहले उन परिणामों का निश्चित करते हैं। इनका निश्चय प्रत्यक्ष तथा अप्रत्यक्ष दोनों प्रकार से हो सकता है। उदाहरण के लिए, हमारी एक परिकल्पना है - आकांक्षा स्तर तथा प्रत्यक्षीकरण में धनात्मक संबंध है तो:
i. उच्च आकांक्षा स्तर वाले बालक दी गई वस्तुओं का उच्च मूल्यांकन करेंगे।
ii. निम्न आकांक्षा स्तर वाले बालक निम्न मूल्यांकन करेंगे।
iii. उच्च मूल्यांकन करने वाले का आकांक्षा स्तर उच्च होगा।
iv. निम्न मूल्यांकन करने वालों का आकांक्षा स्तर निम्न होगा।
2. **परीक्षण का चयन अथवा निर्माण**: परिणामों का निश्चय कर लेने के पश्चात् ऐसी विधि और उपकरण का चयन अथवा निर्माण करते हैं, जिसके आधार पर प्रयोग अथवा निदीक्षण करके देखा जा सके कि यह बात होती भी है अथवा नहीं।

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3. **नमूना आकार का निश्चय**: तीसरे स्तर पर यह निश्चय करते हैं कि परिकल्पना के निदीक्षण के लिए कितने नमूने की आवश्यकता है। जिससे (Type1 तथा Type2 error) से बचाव हो सके। इसके साथ ही नमूने के वितरण की भी जाँच कर लेते हैं कि वितरण सामान्य है अथवा विशेष है।
4. **प्रयोग अथवा निदीक्षण**: इस स्तर पर प्रयोग अथवा निदीक्षण के माध्यम से परिकल्पना की पुष्टि के लिए आँकड़ों का संकलन करते हैं।
5. **शून्य परिकल्पना का निर्माण**: सांख्यिकीय आधार पर परिकल्पना के परीक्षण के लिए पहले ली गई अनुसंधान परिकल्पना को शून्य परिकल्पना में परिवर्तित कर लेते हैं।
6. **सांख्यिकीय परीक्षण का चयन**: शून्य परिकल्पना के निर्माण के पश्चात् उचित सांख्यिकीय परीक्षा विधि का चयन किया जाता है। इस बात का निश्चय करते हैं कि ली गई परिकल्पना के परीक्षण के लिए प्राचल अथवा अप्राचल। विधियों में से कौन सी विधि उपयुक्त होगी और कौन सी परीक्षा उपयुक्त रहेगा।
7. **सार्थकता स्तर का निश्चय**: इस स्तर पर यह निश्चय करते हैं कि सार्थकता का स्तर .01, .05 अथवा इससे भी कम होगा।
8. **अस्वीकृति क्षेत्र का निश्चय**: सार्थकता स्तर के निर्धारण के पश्चात् इस बात का अनुमान लगाते हैं कि निदीक्षणों का वितरण किस रूप में प्राप्त होगा तथा एक-पुच्छीय परीक्षा अथवा दो-पुच्छीय परीक्षा के आधार पर वितरण के अस्वीकृति क्षेत्र का निश्चय किया जाता है।
9. **निर्णय लेना**: अंत में सांख्यिकीय परीक्षा के पद्ध 6,7 और 8 के आधार पर निर्णय लेते हैं कि बनाई गई शून्य परिकल्पना वितरण के अस्वीकृति क्षेत्र में पड़ती है अथवा स्वीकृत क्षेत्र में। इस प्रकार शून्य परिकल्पना के स्वीकार अथवा अस्वीकार होने के पश्चात् प्रारंभिक अनुसंधान परिकल्पना को स्वीकार अथवा अस्वीकार कर देते हैं।

निष्कर्ष

किसी भी कार्य को करने के पहले व्यक्ति उस कार्य की प्रकृति के आधार पर एक परिकल्पना का निर्माण करता है। जिससे वह अपने कार्यों को सुनियोजित तरीके से पूरा कर सके। किसी भी शोध के पहले परिकल्पना का निर्माण आवश्यक हो जाता है। जिससे शोधकर्ता अपने शोध के लिए सुनियोजित तैयारी कर सके। शोध परिकल्पना दो या दो से अधिक चरों के बीच की हेतक संबंध को दर्शाता है। शोध परिकल्पना को पूरा करने के लिए शोधकर्ता अपने स्थानीय वातावरण के प्रति सक्रिय रहकर अपने व्यक्तिगत अनुभव एवं सुझ द्वारा आसानी से पूर्ण कर सकता है। एक अच्छे शोध परिकल्पना का निर्माण कर शोधार्थी अपने शोध कार्य को आसान बना सकता है। एक वैज्ञानिक शोध में परिकल्पना का महत्वपूर्ण स्थान है जिसके माध्यम से एक शोध को सफलतापूर्वक पूरा किया जा सकता है।

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शोध पद्धति: एक परिचय
(Research Methodology: An Introduction)

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सारांश (Abstract)
अनुसंधान, खोज, शोध, अन्वेषण और गवेषणा सभी पर्यायवाची शब्द हैं। इनका मूल भाव अज्ञान को ज्ञान में बदलना है। किसी भी विषय में नए तथ्यों की खोज हेतु जाँच या पूछताछ करना ही शोध है। पूछताछ ज्ञान की जननी होती है, जिसके माध्यम से हम अज्ञान को दूर कर सत्य को प्राप्त करते हैं, जिसे शोध कहा जाता है।
शोध के लिए विभिन्न क्षेत्रों में मार्ग खुले होते हैं। जो तथ्य दृष्टि से ओझल होते हैं, उन्हें प्रत्यक्ष करने का प्रयास शोधार्थी करते हैं। नवीन तथ्यों की खोज तथा पुराने तथ्यों और सिद्धांतों का पुनः परीक्षण कर नए निष्कर्ष तक पहुँचना ही अनुसंधान कहलाता है।
अतः शोध शब्द का तात्पर्य उस प्रक्रिया से है, जिसमें समस्या की पहचान करना, एक परिकल्पना तैयार करना, तथ्यों अथवा आँकड़ों को एकत्र करना, उनका विश्लेषण करना और समस्या के समाधान के रूप में निष्कर्ष तक पहुँचना सम्मिलित है। शोध समस्या का परीक्षण न तो अत्यधिक व्यापक होना चाहिए और न ही अस्पष्ट। शोध का उद्देश्य संग्रहीत और विश्लेषित आँकड़ों के आधार पर अध्ययन करना तथा वैज्ञानिक विधियों के प्रयोग से प्रश्नों के उत्तर खोजना है। अंततः शोधकर्ता को अपने द्वारा किए गए कार्य की विस्तृत रिपोर्ट तैयार करनी होती है।

बीज शब्द (Keywords): *शोध, समस्या, परिकल्पना, उद्देश्य, प्रक्रिया, पद्धति।*

परिचय (An Introduction)

उपनिषद्कार कहते हैं- "तद्विज्ञानेन परिपात्रेण ने में सत्यस्य अतिहितं मुखम्"

विज्ञान में पात्र प्रतीकात्मक शब्द है जो माया या अज्ञान का द्योतक है। सत्य अर्थात् ज्ञान अज्ञान के आवरण में छिपा रहता है। उसे निर्वारण करने का कार्य अनुसंधानकर्ता का है। व्यापक अर्थ में शोध का अर्थ किसी भी क्षेत्र में 'ज्ञान की खोज करना या सत्यनिरूपण' करना होता है।

प्रसिद्ध भौतिक शास्त्री डेविड बॉम का कहना है कि "नई सृष्टि का अर्थ यह हुआ कि यह न ही पुरानों की नकल करती है ना ही मौलिक सच्चाई के विपरीत जाती है यह पुराने सत्यों की हमारी समझ को नए संदर्भ में ढालती है और इसके साथ-साथ हमारे ज्ञान के आयाम को विस्तृत करती है। शोध एक स्वतः प्रवाहमान क्रिया है जिसका आदि तो है पर अंत नहीं है।"

तिलफोर्ड टी. डी के मुताबिक, शोध में समस्याओं को परिभाषित व पुनः परिभाषित करना, परिकल्पना तैयार करना या समाधान सुझाना, समंक एकत्र करना, उसे व्यवस्थित करना एवं उसका मूल्यांकन करना, कटौती करना एवं निष्कर्ष तक पहुंचाना और आखिर में ध्यान पूर्वक निष्कर्ष का परीक्षण करना कि वह दी गई परिकल्पना में उपयुक्त होते हैं या नहीं शामिल है। यह अध्ययन, अवलोकन, तुलना और प्रयोग की सहायता से सत्य की खोज है। विज्ञान के सिद्धांतों को लोग प्रायः शाश्वत मानते रहे हैं अब यह मान्यता खंडित होने लगी है। उदाहरणार्थ पहले अणु को पदार्थ का न्यूनतम अंश माना जाता था पर आधुनिक शोध ने परमाणु को उसका न्यूनतम अंश सिद्ध किया है इसे आधुनिक शोध कहा गया है पिंतु भारतीय विद्वानों ने इसका सदियों पूर्व अन्वेषण कर लिया था से तो परमाणुओं को भी संनमात्राओं से निर्मित मानते हैं। इसी प्रकार पहले पदार्थ और ऊर्जा को दो भिन्न सत्त्व माना जाता था पर अद्यतन आविष्कार ने दोनों को एक ही सिद्ध कर दिया है। यूरेनियम पदार्थ यदि विशेष मात्रा में एक जगह रख दिया जाए तो परमाणु अपने आप टूटने लगते हैं जिसके परिणाम स्वरूप ऊर्जा उत्सर्जित होती है। एटम बम बनाने में यही प्रक्रिया काम में लाई जाती है। पहले काल को सेकंड में विभाजित किया गया था पर आधुनिक समय में सेकंड को भी विभाजित किया गया है भारतीय सत्त्वान्वेषी इसे भी सूक्ष्मकाल का विभाजन कर चुके हैं। इस प्रकार व्याख्या सत्य परिकल्पना या समस्या को हल करने की व्यवस्थित स्थायी प्रक्रिया

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का मान ही शोध है। ज्ञान सत्य की युगानुरूप व्याख्या भी शोध का अंग माना जाता है शोध नए सत्यों की खोज ही नहीं उनकी सका संगत व्याख्या भी है। शोध एक समस्या या प्रश्न होता है जो बताता है कि शोध क्यों किया जाना है?

शोध का उद्देश्य (Objectives of Research)

शोध का उद्देश्य एकत्रित और विश्लेषित आंकड़ों के आधार पर अध्ययन करना है और वैज्ञानिक प्रक्रियाओं के प्रयोग के माध्यम से प्रश्नों के उत्तर की खोज करना है। इसका मुख्य उद्देश्य यह है कि उस अज्ञात सत्य का पता लगाया जाए जो छुपा हुआ है और जिसे अभी तक खोजा नहीं जा सका है। हर एक शोध का अपना विशिष्ट उद्देश्य होता है पिंतु कुछ सामान्य उद्देश्य इस प्रकार हैं:

1. **खोजपूर्ण शोध अध्ययन**: किसी घटना विशेष से संबंधित जानकारी के लिए या उसमें निहित अंदृष्टि या जानकारी प्राप्त करने के लिए।
2. **विवरणात्मक शोध अध्ययन**: एक विशेष व्यक्ति, समूह या किसी विशेष स्थिति की विशेषताओं को जानने के लिए।
3. **नैदानिक शोध अध्ययन**: उस स्थिति को निर्धारित करने के लिए जिसके साथ कुछ अनुभव घटित होता है या जिसके साथ कुछ और जुड़ा होता है।
4. **परिकल्पना-परीक्षण शोध अध्ययन**: चरों के बीच आकस्मिक संबंध की परिकल्पना का परीक्षण करने के लिए।

शोध के प्रकार

1. **वर्णनात्मक बनाम विश्लेषणात्मक (Descriptive vs. Analytical)**: वर्णनात्मक अनुसंधान में वर्तमान स्थिति का वर्णन किया जाता है। इसमें मानव जीवन की सभी वर्तमान समस्याओं पर चाहे वह साहित्य, समाज विज्ञान या गृह विज्ञान से संबंध क्यों न रखती हो अनुसंधान किया जाता है। इसमें सत्यों को संकलित कर उनकी व्याख्या और उनका मूल्यांकन किया जाता है। इसमें विभिन्न प्रकार के सर्वेक्षण और सत्य खोज, पूछताछ इत्यादि को शामिल किया जाता है। इस पद्धति में शोधकर्ता वस्तुओं से संबंधित विस्तृत जानकारी रखना चाहता है। जैसे उदाहरण के लिए लोगों द्वारा प्रतिदिन उपयोग किया जाने वाले इंटरनेट की विस्तृत जानकारी। इस शोध पद्धति में सर्वेक्षण के विभिन्न प्रकार शामिल हैं। विश्लेषणात्मक शोध में शोधकर्ता को उसके पास उपलब्ध सत्यों और सूचनाओं का उपयोग करना पड़ता है और उनका मूल्यांकन करने के लिए सामग्रियों का विश्लेषण करना पड़ता है।
2. **व्यवहारिक बनाम मौलिक (Applied vs. Fundamental)**: व्यवहारिक शोध में किसी समाज या किसी संगठन के किसी तात्कालिक समस्या का समाधान खोजा जाता है जबकि मौलिक अनुसंधान में मुख्य रूप से सिद्धांत के सामान्यीकरण और निर्माण से संबंधित शोध किया जाता है। भौतिक या रसायन से संबंधित सत्य मौलिक अनुसंधान के उदाहरण हैं। मानव व्यवहार एवं किसी प्राकृतिक घटना से संबंधित शोध भी मौलिक शोध के उदाहरण। सामाजिक व्यवहारिक समस्या कुछ निष्कर्ष पर किया गया शोध व्यवहारिक अनुसंधान का उदाहरण है।
3. **मात्रात्मक बनाम गुणात्मक (Quantitative vs. Qualitative)**: मात्रा के संबंध में किए गए अनुसंधान को मात्रात्मक अनुसंधान कहते हैं। गुणवत्ता से संबंधित अनुसंधान को गुणात्मक अनुसंधान कहते हैं। यदि हम मानव व्यवहार के अंतर्निहित उद्देश्यों के बारे में अनुसंधान करते हैं तो यह गुणात्मक शोध के अंतर्गत आता है। इसमें मानव में अंतर्निहित उद्देश्यों और इच्छाओं की खोज की जाती है। इसके लिए विभिन्न प्रकार के साक्षात्कार का उपयोग किया जाता है। इसमें यह पता लगाया जाता है कि लोग किसी विशेष संस्था या विषय के बारे में कैसा महसूस करते हैं या क्या सोचते हैं? इसमें विभिन्न कारकों का विश्लेषण किया जाता है जो लोगों को एक विशेष तरीके से व्यवहार करने के लिए प्रेरित करते हैं। गुणात्मक अनुसंधान का व्यवहारिक रूप में प्रयोग करना अपेक्षाकृत कठिन काम।
4. **वैचारिक बनाम आनुभविक (Conceptual vs. Empirical)**: वैचारिक अनुसंधान दार्शनिकों और विचारकों द्वारा नई अवधारणाओं को विकसित करने या मौजूद अवधारणा की पुनर्व्याख्या करने के लिए उपयोग किया जाता है। आनुभविक अनुसंधान प्रणाली और सिद्धांत के लिए स्वयं के अनुभव या अवलोकन पर निर्भर करता है। यह समंक पर आधारित अनुसंधान है। इसे अवलोकन और प्रयोग द्वारा सत्यापित किया जाता है। इसे प्रयोगात्मक अनुसंधान के रूप में भी जाना जाता है। इसमें सत्य प्राप्त करना और जानकारी को प्रोत्साहित करने के लिए सक्रिय रूप से कुछ क्रियाएं करना आवश्यक है। इसमें शोधकर्ता को संभावित परिणामों के रूप में एक अनुमान लगाना पड़ता है या एक परिकल्पना तैयार करना पड़ता है। उसके बाद अपनी परिकल्पना को स्वीकार या अस्वीकार करने हेतु पर्याप्त सत्य अथवा समंक प्राप्त करने का कार्य किया जाता है। उसके बाद प्रयोगात्मक प्रारूप तैयार किया जाता है जिससे संतोषजनक जानकारी प्राप्त हो सके।

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आनुभविक अध्ययनों के माध्यम से एकत्र किए गए प्रमाणों को किसी परिकल्पना की परीक्षण के लिए शक्तिशाली समर्थन माना जाता है।

5. **कुछ अन्य प्रकार के शोध**: इसमें उपरोक्त दृष्टिकोण में से एक या एक से अधिक का प्रयोग किया जाता है जो अनुसंधान या शोध को पूरा करने के लिए कुछ अन्य कारकों का भी उपयोग करता है। 'एक बार शोध' में शोध के केवल एक समय पर ही सीमित होता है जबकि 'अनुदैर्घ्य' पुनखोज में शोध को कई समय अवधि में किया जाता है। अनुसंधान क्षेत्र अनुसंधान, प्रयोगशाला अनुसंधान या उत्प्रेरक अनुसंधान हो सकता है जो उस पर्यावरण पर निर्भर करता है जिसमें इसे किया जाना है। नैदानिक अनुसंधान में आकस्मिक संबंधों तक पहुंचाने के लिए अध्ययन विधि का पालन किया जाता है। इसमें अनुसंधानकर्ता को अपनी रुचि से संबंधित विषय में गहन अध्ययन करना पड़ता है साथा उनके लिए छोटे छोटे नमूनों साथा समंक को भी एकत्र करना पड़ता है। खोजपूर्ण अनुसंधान का लक्ष्य उसका विकास करना होता है जबकि औपचारिक शोध अध्ययन में संरचना के साथ विशिष्ट परिकल्पना की भी आवश्यकता होती है। ऐतिहासिक अनुसंधान में ऐतिहासिक स्रोतों जैसे दस्तावेजों, विशेष आकड़ों का उपयोग किया जाता है। निष्कर्षोन्मुखी अनुसंधान में शोधकर्ता को किसी समस्या को चुनना होता है एवं अपनी इच्छा अनुसार अवधारणा तैयार करना होता है। निर्णय उन्मुख अनुसंधान निर्णय निर्माण की आवश्यकता के लिए होता है। संचालन अनुसंधान संचालन के बारे में एक वैज्ञानिक तरीका है।

अनुसंधान अर्थात शोध का महत्व (Significance of Research)

"सभी प्रगति की उत्पत्ति जाँच से होती है। संदेह अल्प विश्वास से बेहतर होता है क्योंकि यह जाँच पड़ताल की ओर ले जाता है और जाँच आविष्कार की ओर ले जाती है।" -हडसन मैक्सिम।

प्रगति, अर्थव्यवस्था और व्यापार के लिए अनुसंधान आवश्यक है। सभी नीतियों का आधार शोध ही होता है क्योंकि शोध के द्वारा ही सरकार को लोगों की जरूरतों एवं विभिन्न प्रकार के समंकों के बारे में पता चलता है। सरकार की आय और व्यय में संतुलन बैठाने के लिए अनुसंधान आवश्यक है। शोध नीति निर्माता को भी निर्णय लेने में सहायता प्रदान करता है। किसानों के समस्या, बड़े छोटे व्यवसाय, उद्योगों की समस्याओं, काम करने की स्थितियां, व्यापार संघ की गतिविधियों, शिक्षण की समस्या, शिक्षा और संचार से संबंधित कार्यों को करने के लिए भी शोध आवश्यक है। राष्ट्र के संसाधनों का राज्य और केंद्र के बीच आंटन में भी अनुसंधान की आवश्यकता होती है। आजकल लगभग सभी सरकारें काम को पूरा करने के लिए बड़े स्तर पर शोध निदेशालयों या विशेषज्ञों को रखती हैं। सरकार के लिए शोध में संचालन के लिए तीन अलग-अलग चरण होते हैं:

1. सत्यों के निंदिष्ट संकलन के माध्यम से आर्थिक संरचना की जाँच।
2. घटनाओं का निदान और उन अंतर्निहित बलों का विश्लेषण।
3. पूर्णानुमान या विकास की भविष्यवाणी।

व्यापार पर निर्णय को लेने के लिए प्रेरक अनुसंधान, संचालन अनुसंधान और बाजार अनुसंधान को महत्वपूर्ण माना जाता है। सामाजिक संबंधों का अध्ययन और विभिन्न सामाजिक समस्याओं का हल करने के लिए सामाजिक वैज्ञानिकों के लिए भी अनुसंधान महत्वपूर्ण है। पीएचडी छात्रों के लिए भी शोध आवश्यक है। शोध पद्धति में पेशेवरों के लिए शोध आजीविका का स्रोत हो सकता है। दार्शनिकों के लिए शोध का मिलन नए विचार और अंतर्दृष्टि हो सकता है। साहित्यिक व्यक्तियों के लिए शोध का अर्थ शैलियों और रचनात्मक काम का विकास हो सकता है। विश्लेषकों और बौद्धिकों के लिए शोध का मिलन सिद्धांतों का सामान्य कारण हो सकता है। इस प्रकार शोध ज्ञान के लिए ज्ञान का भंडार है।

अनुसंधान विधि बनाम पद्धति (Research Methods vs. Methodology)

अनुसंधान विधि से तात्पर्य उन विधियों अथवा तकनीक से है जिनका उपयोग एक शोधकर्ता शोध संचालन में करता है। अनुसंधान का उद्देश्य किसी दिए गए समस्या के समाधान तक पहुंचना होता है। अनुसंधान विधियों को तीन समूह में रखा जा सकता है:

1. समंक संग्रह से संबंधित विधि में जहां पहले से उपलब्ध समंक आवश्यक समाधान तक पहुंचने के लिए पर्याप्त नहीं है।
2. उन सांख्यिकीय तकनीक का उपयोग जिनका उपयोग समंक और अज्ञातों के बीच संबंध स्थापित करने के लिए किया जाता है।
3. वह विधि जिनका उपयोग प्राप्त परिणामों की शुद्धता का मूल्यांकन करने के लिए किया जाता है।

अनुसंधान पद्धति अनुसंधान समस्या को व्यवस्थित रूप से हल करने का एक तरीका है। इसमें उन विभिन्न पद्धतियों का अध्ययन करते हैं जिन्हें शोधकर्ता द्वारा उनकी शोध समस्या का अध्ययन करने के लिए सका के साथ अपनाया जाता है।

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शोधकर्ताओं को यह जानना भी जरूरी है कि इनमें कौन सी विधियां या तकनीक प्रासंगिक हैं, और कौन सी नहीं हैं, और उनका क्या अर्थ होगा? शोधकर्ता के लिए अपनी समस्या के लिए अपनी पद्धति का ज्ञान होना आवश्यक है। क्योंकि यह विभिन्न समस्याओं का आधार पर भिन्न-भिन्न हो सकता है। उदाहरण के लिए एक वास्तुकार को अपने फैसलों के आधार पर मूल्यांकन करना पड़ता है कि वह किस आकार और किस आधार पर विशेष आकार संख्या और दरवाजे खिड़की और वेंटीलेटर के स्थान का चयन करता है और विशेष सामग्री का उपयोग करता है। शोध में वैज्ञानिक को अनुसंधान निर्णय को लागू करने से पहले यह उल्लेख करना पड़ता है कि मूल्यांकन के लिए उनकी पद्धति क्या होगी, ताकि उनका मूल्यांकन दूसरों के द्वारा भी किया जा सके। अनुसंधान पद्धतियों का दायरा अनुसंधान विधियों की तुलना में व्यापक होता है। एक शोध पद्धति के संदर्भ में एक शोध अध्ययन क्यों किया गया है, शोध समस्या को कैसे परिभाषित किया गया है, किस प्रकार की परिकल्पना तैयार की गई है, किस प्रकार का और किस प्रकार से समंक को एकत्रित किया गया है और किस विशेष विधि को अपनाया गया है समंक का विश्लेषण करने की विशेष तकनीक का उपयोग क्यों किया गया है और इसी प्रकार के अन्य प्रश्नों का उत्तर दिया जाता है।

अनुसंधान और वैज्ञानिक विधि (Research and Scientific Method)

अनुसंधान को किसी विशेष परिस्थितियों के प्रकृति, कारणों और परिणामों के बारे में पूछताछ या जाँच के रूप में जाना जाता है। दर्शन को वैज्ञानिक विधि माना जाता है। वैज्ञानिक पद्धति तार्किक विचारों द्वारा निर्धारित सत्य की खोज है। कार्ल पियर्सन का कहना है कि "वैज्ञानिक पद्धति विज्ञान के शाखाओं में एक ओर सामान है और यह विधि सभी सक्रियंगति प्रतिशिक्षित कर्मचारियों की विधि है सभी विज्ञानों की एकता अकेले उनकी पद्धति में ही निहित होती है ना कि उनकी सामग्री में वह व्यक्ति जो किसी तरह के सत्यों को संगीकृत करता है जो उनके परस्परिक संबंध को देखता है और उनके अनुसमरों का वर्णन करता है वह वैज्ञानिक पद्धति को लागू कर रहा है और विज्ञान का एक आदमी है।" वैज्ञानिक पद्धति प्रयोग, अवलोकन और अवधारणाओं द्वारा आदर्श को प्राप्त करने का प्रयास करती है। वैज्ञानिक पद्धति सका सहायक होती है ताकि उनके संभावित विकल्प स्पष्ट हो जाएं। प्रयोग परिकल्पनाओं का परीक्षण करने और चरों के मध्य संबंधों की खोज के लिए किया जाता है लेकिन कभी-कभी प्रयोगात्मक समंक के आधार पर निकल गए निष्कर्षों की दोषपूर्ण धारणाओं, खराब प्रयोगों या दोषपूर्ण व्याख्याओं के लिए आलोचना की जाती है। अतः शोधकर्ता को प्रयोगात्मक डिज़ाइन के विकास और अनुमानों के आलेखन के दौरान सभी संभावित सत्यों पर ध्यान देना चाहिए। सर्वेक्षण जाँच का उद्देश्य शोधकर्ताओं के निष्कर्षों के आधार पर काम करने के लिए वैज्ञानिक रूप से एकत्रित जानकारी प्रदान करना भी हो सकता है।

अनुसंधान प्रक्रिया (Research Process)

अनुसंधान प्रक्रिया में प्रभावी ढंग से अनुसंधान करने के लिए आवश्यक चरणों की श्रृंखला शामिल होती है लेकिन कभी-कभी ऐसी गतिविधियाँ निर्धारित अनुसमर का कड़ाई से पालन करने के बजाय निंदिष्ट आतिव्याप्त होती है। यदि शुरुआती चरणों के बाद की प्रक्रिया का ध्यान नहीं रखा जाता है तो गंभीर कठिनाइयों का सामना करना पड़ता है जो अध्ययन को पूरा होने से रोक भी सकती हैं। शोधकर्ता को अनुसंधान प्रक्रिया में प्रत्येक चरण में आगामी चरण की आवश्यकताओं की लगातार अपेक्षा करनी पड़ती है जो निम्न प्रकार है:

I. शोध समस्या को परिभाषित करना
II. अवधारणाओं व सिद्धांतों की समीक्षा और पूर्व शोध खोजों की समीक्षा
III. परिकल्पना का निर्माण
IV. शोध का प्रारूप तैयार करना
V. समंक एकत्रीकरण
VI. समंकों का विश्लेषण, परिकल्पना का परीक्षण
VII. निष्कर्ष एवं रिपोट

1. **शोध समस्या तैयार करना (Formulating the Research Problem)**: शोध समस्या को तैयार करने के दो चरण हैं पहली समस्या को अच्छी तरह समझना और दूसरा विश्लेषणात्मक दृष्टिकोण से सार्थक शब्दों में कफ़र से लिखना। समस्या को समझने के लिए अपने सहयोगियों या विशेषज्ञों के साथ चर्चा की जाती है। शोधकर्ता शोध के लिए मार्गदर्शक/गाइड की भी सहायता ले सकता है। मार्गदर्शक सामान्य शब्दों में समस्या का उल्लेख करता है कि मूल रूप से

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समस्या का निर्माण किस प्रकार हुआ और इसके संभावित समाधानों में उनके क्या विचार शामिल हैं। शोधकर्ता को समस्या से परिचित होने के लिए सभी उपलब्ध साहित्य की जाँच और उनका अध्ययन करना चाहिए। इसके लिए दो प्रकार के साहित्य की समीक्षा कर सकते हैं- अवधारणाओं और सिद्धांतों के बारे में वैचारिक साहित्य और अनुभवी साहित्य जिसमें पहले से किए गए अध्ययन शामिल थे जो प्रस्तावित समस्या से संबंधित हैं। इसके बाद शोधकर्ता समस्या को विश्लेषणात्मक शब्दों में संदर्भित करता है। जाँच की जाने वाली समस्या को स्पष्ट रूप से परिभाषित किया जाना चाहिए। यदि कुछ प्रासंगिक नियम हैं तो समस्या को तैयार करने के साथ इसे स्पष्ट रूप से परिभाषित किया जाना चाहिए।

2. **व्यापक साहित्य सर्वेक्षण (Extensive Literature Review)**: समस्या से जुड़े व्यापक साहित्य का सर्वेक्षण करना चाहिए। अकादमिक पत्रिकाओं, सम्मेलन के कार्यवाही, सरकारी रिपोट, किताबें इत्यादि का अध्ययन करना चाहिए। पहले के अध्ययन यदि कोई हैं जो वर्तमान अध्ययन के समान हैं उनका सावधानीपूर्वक अध्ययन किया जाना चाहिए।
3. **परिकल्पनाओं का विकास (Development of Hypothesis)**: परिकल्पना परिणामों को ज्ञान करने और उनका परीक्षण करने के लिए विकसित की गई एक धारणा है। परिकल्पना समंक के विश्लेषण और समंक की गुणवत्ता के लिए आवश्यक है। परिकल्पना बहुत विशिष्ट और अनुसंधान के एक हिस्से तक ही सीमित होनी चाहिए क्योंकि इसका परीक्षण किया जाता है। परिकल्पना की भूमिका अनुसंधान के क्षेत्र को सीमित करना, सही रास्ते पर रहने के लिए शोधकर्ता का मार्गदर्शन करना है और समस्या के महत्वपूर्ण पहलुओं पर ध्यान केंद्रित करना है।
4. **शोध डिज़ाइन तैयार करना (Preparing the Research Design)**: शोध डिज़ाइन का कार्य समय और धन के न्यूनतम व्यय के साथ प्रासंगिक साक्ष्य के संग्रह में सहायता प्रदान करना है। यह शोध उद्देश्य पर निर्भर करता है। शोध उद्देश्यों को चार श्रेणियों में विभक्त किया जा सकता है, जैसे (i) अन्वेषण, (ii) विवरण, (iii) निदान और (iv) प्रयोग। अनुसंधान डिज़ाइन के कई प्रकार हैं जैसे प्रयोगात्मक और गैर-प्रयोगात्मक परिकल्पना परीक्षण। प्रयोगात्मक डिज़ाइन या तो औपचारिक डिज़ाइन हो सकती है या अनौपचारिक डिज़ाइन जिसमें से शोधकर्ता को अपनी परियोजना के लिए एक का चयन करना होता है।
5. **नमूना डिज़ाइन निर्धारित करना (Determining the Sample Design)**: जनसंख्या की सभी इकाइयों की एक पूर्ण गणना जनगणना जाँच के रूप में की जाती है। ऐसी जाँच में जब सभी इकाइयों को शामिल किया जाता है तो कोई सत्त्व नहीं छोड़ा जाता है और उत्तम शुद्धता प्राप्त की जाती है। लेकिन व्यवहार में यह सच नहीं हो सकता है क्योंकि इस तरह की जाँच में पूर्णाह का मामूली सत्त्व भी और बड़ा हो जाता है क्योंकि अवलोकनों की संख्या बढ़ जाती है। इस प्रकार के जाँच में बहुत समय, धन और ऊर्जा शामिल होती है। कई परिस्थितियों में जनगणना जाँच संभव नहीं है उदाहरण के रक्त परीक्षण के लिए नमूना के आधार पर किया जाता है इसलिए अध्ययन उद्देश्यों के लिए ब्रह्मांड में से केवल कुछ इकाइयों का चयन करते हैं जिसे नमूना या प्रतिदर्श कहा जाता है। शोधकर्ता द्वारा जनसंख्या से नमूना चुनने का तरीका को नमूना डिज़ाइन के रूप में जाना जाता है। प्रतिदर्श संभावना प्रतिदर्श या गैर-संभावना प्रतिदर्श हो सकता है। संभाव्यता प्रतिदर्श साधारण यादृच्छिक नमूनाकरण, व्यवस्थित नमूनाकरण, स्वीकृत नमूनाकरण, क्लस्टर अथवा क्षेत्र नमूनाकरण पर आधारित होते हैं जबकि गैर-संभाव्यता नमूने सुविधा नमूनाकरण, निर्णय नमूनाकरण और कोटा नमूना पर आधारित होते हैं।
6. **समंक एकत्रित करना (Collection of Data)**: उचित समंक एकत्रित करना अनुसंधान के लिए आवश्यक है जो धन, लागत, समय और अनुसंधान के संदर्भ में भिन्न है। प्राथमिक समंक प्रयोग या सर्वेक्षण के माध्यम से एकत्रित किया जा सकता है। सर्वेक्षण के मामले में समंक कई तरह से एकत्रित किया जा सकता है जैसे अवलोकन द्वारा, व्यक्तिगत साक्षात्कार के माध्यम, से टेलीफोन साक्षात्कार के माध्यम से, प्रश्नावली की मेलिंग करके या कार्यकमों के माध्यम से।
7. **परियोजना का निष्पादन (Execution of Project)**: परियोजना का निष्पादन अनुसंधान प्रक्रिया में एक बहुत ही महत्वपूर्ण कदम है। यदि सर्वेक्षण संरक्षित प्रश्नावली के माध्यम से आयोजित किया जाता है तो समंक मशीन संनादित किया जा सकता है। सर्वेक्षण सांख्यिकीय नियंत्रण में होना चाहिए ताकि एकत्रित जानकारी मानक के अनुरूप हो।
8. **समंक का विश्लेषण (Analysis of Data)**: समंक के विश्लेषण के लिए श्रेणियों की स्थापना, कोडिंग के माध्यम से अपक्व (raw) समंक में इन श्रेणियों का उपयोग, सारीकरण और कफ़र सांख्यिकीय संदर्भों को चित्रित करने की आवश्यकता होती है। कोडिंग के माध्यम समंक की श्रेणियाँ प्रक्रियकों में परिवर्तित हो जाती हैं जिन्हें श्रेणीबद्ध किया जा सकता है। संपादन कोडिंग के लिए समंक की गुणवत्ता में सुधार करती है। सारीकरण में संगीकृत समंक सारीण के रूप में

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रखा जाता है जिसके लिए यांत्रिक उपकरणों या कंप्यूटर का भी उपयोग किया जाता है। सारीकरण के बाद विभिन्न सांख्यिकीय सूत्रों को लागू करके विभिन्न प्रतिश, गुणांक आदि की गणना की जाती है। शोधकर्ता एकत्रित समंक का विश्लेषण विभिन्न सांख्यिकीय उपायों की सहायता से कर सकता है।

9. **परिकल्पना परीक्षण (Hypothesis Testing)**: परिकल्पना परिणामों को ज्ञान करने और उनका परीक्षण करने के लिए विकसित की गई एक धारणा है। परिकल्पना समंक के विश्लेषण और समंक की गुणवत्ता के लिए आवश्यक है। परिकल्पना की भूमिका अनुसंधान के क्षेत्र को सीमित करना और सही रास्ते पर रहने के लिए शोधकर्ता का मार्गदर्शन करना है और समस्या के महत्वपूर्ण पहलुओं पर ध्यान केंद्रित करना है। समंक का विश्लेषण करने के बाद परिकल्पना का परीक्षण किया जाता है। यह देखा जाता है कि क्या प्राप्त किए गए सत्य परिकल्पना का समर्थन करते हैं या विपरीत होते हैं? इस उद्देश्य के लिए काई-वर्ग परीक्षण, टी परीक्षण, एफ परीक्षण जैसे विभिन्न परीक्षण विकसित किए गए हैं। परिकल्पना परीक्षण के परिणाम स्वरूप या तो परिकल्पना को स्वीकार किया जाता है या अस्वीकार कर दिया जाता है।
10. **सामान्यीकरण और व्याख्या (Generalisation and Interpretation)**: यदि एक परिकल्पना का परीक्षण किया जाता है और दावों को बार बार रखा जाता है तो शोधकर्ता के लिए सामान्यीकरण पर पहुंचना संभव हो सकता है। यदि शोधकर्ता के पास कोई परिकल्पना नहीं हो तो वह कुछ सिद्धांतों का आधार पर निष्कर्षों को साझा कर सकता है जिसे व्याख्या के रूप में जाना जाता है जो नए प्रश्नों को जन्म देती है जो बाद में शोधों का कारण बनती है।
11. **रिपोट या थीसिस की तैयारी (Preparation of the Report or the Thesis)**: अंत में शोधकर्ता को उसके द्वारा किए गए कार्यों की रिपोट तैयार करनी होती है। इसके निम्नलिखित महत्वपूर्ण बिंदु हैं:

    i. **रिपोट का खाका**: प्रारंभिक पृष्ठ, मुख्य पृष्ठ, अंतिम पृष्ठ। प्रारंभिक पृष्ठों में रिपोट में शोध का शीर्षक और तारीख के बाद स्वीकृति और प्रस्ताव लिखा जाता है कफ़र रिपोट में शोध में प्रयोग की गई तालिकाओं, ग्राफ और चार्ट की सूची की तालिका होनी चाहिए। रिपोट के मुख्य पाठ में निम्नलिखित भाग होना चाहिए- परिचय, निष्कर्षों का सारांश, मुख्य रिपोट और निष्कर्ष। रिपोट के अंत में परिशिष्ट को सूचीबद्ध किया जाता है। संदर्भ सूची, पत्रिकाओं, रिपोट इत्यादि की सूची, परामर्श लिखना चाहिए।

    ii. रिपोट में अस्पष्ट अभिव्यक्तियों जैसे ऐसा लगता है या ऐसा हो सकता है से बचना चाहिए और सरल भाषा में एक संक्षिप्त और उद्देश्य शैली में लिखी जानी चाहिए।

    iii. अगर जरूरत हो तो मुख्य रिपोट में चार्ट और चित्रों का भी उपयोग किया जा सकता है।

    iv. गणनात्मक 'विश्वास सीमा' (confidence limits) का उल्लेख अवश्य किया जाना चाहिए और शोध के संचालन में आने वाली विभिन्न प्रकार की बाधाओं का वर्णन भी किया जाता है।

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सामाजिक विज्ञान में अनुसंधान अभिकल्प: एक विश्लेषण

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शोध सारांश

विश्व के विभिन्न भागों में मानवीय आवश्यकताओं में परिवर्तन हुआ है, जिसके कारण नई-नई समस्याएँ जन्म ले रही हैं। इन समस्याओं के समाधान हेतु सामाजिक विज्ञान में ठोस और महत्वपूर्ण अनुसंधान की आवश्यकता है। अनुसंधान को आदर्शात्मक और व्यवहारिक स्वरूप प्रदान करने के लिए मानवीय भावों, चिंतनों, विचारों को कल्पना का रूप दिया जाता है। इसके उपरान्त उपकल्पना या परिकल्पना को सृजित किया जाता है। इसे पूर्ण रूप में लाने के लिए शोध प्रविधियों के माध्यम से अनुसंधान अभिकल्प या शोध प्रारूप की रचना की जाती है। इस तरह किसी भी अनुसंधान की सम्पूर्ण प्रक्रिया से संबंधित जो वैज्ञानिक प्रारूप तैयार किया जाता है, उसे हम शोध प्रारूप या अनुसंधान अभिकल्प कहते हैं। अनुसंधान या अन्वेषण को कमबद्ध एवं प्रभावपूर्ण ढंग से समय, काल एवं लागत के न्यूनतम प्रयासों से संचालित करने से एक अभिकल्प का निर्माण होता है। यद्यपि भौतिक विज्ञानों में शोध प्रारूप प्रारंभ से ही प्रचलित रहा, तथापि सामाजिक विज्ञान में शोध 19वीं शताब्दी के अंत में समाज वैज्ञानिकों का ध्यान आकृष्ट हुआ। वस्तुतः शोध कार्य करने से पूर्व शोध की समस्या, उपकरण एवं प्रक्रिया के संबंध में सुव्यवस्थित ढंग से बनाया गया कार्यकम और प्रारूप ही शोध प्रारूप कहलाता है। अनुसंधान कार्य की शोध प्ररचना योजनाबद्ध रूप प्रदान करती

बीज शब्द (Keywords): *शोध, समस्या, परिकल्पना, उद्देश्य, प्रक्रिया, पद्धति।*

अनुसंधान अभिकल्प

अनुसंधान प्ररचना या शोध अभिकल्प एक ऐसी योजना या रूपरेखा है, जो समस्या के प्रतिपादन से लेकर अनुसंधान प्रतिवेदन के अंतिम चरण तक के विषय में विकल्पों पर ध्यान देकर इस प्रकार से निर्णय लेती है कि न्यूनतम प्रयासों, समय एवं लागत के व्यय से अधिक अनुसंधान के महत्वपूर्ण उद्देश्यों को प्राप्त किया जा सके। इस संबंध में अल्फेड जे. कान्ह ने कहा है, "अनुसंधान की आरंभिक स्थिति में अभिकल्प का निर्माण प्रस्तावित अध्ययन की उपयुक्तता को स्पष्ट करता है तथा ढंग संबंधी प्रमुख समस्याओं के समाधान में सहायता पहुँचाता है।" वास्तव में अनुसंधान अभिकल्प समस्याओं के समाधान हेतु सुन्दर प्ररचना बनाना है जिससे शोध के उद्देश्यों को सही ढंग से प्राप्त किया जा सके।

ठीक इसी तरह प्रसिद्ध विद्वान एफ. एन. कर्लिजर ने कहा है, "अनुसंधान प्ररचना अन्वेषण की योजना, संरचना एवं एक रणनीति है जिसके रचना इस प्रकार की जाती है कि अनुसंधान प्रश्नों के उत्तर प्राप्त हो सके तथा विविधताओं को नियंत्रित किया जा सके। यह प्ररचना या योजना अनुसंधान की सम्पूर्ण रूपरेखा अथवा कार्यकम है, जिसके अन्तर्गत प्रत्येक वस्तु की रूपरेखा सम्मिलित होती है जो अनुसंधानकर्ता उपकल्पनाओं के निर्माण एवं उनके परिचायात्मक अभिप्रायों से लेकर आँकड़ों के अन्तिम विश्लेषण तक करता है।"

उपयुक्त अनुसंधान अभिकल्प की अवधारणा से स्पष्ट है कि शोध की प्रारंभिक और अंतिम तक की रूपरेखा इसमें शामिल है। इसी के माध्यम से शोध के उद्देश्यों तक पहुँचा जा सकता है।

सामाजिक अनुसंधान में अनुसंधान अभिकल्प का महत्वपूर्ण स्थान है। इसकी अनिवार्य और आधारभूत विशेषताएँ हैं, जिसमें प्रमुख है कि इसका संबंध सामाजिक अनुसंधान के विषयों से है। यह अनुसंधानकर्ताओं को एक निश्चित दिशा प्रदान करता है। इसकी मुख्य विशेषता है कि यह सामाजिक घटनाओं, परिघटनाओं आदि की जटिल प्रकृति को सरल रूप में प्रस्तुत करता है। यह अनुसंधान की रूपरेखा इसकी कठिनाइयों को कम करना, समय और लागत को कम करना, श्रेष्ठ निर्णय लेने में सहायता करना आदि बिंदुओं पर अनुसंधानकर्ताओं को सहायता प्रदान करता है।

सामाजिक विज्ञान में अनुसंधान अभिकल्प की विषय-वस्तु ही महत्वपूर्ण और समकालीन विषयों को समेटे हुए है। एक सामान्य प्ररचना अभिकल्प में शोध का विषय का स्पष्टीकरण, अध्ययन की प्रकृति, उसकी प्रस्तावना और पृष्ठभूमि तथा उद्देश्य, इसमें सामाजिक, सांस्कृतिक, राजनीतिक एवं भौगोलिक संदर्भित अध्ययन, अवधारणा, उपकल्पना और काल, तथ्य सामग्री के चयन के आधार एवं संकलन प्रविधियाँ, विश्लेषण, समय और धन आदि होते हैं।

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अनुसंधान अभिकल्प के महत्वपूर्ण चरण होते हैं। वैसे कुछ विद्वानों ने इसके छः चरण बतलाएँ हैं तो कुछ ने चार चरणों से होकर गुजरने की बात की है। इनमें प्रमुख चरण हैं, जैसे अध्ययन किए जाने वाले विषय व समस्या को सुस्पष्ट करना, अध्ययन अभिकल्प के प्रारूप को तैयार करना, प्रतिदर्श को नियोजित एवं योजनाबद्ध करना, आधार सामग्री का संग्रहण करना, आधार सामग्री का विश्लेषण करने में सम्पादन, कोड निर्धारण, परीक्षण और सरलीकरण करना तथा रिपोर्ट तैयार करना भी काफी महत्वपूर्ण प्रक्रिया है। इसके विभिन्न चरणों के उपरान्त इसके कार्य और लक्ष्य भी कुछ विद्वानों के अनुसार निर्धारित किए हैं। इनमें प्रमुख हैं- ब्लैक और चैम्पियन, बर्गन, हेनरी मेनहेम आदि।

अनुसंधान अभिकल्प के कार्य और लक्ष्य के संबंध में ब्लैक एवं चैम्पियन ने तीन कार्य व लक्ष्य बतलाएँ हैं। इनमें प्रमुख हैं- रूपरेखा उपलब्ध कराना, अनुसंधान क्रिया को सीमित करना तथा संभावित समस्याओं को पूर्वानुमान लगाकर अन्वेषण को सरल बनाना। इसके कार्य और लक्ष्य के निर्धारण से अनुसंधान समस्या का निदान होता है।

अनुसंधान अभिकल्प को प्रकृति के उल्लेख से ही अनुसंधान समस्या का समाधान शुरू हो जाता है। इसकी प्रकृति में प्रमुख हैं- स्रोत (प्रलेख स्रोत, व्यक्तिगत स्रोत, पुस्तकालय स्रोत: जो व्यवहारिक और सैद्धान्तिक ज्ञान पर आधारित है), अध्ययन की प्रकृति, अनुसंधान अध्ययन के उद्देश्य, अध्ययन का सामाजिक और सांस्कृतिक संदर्भ, भौगोलिक क्षेत्र, समय अवधि, अध्ययन के विभिन्न आयाम, तथ्य सामग्री के चयन का आधार और तथ्य सामग्री को एकत्र करने की प्रविधियाँ आदि। अनुसंधान अभिकल्प की प्रकृति जितनी सरल और सुन्दर होगी, शोध उतना ही सही दिशा में उद्देश्य को प्राप्त करने में सक्षम होगा।

अनुसंधान अभिकल्प का वर्गीकरण

अनुसंधान अभिकल्प को संक्षिप्त में निम्न प्रकार व्यक्त किया जा सकता है:

1. **अन्वेषणात्मक अनुसंधान अभिकल्प**
2. **निदानात्मक अनुसंधान अभिकल्प**
3. **प्रयोगात्मक अनुसंधान अभिकल्प**

(1) अन्वेषणात्मक शोध-प्रारूप

अन्वेषणात्मक शोध-प्रारूप का प्रयोग उस स्थिति में किया जाता है, जब शोधकर्ता समस्या या परिस्थितियों से पूरी तरह अवगत नहीं रहता है। यही कारण है कि इस तरह के शोध प्रारूप में उपकल्पना का निर्माण आरंभिक चरण में नहीं किया जाता है, बल्कि उपकल्पना का निर्माण अंत में किया जाता है।

इस प्रकार के शोध प्रारूप में मुख्यतः नवीन तथ्यों की खोज पर ध्यान दिया जाता है। परंतु इसके व्याख्या के क्रम में साथ-ही-साथ विभिन्न तथ्यों के अंतर्संबंधों के विषय में भी जानकारी प्राप्त की जाती है। इस शोध प्रारूप के निम्नलिखित उद्देश्य होते हैं:

1. अनुसंधान विषय की जानकारी करना
2. अनुसंधान की संभावनाओं एवं क्षेत्र का निर्णय
3. अवधारणाओं का स्पष्टीकरण एवं नवीन अवधारणाओं की खोज
4. उपकल्पनाओं का निर्माण

अन्वेषणात्मक शोध की सफलता के लिए निम्न शर्तें आवश्यक हैं, या दूसरे शब्दों में यह कहें कि निम्नलिखित चरणों के माध्यम से अन्वेषणात्मक शोध प्रारूप को सफल बनाया जा सकता है:

(i) **साहित्य का मूल्यांकन**: समस्या से संबंधित सभी दस्तावेजों एवं साहित्य का मूल्यांकन उपकल्पना के निर्माण के लिए काफी महत्वपूर्ण होता है। क्योंकि उपकल्पना निर्माण के लिए समस्या से संबंधित सभी तथ्यों की छानबीन आवश्यक होती है।

(ii) **साक्षात्कार और सर्वेक्षण**: अनुसंधान के लिए शोधकर्ता महत्वपूर्ण व्यक्तियों का साक्षात्कार करता है, या सर्वेक्षण विधि द्वारा उनसे तथ्य एकत्रित करता है, क्योंकि उनका अनुभव और उनके विचार अनुसंधान को एक नई दिशा देते हैं।

(iii) **घटनाओं का विश्लेषण**: घटनाओं का विश्लेषण भी अनुसंधान में अंतर्दृष्टि प्राप्त करने की दृष्टि से महत्वपूर्ण होता है। स्पष्टतः अन्वेषण शोध प्रारूप बनाते समय उपलब्ध साहित्य का विस्तृत अध्ययन, अनुभवी व्यक्तियों की राय एवं शोधकर्ता की अंतर्दृष्टि दोनों महत्वपूर्ण होते हैं।

(2) वर्णनात्मक शोध-प्रारूप

वर्णनात्मक शोध प्रारूप का प्रयोग तब किया जाता है जब किसी व्यक्ति, समुदाय या घटना के संबंध में पूर्ण विवरण प्रस्तुत करना होता है। इस शोध प्रारूप के तीन मुख्य उद्देश्य होते हैं:

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1. किसी समूह अथवा परिस्थिति के लक्षणों का परिशुद्ध वर्णन करना
2. किसी चर (Variable) की आवृत्ति निश्चित करना
3. चरों के सहचर्य (Association) के विषय में पता लगाना

इस शोध प्रारूप के द्वारा जो भी वर्णन प्रस्तुत किया जाता है, उसमें यह ध्यान रखा जाता है कि कम से कम अभिनति और अधिक से अधिक विश्वसनीयता हो। इस शोध प्रारूप का प्रयोग अनेक समाज वैज्ञानिकों ने अपने अध्ययन में किया है। जैसे विलियम ह्वाइट ने *स्ट्रीट कॉर्नर सोसाइटी* के अध्ययन में, मारग्रैट मीड ने बच्चों के पालन-पोषण को जानने की प्रक्रिया के अध्ययन में, तथा लिंड ने *मिडल टाउन* के अध्ययन में। इन विद्वानों ने मुख्यतः सहभागी अवलोकन विधि का प्रयोग किया है।. दरअसल, वर्णनात्मक शोध प्रारूप दो तरह का होता है:

(a) **गुणात्मक**

(b) **परिमाणात्मक**

संस्कृति, सामाजिक एवं सांस्कृतिक परिवर्तन की प्रक्रिया तथा मानव व्यवहार के प्रतिमान आदि से संबंधित अध्ययनों के लिए गुणात्मक शोध प्रारूप तैयार किए जाते हैं, जबकि लोगों के मतदान व्यवहार के प्रतिमान, सिनेमा हॉल जाने की आदत या किसी अस्पताल के प्रति कमरे में रोगियों की संख्या जैसी समस्याओं के अध्ययन के समय परिमाणात्मक शोध प्रारूप तैयार किए जाते हैं, जिसमें तथ्यों का संकलन मुख्यतः प्रश्नावली, अनुसूची या संरचनात्मक साक्षात्कार आदि के द्वारा किया जाता है।

वर्णनात्मक शोध-प्रारूप के द्वारा समस्याओं का अध्ययन व्यवस्थित तरीके से किया जाता है। अर्थात् इस तरह के अध्ययन में एक शोधकर्ता सही आंकड़े प्राप्त करने के लिए निम्नलिखित चरणों का पालन करता है:

a) अध्ययन के उद्देश्य को स्पष्ट रूप से निर्धारित करना

b) निर्देशन चुनने की विधि का निर्धारण करना

c) तथ्य संकलन की विधि का निर्धारण करना

d) तथ्य का संकलन करना

e) प्राप्त तथ्यों का वर्गीकरण तथा विश्लेषण करना

f) उपलब्ध आंकड़ों के आधार पर निष्कर्ष प्रतिपादित कर रिपोर्ट तैयार करना

उपरोक्त चर्चाओं के आधार पर निष्कर्ष स्वरूप यह कहा जा सकता है कि वर्णनात्मक शोध-प्रारूप द्वारा हम किसी भी समूह या समस्या के विषय में ब्योरेवार तथ्य प्राप्त करते हैं। उदाहरणार्थ, किसी राजनीतिक दल, हड़ताल या चुनाव आदि के विषय में ब्योरेवार तथ्य प्राप्त किए जा सकते हैं। किसी चुनाव के समय उम्मीदवार किस-किस राजनीतिक दल के थे, या किस-किस जाति के थे, इस प्रकार का वर्णन इस शोध प्रारूप द्वारा अच्छी तरह से प्राप्त किया जा सकता है। इसके अलावा इसके द्वारा विभिन्न चरों के सहसम्बन्ध का पता लगाया जा सकता है। जैसे भारत जैसे विकासशील देश में आय एवं शिक्षा में किस तरह के सहसम्बन्ध पाए जाते हैं इत्यादि। वर्णनात्मक शोध-प्रारूप द्वारा किए गए अध्ययन कार्य-करण सम्बन्धी उपकल्पनाओं के निर्माण में सहायक होते हैं। लेकिन इसमें केवल इस तरह की उपकल्पनाओं का निर्माण किया जाता है जिन्हें उपलब्ध आंकड़ों के आधार पर जाँचा जा सके।

अन्वेषणात्मक एवं वर्णनात्मक शोध प्रणाली में तुलना

अन्वेषणात्मक एवं वर्णनात्मक शोध प्रारूपों में निम्नलिखित पाँच आधारों पर तुलना की जा सकती है:

1. **उपकल्पना का निर्माण**: अन्वेषणात्मक शोध-प्रारूप में उपकल्पना का निर्माण अध्ययन के अंत में किया जाता है, जबकि वर्णनात्मक शोध-प्रारूप में उपकल्पना का निर्माण प्रथम चरण में ही कर लिया जाता है, तब इसकी जाँच की जाती है।
2. **संरचना**: अन्वेषणात्मक शोध-प्रारूप की तुलना में वर्णनात्मक शोध-प्रारूप ज्यादा संरचित होता है।
3. **समस्या की जानकारी**: अन्वेषणात्मक के लिए समस्या बिल्कुल नई होती है या यूँ कहें कि उसे समस्या की कोई जानकारी नहीं होती है। दूसरी तरफ वर्णनात्मक शोध प्रारूप का प्रयोग तब किया जाता है, जब अनुसंधानकर्ता समस्या से पूरी तरह अवगत रहता है।
4. **उपकल्पना की विशिष्टता**: अन्वेषणात्मक शोध प्रक्रिया की तुलना में वर्णनात्मक शोध प्रारूप में उपकल्पना ज्यादा विशिष्ट होती है।

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5. **संयुक्त उपयोग**: दोनों ही शोध-प्रारूपों का प्रयोग एक ही अध्ययन में भी संभव है, जैसे पहले अन्वेषणात्मक शोध-प्रारूप का प्रयोग कर समस्या के विषय में जानकारी हासिल करके अंत में उपकल्पना का निर्माण कर लिया जाए और तब इस उपकल्पना की जाँच वर्णनात्मक शोध-प्रारूप के द्वारा की जाए।

(3) प्रयोगात्मक शोध-प्रारूप

इस शोध प्रारूप का निर्माण चरों के बीच कार्य-करण सम्बन्धों के विश्लेषण के लिए किया जाता है। जहोदा का कहना है कि इस पद्धति का प्रयोग तब किया जाता है, जब हमें कार्य-करण सम्बन्धों की व्याख्या करनी होती है। प्रयोगात्मक पद्धति की मुख्य विशेषताएँ हैं:

(a) उपकल्पना की जाँच

(b) चरों के बीच कार्य-करण सम्बंधों की जाँच

ये परीक्षण नियत एवं निश्चित नियंत्रण के अन्तर्गत किए जाते हैं। यहाँ नियंत्रण का अर्थ है दो समूहों में से एक को नियंत्रित करना तथा दूसरे समूह पर उस चर का प्रभाव देखना। सामाजिक शोध में इस प्रकार के नियंत्रण के लिए दो विधियाँ प्रयोग में लाई जाती हैं:

(i) **दैव विधि (Random Method)**: पहली विधि में एक समूह के सदस्यों को दूसरे समूह के सदस्यों के साथ समानता स्थापित करने के लिए दैव विधि से दो समूहों में बाँट दिया जाता है। इससे पक्षपात की संभावना नहीं रहती।

(ii) **मैचिंग विधि (Matching Method)**: दो समूह में समानता प्राप्त करने के लिए एक समूह की प्रत्येक इकाई दूसरे समूह की प्रत्येक इकाई से बराबर किया जाता है। चूँकि मैचिंग विधि का प्रयोग हमेशा दुष्कर रहता है, अतः दैव विधि का ही प्रयोग ज्यादा किया जाता है।

उपरोक्त चर्चाओं से स्पष्ट है कि प्रत्येक प्रयोगात्मक शोध में कम-से-कम दो प्रकार के समूह होते हैं- एक प्रयोगात्मक समूह और दूसरा नियंत्रित समूह। नियंत्रित समूह अन्य सभी दृष्टियों से प्रयोगात्मक समूह के समान होते हैं। केवल इसमें वह चर प्रभावकारी नहीं होता जिसका कि अध्ययन किया जाना हो। प्रयोगात्मक शोध-प्रारूप को मोटे तौर पर दो भागों में बाँटा गया है:

(1) **केवल पश्चात् प्रयोग (After Only Experiment)**

(2) **पूर्व-पश्चात् प्रयोग (Before-After Experiment)**

(1) केवल पश्चात् प्रयोग (After Only Experiment)

केवल पश्चात् प्रयोग के अन्तर्गत सभी दृष्टियों से समान विशेषताओं वाले दो समूहों का अध्ययन किया जाता है। इसमें एक समूह नियंत्रित होता है और प्रयोगात्मक समूह पर किसी भी चर का प्रभाव जानना होता है। इस प्रकार के प्रयोग में प्रारंभ में कोई प्रकार के चर मापे नहीं जाते। पहले प्रयोगात्मक समूह पर प्रयोगात्मक चर का प्रभाव डाला जाता है, जबकि नियंत्रित समूह पर उस चर का प्रभाव नहीं डाला जाता। अंत में दोनों समूहों का अध्ययन किया जाता है और दोनों समूहों में जो अंतर मिलता है, वह प्रयोगात्मक चर का प्रभाव माना जाता है। इस प्रयोग के अच्छे उदाहरण के रूप में हम द्वितीय विश्वयुद्ध के दौरान अमेरिकी सैनिकों पर किए गए अध्ययन की चर्चा कर सकते हैं। सेना की टुकड़ियों को मिलाकर बनाए गए जो शिक्षा, आयु, परीक्षाफल और प्रशिक्षण आदि के आधार पर समान थे। फिर सिक्का उछालकर तय किया गया कि कौन-सा समूह प्रयोगात्मक समूह माना जाए। इस समूह को साधारण प्रशिक्षण कार्य-कम के अन्तर्गत एक फिल्म *दि बैटल ऑफ ब्रिटेन* (The Battle of Britain) दिखाई गई, जबकि दूसरा समूह जो कि नियंत्रित समूह था, को यह फिल्म नहीं दिखाई गई। एक सप्ताह बाद दोनों समूहों के सैनिकों से एक प्रश्नावली भरवाई गई। परंतु सैनिकों को इस बात की भनक नहीं लगने दी गई कि उनका अध्ययन किया जा रहा है। अंत में दोनों समूहों से प्राप्त उत्तरों के अंतर के आधार पर फिल्म का प्रयोगात्मक समूह पर प्रभाव देखा गया।

(2) पूर्व-पश्चात् प्रयोग (Before-After Experiment)

इस प्रकार के शोध-प्रारूप में केवल एक ही समूह का चयन किया जाता है। इसी समूह का अध्ययन किसी विशिष्ट परिस्थिति में रखने के पूर्व तथा उसके बाद किया जाता है। अध्ययन द्वारा पूर्व तथा पश्चात् की अवस्थाओं में पाए गए अंतर का कारण उस परिस्थिति को माना जाता है। दूसरे शब्दों में, इस शोध प्रारूप में प्रयोगात्मक समूह तो हमेशा होता है, परंतु नियंत्रित समूह कभी होता है और कभी नहीं होता है। कभी-कभी दो या दो से अधिक नियंत्रित समूह होते हैं।

इस प्रकार के शोध-प्रारूप में सामान्य परिस्थितियों में एक ही प्रयोगात्मक समूह होता है। केवल किसी विशेष परिस्थिति में ही इस शोध-प्रारूप का प्रयोग होता है, जहाँ नियंत्रित समूह बनाना संभव नहीं होता। इस प्रकार के शोध-प्रारूप में हम किसी एक समूह पर पहले और बाद में अध्ययन कर किसी चर का प्रभाव जानते हैं। जैसे, टी.वी. द्वारा पढ़ाए जाने का छात्रों के परीक्षाफल पर प्रभाव

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पड़ता है, यह जानने के लिए हम किसी कॉलेज के एक विशेष वर्ग के छात्रों को परम्परागत तरीके से उनकी जाँच परीक्षा लेकर उनके प्रदर्शन को जान लेते हैं और पुनः उन्हें टी.वी. के माध्यम से पढ़ाया जाता है, पुनः उनकी परीक्षा ली जाती है और उनके प्रदर्शन को आंका जाता है। पूर्व और पश्चात् के परीक्षा में जो अंतर पाया जाता है, वही उस चर यानी टी.वी. द्वारा पढ़ाने का प्रभाव माना जाता है।

इस तरह के शोध-प्रारूप का प्रयोग हम दो समान समूहों की स्थिति में भी कर सकते हैं। जब एक समूह को प्रयोगात्मक समूह बना लेते हैं और दूसरे समूह को नियंत्रित समूह परम्परागत तरीके से पढ़ाकर दोनों समूह के छात्रों की परीक्षा ली जाती है। उसके बाद प्रयोगात्मक समूह को टी.वी. द्वारा पढ़ाया जाता है, जबकि नियंत्रित समूह को परम्परागत तरीके से पढ़ाया जाता है। अंत में दोनों तरह के छात्रों की परीक्षा ली जाती है और दोनों के परीक्षाफल में जो अंतर पाया जाता है, वही उस चर का प्रभाव माना जाता है।

निष्कर्ष

उपरोक्त चर्चाओं से यह स्पष्ट है कि सामाजिक विज्ञानों में शोध-प्रारूप का प्रयोग काफी महत्वपूर्ण स्थान रखता है। एक शोधकर्ता किस प्रकार का शोध-प्रारूप बनाएगा, यह कई बातों पर निर्भर करता है, जैसे शोध का उद्देश्य, समस्या के विषय में उसकी जानकारी आदि। सामाजिक अनुसंधान में जब शोधकर्ता को किसी समस्या का विवरण प्रस्तुत करना होता है, तो वह एक उपकल्पना बनाकर वर्णनात्मक शोध-प्रारूप के द्वारा उसकी जाँच करना चाहता है। लेकिन, शोधकर्ता के लिए समस्या एकदम नई होती है, तब वह अन्वेषणात्मक शोध-प्रारूप का निर्माण करता है। प्रयोगात्मक शोध-प्रारूप का प्रयोग प्रायः किसी समूह पर किसी चर के प्रभाव को जानने के लिए किया जाता है या चरों के बीच कार्य-करण संबंध को जाँचने के लिए किया जाता है। निष्कर्षतः यह कहा जा सकता है कि शोध-प्रारूप एक कल्पित योजना, एक संरचना तथा एक प्रणाली है, जिसका एकमात्र उद्देश्य है, शोध संबंधी प्रश्नों के उत्तर प्राप्त करना तथा प्रसारणों को नियंत्रित करना।

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झारखण्ड राज्य के देवघर जिलान्तर्गत बाबा वैद्यनाथ मन्दिर का देवघर की संस्कृति एवं सभ्यता के संरक्षण में भूमिका सम्बन्धी अध्ययन

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शोध सारांश

झारखण्ड के देवघर में स्थित बाबा वैद्यनाथ मन्दिर भगवान शिव को समर्पित सबसे प्रतिष्ठित और प्राचीन हिन्दू मन्दिरों में से एक है। यह पवित्र मन्दिर इतिहास, पौराणिक कथाओं और किवदंतियों का एक समृद्ध ताना-बाना समेटे हुए है, जो इसे एक महत्त्वपूर्ण तीर्थस्थल बनाता है। बाबा वैद्यनाथ मन्दिर का इतिहास एक हजार साल से भी ज्यादा पुराना है। ऐतिहासिक अभिलेखों के अनुसार, मन्दिर का निर्माण मूल रूप से नागवंशी राजवंश के पूर्वज पूरनमल ने 8वीं शताब्दी में करवाया था, हालाँकि सदियों से मन्दिर में कई जीर्णोद्धार और विस्तार हुए हैं। माना जाता है कि वर्तमान संरचना का निर्माण 16वीं शताब्दी में राजा मानसिंह ने करवाया था। मन्दिर परिसर एक विशाल क्षेत्र में फैला हुआ है और इसकी विशेषता इसकी ऊँची चोटी, जटिल नक्काशी और एक पवित्र तालाब है, जिसे शिवगंगा (श्रावणी मेला कुण्ड) के नाम से भी जाना जाता है। मन्दिर की वास्तुकला नागर और द्रविड़ सहित विभिन्न शैलियों के मिश्रण को दर्शाती है, जो इसकी संरचना को आकार देने वाले विविध सांस्कृतिक प्रभावों को प्रदर्शित करती है।

बाबा वैद्यनाथ मन्दिर न केवल एक धार्मिक केन्द्र है, बल्कि एक सांस्कृतिक केन्द्र भी है। यह मन्दिर पवित्र श्रावण महीने के दौरान, विशेष रूप से शिवरात्रि के शुभ दिन पर लाखों भक्तों को आकर्षित करता है। वार्षिक श्रावणी मेला एक महत्त्वपूर्ण तीर्थयात्रा है, जहाँ भक्त भगवान शिव को चढ़ाने के लिए सुल्तानगंज स्थित गंगा से पवित्र गंगाजल लेकर काँवर यात्रा करते हैं। इस विश्व प्रसिद्ध मेला के सफल संचालन एवं ऐतिहासिक धरोहर बाबा वैद्यनाथ ज्योतिर्लिंग के संरक्षण हेतु प्रति वर्ष स्थानीय तीर्थपुराहितों (पण्डा जी) एवं पण्डाधर्मरक्षिणी सभा द्वारा तन-मन-धन से अविस्मरणीय सहयोग किया जाता है। मन्दिर का सांस्कृतिक महत्त्व पूरे वर्ष आयोजित होने वाले विभिन्न अनुष्ठानों, त्योहारों और समारोहों में भी स्पष्ट दृष्टिगोचर होता है। इन समारोहों के दौरान जीवन्त माहौल बाबा वैद्यनाथ के साथ लोगों के गहरे आध्यात्मिक जुड़ाव को दर्शाता है।

निष्कर्ष रूप में, बाबा वैद्यनाथ मन्दिर हिन्दू आध्यात्मिकता की स्थायी विरासत का एक प्रमाण है। भगवान शिव की दयालुता और उपचार शक्तियों के प्रतीक के रूप में यह मन्दिर न केवल पूजा स्थल के रूप में कार्य करता है, बल्कि एक सांस्कृतिक और आध्यात्मिक केन्द्र बिन्दु के रूप में भी कार्य करता है, जो बाबा वैद्यनाथ की दिव्य उपस्थिति का अनुभव करने के लिए सभी क्षेत्रों के लोगों को आकर्षित करता है। इस ऐतिहासिक धरोहर के संरक्षण के लिए स्थानीय सरकारी प्रशासन, स्थानीय तीर्थपुराहितों (पण्डा जी) एवं पण्डाधर्मरक्षिणी सभा द्वारा निरन्तर एवं सतत् प्रयास किए जा रहे हैं।

बीज शब्द (Keywords): *झारखण्ड, शोध, देवघर समस्या, बाबा वैद्यनाथ मन्दिर ।*

प्रस्तावना

आध्यात्मिक अथवा धार्मिक दृष्टि से विश्व में भारत का सम्मान सर्वाधिक है। यहाँ का सांस्कृतिक धरातल लाखों वर्षों की प्राचीनता की गहराई में स्थित है। यहाँ के मठ, मन्दिर, आश्रम इत्यादि के अस्तित्व के मूल में धार्मिकता अथवा देवी भावना के साथ-साथ दार्शनिक, सांस्कृतिक और ऐतिहासिक मान्यता विद्यमान है। भारतीय हिन्दू सनातन धर्म की यह विशिष्टता है कि लोकोत्तर दैवी विश्वास मूलक धार्मिक क्रियाकलापों में तात्विक, सांस्कृतिक एवं सामाजिक प्रयोजन मूलक आदर्श निहित है। इस परम्परा में वैद्यनाथधाम देवघर आर्य संस्कृति का परिपोषक और उद्घोषक रहा है। आज झारखण्ड राज्य में स्थित वैद्यनाथधाम देवघर पुराण प्रसिद्ध नगर है। यहाँ अनादिकाल से द्वादश ज्योतिर्लिंगों में अन्यतम वैद्यनाथ ज्योतिर्लिंग का प्रसिद्ध देवालय है। आदि शंकराचार्य जी ने वैद्यनाथ ज्योतिर्लिंग के बारे में लिखा है:

पूर्वोत्तरे प्रज्ज्वलिका निधाने सदा वसन्तं गिरिजासमेतम्।
सुरासुराराधित् पादपद्म श्रीवैद्यनाथं तमहं नमामि।

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अर्थात्, जो पूर्वोत्तर दिशा में चिताभूमि (वैद्यनाथधाम) के भीतर सदा ही गिरिजा के साथ वास करते हैं, देवता और असुर जिनके चरणकमलों की साधना करते हैं, उन श्री वैद्यनाथ को मैं प्रणाम करता हूँ।

देवघर भारत के झारखण्ड राज्य का एक शहर है। यह देवघर जिले का मुख्यालय तथा हिन्दुओं का प्रसिद्ध तीर्थस्थल है। इसे "बाबाधाम" के नाम से भी जाना जाता है। यहाँ भगवान शिव का एक अत्यन्त प्राचीन मन्दिर स्थित है। प्रतिवर्ष श्रावण मास में यहाँ लाखों भक्तों की भीड़ उमड़ती है। यहाँ भारत के विभिन्न भागों से तीर्थयात्री और पर्यटक आते रहते हैं। इन भक्तों को "काँवरिया" कहा जाता है। ये शिवभक्त बिहार के सुल्तानगंज से गंगा नदी से गंगाजल लेकर 105 किलोमीटर की दूरी पैदल तय कर देवघर में भगवान शिव को जल अर्पित करते हैं। काँवर लेकर शिव को गंगाजल अर्पित करने से मनुष्य के काम-विकारों का शमन होता है। देवत्व भाव की प्राप्ति के लिए पापवृत्तियों का विनाश आवश्यक है। इस संबंध में पुराणों में यह उक्ति प्रसिद्ध है:

स्कन्धे तु कामरं धृत्वा बम् बम् प्रोच्य क्षणे क्षणे।
पदे पदे अश्वमेधस्य अक्षयं पुण्यमश्नुते।

अर्थात्, कंधे पर काँवर धारण कर जो नर-नारी क्षण-क्षण में बम-बम का उच्चारण करते हैं, उन्हें अश्वमेध यज्ञ का फल प्राप्त होता है। स्पष्ट है कि काँवर की महिमा सर्वोपरि है। धर्मप्राण देवघर परम पुनीत पुण्य क्षेत्र है, धर्म, मुक्ति, संकल्प, आत्मसंयम, आस्था और विश्वास का महासंगम स्थल है, क्योंकि द्वादश ज्योतिर्लिंगों में से एक वैद्यनाथ का यहाँ साक्षात् सपरिवार निवास है। श्रद्धा, भक्ति, समर्पण का प्रतीक देवघर "भव रोग हरं तीर्थ" भी माना जाता है। देवघर नाम ही सिद्ध करता है कि बाबा वैद्यनाथ जी के कारण ही इसकी इतनी महिमा है। यह नगरी सर्व सिद्धि प्रदान करने वाली है। देवघर स्थित बाबा वैद्यनाथ कामनालिंग होने के कारण यहाँ भक्तों के सभी मनोरथ पूरे हो जाते हैं। तभी तो श्रद्धा-समर्पणोत्प्रेरित भक्त बाबाधाम को शुचिता, शुद्धता एवं एकाग्रचित्तता का प्रतीक मानते हैं।

देवघर शक्तिपीठ भी है। शक्ति (सती) का यहाँ हृदय भाग गिरा था। इतना ही नहीं, द्वादश ज्योतिर्लिंगों में एकमात्र देवघर में ही माता शैलजा (पार्वती) के साथ शिव का गठबंधन होता है। इसका तात्पर्य यह है कि श्रद्धा और विश्वास यहीं जुड़ते हैं - एकाकार होते हैं। वस्तुतः हृदयस्थ ईश्वर के दर्शन श्रद्धा और विश्वास के अभाव में असंभव है। तभी तो कवि कुल चूड़ामणि तुलसीदास ने शिव और शिवा को "भवानीशंकरौ वन्दे श्रद्धाविश्वासरूपिणौ" कहा है। यही कारण है कि लाखों की संख्या में देश-विदेश के लोग देवघर की पावन मृत्तिका से अपना जीवन धन्य करते रहते हैं।

देवघर स्थित बाबा वैद्यनाथ "मंगलभवन अमंगलहारी" है। यहाँ आकर जीवन के पाप-ताप से त्रस्त-अवसन्न प्राणी को शान्ति मिलती है। यही कारण है कि देवघर में भक्ति और श्रद्धा की गंगोत्री प्रवहमान रहती है - चप्पा-चप्पा शिवमय एवं कण-कण जीवन्त शिवता का मूर्तिमान स्वरूप है। अवसर विशेष यथा श्रावणी मेला, शिवरात्रि एवं वसंत पंचमी में यह भूमि अशेष आराधना, पूजा-अर्चना एवं मधुर भक्ति संगीत की निर्झरिणी से युक्त होकर मंत्रमुग्ध कर देती है। सायंकालीन बेला में देवघर साक्षात् शिवलोक प्रतीत होता है। आरती, चरणामृत, चन्दन प्रसाद रूप में ग्रहण करने की आपाधापी जनमानस की आध्यात्मिक प्यास की अकुलाहट व्यक्त करती है।

संबंधित साहित्य का पुनरावलोकन

प्रत्येक प्रकार के वैज्ञानिक अनुसंधान में, चाहे भौतिक विज्ञान के क्षेत्र में हो या सामाजिक विज्ञान के क्षेत्र में, साहित्य का पुनरावलोकन एक अनिवार्य और प्रारंभिक कदम होता है। देवघर का धार्मिक इतिहास बड़ा प्राचीन है। सिर्फ शैवों के लिए ही नहीं, अपितु शाक्तों, नाथों एवं सगुण-निर्गुणवादियों के लिए भी एक समान दर्शनीय वन्दनीय रहा है देवघर स्थित बाबा वैद्यनाथ मंदिर, क्योंकि विश्वास रूप शंकर सबके आराध्य हैं। विश्वास वह दृढ़ भूमि है जो सबका उपजीव्य है, जिसमें सभी समाहित-अनुस्यूत हैं। देवघर अंधकार और आलोक, दानव और देव, सबके लिए पूज्य है, क्योंकि देव भाव और दानव भाव - दोनों ही शिव से संतुष्ट हैं।

देवघर स्थित बाबा वैद्यनाथ मंदिर की पवित्र भूमि सांस्कृतिक धरोहर की भूमि है। विभिन्न देश-प्रदेशों की संस्कृति घुलमिल कर यहाँ एकरूप हो जाती है। सबका निजत्व, भिन्न-भिन्न सत्ता तिरोहित हो जाती है - भेद मिट जाता है। देश-काल की सीमा रेखा से ऊपर शेष रह जाती है सिर्फ एक भावना - धर्म-भावना, इसकी निर्मलता एवं तन्मयता। देवघर की धार्मिक महिमा तो सदा से अक्षुण्ण है ही, यहाँ आने वाले शिवभक्तों की मार्ग में भी भरपूर सेवा होती है। काँवरियों के पाँवों पर शीतल जलार्पण, गुलाब जल से काया-सिक्ति तथा अन्यान्य प्रकार के सेवा भाव से प्रेरित होकर लोग प्रत्यक्ष-अप्रत्यक्ष रूप से शिव-शिवनगरी देवघर से अपने को जोड़ लेते हैं। सरकारी, गैर-सरकारी, स्थानीय, बाह्य स्वयंसेवी संस्थाओं की सेवा देवघर को अद्वितीय तीर्थ सिद्ध करती है।

शिवमहापुराण के श्रीकोटिरुद्र संहिता के 28वें अध्याय में उल्लिखित है:

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दर्शनात्पूजनाज्ज्योतिर्लिंग रूपो महेश्वरः।
भुक्ति मुक्ति प्रदोलोके सर्वेषां हितकारकः।
इस प्रकार वैद्यनाथ ज्योतिर्लिंग के दर्शन-पूजन से इस लोक में भोग और मोक्ष की प्राप्ति होती है। ये सभी के कल्याणकारक हैं। रावणेश्वर बाबा वैद्यनाथ सभी प्राणियों के प्रिय हैं। ये सभी गुणों की अबाध कृपा से परिपूर्ण हैं।

धर्मक्षेत्र देवघर यूँ तो कृषि उद्योग की दृष्टि से अविकसित है (वर्तमान सरकार इस ओर प्रयासरत है), किन्तु यहाँ का आर्थिक पहलू कम रोचक नहीं है। यहाँ अर्थशास्त्र की तमाम परिभाषाएँ शिथिल पड़ जाती हैं। स्थायी-अस्थायी व्यवसायी वर्ग सहित पण्डा समाज की जीविका का तो आधार ही है धर्मभूमि देवघर स्थित बाबा वैद्यनाथ मंदिर, क्योंकि इन सबके केन्द्र में शिव-प्रेम, धर्म-कर्म ही धुरी बनकर क्रियाशील है। धर्मप्राण देवघर स्थित बाबा वैद्यनाथ मंदिर सघन अरण्यों से आवृत्त, शस्य श्यामल लता निकुंजों से आच्छादित, सतत् प्रवहमान निर्झरों से निरंतर निनादित, बहुवर्णा सुमंजलियों से श्रृंगारित सुशोभित, नानारूप विहगावलियों के कलरव से अनुगुंजित और पुलकित है। वर्तमान झारखण्ड सरकार इस तीर्थ नगरी के सौन्दर्याकरण एवं विकास-विस्तार हेतु सघन अभियान में संलग्न है।

देवघर झारखण्ड की सांस्कृतिक राजधानी है और यहाँ कई संस्कृतियों और लोगों का मिश्रण है। यहाँ बंगाली, बिहारी, गुजराती, पंजाबी, तमिल, मलयाली, तेलुगु और मारवाड़ी-राजस्थानी समुदाय के लोग रहते हैं। यहाँ कई भाषाएँ बोली जाती हैं। देवघर के स्थानीय तीर्थ पुरोहित (पण्डा समाज) सभ्यता और संस्कृति का अहम हिस्सा हैं। आध्यात्मिक चेतना के विकास के लिए हजारों वर्षों से लोग तीर्थों की यात्रा करते रहे हैं। इन तीर्थों में जितना महत्त्व तीर्थों का है, उतना ही अधिक महत्त्व तीर्थपुरोहितों का भी है। प्राचीन काल से ही यह उक्ति प्रसिद्ध है: "तीर्थे तीर्थगुरुः श्रेष्ठः"। अनादिकाल से भारतीय जनमानस तीर्थगुरुओं की सेवा करता आ रहा है। महान पण्डित राहुल सांकृत्यायन ने देवघर के तीर्थपुरोहितों को भारतीय इतिहास का संरक्षक कहा है। आज भी इतिहास की व्यक्तिगत सामग्रियों और वंशावलियों का विवरण देवघर के स्थानीय तीर्थ पुरोहितों की पंजी में जितना सुरक्षित है, उतना भारत के पुरातत्व संग्रहालयों में भी नहीं है। तीर्थ पुरोहितों की यात्रा पंजी में उनके सारे ऐतिहासिक पुरुषों के परिवार के सदस्यों की सूची और ऐतिहासिक घटनाओं का विवरण मिल जाता है, जिनका विवरण इतिहास की बड़ी-बड़ी पुस्तकों में भी उपलब्ध नहीं है।

तीर्थपुरोहित एक ओर धार्मिक चरित्र की रक्षा करते हैं, तो दूसरी ओर भारतीय इतिहास को सामाजिक एकता और संस्कृति की भी रक्षा करते हैं। विभिन्न भाषाओं के परिवेशों से इनका सहज ही सम्पर्क होता रहा है। इसलिए ये सार्वदेशिक चरित्र का निर्माण करते हैं, जिसे आज के परिवेश में विश्व मानव की संज्ञा दी जा सकती है।

देवघर का इतिहास वस्तुतः देवघर स्थित बाबा वैद्यनाथ मंदिर का इतिहास है। आज देवघर में जो कुछ भी दिखलाई पड़ रहा है, वह बाबा वैद्यनाथ मंदिर का ही सुपरिणाम है। अतीत के झरोखे से झाँकने के बाद ऐसा प्रतीत होता है कि देवघर सदैव समस्त भारतीय संस्कृति का वाहक रहा है। कम से कम बारह सौ वर्षों की ऐतिहासिक सामग्री से यह स्पष्ट पता चलता है कि देवघर जनपद नहीं होने पर भी जनता के हृदय मन्दिर में पवित्र मूर्ति के समान रहा, राज्य नहीं होने पर भी सर्वदा देश के राजाओं और छोटे-छोटे सामन्तों के इष्टदेव की भूमि के रूप में आदर प्राप्त करता रहा और गंगा के किनारे नहीं होने पर भी सदैव गंगाजल से धुलता रहा है। पर्वतों और छोटी-छोटी नदियों से आवृत्त देवघर प्राकृतिक सुषमा की अनुपम छटा को छिटकता रहा है तथा संस्कृति का यह मेरुदण्ड है। जब तक भारत में गंगा की पवित्र धारा प्रवाहित होती रहेगी, देवघर अपने गौरवशाली इतिहास को दुहराता रहेगा।

वैद्यनाथ समं लिंगं न च ब्रह्माण्ड भूतले।
शैवमत के अनुसार, अन्य देवों का यजन-पूजन प्राणियों को केवल भोग ही प्रदान करता है, किन्तु भगवान शिव का पूजन भोग के साथ-साथ मोक्षदायक भी है। मोक्षदानरूपी कार्य भगवान शिव के अतिरिक्त अन्य कोई देव नहीं करते। अतः केवल भोग की कामना करने वाले भक्तों को चाहिए कि वह शिव की पूजा करे। ऐसा करने से उसे भोग तो मिलेगा ही, साथ ही साथ मोक्ष भी प्राप्त हो जाएगा। दुर्लभ मनुष्य जन्म प्राप्त करके जो प्राणी शिव की पूजा करते हैं, उनका जन्म सफल है और वे ही नरोत्तम कृतार्थ हैं। इस संसार में शिवार्चन के तुल्य अन्य धर्म नहीं है। अतः अपने जीवन को सफल बनाने की इच्छा वाले को चाहिए कि वह सम्पूर्ण धर्मों का परित्याग कर भगवान शिव की पूजा, वन्दना एवं शरण का आश्रय ले।

भगवान शिव की पूजा लिंग और प्रतिमा दोनों में की जाती है। पुराण एवं लोक में शिव की प्रतिमा की अपेक्षा लिंगार्चन की महत्ता विशेष रूप से दृष्टिगोचर होती है। शिवलिंग को शिवमूर्ति की अपेक्षा प्राथमिकता प्रदान की गई है। शिवमहापुराण के आद्योपान्त अध्ययन से यह बात बहुत स्पष्ट हो जाती है कि अन्य लिंगों की अपेक्षा ज्योतिर्लिंग सर्वाधिक प्रसिद्ध एवं महत्त्वशाली है। अपने मन को मन्त्रमय वृत्ति के द्वारा उपास्य के साथ अभेद बुद्धि करना यह पर-उपासना है और समस्त संसार अनन्त कोटि ब्रह्माण्ड को उपास्य

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तत्व में लीन कर केवल तदनुरूप ही सर्वत्र देखना परापर-भगवान की उपासना है। शिव तत्व अनन्त है और उनकी उपासना भी अनन्त है।

शिवमहापुराण विश्वेश्वर संहिता में लिंग शब्द का अर्थ इस प्रकार बताया गया है:

लीनार्थगमकं चिन्हं लिंगमित्यभिधीयते।

भं वृद्धिं गच्छतीत्यपाद भगः प्रकृतिरुच्यते।

मुख्यो भगस्तु प्रकृतिर्भगवान शिव उच्यते।

लीन अर्थात् अव्यक्तावस्थापन वस्तु के गमक बतलाने वाले चिन्ह को लिंग कहते हैं। अभिवृद्धि को तथा प्राप्त होने वाली वस्तु को भग कहते हैं। उस भग के अधिष्ठाता को भगवान शिव कहते हैं।

शिवजी की स्थूल मूर्ति को शिवलिंग कहते हैं। शिवलिंग के स्पर्श पूर्वक दर्शनार्थ सम्पूर्ण संवत्सर यहाँ तीर्थयात्रियों का आवागमन होता रहता है। वह कौन सी भावना या प्रेरणा है जो लाखों स्त्री-पुरुषों को देवघर स्थित वैद्यनाथ मन्दिर के प्रांगण में खींच लाती है। इस भावना अथवा प्रेरणा का मूलाधार एक विश्वास है कि वैद्यनाथधाम में आकर उनका सब कलुष धुल जाएगा। वैद्यनाथधाम की पावनता उनको पवित्र बना देगी। यहाँ आकर शिवगंगा का पुण्य स्नान-दान, वैद्यनाथ ज्योतिर्लिंग का दर्शन-पूजन ही नहीं होता, वरन् उन साधु-महात्माओं का दुर्लभ सत्संग भी सुलभ होता है, जो दूर-दूर से वैद्यनाथधाम में आकर एकत्रित होते हैं। उनके सम्मेलन और प्रवचन होते हैं। उपनिषदों और पुराणों की कथाएँ तीर्थयात्री गण यहाँ सुन पाते हैं और वे इन सब चीजों से नई-नई प्रेरणाएँ लेकर अपने-अपने घरों को वापस जाते हैं। इस पवित्र परिवेश से यात्रियों के जीवन में अलौकिक आनन्द की अनुभूति होती है।

देवघर स्थित वैद्यनाथ मन्दिर का बड़ा माहात्म्य है, इसमें कोई संशय नहीं। वैद्यनाथधाम देवघर का इतिहास और इसकी संस्कृति में ऐतिहासिक व्याख्या निहित है। लौकिक और अलौकिक कृतित्व का यह पवित्र और प्रसिद्ध स्थान है। भारतीय धार्मिक इतिहास को ज्ञाननिष्ठ दृष्टिकोण से ही समझा जा सकता है, क्योंकि मानवीय इतिहास की गणना की परम्परा काल एवं स्थल से संबंधित है। इसे विद्वान् भौतिकवादी व्याख्या भी कहते हैं। धर्म और संस्कृति को भी इसी प्रकार से आबद्ध किया जाता है। निरपेक्ष चिन्तन से ही धर्मगत इतिहास की तह तक पहुँचा जा सकता है। अतीत की शिला पर स्थित वैद्यनाथधाम देवघर के भूतकालीन समस्त प्राचीन-अर्वाचीन साक्ष्यों को प्रस्तुत करना ही इस शोध का मूल उद्देश्य है।

वैद्यनाथ ज्योतिर्लिंग का तीर्थक्षेत्र केवल शैव तीर्थ ही नहीं माना जाता, अपितु यह एक शाक्त तीर्थ भी है। सती के हृदय गिरने से इसे हृदयपीठ कहते हैं। सती के हृदय को लेकर शिव उद्विग्न अवस्था में नृत्य करने लगे थे। भगवान विष्णु ने अपने चक्र से उसका खण्डन किया था, तब से यह चिताभूमि के नाम से प्रसिद्ध है। इसे प्रज्ज्वलित भूमि के अभिधार्थ में भी ग्रहण किया जाता है। वैद्यनाथ ज्योतिर्लिंग की ख्याति हिमालय से कन्याकुमारी तक फैली है। असंख्य लिंगों की उपस्थिति के बाद भी इस ज्योतिर्लिंग की गणना सर्वश्रेष्ठ ज्योतिर्लिंग के रूप में होती है। यह प्राचीनतम शिवलिंगों में से एक है। प्राचीनकाल से ही विभिन्न मानव समूहों के द्वारा इनकी उपासना होती रही है। द्वादश ज्योतिर्लिंगों में वैद्यनाथ अन्यतम हैं। इसे नवम् ज्योतिर्लिंग के रूप में स्वीकार किया जाता है। इसकी विस्तृत कथा शिवमहापुराण में है। शिवमहापुराण के पश्चात् सबसे अधिक वर्णन पद्मपुराण पाताल खण्ड में है। वायुपुराण, मत्स्य पुराण, श्रीमद् देवी भागवत, वामन पुराण और भविष्य पुराण आदि में देवघर तीर्थक्षेत्र की विशद् चर्चा है। वैद्यनाथ ज्योतिर्लिंग के धार्मिक महत्त्व के लिए इतना साक्ष्य ही पर्याप्त है।

सारांश, निष्कर्ष एवं सुझाव

निष्कर्ष रूप में, बाबा वैद्यनाथ मन्दिर हिन्दू आध्यात्मिकता की स्थायी विरासत का एक प्रमाण है। भगवान शिव की दयालुता और उपचार शक्तियों के प्रतीक के रूप में यह मन्दिर न केवल पूजा स्थल के रूप में कार्य करता है, बल्कि एक सांस्कृतिक और आध्यात्मिक केन्द्र बिन्दु के रूप में भी कार्य करता है, जो बाबा वैद्यनाथ की दिव्य उपस्थिति का अनुभव करने के लिए सभी क्षेत्रों के लोगों को आकर्षित करता है। इस ऐतिहासिक धरोहर के संरक्षण के लिए स्थानीय सरकारी प्रशासन, स्थानीय तीर्थपुराहितों (पण्डा जी) एवं पण्डाधर्मरक्षिणी सभा द्वारा निरन्तर एवं सतत् प्रयास किए जा रहे हैं।

प्रस्तुत अध्ययन में शोध की प्रस्तावना, शोध का औचित्य, समस्या कथन, समस्या के उद्देश्य, परिकल्पना, समस्या का परिसीमन, न्यादर्श, अध्ययन विधि, उपकरण, अग्रिम शोध हेतु सुझाव, शोध की शैक्षिक उपयोगिता प्रस्तुत की गई है। इस शोध कार्य से प्राप्त निष्कर्षों से वैद्यनाथ धाम स्थित बाबा वैद्यनाथ मन्दिर का देवघर की सभ्यता और संस्कृति के संरक्षण संबंधी अध्ययन में शैक्षिक उपलब्धि, अभिप्रेरणा तथा समायोजन के सम्बन्ध में आवश्यक दिशा-निर्देश मिल सकेंगे।

अन्त में, मैं चिताभूमि के नाथ वैद्यनाथ को नमन करता हूँ:

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झारखण्ड निवासाय कामनालिंग मूर्तये।
भुक्ति मुक्ति प्रदाताय वैद्यनाथ नमोऽस्तुते।

संदर्भ ग्रन्थ-सूची

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5. श्री मत्स्य महापुराण, तीर्थ प्रकरण, गीता प्रेस, गोरखपुर
6. श्री पद्म महापुराण, पाताल खण्ड, गीता प्रेस, गोरखपुर
7. श्री भविष्य महापुराण, ब्रह्माण्ड प्रकरण, गीता प्रेस, गोरखपुर
8. श्री स्कन्द महापुराण, काशी खण्ड, प्रभास खण्ड, गीता प्रेस, गोरखपुर
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शोध पत्रिका की संरचना

राजीव प्रियदर्शनम्*

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सारांश

शोध पत्रिका की संरचना शैक्षिक लेखन का एक महत्वपूर्ण पहलू है, जो अनुसंधान प्रक्रिया को व्यवस्थित और प्रभावी ढंग से प्रस्तुत करने में सहायता करती है। अनुसंधान, जिसे अंग्रेजी में 'रिसर्च' कहा जाता है, किसी विषय की गहन खोज और विश्लेषण की प्रक्रिया है, जिसमें समंकों का संग्रहण, विश्लेषण, और निष्कर्ष निकालना शामिल है। शोध पत्र सामान्यतः सामान्य से विशिष्ट और फिर सामान्य की ओर प्रवाहित होते हैं, जिसमें शीर्षक पृष्ठ, सार, परिचय, क्रियाविधि, परिणाम, चर्चा, निष्कर्ष, और संदर्भ जैसे प्रमुख घटक होते हैं। यह संरचना शोधकर्ता को अपने विचारों को तार्किक क्रम में प्रस्तुत करने और पाठकों के लिए स्पष्ट रोडमैप प्रदान करने में मदद करती है। साहित्य समीक्षा और बहुप्रयोग पत्र जैसी विविधताएँ शोध पत्रों को विभिन्न संदर्भों में अनुकूलित करती हैं। शैक्षिक अनुसंधान के चार चरण—समंक संकलन, आंतरिक वैधता, बाहरी वैधता, और सैद्धांतिक अनुसंधान—शोध प्रक्रिया को और गहराई प्रदान करते हैं। परिकल्पना निर्माण और वैज्ञानिक विधियों का उपयोग अनुसंधान की विश्वसनीयता को बढ़ाता है। यह सार शोध पत्र की संरचना और इसकी विशेषताओं को समझने में सहायक है।

मुख्य शब्द: शोध पत्र, अनुसंधान, संरचना, साहित्य समीक्षा, परिकल्पना, समंक विश्लेषण, शैक्षिक लेखन, वैज्ञानिक अन्वेषण

अनुसंधान का अर्थ

अनुसंधान को अंग्रेजी भाषा में **रिसर्च (Research)** कहा जाता है। "Re-Search" शब्द का अर्थ हिन्दी में **बार-बार खोज करना** होता है, जिसमें **Search** का अर्थ **खोज करना** या **खोजना** है। निश्चित रूप से यह अंग्रेजी शब्द अनुसंधान की प्रक्रिया को दर्शाता है। अनुसंधानकर्ता किसी विषय को बार-बार खोजता है, जिसके माध्यम से वह विभिन्न **समंक (Data)** एकत्र करता है और उनके विश्लेषण के आधार पर निष्कर्ष निकालता है। अर्थात्, उपलब्ध समंकों की तह में पहुँचकर निष्कर्ष निकालना, नए सिद्धांतों की खोज करना, और उनसे प्राप्त समंकों का विश्लेषण करना ही अनुसंधान के अंतर्गत आता है। अनुसंधान में किसी समस्या का **वैज्ञानिक अन्वेषण** भी शामिल होता है।

मेकग्रेथ और वाटसन के अनुसार, **अनुसंधान एक प्रक्रिया है**, जिसमें खोज प्रविधि का उपयोग किया जाता है, जिसके निष्कर्ष उपयोगी हों, ज्ञान वृद्धि हो, और प्रगति के लिए प्रोत्साहन मिले।

शोध पत्र क्या है?

शोध पत्र **शैक्षणिक प्रकाशन** की एक विधि है। इसमें किसी **शोध-पत्रिका (जर्नल)** में लेख प्रकाशित किया जाता है या किसी संगोष्ठी में किसी विषय पर लेख पढ़ा जाता है। प्रायः शोध पत्रों का प्रकाशन कुछ विशेषज्ञों द्वारा **समीक्षा** या **जाँच** के बाद ही संभव होता है।

शोध प्रस्ताव के उद्देश्य

शोध प्रस्ताव में निम्नलिखित उद्देश्य शामिल हो सकते हैं:

1. **शोध निबंध लेखन**।
2. **उच्च स्तरीय शिक्षा** के लिए शोध करवाना।
3. विभिन्न संगठनों से **वित्त पोषण** के लिए आवेदन करना।

यह शोध करवाने के लिए एक **कार्य योजना की रूपरेखा** तैयार करता है, जिसे प्रस्तुतीकरण के दौरान स्वीकार या प्रस्तुत किया जा सकता है।

शोध संरचना

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आम तौर पर, शोध पत्र अपने संगठन में **सामान्य से विशिष्ट** और फिर **विशिष्ट से सामान्य** की ओर प्रवाहित होते हैं। **परिचय** सामान्य से विशिष्ट की ओर गति करता है, रुचि की स्थापना करता है, और बातचीत के लिए संदर्भ निर्धारित करता है। एक शोध रिपोर्ट की आदर्श संरचना में शोध का सबसे विस्तृत खंड होना चाहिए, जिसमें आगे के अध्ययन के लिए संदर्भ हों। जानकारी को **तार्किक क्रम** में प्रस्तुत करना चाहिए।

एपीए शैली में शोध पत्र के प्रमुख भाग

1. **शीर्षक पेज**
2. **अमूर्त (Abstract)**
3. **परिचय**
4. **तरीके (Methods)**
5. **परिणाम (Results)**
6. **चर्चा (Discussion)**
7. **संदर्भ (References)**
8. **तालिकाएँ और आँकड़े (Tables and Figures)**
9. **परिशिष्ट (Appendix)**

शोध पत्रों की विविधताएँ

1. **साहित्य समीक्षा (Literature Review)**:
    - जब शोध पत्र पहले प्रकाशित शोध की समीक्षा करता है और स्वयं नया अनुभवजन्य शोध प्रस्तुत नहीं करता (जैसे समीक्षा लेख या गुणात्मक समीक्षा में), तो लेखक **विधि** और **परिणाम** अनुभाग को छोड़ सकता है।
    - इसकी संरचना में एक **परिचय अनुभाग** होता है, जिसके बाद समीक्षा किए जा रहे शोध के विभिन्न पहलुओं के लिए अलग-अलग अनुभाग होते हैं, और फिर एक **चर्चा अनुभाग** हो सकता है।
2. **बहुप्रयोग पत्र (Multi-Experiment Papers)**:
    - जब कई प्रयोग होते हैं, तो परिचय के बाद **प्रयोग अनुभाग** आम होता है, जिसमें **विधि**, **परिणाम**, और **चर्चा** उप-अनुभाग शामिल होते हैं।
    - इसके बाद समान संरचना वाले **प्रयोग 2**, **प्रयोग 3** आदि अनुभाग होते हैं, जब तक सभी प्रयोगों को कवर नहीं कर लिया जाता।
    - पेपर के अंत में एक **सामान्य चर्चा अनुभाग** और फिर **संदर्भ** होते हैं।
    - बहुप्रयोग पत्रों में व्यक्तिगत प्रयोगों के परिणाम और चर्चा को एक संयुक्त **परिणाम और चर्चा अनुभाग** में मिलाना भी आम है।

शोध पत्र का महत्व

शोध पत्र **आकादमिक लेखन** का एक हिस्सा है, जिसमें स्वतंत्र शोध, विश्लेषण, और तर्क शामिल होते हैं। शोध पत्र की संरचना लेखक को अपने विचारों को **व्यवस्थित करने** में मदद करती है और पाठकों को निष्कर्षों को समझने में सहायता प्रदान करती है। यह शोधकर्ता के योगदान को संप्रेषित करता है।

शोध पत्र के प्रमुख घटक

1. **शीर्षक पृष्ठ**:
    - पेपर का पहला पृष्ठ, जिसमें शीर्षक, लेखक का नाम, संबद्धता, और अन्य विशिष्ट जानकारी होती है।
2. **सार (Abstract)**:
    - पेपर का संक्षिप्त सारांश, जिसमें अध्ययन की मुख्य समस्या, प्रश्न, लक्ष्य, उपयोग की गई विधियाँ, परिणाम, और निहितार्थ शामिल होते हैं।
3. **परिचय**:
    - शोध का पहला खंड, जो अध्ययन की पृष्ठभूमि और संदर्भ प्रदान करता है। यह प्रासंगिक साहित्य की समीक्षा करता है और शोध प्रश्न या परिकल्पना प्रस्तुत करता है।

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4. **क्रियाविधि (Methodology)**:
    - अध्ययन के डिज़ाइन, प्रतिभागियों, सामग्रियों, प्रक्रियाओं, और डेटा विश्लेषण विधियों का वर्णन करता है।
    - यह अनुभाग इतना विस्तृत होना चाहिए कि अन्य शोधकर्ता अध्ययन को दोहरा सकें।
5. **परिणाम (Results)**:
    - अध्ययन के मुख्य निष्कर्षों की रिपोर्ट करता है।
    - डेटा को तालिकाओं, ग्राफों, चार्टों, या अन्य दृश्य सहायता के माध्यम से प्रस्तुत किया जाता है।
    - यह अनुभाग वस्तुनिष्ठ और तथ्यात्मक होना चाहिए, बिना व्याख्या या चर्चा के।
6. **चर्चा (Discussion)**:
    - परिणामों की व्याख्या और मूल्यांकन करता है।
    - यह स्पष्ट करता है कि परिणाम शोध प्रश्नों का उत्तर कैसे देते हैं।
7. **निष्कर्ष (Conclusion)**:
    - पेपर के मुख्य बिंदुओं का सारांश प्रस्तुत करता है।
    - शोध प्रश्न या परिकल्पना को पुनः बताता है और अध्ययन के मुख्य योगदान या निहितार्थ पर प्रकाश डालता है।
    - नई जानकारी पेश करने से बचना चाहिए।
8. **संदर्भ (References)**:
    - एनोटेटेड ग्रंथसूची या संदर्भ सूची, जो शोध में उपयोग किए गए सभी स्रोतों का अवलोकन प्रदान करती है।
9. **आभार (Acknowledgements)**:
    - शोध में सहायता प्रदान करने वालों को धन्यवाद देता है।

शोध पत्र की संरचना का महत्व

शोध पत्र की संरचना **पाठकों और समीक्षकों** के लिए एक रोडमैप के रूप में कार्य करती है। यह केवल विषय-वस्तु के बारे में नहीं है, बल्कि यह भी महत्वपूर्ण है कि आप अपने निष्कर्षों को कैसे प्रस्तुत करते हैं। एक सुसंगत और संरचित शोध पत्र लिखने के लिए **सुसंगतता** और संरचना के घटकों की समझ आवश्यक है।

शोध प्रक्रिया

शोध प्रक्रिया सामान्यतः **रुचि के व्यापक क्षेत्र** से शुरू होती है। उदाहरण के लिए, शोधकर्ता की रुचि इस बात में हो सकती है कि **गणित में छात्रों के प्रदर्शन** को बेहतर बनाने के लिए कंप्यूटर का उपयोग कैसे किया जाए। लेकिन यह रुचि बहुत व्यापक होती है, इसलिए शोधकर्ता को इसे एक विशिष्ट **शोध प्रश्न** या **परिकल्पना** तक सीमित करना होता है।

अनुसंधान की विशेषताएँ

1. अनुसंधान का उद्देश्य **किसी समस्या का समाधान** खोजना है।
2. अनुसंधान का मुख्य आधार **निरीक्षणीय अनुभव** या **वर्णन** होता है।
3. अनुसंधान में **विश्वसनीय और वैध विधियों** का उपयोग होता है।
4. अनुसंधान से **निष्कर्ष** निकाले जाते हैं और **सामान्यीकरण** का प्रतिपादन किया जाता है।
5. अनुसंधान की प्रक्रिया **वस्तुनिष्ठ** होती है।

अनुसंधान के मुख्य चरण

अनुसंधान एक **दीर्घ और क्रमिक प्रक्रिया** है। इसे निम्नलिखित चरणों में व्यवस्थित किया जा सकता है:

1. **अनुसंधान के अध्ययन प्रारूप का वर्णन**।
2. **समंक संकलन की विधि का वर्णन**।
3. **समस्याओं के रूप में उद्देश्य का वर्णन**।
4. **अनुसंधान के परिणाम का प्रस्तुतीकरण**।
5. **उचित निष्कर्ष निकालना**।

डेविड जे. फॉक्स द्वारा अनुसंधान की विस्तृत योजना

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1. **समस्या या समस्या का क्षेत्र (Planning of Research)।**
2. **विभिन्न साहित्यों का एकत्रीकरण या सर्वेक्षण।**
3. **विशिष्ट अनुसंधान की समस्या का निर्णय।**
4. **शोध की सफलता का पूर्वानुमान।**
5. **साहित्यों का द्वितीयक सर्वेक्षण।**
6. **अनुसंधान की प्रक्रिया का चयन।**
7. **परिकल्पना का निर्माण।**
8. **प्राप्त समंकों की विधियों का निश्चय।**
9. **समंक प्राप्त करने की विधियों का चुनाव।**
10. **समंक विश्लेषण की योजना बनाना।**
11. **समंक प्राप्त करने की योजना बनाना।**
12. **जनसंख्या और न्यादर्श का निश्चय।**
13. **छोटे समूह पर पूर्व अध्ययन कर कठिनाइयों का पता लगाना।**

भाग II: अनुसंधान योजना का क्रियान्वयन

14. **समंक का संग्रहण।**
15. **समंक का विश्लेषण।**
16. **अनुसंधान प्रतिवेदन तैयार करना।**

भाग III: निष्कर्ष

17. **प्राप्त निष्कर्षों का कार्यान्वयन।**

शैक्षिक अनुसंधान के चरण

शैक्षिक अनुसंधान को प्रायः **चार चरणों** में व्यवस्थित किया जाता है:

1. **प्रथम चरण: समंकों का संकलन**
    - यह सबसे निम्नतम चरण है, जिसमें निम्नलिखित प्रश्नों के उत्तर देने का प्रयास किया जाता है:
        - क्या होता है?
        - समस्या क्या है?
        - क्या यही होना चाहिए?
        - क्या यही कार्य करना चाहिए?
        - क्या परिणाम आएगा?
    - यह चरण विश्वसनीय माना जाता है, क्योंकि जो हो रहा है, उसे उचित रूप से मापा जाता है।
2. **द्वितीय चरण: आंतरिक वैधता**
    - इस चरण में निम्नलिखित प्रश्नों का समाधान खोजने का प्रयास किया जाता है:
        - क्या इसका कारण मैं हूँ?
        - जो हो रहा है, उसका कारण क्या है?
        - क्या इसमें परिवर्तन किया जा सकता है?
    - शोधकर्ता प्रथम चरण के बाद यह जानने का प्रयास करता है कि वह क्या चाहता है।
3. **तृतीय चरण: बाहरी वैधता**
    - इस चरण में निम्नलिखित प्रश्नों का उत्तर खोजने का प्रयास किया जाता है:
        - क्या यही सही है?
        - क्या सही क्रियाएँ भिन्न-भिन्न परिस्थितियों में होंगी?
        - अनुसंधान के परिणामों को कहाँ तक लागू किया जा सकता है?

- इस प्रकार के अनुसंधान कार्य शिक्षकों द्वारा नहीं किए जाते, जबकि द्वितीय चरण के कार्य शिक्षकों के माध्यम से संपादित होते हैं।

4. **चतुर्थ चरण: सैद्धांतिक अनुसंधान**
    - इस चरण में पूर्व चरणों के परिणामों और निष्कर्षों की आवश्यकता होती है।
    - इनके योगदान से वैज्ञानिक सिद्धांतों और नियमों की खोज की जाती है।
    - सीखने की प्रक्रिया, सिद्धांतों का सामान्यीकरण, और उपयोग किए गए नियमों का उल्लेख किया जाता है।

परिकल्पना (Hypothesis)

परिकल्पना शोध में **प्रमुख साधन** है। इसका मुख्य कार्य **नए प्रयोगों और अवलोकनों का सुझाव देना** है। परिकल्पना एक प्रस्ताव या प्रस्तावों का सेट है, जो:

- किसी घटना के लिए स्पष्टीकरण प्रदान करता है।
- जाँच का मार्गदर्शन करता है या अंतिम अनुमान के रूप में माना जाता है।
- स्थापित तथ्यों के आधार पर अत्यधिक संभावित माना जाता है।

परिकल्पना को **स्पष्ट और सटीक** होना चाहिए, अन्यथा इसके आधार पर निकाले गए अनुमान विश्वसनीय नहीं होंगे। परिकल्पना का **परीक्षण** भी किया जाना चाहिए। यदि यह संबंधपरक परिकल्पना है, तो यह चरों के बीच संबंध को स्पष्ट करना चाहिए।

संदर्भ

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