Exploratory Research Design in Management Science: A Review of Literature on Conduct and Application

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ABSTRACT

The study examined the conduct and application of exploratory research design in management science. The study adopted an exploratory research design. Articles that utilised exploratory research design in management sciences were reviewed using a content analysis. Further, an evaluation of the types and methodologies, conduct, and application of exploratory research design in the field of management sciences was carried out. The study's findings revealed that some researchers used exploratory research design appropriately in their studies, whereas others did not, resulting in inappropriate research design usage. The study concluded that knowledge of exploratory research design could help researchers better define, understand research problems, and advance research in management sciences. The study recommended that, researchers should choose research designs that they are most comfortable with and feel most competent to handle, but the choice should ideally be based on the nature of the research phenomenon being studied and information available.

Key words: Exploratory Research Design, Management Sciences, Primary Methods, Secondary Methods, and Methodologies.

INTRODUCTION

Research is a continuous process that requires improvement over time, and the purpose of all research is to provide answers to questions through the application of scientific procedures (Lelissa, 2018). The research problem having been formulated in clear-cut terms, the researcher will be required to prepare a research design that is, the researcher 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 (Tegan, 2021).

According to Goundar (2019), one of the first considerations when designing a research project is what the researcher hopes to achieve, in broad terms, by conducting the research. What do they hope to say about their subject? Do they want a deep understanding of whatever phenomenon they are studying, or do they want a broad, but perhaps less deep, understanding? Do they want policymakers or others to use their research findings to shape social life, or is this project more about them exploring their interests? Their responses to each of these questions will influence the design of their research.

Every research problem is uniquely different, but almost all research problems and research objectives can be categorised into one of the types of research designs, viz., exploratory and conclusive (Asika, 2004). When conducting research, the researcher's choice of design is influenced by the available information. Researchers may decide to work on a problem that has not been thoroughly studied in order to establish priorities, develop operational definitions, and improve the final research design. This type of research is

referred to as exploratory research (Umesh, 2021). According to Saunders, Lewis and Thornhill (2016) an exploratory research design is a valuable means of finding out 'what is happening; to seek new insights; to ask questions and to assess phenomena in a new light.

It is particularly useful if researchers wish to clarify the understanding of a problem, such as if they are unsure of the precise nature of the problem.

Exploratory research can be likened to the activities of the traveller or explorer (Adams & Schvaneveldt, 1991 as cited in Saunders, Lewis & Thornhill, 2016). Its great advantage is that it is flexible and adaptable to change. When conducting exploratory research the researcher must be willing to change their direction as a result of new data that appear and new insights that occur to them (Lelissa, 2018). Adams and Schvaneveldt (1991) reinforce this point by arguing that the flexibility inherent in exploratory research does not mean absence of direction to the enquiry. What it does mean is that the focus is initially broad and becomes progressively narrower as the research progresses. Exploratory research design is evolutionary and historical in nature and it rarely involves the employment of large samples or use of structured questionnaires (Asika, 2004).

Management science research is the systematic development and acquisition of knowledge tailored to specific management needs in order to solve managerial problems in a timely and effective manner. Management science research generates knowledge by combining data from various subjects such as strategy, organisational behaviour, entrepreneurship, innovation, and technology, human resource management, international business, and marketing, to name a few (Bernd, 2017). The selection of the appropriate research method is one of the most important fundamentals for success in this field for solving managerial problems (Lelissa, 2018). The use of this design in management sciences may play an important role in the development of this field because it assists a researcher in developing an understanding of the research problem. In this regard, exploratory research design adds value and contributes to the advancement of business research topics (Bashin, 2020).

This research aims to shed more light on exploratory research design and its conduct in management sciences. The researcher wants to show the application of exploratory research in the management sciences as well. To be reliable, exploratory research should be carried out in a transparent and honest manner, and should adhere to a set of guidelines. In essence, if exploratory research design is carried out in this manner, the study will achieve high validity while also providing new and innovative ways to analyse reality.

Statement of the Problem

The research design establishes the decision-making processes, conceptual structure of investigation, and analytical methods used to address the study's central research problem (Tegan, 2021). Taking the time to select an appropriate research design will assist researchers in organising their thoughts, define the scope of their study, increase the reliability of their findings, and avoiding misleading or incomplete conclusions. As a result, if any aspect of research design is flawed or misappropriate, the quality and dependability of the results, as well as the overall value of the study, will diminish (Umesh, 2021).

In management sciences research today, the researcher's choice of research design, survey questions, and research method is sometimes largely influenced by the preferences of the researcher rather than what works best for the research context, resulting to inappropriate usage of research design (Lelissa, 2018). For instance, some researchers provide the final and conclusive answers to the research questions in studies where the situations are unclear and have not attracted serious investigations and research in the past. Further, some researchers employ an exploratory research design in studies where specific relationships among variables of a research problem are investigated and the information required is clearly defined. In many instances, inappropriate usage of design in the systematic investigation can infuse bias into the

research process. Not all designs are suited for all kinds of research in management sciences. An exploratory research design is required in the preliminary stages of research when the research problem is unclear and the researcher wants to scope out the nature and extent of a specific research problem (Elman, Gerring & Mahoney, 2020).

In other words, researchers must understand what research designs are available to best address their research problems and guide them throughout the research process. With new researchers in mind, this article focuses on exploratory research design – its conduct and applications in management sciences.

Research Objectives

The main objective of this study is to examine the exploratory research design in management sciences. The specific objectives are to:

1. Evaluate the conduct of exploratory research design in management sciences.
2. Examine the application of exploratory research design in management sciences.

METHODOLOGY

This study utilised exploratory research design and reliant on secondary data gathered from various publications, journals, textbooks, and internet sources that focused on exploratory research design. The articles extracted for the study were examined using content analysis.

CONCEPTUAL REVIEW

Concept of Exploratory Research Design

Exploratory research design can be defined as research conducted to investigate an undefined problem. It is carried out to gain a better understanding of the current problem (Asika, 2004; Olajide & Lawal, 2020; Akhtar, 2016; Saunders, Lewis & Thornhill, 2016, Richard, 2018; Elman, Gerring, & Mahoney, 2020). Explorative research design, as the name implies, seeks to elucidate research questions rather than provide final and conclusive solutions to existing problems (Brown, 2006; Nargundkar, 2008). A researcher begins with a broad concept and uses this research as a vehicle to identify issues that can be the focus of future research (Lelissa, 2018). The goal of exploratory research is not to provide final and conclusive answers to research questions, but rather to explore the research topic in varying depths. It has been stated that exploratory research is the preliminary research that serves as the foundation for more conclusive research (Asika, 2004; Akhtar, 2016; Saunders, Lewis & Thornhill, 2016).

Exploratory research "tends to address new problems with little or no prior research". The exploratory research design focuses on collecting secondary or primary data in an unstructured format and interpreting it using informal procedures (Bernd, 2017). Due to its aims and structure, exploratory research designs incorporate the least amount of scientific method and rigor of the other research designs classified above (Umesh, 2021). When only research questions serve as the foundation of the investigation, the explorative research design is qualitative. When hypotheses are used to test a specific relationship between identified variables in a research problem, it is quantitative (Asika, 2004). Tegan (2021) also stated that exploratory research is frequently qualitative. A large-sample exploratory study, on the other hand, can be quantitative as well. Due to its flexibility and open-ended nature, it is also known as interpretive research or a grounded theory approach. Researchers are advised to be careful not to confuse exploratory research with explanatory research, which is also preliminary in nature but instead explores why a well-documented problem occurs (Tegan, 2021).

Exploratory research is not usually generalisable to the general population. The outcomes of this research provide answers to questions like what, how and why (Bernd, 2017).

According to Akhtar (2016), exploratory research aids in determining the best research design, data collection method, and subject selection. Only with extreme caution does exploratory research draw definitive conclusions. Exploratory research, by definition, relies on techniques such as: (i) quantitative research by reviewing available literature. (ii) Informal qualitative approaches, such as conversations with customers, employees, management, or competitors. (iii) Formal qualitative research methods such as in-depth interviews, focus groups, projective methods, case studies, or pilot studies.

Brown (2006) distinguishes between exploratory and conclusive research by stating that exploratory studies yield a variety of causes and alternative solutions for a specific problem, whereas conclusive studies yield the final information that is the only solution to an existing research problem. In other words, an exploratory research design simply investigates the research questions, leaving room for future studies, whereas a conclusive research design seeks to provide final research findings. Furthermore, "an exploratory study may not have as rigorous a methodology as that used in conclusive studies, and sample sizes may be smaller (Nargundkar, 2008).

Benefits and limitations of Exploratory Research Design Voxco (2021) and Tegan (2021) pointed the following benefits and limitation of exploratory research design in management sciences.

The benefits are as follows:

1. Exploratory research can contribute valuable and insightful information to a study and is critical to its success.
2. Exploratory research enables the researcher to be as creative as possible in order to gain the most understanding of a subject.
3. It enables a better understanding of what a research team's objectives should be throughout the course of a study. Having this information on hand will help anyone conducting research from outside sources.
4. Regardless of the field that research is required, exploratory research can be used in a variety of fields. As a result, it is critical to understand how the various fields will influence any research that will be conducted.
5. It will be useful to compare and contrast different techniques, such as secondary research, discussions, or qualitative research through focus groups, surveys, or case studies. Within exploratory research, the Internet allows for more interactive research methods.
6. The researcher has a lot of flexibility and can adapt to changes as the research progresses.
7. It is usually cost effective.
8. It helps lay the foundation of a research, which can lead to further research.
9. It enables the researcher understand at an early stage, if the topic is worth investing the time and resources and if it is worth pursuing.
10. It can assist other researchers to find out possible causes for the problem, which can be further studied in detail to find out, which of them is the most likely cause for the problem.

While the limitations includes the following;

1. Even though it can point you in the right direction towards what is the answer, it is usually inconclusive.
2. The main disadvantage of exploratory research is that they provide qualitative data. Interpretation of such information can be judgmental and biased.

3. Most of the times, exploratory research involves a smaller sample, hence the results cannot be accurately interpreted for a generalized population.
4. Many a times, if the data is being collected through secondary research, then there is a chance of that data being old and is not updated.

Figure 1. A Conceptual Model of Exploratory Research
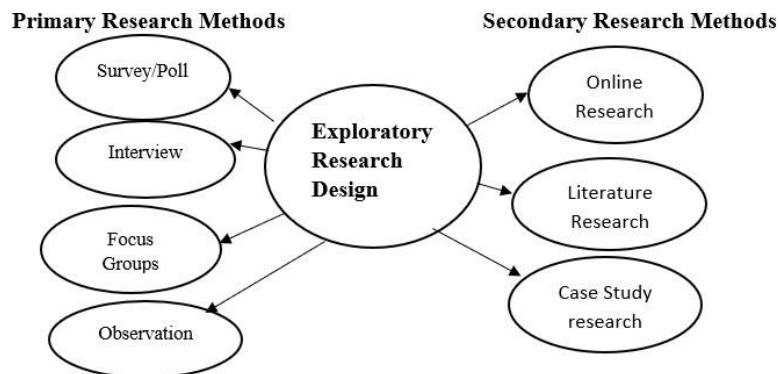
Adopted from Voxco (2021)

Types and Methodologies of Exploratory Research

While it may appear difficult to research something about which there is little information, several methods can assist a researcher in determining the best research design, data collection methods, and subject selection. There are two methods for conducting research: primary and secondary. A researcher can employ a variety of methods under these two categories. The information gleaned from these studies can be qualitative or quantitative (Formplus, 2019). The following are some of the most commonly used research designs:

Primary Research Methods

According to Goundar (2019), primary research entails gathering information directly from the subject. It could be done by a group of people or by an individual. This type of research can be carried out directly by the researcher or by a third party on their behalf. Primary research is conducted specifically to investigate a specific problem that necessitates an in-depth investigation (Formplus, 2019).

1. **Surveys/Polls**: Surveys/polls are used to collect information from a specific number of participants. It is one of the most essential quantitative methods. To investigate opinions, trends, and so on, various types of surveys or polls can be utilised (Richard, 2018; Umesh, 2021). Surveys can now be sent online and are very easy to access thanks to technological advancements. For example, using a survey app on a tablet, laptop, or even a mobile phone. This information is also available to the researcher in real time (Umesh, 2021).
2. **Interviews:** It entails gathering a large amount of information from public sources. An interview with a subject matter expert can provide the researcher with meaningful insights that a generalised public source cannot. To obtain meaningful information about a topic, interviews are conducted in person or over the phone using open-ended questions (Tegan, 2021; Umesh, 2021; Formplus, 2019)
3. **Focus groups:** Another common method in exploratory research is focus groups. In this method, a group of people is selected and allowed to express their thoughts on the topic being investigated. However, it is critical to ensure that the individuals chosen for a focus group share a common background and have comparable experiences (Elman, Gerring, & Mahoney, 2020).
4. **Observations:** Observation research can be qualitative or quantitative in nature. This type of research

involves observing a person and deducing conclusions based on their reactions to various parameters. There is no direct communication with the subject in such a study (Richard, 2018; Umesh, 2021).

Secondary Research Methods

Secondary research is the collection of information from previously published primary research. In this type of study, the researcher gathers information from various sources such as case studies, magazines, newspapers, books, and so on (Gerring & Mahoney, 2020).

1. **Online research:** This is one of the quickest ways to gather information on any topic in today's world. A large amount of data is readily available on the internet, and the researcher can download it as needed (Elman, Gerring & Mahoney, 2020; Baxter & Jack, 2010). The genuineness and authenticity of the source websites from which the researcher is gathering information is an important consideration for such a study (Goundar, 2019).
2. **Literature research**: Literature research is one of the most cost-effective methods for testing a hypothesis. There is a wealth of information available in libraries, online sources, and even commercial databases. Newspapers, magazines, library books, documents from government agencies, specific topic related articles, literature, Annual reports, published statistics from research organisations, and so on are examples of its sources (Elman, Gerring & Mahoney, 2020; Umesh, 2021).

- **Case study research:** Case study research can assist a researcher in gathering more information by carefully analysing existing cases that have encountered a similar problem. Such analyses are critical, particularly in today's business world. The researcher only needs to make sure that he carefully analyses the case in comparison to all of the variables present in the previous case against his own case (Baxter & Jack, 2010).

Conduct of an Exploratory Research in Management Sciences

The following is an illustration of the steps for conducting an exploratory research designs in management sciences:

Figure 1. Procedures for Conducting a Mixed Methods Research Design
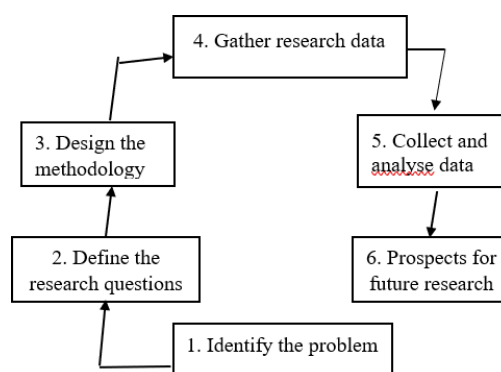
Adapted from Tegan (2021).

1. Identify the problem: A researcher identifies the subject of research and the problem is addressed by carrying out multiple methods to answer the questions (Voxco, 2021).
2. Define the research questions: Even if the researchers know what they want to investigate, defining the research question in clear terms is an important part of the process. Defining the research question

will assist the researchers in determining the direction of their research. It will assist them in keeping the research on track and ensuring that it is carried out efficiently. (Bashin, 2020).

3. Design the methodology: Next, conceptualise the data collection and data analysis methods and write them up in a research design. The researcher can use one or more than one method (described earlier) to conduct the research (Tegan, 2021). Exploratory research necessitates speaking with your people in order to obtain detailed information about the subject matter. Researchers commonly use surveys and interview to gain insight into unexplored subjects. Researchers can gather a wealth of useful information by soliciting customer feedback (Voxco, 2021).

4. Gather research Data: Once the method for conducting exploratory research has been determined, the researchers must collect the resulting data. Spend a good time to explore different sources and make sure that the study is not missing an aspect of the research (Tegan, 2021).

5. Analyse result: The next step is to analyse the data so that the researcher can determine whether the preliminary results are in line with the questions earlier defined (Elman, Gerring & Mahoney, 2020).

6. Prospects for future research: The researcher should determine whether to continue to study the topic. If this is the case, the researcher will almost certainly need to switch to a different type of research (Elman, Gerring & Mahoney, 2020). Since exploratory research is frequently qualitative in nature, the researcher may need to conduct quantitative research with a larger sample size to achieve results that are more generalisable (Umesh, 2021).

Applications of Exploratory Research in Management Sciences

The following table depicts an illustration of the application of exploratory research design in management sciences

Table1 Illustration on the Applications of Exploratory Research Design in Management Sciences

S/N	Author(s)/ Year	Title	Method-logy	Findings	Remarks
1.	Abbas, Majeed & Luma (2021)	Employees' retention strategy and its impact on organisational memory: An exploratory research for the opinion of faculty members at private colleges on Baghdad.	Survey, Interview.	The employee retention strategy plays an important role in retaining employees and, as a result, in maintaining organisational memory.	Since the study examined specific relationships among variables of the research problem, a conclusive research design would have been more appropriate than an exploratory design. The study has a very definite outcome.
2.	Haughton (2021).	Exploring knowledge retentions trategies to prevent knowledge loss in project-based organisations(PBOs).	Semi-structured interview, Case study.	Management's development and implementation of a knowledge retention strategy will aid in the identification, capture, andretention of critical knowledge in their organisation.	A conclusive research design, rather than an exploratory design, would have been more appropriate in this studybecause the study's information requirements were clearly defined, and its findings were definite and precise.

3.	Leonor, Samuel, Pedro & Tiago (2021).	What are the main drivers of block chain adoption within supply chain? – An exploratory research.	Survey, Literature research.	Block chain gives its adopters a higher control over their supply chain networks and bettering their processes in a holistic manner.	The use of an exploratory research design was appropriate because the information needed for the study was ambiguous and an in-depth understanding of the phenomenon was required.
4.	Chiarini, Belvedere & Grando, (2020).	Industry 4.0 strategies and technological developments. An exploratory research from Italian manufacturing companies.	Survey	Technologies identified do not contribute to any significant improvement in environmental sustainability, other strategies such as Servitisation, Design-to-cost, Supply chain integration etc. are enabled through the adoption of Industry 4.0 technologies.	A conclusive research design would have been more appropriate than an exploratory design because the study examined specific relationships among variables of the research problem, had a large sample size, and used data analysis to deduce a definite outcome.
5.	Kei & Abdulla (2020).	The nature and challenges of guest house business in the Maldives: An exploratory study.	In-depth interview	The findings revealed that infrastructure, product image, customer orientation, and service quality, among other factors, contribute to the success of guesthouse operations.	Since the information needed for the study was unclear and an in-depth understanding of the phenomenon was required, an exploratory research design was appropriate.
6.	Wijdène & Manel (2020).	Cultural challenges of e-learning experiences: An exploratory research.	Semi-structured interview.	The study showed the existence of four dimensions such as management of time and learning activities, management of the learning space, management of interpersonal relations, and style of communication that canbe factors of convergenceor divergence for thelearners.	The use of an exploratory research design was appropriate because theinformation requiredfor the study wasambiguous and had attracted limitedstudies in the past, necessitating an in-depth understanding of the phenomenon.

7.	Camargo, Pereira & Scarpin (2020).	Fast and ultra-fast fashion supply chain management: An exploratory research.	Document analysis, In-depth interviews	Ultra-fast fashion differs from fast in the following supply chain strategies: avoids excess inventory, focuses on local manufacturing, on-demand production, and shorter lead times ranging from a few days to a week through a combination of agile, lean, and responsive supply chain strategies.	The utilisation of an exploratory research design was appropriate because the information needed for the study was vague and had previously attracted limited studies, necessitating a thorough understanding of the phenomenon.
8.	Pooja, S. (2019).	Techno stress creators -An exploratory research on teaching and non-teaching staff working in colleges	Survey	Males feel more insecure and uncertain when using technology, according to the findings. Furthermore, employees working in and around Chandigarh experience more Techno Overload, Tech Invasion, and Techno Insecurity.	Since this study examined specific relationships among variables of the research problem, covered a large sample size, and used data analysis to derive a definite outcome, a conclusive research design would have been more appropriate than an exploratory design.
9.	Sagolsem (2019)	Entrepreneurial marketing as sustainable competitive advantage forSME's: Anexploratory study within the Irish flower industry.	Semi-structured interview, Survey.	Entrepreneurial marketing dimensions are practiced within Irish Flower SMEs and that there are a number of benefits to implementing these dimensions.	Based on fact that the subject had attracted several studies in the past, a conclusive research design would have been preferable to an exploratory design.
10.	Fonseca & Domingues (2018).	Exploratory research of ISO 14001:2015 transition among Portuguese organisations.	Online survey	ISO 14001:2015 implementation and the adoption of new and reinforced requirements, such as risk and opportunity identification, organisational context mapping and stakeholder identification, and the adoption of the life cycle perspective, benefited the surveyed organisations.	The application of an exploratory research design was suitable because the information needed for the study was ambiguous, still in its early stage, and had previously attracted limited studies, requiring a thorough understanding of the issue.

Source: Researcher (2022)

FINDINGS

Following a review of a few articles on the subject written by various researchers who used an exploratory research design in management sciences. The findings revealed that some researchers used exploratory research design appropriately in their studies, whereas others' choice of research design was largely influenced by the researchers' preferences rather than what works best for the research context, resulting in inappropriate research design usage. For instance, some researchers employed an exploratory research design in studies where specific relationships among variables of a research problem are investigated, the information required was clearly defined, and in subjects that had been severely studied by other researchers in the past.

Further, some researchers were observed to be able to collect data using various methods such as primary and secondary sources. The researcher observed that multiple methods for data collection were used in a single study in order to optimize the strengths and lessen the weaknesses of each method in a research process. As a result, using a variety of data collection methods allows researchers to answer questions that cannot be answered using only primary or secondary sources.

CONCLUSION

Analysis of management sciences research using an exploratory research design seems to be an intriguing topic for scholars and practitioners due to its positive impact on organisational performance. This design is used to study and attain understanding into situations that have not previously attracted severe investigations and research. Its goal is to more succinctly define a problem and develop courses of action that will lead to its solution. In order to improve the appropriate use of this research design in management science, this study examined the conduct and application of an exploratory research design for research students and novice researchers with little prior knowledge in the field. It is designed to help researchers understand when and how to use exploratory research design at any stage of their research. It highlighted the various types and methodologies of exploratory research design. It also highlighted some of the benefits and limitations of using an exploratory research design. Further, it demonstrated the conduct and applications of exploratory research design in management sciences by referring to various articles in this field.

The study would like to emphasise that knowledge of exploratory research design can help a researcher better define and understand research problems and questions in management research. Ideally, this review of studies that used exploratory research design, as well as the ideas provided for the application and conduct of exploratory studies, will help to advance research in management sciences and can also assist management researchers in designing and conducting this type of study.

RECOMMENDATIONS

The following recommendations are made based on the study's conclusion:

1. Researchers should choose research designs that they are most comfortable with and feel most competent to handle, but the choice should ideally be based on the nature of the research phenomenon being studied and information available.
2. Researchers should be more sensitized of the appropriate use of exploratory research designs by publishing articles about exploratory research design in peer-reviewed journals.
3. When conducting exploratory research, management sciences researchers should use a multi-method approach for data collection, so that the researcher's desire for a better understanding of a phenomenon are satisfied.

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