

TRIANGULATION METHOD IN MANAGEMENT SCIENCES RESEARCH

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Abstract: This study examined issues relating to triangulation method in management sciences research. Even though scholars in social sciences have found triangulation approach as a useful technique for gathering and analyzing data for their studies, this has not been so popular in the management studies. It noted that the approach of triangulation approach is a stronger in research process which make it easier for researchers to validate data collected from different sources. Moreso, It observed further that triangulation methods help researchers to aids greater flexibility on a particular research study, and to generate better supported arguments from research data collected. Triangulation method is of a great benefit to management sciences researchers when conducting a research study to solve identified research problem. Specifically, this paper submit that management sciences need to look for appropriate tool for research study such as triangulation method that will interpret and analyses data collected. Most importantly it will help management sciences to enhance better quality of a research study.

JEL classification: C8, C83

Key words: Management Sciences, Methodology, Qualitative, Quantitative, Triangulation Method.

1. INTRODUCTION

Today, Management sciences research like in many other fields of study, is becoming increasingly complex and complicated. Research studies are now requiring new techniques or approaches in examining research problems and analyzing data to explain and clarify social phenomena (Uma & Jolani, 2014). Conventionally, researchers use qualitative or quantitative means of gathering and analyzing data. This might be attributed to the class of research school of thought that such researcher belongs, that is, either qualitative paradigm or quantitative paradigm. Later, they found out that neither of this bring the expected or satisfactory result. Thus, looking for how to enhance the output of this made some researchers looked beyond these two means of gathering and analyzing data.

Management sciences investigation of sources and causes of human experience which leads to new knowledge through the use of methods of inquiry that are currently acceptable by researchers in a particular study become imperative (Olu-David & Ndu,

2017). Therefore, research itself is a creative effort carried out in a scientific manner with the aim of increasing the body of knowledge as well as utilizing this knowledge in providing solutions to new inquiries (Organisation for Economic Cooperation and Development, 2002). Research is used to investigate the existing facts and results of past studies, provide support for theories, provide solutions to both new and existing problems as well as uphold or establish new theories. It is obvious that without the use of acceptable methods, any results obtained from research cannot be added to the stock of knowledge in a particular field. Hence, improper research methods may be a waste of cerebral time (Olu-Daniel & Ndu, 2017). Therefore, the use of different methods in research is necessary to improve on quality of the research.

Hence, there are several techniques that were being used to make inquiry about a phenomenon. In the 1950s the method of triangulation was introduced into a research, so as to avoid biases which a researcher may encounter from the use of a single method. Triangulation method is basically used to verify the suggested results on a particular study and determine the completeness of research data (Robert, 2017). Specifically, combinations of different methods such as multiple study sites, theories or methods have made it easier for any research study to be undertaken (Johnson, 2016). Triangulation is the use of more than one method for data collection when conducting research (Willianson, 2005 as cited in Roberta & Dorothy, 2017).

Every field of study has its own methods of conducting research on any subject of interest. As such, management sciences is no exception. For instance, Astronomy and Physics depend primarily on observation while Mathematicians depend on derived proofs that are apparently consistent with assumptions of the system. Archaeologists, Botanists, Clinical Psychologists, Cultural Anthropologists, Pharmacologists, and members of countless disciplines and sub disciplines also rely to a greater or lesser extent, on a relatively small number of methods by which their data are ordinarily collected. Meanwhile, every research in any field aims to collect data for analysis. These data are used in establishing factual information, used as a basis for reasoning, discussion or calculation (Podsakoff & Dalton, 1987).

Every scientific endeavour has “data” at its cornerstone and no matter the discipline, all systematic inquiry includes the collection, derivation or production of such information as it is useful to the advancement of knowledge base in that particular discipline. It is therefore, the methodology used in providing the information when conducting a research (Baridam & Nwibere, 2008). The research elements in management sciences are dynamic and unstable, varying with time, mood and situations which makes study and methodology even more challenging. Onwuegbuzie and Leech (2006) argued that choosing the appropriate research design and methodology in management sciences is a daunting task especially when the inquiry involves system rethinking, change in sociocultural practices or organisational learning. This is as a result of the complex and ever-changing nature of modern-day business environment and intense competition (Mullins, 2005). This study is focused on salient issues about triangulation method so that researchers in management sciences will be more disposed to using it.

Meanwhile, in management sciences research, arguments as to the appropriate research methodology to adopt for investigating a research problem is a continuous issue among scholars and practitioners (Howe, 1988; Onwuegbuzie & Leech, 2005). Howe (1988) argued for the adoption of a single line of methodology, while

Ouwuegbuzie and Leech (2005), advocated for the mixed of two or more research methodologies in solving a particular research study. However, irrespective of the approach, Sackett and Larson (1990) opined that researchers must endeavor to critically identify the choice of the method to adopt in their study. This is because research elements in management sciences studies are often challenged with dynamic and unstable responses, changes and variability in respondents mood, time and situation changes among others. Thus, management sciences scholars further observed that significance of research may largely dependent on the correctness, accuracy, and not on rigor of the research methods, instruments, data analytical tools, and validity of constructs selected. It is practically impossible to conduct a research without flaws, as such there is no single research method without blemish. (Scandura & Williams, 2000; Mc Gratt, 1982). Apparently, the adoption of a single method might limit or affect the findings and conclusion of a research study.

Furthermore, the above-mentioned scholars created an imbalance in the paradigm shift in conducting research in management sciences. Scholars in the management sciences probably seem to be contended with the usage of either quantitative or qualitative method in carrying out their research studies. These researchers probably believe that this may be as a result of inadequate awareness of the potentialities of triangulation as a means of carrying out research studies. Hence, this study tends to expose the management sciences researchers to know the strengths and weaknesses of triangulation method in a research studies.

2. OBJECTIVES

The aim of this study is to discuss the potentialities of triangulation method in management sciences research studies via an x-ray of existing literatures methodologically.

3. LITERATURE REVIEW

Concept of Triangulation

The term triangulation is a military term used for surveying, which has been used as a changes in other discipline like social sciences (Smith, 1975). However, the concept of triangulation denotes the location of a position on a map. A single landmark can only provide the information that its situated somewhere along the line in a particular direction from the landmark. While with two landmarks, the exact position can be identified by taking bearing of both landmarks: that person is at the point where the two lines cross (Robert, 2017).

In the management sciences research endeavours, the analogy is that when one relies on a single piece of data, there is danger that an undetected error in the data collected might render the analysis incorrect (Praeti, Catherine, Edwin & Padam, 2018). Therefore, triangulation in management sciences involved the usage of many sources for data collection, investigators, methods and theoretical perspectives (Denzil, 1970 cited in Robert, 2017), or analytical methods about the measurement (Compbell, Schwartz & Sehrest, 1966 as cited in Robert, 2017) that was used to find out if hypothesis can survive confrontation with a series of complementary triangulates of testing (Campbell & Fiske, 1959). It was developed further by Denzin (1970) where multiple triangulation was first introduced into a research study. They used two data

sources along with two investigators. Triangulation is a tool which the researcher used for data analyzes and the results of a particular phenomenon is well understood.

Types of Triangulation

According to Denzin (1970) as cited in Patricia, Gene and Lawrence, (2018) posited that there are four major types of triangulation methods that investigator or researchers may use to improve fairness, accuracy, and validity of a research study, And these are:

Data Triangulation

This type of triangulation is the usage of multiple source of data when conducting a research. The data sources can vary based on the times at which the data were collected, the space or area and people who data were obtained from (Denzin, 1970; Mitchell, 1986 as cited in Robert, 2017).

Methodological Triangulation

Hastings and Salkind (2013) posit that it is the most commonly used of triangulation which uses multiple methods to investigate a research study. The usage of these two approaches i.e qualitative and quantitative

may be used simultaneously by the researcher when carrying out a research. These methodological triangulation is classified into two types, which are within and between method triangulationn. .

Although, the most commonly known type is within method triangulation and it involves multiple sources of data that can be gotten with a single design.

Investigator Triangulation

It is a situation whereby more than one investigator or researchers are used in a study to engaged investigation, interviews, coding, or analysis of participants responses. Using multiple investigators limits the potentials bias inherent than employing only one investigator or analyst for data consistency through auditing, independent confirmation of data among investigations leads to greater credibility to the observations (Denzin, 1978).

Theoretical Triangulation

This provides multiple theoretical perspectives either in conducting the study or when interpreting data. Multiple theoretical perspectives, such as using a management theory and a leadership theory that can help to rule out competing hypotheses and reduce the risk of premature acceptance of plausible explanations whilst increasing the confidence in developing concept or constructs in theory development (Banik, 1993).

Triangulation Approach

Triangulation approach is the usage of multiple sources of data which helped the researcher to improve the reliability of a research (Stavros & Westberg, 2009) and it also enable researcher to saturate data (Fusch & Ness, 2015).

Triangulation methods has been described in different ways by many scholars which make it a difficult concept to understand (Niglas, 2009), and this is referred to as the “empirical research that involves the collection and analysis of both qualitative and quantitative data”. Whereas Burke, Onwueegbuzie, and Turner, (2007) defined it as the type of research in which a researcher or team of researchers combine elements of qualitative and quantitative research approaches for data collection, analysis, and inference drawing for the broad purposes of breadth and depth of understanding and corroboration.

research aids managers of organisations to achieve its organizational performance which demands extensive research and studies into the nature of man and environmental factors to obtain the best out of the study carried out by intellectuals, scholars and organisations. Thus, there is need for a more comprehensive way of gathering and analyzing data to have a robust finding.

3.1 COMPARATIVE CATALOGUE OF SINGLE AND MULTIPLE ANALYTICAL TOOL USAGE

Table 1: Shown the Single and Multiple Analytical Tool Usage

S/N	Author(s) Year	Title	Single Method	Multiple Method	Remarks
1	Latopa, A.A., & Genty, K. I. (2018)	Qualitative analysis of youth participation in Agriculture program towards achieving the dimensions of empowerment.	As a qualitative case study, the findings cannot be generalized to other similar studies because of human nature. Therefore, a repeat of the study is required in another environment.	_____	Qualitative studies are sometimes affected by human nature.
2	Olatunji, J. O. (2018).	Lean-in-Nigerian construction: State Barriers, Strategies and “Go-To-Gemba” Approach.	An interview schedule was prepared to gathered information from the respondents. The response cannot be use in other studies.	_____	The qualitative method used was limited to a particular study. It cannot be generalised to other studies.
3	Miro. H., Mihael. G., & Nedeljko. S. (2018).	Relationship between Lean and Green management in croatian manufacturing companies.	A semi-structured interview was used. The research study focused on one sided area, which limit the strength to other sectors.	_____	Qualitative method only focused on a particular area. And it will limit generalization to other sectors.
4	Chukwuka, E. J. & Eboh, E. A. (2018).	Effect of Green Business Practices on organizational performance of selected manufacturing firms in Nigeria.	_____	Designed questionnaire and personal interview were both used for data collection for this study. The usage of these two	These two methods i.e quantitative and qualitative methods were employed to capture the opinion of all respondents in

S/N	Author(s) Year	Title	Single Method	Multiple Method	Remarks
				methods helps a researcher to identify the challenges or failures as well as dealing with all performance problems of the study area.	solving the identified research problems.
5	Akewusola, R.O., & Akingbade, W. A. (2017)	Strategic capabilities and organizational performance. An empirical evidence.	The study employed survey research design. A well structural questionnaire was used to gather data.	_____	The use of quantitative method (Questionnaire for this study can not be generalized to other studies because data were gotten from specific respondents and moreso, some sectors are omitted from the sample.
6	Jean, B. H. (2018)	The Role of Electronic Payment System on the Financial Performance Institution in Rwanda.	_____	This study used different tools, techniques and methods where both primary and secondary data were used. A questionnaire and interview were developed to know how the respondents (bank staff) use electronic payment system such as Electronic fund transfer, internet banking and online banking because training and experience of the customers	This study can be generalized to others financial sectors. Therefore, employment of multiple methods have given more credence to this study and this research can be duplicate in other sector.

S/N	Author(s) Year	Title	Single Method	Multiple Method	Remarks
				were found to significantly impact access to electronic payment system.	
7	Shah. S., Ganji, E.N., & Alec. C. (2017)	Lean Production Practices to Enhance organization performance	_____	Multiple methods was employed for this study. The researchers used questionnaire and interview for data collection (qualitative & quantitative). This qualitative method used (interview) show that before firms can choose their suppliers, they need to consider quality product varieties, delivery time, price and consistency.	The use of these two approaches (qualitative and quantitative) gives room to all departments and business units within the organization to properly understand their roles and how resources can be allocated to each department for effective and efficient improvement.
8	Saka, R.O., & Kazeem, B.L.O. (2017).	Influence of bonus schemes on executives compensation of manufacturing companies in Nigeria.	Survey research design was used. Questionnaire were distributed to the respondents of the selected manufacturing companies. The study only covered individual that are too difficult to access.	_____	The use of quantitative method (questionnaire) for gathering data cannot sufficiently provide the needed information because the selected respondents maybe afraid of answering some of the questions.
9	Roy. S., & Sinha. I	Determinants of customer's	This study adopted Primary		Quantitative Method used

S/N	Author(s) Year	Title	Single Method	Multiple Method	Remarks
	(2014)	Acceptance of Electronic payment system in Indian Banking sector- A study.	data (a structural interview through questionnaire). The result shown a better improvement on this study but there is need to expand the scope when using this method.	_____	was limited in scope. The sample size of the study is relatively small. So, it cannot be generalized to others studies.
10	Belekoukias . I., Garza, J. A., & Kumar. V. (2014).	The impact of lean methods and tools on the operational performance of manufacturing organization.	A survey questionnaire designed through SNAP computer software was used. The research instrument mainly focused on one direction and it cannot be useful to other studies.	_____	The survey questionnaire software had access restrictions from the respondents internet browser. Therefore, the study cannot capture all the affected organization problems.
11	Anas, Y. A., & As'ad, H. A. (2014).	The impact of green innovation on organizational performance, Environment Management behaviour as a Moderate Variable. An analytical study of Nuqul Group in Jordan.	A questionnaire designed was used in conducting this study. The result of one sector can be compare to others. Therefore, a study can be used as a reference point to other areas.	_____	The use of quantitative method usually focused on a specific study which provide appropriate solution to identify problems.

Source: Researcher, (2020).

3.2. THE IMPORTANCE OF TRIANGULATION

Triangulation approach cannot be underestimated for ensuring reliability and validity data set and research findings. Basically, it usually occurs when data is correct and truthful (Roe & Just, 2009), moreso, the inferences have a reasonable probability for actually occurring and can be drawn back to the conceptual framework of the

research (Roe & Just, 2009). However, all research methods have power and limitations which enable a researcher to use the strengths of one method to improve the shortcomings of another. When collecting different types of data through quantitative and qualitative approaches the researcher is more-likely to get a complete, fully-rounded ("holistic") picture of the behaviour they are investigating. Triangulation method is used to confirm data reliability and validity, where different researchers using the same approach can compare information for similarities and differences, for confirmations to verifying the accuracy of different types of data collected.

4. CONCLUSIONS

In conducting a research there are several techniques which researcher can use to make inquiry about phenomenon such as quantitative, qualitative or mixed methods otherwise known as triangulation method. The triangulation method was introduced into a research study, so as to avoid any biases or challenges that researcher may over come when using a only one method. However, triangulation method was used in social sciences to confirm the suggested results on a particular study and to determine the completeness of research data (Robert, 2017).

Specifically, combinations of different methods such as multiple study sites, theories or methods have made it easier for a research study to be undertaken (Johnson, 2016). Furthermore, it is important for management sciences researchers to identify and determine the appropriate method(s) needed for research work. However, several scholars in other fields like social sciences claimed that triangulation method is used to increase strength and support argument of their study which also improved the validity and reliability on data collected (Johnson, Onwuegbuzie & Turner, 2007).

5. RECOMMENDATIONS

Triangulation approach is recommended to the management sciences researchers for carrying out a research study and these are:

- i. Triangulation method gives a deeper understanding of context to inform context-specific research in management sciences.
- ii. Also, the attention of combining both methods (QUAN and QUAL) through triangulation methods benefit theory-building.
- iii. And finally, the usage of triangulation method helps to bridge the academic-researcher divide through enhancing the clarification and communication of finding.

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