

Research Design for Investigation of Nigeria Manufacturing Management

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Abstract. Nigeria is a developing nation in West Africa and the manufacturing management in this nation in the past twenty years has not been well documented. This paper sets out the research design for investigating Nigeria manufacturing management. The project is a combination of 'explanatory and exploratory researches' because it strives to explore the issues related to the Nigerian manufacturing organizations with the help of the existing research studies as well as statistical survey work.

Keywords: Nigerian manufacturing organization, research design, manufacturing management

1 Introduction

This paper describes the methodology upon which the entire research study on the investigation of Nigeria manufacturing management is based. There are different research approaches that are commonly used by the researchers for the attainment of their research purposes, and it is important to select from these research methods the most appropriate suitable research methods in accordance with the topic, objectives of the research and the target respondents. Thus in this paper the different research approaches, purposes and types of expected outcomes are discussed and then the research study is judged on the basis of this description to find out the purpose of the research, what would be the best way to attain this purpose and what would be the nature of the expected outcome of the study. Moreover, the paper explicitly explains the process through which the entire research work is to be conducted including the selection of the sources of information, survey sampling, data gathering, questionnaire construction and result calculation methods.

2 Research Questions

The research study emphasizes the analysis, review and examination of the performance of the Nigerian manufacturing organizations during the last 20 years and there are three factors selected as performance measures to conduct this examination. These performance measures are 'manufacturing systems (made up of manufacturing strategy, manufacturing process and manufacturing innovation), product design, and environmental uncertainty. Furthermore, this project will present a comparative analysis between a Nigerian manufacturing sector with those of China, India and Malaysia with the intention of finding some

ways to improve the performance of the Nigerian manufacturing organizations. It is found that the research study is going to cover a wide topic and for the attainment of the research objectives in a systematic and managed manner. It is therefore necessary to organise the research objectives in terms of different research questions so that the findings of the study can be evaluated on the basis of providing the answers to the main research questions. Principally, this research is aimed at finding the answers to the following research questions which were generated in the literature chapters:

- What are the strategies and policies that can help the underdeveloped countries to cope with the technological advancements in manufacturing?
- What strategies and planning can improve the performance and productivity of the Nigerian manufacturing organizations?
- What was the performance of the Nigerian manufacturing sector from 1999-2009 in terms of product design, manufacturing processes, manufacturing strategy, manufacturing innovations and environmental uncertainty?
- What are the main problems and limitations faced by Nigerian manufacturing organizations?
- What are the factors that have played an important role in undermining manufacturing sector growth in Nigeria?
- What are the main differences in terms of product design, manufacturing processes, manufacturing strategy and manufacturing innovations in the Nigerian manufacturing sector as compared with that of China, India and Malaysia?
- What are the main differences in the growth patterns, strategies and planning of the Nigerian manufacturing sector as compared with that of China, India and Malaysia?
- What are the main differences in the manufacturing sector operating environments between Nigeria and China, India and Malaysia?

3 Research Approach

The research approach employed for conducting the research study is the 'mixed methodological approach' and the thesis strives to attain its objectives through the statistical survey and secondary analysis of data. These two research approaches are chosen keeping in view the significance and relevance of these research methods for the study. The research work seeks the answers to the eight research questions mentioned in the last section above. A qualitative analysis of secondary data is to be conducted in order to find out the answers to some of the research questions.

Comparative analysis is one of the significant and commonly employed research approaches. Akinlo observed that in order to find some better ways for improvement in the economic performance of a country, it would be a better approach to compare the performance and economic

conditions of that country with some developing nations so that the implacable strategies and policies of the developing countries can be identified and implemented to gain economic stability [1]. In this way the growth patterns of one country can help in determining the future path for the development of other countries. This approach is also employed in this research. Along with the secondary data analysis, a statistical survey among 400 Nigerian manufacturing firms involved in the manufacturing of different consumer products is also conducted to gather quantitative information about the topic of the thesis. The views of the Chief Executive Officers (CEOs) and heads of manufacturing operations in the selected organizations will help in pointing out the main obstacles to the development of the manufacturing enterprises and options for improvements. The strategy adopted is that the primary research findings will support the findings of the secondary research in answering the research questions.

4 Research Methodology

There are three important issues that must be clearly understood when formulating any research design and methodology [2]. First of all, the researcher has to decide what would be the purpose of the research, second, what would be the process of conducting the research and third, what would be the outcome of the research. Therefore, before describing the research design, these three issues are discussed in details so that the 'Purpose, Process and Outcome' of this research are decided.

4.1 Purpose of the Research

When deciding the purpose of a research, types of researches must be understood very clearly so that it can be explained which research type will be most suitable for the research purpose. There are basically four types of research purposes including "exploratory, descriptive, explanatory and predictive" [3]. These four research types are explained below.

'Exploratory research' is one of the important methods of conducting research studies. Researchers always give proper attention to this research type in order to find out the answer to their research question. This research type is beneficial for conducting the research study because the main objective of this research type is to collect maximum information related to a specific problem. This research type is selected for uncommon problems or when the available information is not very reliable and absolute [2]. This technique is most suitable for conducting interviews [3]. As identified in the literature review, there are some gaps found in the literature available and this thesis strives to fill those gaps by exploring the issues that are as yet undiscovered.

The second type of research is 'descriptive research'. The purpose of this type of research is to provide a description of different phenomena related to different individuals, events and situations. The main

objective is to build up empirical generalizations. It is commonly used for searching secondary data for the solution to different problem statements. It can be stated that this research type mostly deals with qualitative issues and conducting this type of research study involves the use of both primary data and literature analysis.

The third type of research is 'explanatory research', which possesses great importance in the context of the scientific researchers because the main purpose of the explanatory studies is to build up precise theory that is utilized to describe the empirical generalizations [2]. Mostly, this type of research is based on empirical studies and tested hypotheses that Explanatory research is also called analytical research, in which the researcher generally goes for description of the characteristics and analysis and explanation of the entire situation to find the reasons behind any incident. This type of research strives to understand and explains the phenomena through the discovery and measurement of the casual relationship between different factors. From these arguments, clearly this project is also an explanatory piece of research as it is aimed at explaining different manufacturing issues in details.

The fourth type of research is 'predictive research' in which the researchers generally go further in making certain statements and comments by forecasting the likelihood of a similar situation occurring elsewhere [2]. In this type of research, the researcher, mostly gives answers to questions like how, why and where and these questions are related to the future of the subject matter of the research and the research will provide possibilities considering the findings as to what will happen in case of any occurrence in future. Considering the above explanations and descriptions of the research purposes it is found that this project is meant to be a combination of 'explanatory and exploratory researches' because it will strive to explore the issues related to the Nigerian manufacturing organizations with the help of the existing research studies as well as statistical survey work.

4.2 Process of the Research

After clarifying the purpose of the research the next step is to find out which research process will best suit the purpose of the project. As discussed above, explanatory and exploratory research studies can be conducted by employing both qualitative and quantitative research approaches. For this research study, the mixed methodology is employed and both qualitative and quantitative studies will be conducted to attain the objectives of the research. The mixed methodology is chosen because it is a significant method for conducting different types of research studies. Johnson and Onwuegbuzie observed that "mixed-method kind of research draws upon the strengths of both quantitative and qualitative analysis, which enables the researcher to draw upon several methodologies in measuring the variables of the study" [4]. Qualitative research is a field of enquiry that crosscuts disciplines and subject matters [5]. Qualitative researches are mostly aimed at having deep understanding of different

issues, human behaviour and the reasons and factors governing human behaviour [2]. In other words, qualitative research strives to find the answers why and how, rather than just where, when and what. Qualitative research is also meant to be explanatory most of the time rather than just conclusive [6]. While conducting qualitative research, it is common to use different theories, models and hypotheses.

Qualitative research is also regarded by experts as an instrument that can be used for the development of in-depth understanding of any phenomenon that can become the base for quantitative research later on [6]. As identified by Berg, there are many ways of conducting a qualitative research study, including “case study, literature review, natural experiment, participant observation, interview-based, and secondary analysis of data or a combination of these [7]. Each of these strategies has its own advantages and disadvantages depending on the following conditions:

- Type of research questions;
- The investigator’s control over the actual behavioural events;
- Degree of focus on contemporary events.

Along with qualitative research, the project will also employ a quantitative research methodology. Quantitative research is the systematic and scientific investigation of quantitative properties and phenomena and their relationships. It is all about quantifying relationships between variables [7]. The quantitative research methods are most of the time aimed at developing and employing different mathematical models, theories and hypotheses that pertain to the natural phenomena. In quantitative research methods, the measurement and calculation of the result possesses central importance because through the measurement or calculation the fundamental relationship between different empirical and mathematical expressions is established. The quantitative research methods have been commonly used by researchers for many years and through the gathering of quantitative data, the researchers seek for information that is measurable in numbers. Graphs, tables and statistics are usually used for the presentation of the results of these types of research methods and some computer software like Excel and SPSS are commonly used for the calculation of the survey results. The researchers supporting the employment of quantitative research methods believed that through different quantitative methods applied research become scientific in real terms. Quantitative research can also be done in different ways like polls, statistical surveys, etc. This thesis finds that statistical survey will be the most appropriate methods. Thus along with the qualitative study of secondary data, a statistical survey of 400 consumer products manufacturing firms operating in Nigeria will be conducted to find more information related to the research topic. A statistical survey is also one of the important and preferred methods of conducting research studies.

4.3 Outcome of the Study

The third important decision regarding the research design is to identify the nature of the expected outcomes of the study. Shaughnessy et al. argued that there could be three types of possible outcomes of a research study, including 'applied, basic or pure and action'. When any part of the research study is conducted with the intention of bringing out the solution of any specific problem then the results or outcome of the research is expected to be applicable, because the outcome will be in the form of some suggestions or decisions that can be used for resolving issues [8].

The second type of outcomes of the research study is called basic or fundamental research. This type of research strives to improve understanding about any general issues while the emphasis of the research does not remain on the immediate applications of the study or any facet of the issue [8]. The outcome of the research is mostly academic in nature as it adds to the knowledge and literature related to the topic for a general good rather than proposing the solution to any problem [2]. In this type of research study, the outcome might offer some discovery, invention or reflection. While analysing this research study in accordance with the basic research, it is found that this project is not basic research as it is not only aimed at contributing to the existing literature, but it goes further in identifying and proposing the solution to the problem.

The third type of outcomes of the study is action. In this type of research study, action is the outcome of the research as well as part of the research. Researchers attempt to interfere in the environment where the problem exists and work out how to bring changes in the situation. This is a common type of research in the pure science fields because the researchers often have the authority and access to interfere and make changes in the existing situation. This project is not action-oriented because the expected outcomes of the research will not be in the form of practical actions but only suggestions, analysis, review and recommendation.

The above discussion helps in deciding the outcome of the project, and it is finally concluded that the expected outcome of this project will be 'applied' because the research study will offer some suggestions and recommendations that can help to improve the situation of the manufacturing organizations in Nigeria [8].

4 Conclusions

The paper discussed all the points related to the research methodology employed for conducting the study. In the paper all the decisions regarding the research method are taken and it describes different purposes for conducting the research studies, and it is found that this research is going to be an exploratory and explanatory research. The research strives to find the solution to a problem and at the same time it will also describe and explain several manufacturing issues in detail. It

is also explained that the mixed methodology is selected for the research and 'secondary analysis of data and statistical survey' are selected as the most appropriate research methods for the study, keeping in view the objectives of the research and the relevance of these methods to the research objectives. In the same way, it also becomes clear that the research study will come up with applied results or outcomes because the research will propose some suggestions and recommendations for the improvement of the performance of the Nigerian manufacturing business rather than just describing and explaining the issues.

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