
EFFECT OF MANAGEMENT INFORMATION SYSTEM ON ORGANIZATIONAL PERFORMANCE IN MANUFACTURING FIRMS

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Abstract

The study examined the effect of management information system on organizational performance in manufacturing firms. The area of the study was manufacturing firms in Anambra state. Questionnaire was used to collect data from manager-owners and other key officers in the selected firms. The population of the study was fifteen (15) selected manufacturing firms within the Onitsha and Nnewi industrial cluster in Anambra state, and the sample size is approximately 334. The research adopted sampling technique was purposive sampling. From the analyses tested, the study found out that Decision support system has significant effect on performance effectiveness in manufacturing firm, Process control system has significant effect on performance efficiency in manufacturing firm, Artificial intelligence has significant effect on performance efficiency in manufacturing firm. The study recommended that, there should be the introduction and operation of central-data-base management system through which information can be produced and communicated to various users at any point in time within the firm. There should also be flexibility in the nature/pattern and structure of management system in organizations so as to permit informed and easy information flow and accessibility to all information end-users. Organizations should also pay more attention to communication through the media agencies. This goes a long way to promoting the company's control of the market.

Keyword: Management information system, organizational performance, manufacturing firms, Process control system, Artificial intelligence

1.1 Introduction

The evolution of performance management has significantly changed the nature of business and has created competitive advantage for firms who appreciate and understand the pertinent effect of management information system. Organizational performance can be described as the accumulated end results of all the organizational work processes and activities (Owino & Jemaiyo, 2015). Organizational performance can also be described as the evaluation of the functional constituents that attempt to assess the capability and ability of a company in attaining its aspired levels using efficiency and effectiveness (Jenatabadi, 2015). The manner in which managers in organization measure and control organizational performance translates to better assessment for management, it enhances the value created to customers, increases how the organization's knowledge is measured and helps to track if the measures of performance are effective and efficient (Young-Harry, Oparanma & Ejo-Orusa, 2018).

Effectiveness, refers to maximum extent production functions are able to fulfil and meet the demands and requirements of the customer, while, efficiency, on the other hand, is assessing and evaluating how the resources of an organization are economically utilized through the accomplishment of functions to achieve its objectives (Jenatabadi, 2015). Therefore, organizational performance is strongly related with the quality of output, quantity of output, timeliness of output, employee commitment on the job task, efficiency of the job completed, effectiveness of the job completed and the robust integration of the management information system (Young-Harry, Oparanma & Ejo-Orusa, 2018).

Management information system (MIS) is a computer-based information system employed for decision-making, and for the coordination, control, analysis, and visualization of information in an organization and it is a system used by managers to support their functions through collection of data, retrieving and processing of information to enhance the task function of managers (Bourgeois, 2014). Similarly, Oladejo (2007) describes management information system as a system that uses formalized procedures based on data from both internal and external sources to enable decision makers to make timely and effective decisions for planning, directing and carrying out activities for which they were employed.

Information management is considered fundamental in effective managerial decision making in all organizations. The concept of management information system has received an appreciable and observable attention within the manufacturing firms in Nigeria in general and Anambra state in specifics. Information management is a major resource for most manufacturing firms and information systems has helped organizations to perform their functions successfully and efficiently (Yassine, 2017). The revolution in information technology and information systems has affected the form and substance of information management and how it is applied in many organizations (Audeh & Mansour, 2018). The impact of this in management is that it helps organizations to manage their numerous data, organize and retrieve information which help the firms to provide effective service delivery as well as enhanced efficiency in their production (Almazan, Tovar & Quintero, 2017). Also, the emergence of machines and electronics have made possible seamless production and this development behooves manufacturing firms to change its policies and tactics to ensure that outputs are achieved in a timely manner and the quality of outputs are not compromised (Munirat, Sanni & Kazeem 2014).

Management information system also takes into account the integrative nature of information flow as well as the structuring of the organization around decision centers. This decision center affects the standard of performance which are part of any good plan, hence,

determination of the standards like other aspects of planning process depends on the availability of relevant information system and it also ensures high operational efficiency in an organization (Yusuf, Aina & Isyaka, 2014; Luenendonk, 2017). Management information system capability in manufacturing firms can be measured using decision support system, process control system, artificial intelligence, enterprise resource planning system and human resource management system (Luenendonk, 2017). The reason is that these systems are embedded in technologies that work with the people and organizations, and relationships among these objects affect the overall performance of the manufacturing firms.

Yadeta (2016) maintains that modern businesses can only compete when their operations are supported by management information systems. The dynamic nature of the business environment dictates that all functional areas of the manufacturing firms need to be boosted by information systems that will enhance their operational performance. Therefore, the capability to design and implement management information systems has become the cornerstone in most manufacturing firms to improve their organizational performance. Management information systems play vital role in all businesses through the integration of people, process and information technology and this provides unique competitive advantage for enhanced organizational performance (Luenendonk, 2017; Guzman, Foster, Ramirez-Correa, Grandon & Alfaro-Perez, 2018).

High quality performance; efficiency and effectiveness represent the critical challenge that most manufacturing firms face and in light of these problems, management information system is identified as the pertinent strategic tactics that would help provide the needed competitive advantage as well as the necessary performance indices manufacturing firms need for long-term sustainability (Yassine, 2017). Also, manufacturing firms need to adopt new technologies and tools that sustain organizations to obtain healthier benefits in the market and likewise, maintain strategy for competitive economic orientations (Rehab, 2018). In this case, scholars maintain that management information system must be capable to enhance and facilitate relevant capabilities and concept knowledge required for a robust human capital functioning (Yadeta, 2016; Luenendonk, 2017), as well as be able to enhance decision making process and costing of products as they are supplements to the central competitive strategy for manufacturing business and industry and their optimal organizational performance in the long-term (Yassine, 2017; Audeh & Mansour, 2018).

There is no doubt that implementation of policies and structures capable of initiating the process of restructured mindset on management information system will re-engineer innovative manufacturing performance (Yassine, 2017; Young-Harry *et al.*, 2018). However, the nature of research design employed in congruent studies that investigated management information system adoption and their effects on organizational performance, have not definitively exhausted the effects of usage and adoption of these individual technology on organizational performance when measures with effectiveness and efficiency of manufacturing firms. Hence, the study evaluates the effect of management information system on organizational performance in manufacturing firms in Anambra state, Nigeria.

1.2 Statement of the Problem

Information ties all business functions together and provides the basis for all managerial decisions. It is the cornerstone of all organizations and represents a major source of competitive management advantage or disadvantage. Information technology has significantly changed the nature of business and created competitive advantages for those

who recognize and appreciate its effects (Khresat, 2015). The growth in the competitive global business environment has put a lot of pressure on manufacturing firms to make their operational, tactical, and strategic processes more efficient and effective (Yadeta, 2016). A typical manufacturing management information system is saddle to monitor the flow of materials and products throughout the organization and is specifically embedded in the manufacturing subsystems to enhance design and engineering, production scheduling, and control of quality, inventory as well as the production processes.

Management information system technique involves using software to mine huge volume of data to help executives make effective decision. Having management information system help firms to gather, assimilate, and evaluate external and internal information to gain competitive advantage over other firms. It serves as one of the most important factors that help to differentiate successful from unsuccessful firms. Effective management information system, thus, collects, codes, stores, synthesizes, and presents information in such a manner that it answers important operating and strategic questions marketing, finance, production and personnel matters internally, and social, cultural, demographic, environmental, economic, political, governmental, legal, technological and competitive factors externally.

However, problems related to cost reduction, increase ineffectiveness and low efficiency in terms of quality and values created from scarce resources and output lead time have continue to affect the long term operational performance of manufacturing firms in Anambra state. Also, manufacturing firms are increasingly concerned about hackers and need to take specific measures to secure and safeguard corporate communications, files, orders and business conducted over the internet. Due to these inadequacies, manufacturing firms today are plagued with computer hackers who include competitors, spies, hired agents, disgruntled employees and thieves and the lack of knowledge and database history of a firm's interaction with its customers, suppliers, distributors, employees and rival firms and more to help generate predictive analytic models for manufacturing firms are subtly inadequate.

As competition becomes intense, more and more products become commoditized (so similar as to be indistinguishable) and competitive advantage tinker towards improvements to business process, it is observing that most manufacturing firms lack the required business analytic techniques that would take advantage of resultant opportunities (knowledge) which yields more effective and efficient organizational performance. Today, using management information systems predictive analytics to find ways to improve managerial performance, talent recruiting, retention and talent management, employee well-being and health leads to company's enhanced productivity. Despite the data and information available, manufacturing firms do not utilize management information system business analytics within internal process as competitive advantage. Consequently, the lack of operations that focus analytics on what determines capabilities that are associated with high performance are highly underutilized.

Prior research claim that management information system is a major factor that differentiates successful organizations from less successful equivalent (Khresat, 2015; Azeez & Yaakub, 2019). Hence, this research will focus on the effect between types of management information system (i.e., decision support system, process control system, artificial intelligence, enterprise resource planning system and human resource information system) and organizational performance (i.e., performance effectiveness and performance efficiency) at manufacturing firms in Anambra State.

1.3 Objectives of the study

The main objective of this study is to examine the effect of management information system on organizational performance in manufacturing firms. The specific objectives are to:

- i. Determine the effect of decision support system on performance effectiveness in manufacturing firm
- ii. Ascertain the extent to which process control system influence performance efficiency in manufacturing firm
- iii. Identify the extent to which artificial intelligence affect performance efficiency in manufacturing firm
- iv. Assess the effect of enterprise resource planning system on performance effectiveness in manufacturing firm
- v. Evaluate the extent to which human resource information system influence performance efficiency in manufacturing firm

REVIEW OF RELATED LITERATURE

2.1 Theoretical Framework

This research work will be anchored on resource based view theory. The resource based view (RBV) proposed by Wernerfelt in 1984 is a major theory which argues that firm possess resources, a subset of which enable them to achieve competitive advantage, and a subset of those that that lead to superior long-term performance. The theory argues that resources that are valuable and rare can lead to the creation of competitive advantage and that advantage can be sustained over longer time periods to the extent that the firm is able to protect against resource imitation, transfer, or substitution.

The information systems are most often considered to be a very critical and important type of resource. According to RBV proponents, it is much more feasible to exploit external opportunities using resources in a new way rather than trying to reinvent to acquire new skills for each different opportunity. When fully utilized in organization, management information system can help enhance the functional activities thereby creating that competitive advantage where an organization resources becomes heterogeneous (i.e. skills, capabilities and other resources that organization possess differ from others) and immobile (i.e. critical resources of organization cannot be moved in the short time, competitors cannot replicate its resources and implement the same strategies. Intangible resources such as brand equity, processes, knowledge or intellectual property are usually immobile).

2.2 Empirical Review

Guzman, Foster, Ramirez-Correa, Grandon and Alfaro-Perez (2018) investigated information systems and their effect on organizational performance in higher education institution. The study aimed to establish if the success of information systems affects the job satisfaction, job commitment and organizational performance. System quality in general, information quality, service quality, decision making, satisfaction and use-utility were employed as the independent variables while job satisfaction, job commitment and organizational performance were employed as the dependent variable. 50 respondents from institutions of University Higher Education in Chile were sampled for the study. Partial least square was employed in analyzing the data. The analysis of results indicates that there were capacities associated with information systems that influenced the success of

these systems, and that this success affected job satisfaction and job commitment and through the latter- to organizational performance.

Young-Harry, Oparanma and Ejo-Orusa (2018) investigated management information system and organizational performance of Seven-Up Bottling Company in Aba and Port Harcourt. One Hundred and seventeen respondents were sampled for the study. Descriptive statistics and spearman's rank correlation were used for data analysis and hypothesis testing. The study findings revealed that there was a positive significant relationship between management information system and organizational performance of Seven Up bottling company in Aba and Port Harcourt. The study concludes that management information system bears a positive and significant influence on organizational performance.

Rehab (2018) investigated the impact of accounting information systems on organizational performance using Saudi's SMEs as the focus of the study. The main purpose of this paper is to investigate the impact of accounting information system on organizational performance (cost reduction, improving quality and effective decision making). Smart partial least squares were used to analyze the data and to test the study hypotheses. Findings proof that using an AIS had a significant impact on organizational performance generally and on all its dimensions including cost reduction, improving quality and effective decision making.

Marire (2018) investigated the importance of management information system in service delivery and paper work in Nigeria University. The study aimed to examine how management of information system has assisted in service delivery in Nigeria universities; and to examine how management information system has assisted in reducing paper work in the universities. A total of 332 respondents were sampled for the study. Chi-square statistical technique and Z-test was employed in analyzing the data. The result was revealed that management information system had assisted in service delivery to a high extent. The study further found that management information system had assisted in reducing paper work to a large extent. The study concludes that poor management information system has been identified as a bottleneck in the successful management of universities in Nigeria.

Almazan Tovar and Quintero (2017) examined the influence of information systems on organizational results, a total of 133 companies of Tamaulipas state, Mexico were sampled for the study. Partial Least Squares (PLS) statistical technique was employed in analyzing the data.

The results of the empirical analysis indicated that information quality was the most important precedent for user satisfaction and for the utility of the IS, given that the users considered the availability and accuracy of the information to be a key element for the successful implementation of a system, followed by the quality of the system, and the service.

Owino and Jemaiyo (2015) investigated the relationship between the use of management information systems and employee job performance in Kenindia Assurance Company Limited. A total of 300 branch managers, underwriting officers, claims and legal managers, information technology managers and operations managers were sampled for the study. Ordinal scale was employed in analyzing the data. The study findings revealed that the use of MIS had enhanced access to resources and employee satisfaction. The results of the study indicated that the new IS tended to cause fear and anxiety among employees who think that the system was out to take their jobs. This is also attributed to confusion of responsibilities and duties of IS among employees. In addition, some of the senior officials in management feel that information systems usurp their power and authority. The result also indicates that management information systems had positive relationship with employee job performance.

Argyropoulou (2014) examined information systems' effectiveness and organizational performance. In this study, system quality, information quality and service provider quality were employed as the explanatory variables while organizational performance was employed as the dependent variable. A total of seven hundred Greek firms were sampled for the study using web-link questionnaire. The data generated were analyzed using multiple regression analysis. The results indicated a significant statistical-link between IS effectiveness (proxied by system quality, information quality and service provider quality) and performance measures.

Yusuf (2014) investigated the impact of management information system (MIS) on the performance of business organization in Nigeria. A total of 100 respondents were sampled from 5 selected local governments in Federal Capital Territory, Abuja, North-Central Nigeria. The data generated through the use of questionnaire and interviews were statistically analyzed using the Z-test. The result revealed that there had been a lot of barriers other than financing militating against the growth and development of MIS in Nigeria for the past years. The study also found that lack of adequate knowledge and skill on information technology and the ability to manage the MIS process by various organizations was one of the major factor that affected the efficient performance of management information system in Nigeria. The study concludes that lack of management skills on MIS process by most business organization in Nigeria does not only affect the effective performance of MIS but also reduce their ability to compete favorably in the market.

Ameen and Hisham (2015) examined the impact of management information systems on the financial performance of Islamic banks in Jordan. In this study speed of achievement, simplification of procedures and information, security were employed as the independent variables while financial performance proxied by profitability and financial liquidity was employed as the dependent variable. Arithmetic mean, standard deviation, Pearson correlation and multiple regression analysis was employed in analyzing the data. The study found that speed of achievement, simplification of procedures and information security had significant effect on financial performance of Islamic banks in Jordan.

Hesam, Farideh and Mohammad (2015) examined the effect of management information systems 'on productivity in Esfahan Islamic Azad Universities. One hundred and eighty respondents were sampled for the study. In (his study, work speed, work cost, work accuracy (efficiency), Supervision, control status improvement, planning status improvement and decision status Improvement were employed as the explanatory variables while productivity was employed as the dependent variable. Confirmatory factor analysis and path coefficient analysis was employed in analyzing the data. The results of the analysis indicated that management information system has significant effect on productivity in Esfahan Islamic Azad Universities.

METHODOLOGY

In this section the methods to be used to get to the findings and the conclusions of the research are discussed. This section describes the research design and the methods that will be used to statistically test the hypothesized relationships developed in section one. Development of the research instrument was described. Translation of the research instrument, the questionnaire which will be administered to validate the proposed conceptual framework and the population and sample size for the study will be discussed.

3.1 Research Design

The study will adopt survey research approach. Surveys attempt to answer the question of "What exists?" The advantage of survey research includes the possibility to collect a wide

scope of information from a large population, the opportunity to deal with real situations, and the development of research beyond description only (Sekaran & Bougie, 2016). This method is chosen because it is designed to specifically describe phenomena and their relationships in actual environment after a given time. Survey research depend specifically on sample frame of respondents drawn from the population and considered a representative of the entire universe.

3.2 Area of the Study

This study will be carried out in Anambra State, Nigeria. Anambra State is one of the states that make up the five states in South-East geopolitical zone. The capital and seat of government is Awka. Onitsha, a historic port city from pre-colonial times is the largest urban area in the state. The state's theme is "Light of the Nation", formerly known as the "Home for all". Anambra has 181 towns within it.

3.3 Sources of Data

The study will make use of primary and secondary sources of data. The primary sources of data will be gathered through the use of questionnaire containing close ended questions. The primary data will be obtained from employees of the selected automobile, plastic and food manufacturing firms located in Onitsha and Nnewi industrial hub of Anambra State. The sources of secondary data for the study include books and periodicals, journals and government publications on information technology, statistical abstracts and databases.

3.4 Population of the Study

Population of study is made up of all conceivable elements, subjects or observation relating to a particular phenomenon that a researcher is interested in studying or the researcher desires to investigate or describe (Sekaran & Bougie, 2016). The population of the study is made up of all employees of fifteen (15) selected manufacturing firms within the Onitsha and Nnewi industrial cluster in Anambra state. This rating is based on the size of the firms, profit after tax, efficiency of the firm's balance sheet, efficiency of risk assets and other performance indices from the state government statistical bulletin on performance of manufacturing firms in Anambra state. Thus, three manufacturing firms will be selected from automobile/auto-parts, plastic and food manufacturing firms in Anambra state. The breakdown of the population as obtained from the human resource department of the selected manufacturing firms is presented in the table below.

Table 3.1: Population Distribution of the Selected Manufacturing firms

S\No	Names of Manufacturing	State	Number of Employees
1	Promotex Nigeria Limited Nnewi	Anambra State	170
2	Rimco Nigeria Limited, Nnewi	Anambra State	130
3	Jolly Industries Limited, Oraifite	Anambra State	75
4	Innoson Nigeria Limited Nnewi	Anambra State	260
5	Cutix Cable, Nnewi	Anambra State	200
6	Tummy Tummy Indurtries, Nnewi	Anambra State	150
7	Krisoral Group of Companies, Onitsha	Anambra State	170
8	Ibeto Group, Nnewi	Anambra State	225
9	Jimmex Industries Nigeria Limited, Nnewi	Anambra State	150
10	Jacson Industries Limited, Onitsha	Anambra State	160
11	Tiger Foods Limited, Onitsha	Anambra State	200
12	Afro Asia Automobile & Plastic Industries, Nnewi	Anambra State	125
13	Uru Industries Limited, Nnewi	Anambra State	165
14	Union Autoparts Manufacturing Company Limited, Nnewi	Anambra State	160
15	Intafact Beverages Limited, Onitsha	Anambra State	185
	Total Population		2150

Source: Human Resource Department of the Respective Firms, (2020).

3.5 Sampling and Sampling Technique

Determining sample size is a very important issue for collecting an accurate result within a quantitative survey design. One of the real advantages of quantitative methods is their ability to use smaller groups of people to make inferences about larger groups that would be expensive to study (Fisher, 2007). To ensure a clear account for determination of sample size, the statistical formula devised by Partem (1995) will be used to determine the sample size. The formula state thus:

$$n = \frac{NZ^2 \times 0.25}{d^2 \times (N - 1) + (Z^2 \times 0.25)}$$

where

n = the sample size required and which is statistically representative

N = the target population size

d = confidence level (0.05)

Z = number of standard deviation units of the sampling distribution corresponding to the desired confidence level given as 1.96

$$n = \frac{2525 (1.96)^2 \times 0.25}{(0.05)^2 \times (2525 - 1) + (1.96^2 \times 0.25)}$$

$$n = \frac{2525 (1.96)^2 \times 0.25}{(0.05)^2 \times (2525 - 1) + (1.96^2 \times 0.25)}$$

$$n = \frac{9700.04 \times 0.25}{0.0025 \times 2524 + 0.9604}$$

$$n = \frac{2425.01}{7.2704}$$

n = 333.5456096 approximate 334

3.5.1 Sample Frame

The sample frame will be determined by the use of proportional stratified random sampling.

The fraction is $S/N = 334/2525 = 0.1322772277$

The sample size is approximately 334. The proportionate distribution of the sample by manufacturing firms is shown in the table below:

Table 1: Population Distribution of Sample based on Manufacturing firms

S\No	Names of Manufacturing	(Number of Employees) * (Fraction)	Sample Size
1	Promotex Nigeria Limited Nnewi	170 * 0.1322772277	23
2	Rimco Nigeria Limited, Nnewi	130 * 0.1322772277	17
3	Jolly Industries Limited, Oraifite	75 * 0.1322772277	10
4	Innoson Nigeria Limited Nnewi	260 * 0.1322772277	34
5	Cutix Cable, Nnewi	200 * 0.1322772277	27
6	Tummy Tummy Indurtries, Nnewi	150 * 0.1322772277	20
7	Krisoral Group of Companies, Onitsha	170 * 0.1322772277	23
8	Ibeto Group, Nnewi	225 * 0.1322772277	30
9	Jimmex Industries Nigeria Limited, Nnewi	150 * 0.1322772277	20
10	Jacson Industries Limited, Onitsha	160 * 0.1322772277	21
11	Tiger Foods Limited, Onitsha	200 * 0.1322772277	27
12	Afro Asia Automobile & Plastic Industries, Nnewi	125 * 0.1322772277	16
13	Uru Industries Limited, Nnewi	165 * 0.1322772277	21
14	Union Autoparts Manufacturing Company Limited, Nnewi	160 * 0.1322772277	21
15	Intafact Beverages Limited, Onitsha	185 * 0.1322772277	24
	Total Population	2525	334

Source: Field Survey, (2021).

Thereafter, convenience sampling technique will be used in selecting the respondents from each of the sample manufacturing firms. The essence is to give all respondents equal chance

of been selected for the study. Only the employees of the manufacturing firms will be sample for the study.

3.6 Instruments for Data Collection

Questionnaire will be used to generate the data needed for the study. The questions will be organized on issue-based structured pattern following the sub-elements of the stated research questions, so as to ensure completeness. The questions are closed-ended in nature and five point Likert scale will be used to generate data for data analysis. The scale is 5(Strongly Agree), 4(Agree), 3(Undecided), 2(Disagree), 1(Strongly Disagree). These scaled responses are adopted because it permits the measurement of intensity of respondents' answers compared to multiple choice responses. The questionnaire is structured into two sections with the first section eliciting response on the personal information of respondents, while the second section covers questions relating to the objectives of the study.

3.7 Validity of Instrument

The researcher used face and content validity in this research work. To ensure the validity of the survey instrument, the supervisor, specialist from the department of business administration and practitioners in the field of human resource and management information systems reviewed the content of the questionnaire. Their corrections and suggestions were incorporated into the final draft of the questionnaire.

3.8 Reliability of Instrument

To ensure consistency of the developed instrument, the instrument was administered to randomly selected 35 employees from three manufacturing firms which were not part of the main sampled selected manufacturing firms that will be used for data collection. Pilot test was conducted with these manufacturing firms in order to ascertain the consistency and reliability of the survey instrument.

The number 35 was chosen because according to Kathuri and Pals (1993) 10 is the smallest number that can yield meaningful results on data analysis in a survey research. Thereafter, their responses were tabulated and the reliability of the instrument established using Cronbach alpha method. This method is appropriate since it involved a single administration of the instrument therefore it yielded internal consistency. The research instruments will be reliable if the reliability coefficient was coefficient is between 0.7 and 0.8 (Sekaran & Bougie, 2013). The result of the reliability test on the instrument is presented below.

Table 3.3: Reliability Statistics

Scale Label	No of Items	Cronbach Alpha
Decision Support System	7	.793
Process Control System	6	.763
Artificial Intelligence	4	.793
Enterprise resource planning system	7	.815
Human resource information system	5	.813
Performance Efficiency	4	.824
Performance Effectiveness	4	.845
Average	37	.807

Source: SPSS Ver. 23

The table shows the reliability statistics of the instrument administered to the respondents. The internal consistency was checked using Cronbach alpha. The number of items used to measure decision support system is seven (7), the reliability coefficient, Cronbach alpha value is .793. The number of items used to measure process control system is six (6), the reliability coefficient, Cronbach alpha value is .763. The number of items used to measure artificial intelligence is four (4) and the reliability coefficient, Cronbach alpha is .793. The number of items used to measure enterprise resource planning system is seven (7) and the reliability coefficient, Cronbach alpha is .815. Similarly, the number of items used to measure human resource information system is five (5) and the reliability coefficient, Cronbach alpha is .813. The number of items used to measure performance efficiency and performance effectiveness is four (4) items respectively and the reliability coefficient, Cronbach alpha is .824 and .845 respectively. All the scales showed values greater than the standard threshold of 0.7, which is considered an acceptable threshold in various management and behavioural research studies (Hair, Hult, Ringle & Sarstedt, 2017).

3.9 Method of Data Analysis

Statistics, such as frequency count and percentages were used in the analysis of personal characteristics, while research hypotheses were tested, using ANOVA. The research hypotheses will be tested at 0.05 level of significance. Analysis will be carried out with the aid of Statistical Package for Social Sciences (SPSS).

PRESENTATION AND ANALYSIS OF DATA

This section presents the data obtained from the respondents through the administered questionnaires. Three hundred and thirty-four (334) questionnaires were administered, among the staff of selected automobile, plastic and food manufacturing firms, Anambra state. However, two hundred and ninety-seven (297) questionnaires were retrieved. Therefore the analysis and interpretation of data were only based on the returned questionnaires. The validity and reliability of this study is highly ensured, despite the number of questionnaires not returned.

4.1 Demographic characteristics of Respondent

4.1.1 sex

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid male	248	82.7	83.5	83.5
Valid female	49	16.3	16.5	100.0
Total	297	99.0	100.0	

Source: SPSS Version 21, 2021

The above table reveals that the two hundred and forty-eight (248) of the respondents which represents 83.5% were male respondents, while forty-nine (49) respondents which represent 16.5% were female respondents. By implication, male respondents were more than female respondents by 67% in our selected population sample for this study. The implication of this is to enable us to know the number of female and male that successfully returned their questionnaire.

4.1.2 Statues

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid married	128	42.7	43.1	43.1
single	74	24.7	24.9	68.0
divorced/separated	95	31.7	32.0	100.0
Total	297	99.0	100.0	

Source: SPSS Version 21, 2021

In the table above, out of the three hundred and thirty-four (334) respondents, one hundred and twenty-eight (128) of the respondents were married. While seventy-four (74) respondents which represent 24.9 percent are single. It is therefore glaring that the majority of the respondents are married as at the time of this study. Thus marital status table helps us to know the number of single, married, and divorced respondents that answered the distributed questionnaire.

4.1.3 Level of Education

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid WAEC	66	22.0	22.2	22.2
Bsc/Hnd	101	33.7	34.0	56.2
Msc	65	21.7	21.9	78.1
Phd	65	21.7	21.9	100.0
Total	297	99.0	100.0	

Source: SPSS Version 21, 2021

In the table above, out of the three thousand and thirty-four (334) respondents, sixty-six (66) of the respondents are WAEC holders. While one hundred and one (101) respondents which represent 22 percent are BSC/HND holders. Sixty-five respondents (65) which represent 21.9 are MSC holders, while sixty-five (65) which represents 21.9 are PHD holders.

4.1.4 Age

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 18-25	62	20.7	20.9	20.9
26-33	93	31.0	31.3	52.2
34-40	84	28.0	28.3	80.5
41-50	34	11.3	11.4	91.9
51-above	24	8.0	8.1	100.0
Total	297	99.0	100.0	

Source: SPSS Version 21, 2021

The table above shows that respondents whose age bracket falls between 18-25 yrs were sixty-two (62) which represent 20.9 percent. This is followed by those with age bracket of 26-33 years with ninety-three (93) which represents 31.3%. Also those within age bracket of

34-40yrs were eighty-four (84) which represents 28.3%. This is followed by those with age bracket of 41-50 years with thirty-four (34) which represents 11.4%. Lastly, those with age bracket of 51-above twenty-four which represent 8.1%. The implication of this age distribution is to enable us to check if the questionnaire was directed to the right age group.

4.3 Hypotheses Testing

H₀₁: Decision support system has no significant effect on performance effectiveness in manufacturing firm

ANOVA

Table 4.3.1

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	139.809	4	34.952	47.346	.000
Within Groups	90.065	297	.738		
Total	229.874	293			

Sources: SPSS Output 2021

In testing this hypothesis, the F-statistics and probability value in table above is used. Decision support system variables have an F-statistics of 47.346 and a probability value of 0.000 which is statistically significant. Therefore, we reject the null hypothesis and accept the alternative hypothesis which states that Decision support system has significant effect on performance effectiveness in manufacturing firm.

H₀₂: Process control system has no significant effect on performance efficiency in manufacturing firm

ANOVA

Table 4.3.2

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	182.143	4	45.536	40.358	.000
Within Groups	137.652	297	1.128		
Total	319.795	293			

Sources: SPSS Output 2021

Second hypothesis has f-statistics of 40.358 and a probability value of 0.000 which is statistically significant. Therefore, we reject the null hypothesis and accept the alternative hypothesis and conclude that Process control system has significant effect on performance efficiency in manufacturing firm.

H₀₃: Artificial intelligence has no significant effect on performance efficiency in manufacturing firm

ANOVA

Table 4.3.3

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	.746	3	.373	7.286	.002
Within Groups	161.869	344	1.305		
Total	162.614	347			

Sources: SPSS Output 2021

The test conducted revealed that the large significance value ($F.sig < .002$) indicate no group differences. Since the F-value of 7.286 with a significance of .002 is less than .05 (i.e. $.002 < .05$), there exist no group difference. Therefore, Artificial intelligence has significant effect on performance efficiency in manufacturing firm

H_{04} : Enterprise resource planning system has no significant effect on performance effectiveness in manufacturing firm

ANOVA

Table 4.3.2

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	197.112	4	45.536	37.334	.000
Within Groups	122.683	297	1.128		
Total	319.795	293			

Sources: SPSS Output 2021

Second hypothesis has f-statistics of 37.536 and a probability value of 0.000 which is statistically significant. Therefore, we reject the null hypothesis and accept the alternative hypothesis and conclude that Enterprise resource planning system has significant effect on performance effectiveness in manufacturing firm.

H_{05} : Human resource information system has no significant effect on performance efficiency in manufacturing firm

ANOVA

Table 4.3.3

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	177.746	3	.373	23.126	.000
Within Groups	142.049	344	1.305		
Total	319.795	347			

Sources: SPSS Output 2021

The test conducted revealed that the large significance value ($F.sig < .002$) indicate no group differences. Since the F-value of 23.126 with a significance of .002 is less than .05 (i.e. $.002 < .05$), there exist no group difference. Therefore, Human resource information system has significant effect on performance efficiency in manufacturing firm

4.4 Discussion of the Findings

The information needs of modern organizations have become quite challenging to the extent that every organization needs to pay great attention on how information is gathered, stored, disseminated and utilized. This as a result of increased organizational size, expanded operational scope, competitive influence and overall environmental vagaries. Presents organizations require tools to support quicker and automated decisions, as well as ways to minimize uncertainly; only an effective management information system can ameliorate this challenge (Gabriel and Obara, 2013).

Information management serve managers, professionals, database administrators and senior executives of organizations which design, implement and manage information system. March and Simon (2016) maintained that information management is the collection and management of information from one or more sources and the distribution of that information

to one or more audiences. This sometimes involves those who have a stake in, or a right to that information. Management means the organization of and control over the structure, process and delivery of information.

An understanding of the technology involved, and the theory behind it became necessary (Kabiru and Abdullahi, 2012). As information storage shifted to electronic means, this became more and more difficult. By the late 1990s, information was regularly disseminated across computer networks and by other electronic means, network managers, in an increasingly complex tasks, hardware and software. With the latest tools available, information management has become a powerful resource and a cause of large expense for many organizations.

Corporate information management has not been core tenet of most organizations. This position is rapidly changing as organizations are confronted with compliance and regulatory demands and/or e-government targets, all demanding more effective and efficient access to information. The result is that organizations have been jolted into reviewing their information practices, realizing that they are suffering from information paralysis as information bases continue to grow unchecked, resulting in information overload and poor quality of data, of which the banking industry is not an exemption (Keary, 2015).

Management Information System though accepted as a vital part of any administrative function is still carried out in ad hoc. According to Hicks and Gullet (2018) Management Information Systems, especially the parts of them that are computerized, are increasingly being studied and designed. They seek to provide management with timely, appropriate and understandable information necessary to control the circumstance surrounding an issue and knowledge of the alternatives available.

An organization has no natural memory other than the memory of the individuals within it and since individuals come and go, administrators must develop extensive networks of reporting management information systems, to retain essential information over long period of time. Few firms have been successful in developing totally adequate information systems for decision-making uses. A number of reasons have been advanced for this lack of success, including inadequate efforts by top management, failure to make appropriate use of computer capabilities, and incorrect approaches to system designs which have emphasized efficient processing more than the importance of the Information.

SUMMARY OF THE FINDINGS, CONCLUSION AND POLICY RECOMMENDATION

5.1 Summary of the Findings

The basic objective of this study is to critically examine the effect of management information system on organizational performance in manufacturing firms. To empirically and statically establish the nature of the relationship in Nigeria, three hundred and thirty-four (334) respondents were randomly selected, two hundred and ninety-seven (297) questionnaires were returned and analysis of the data was based on this number. From the analysis of the data especially, and the testing of hypotheses it was realized that:

- Decision support system has significant effect on performance effectiveness in manufacturing firm

- Process control system has significant effect on performance efficiency in manufacturing firm
- Artificial intelligence has significant effect on performance efficiency in manufacturing firm
- Enterprise resource planning system has significant effect on performance effectiveness in manufacturing firm
- Enterprise resource planning system has significant effect on performance effectiveness in manufacturing firm

5.2 Conclusion

The result of this research work revealed that there have been a lot of barriers other than financing militating against the growth and development of MIS in Nigeria for the past years. Poor technological equipment and advancement is one of the major barriers hampering the growth of MIS in Nigeria other than financing also attributed to it is poor government policies on Its, and lack of MIS software and program by various business organization also hinder MIS development in Nigeria. Again lack of innovation and invention in Nigeria which prevent most business organization to compete favorably and develop a formidable MIS system in Nigeria MIS determine firms ability to perform and compete in the Global market, but the performance and effectiveness of MIS process in Nigeria has been drastically low despite various government and organization institutional policies on MIS on how to develop the process in enhancing the capacity of business organization in Nigeria.

The result of our finding reveals that lack of adequate knowledge and skill on information technology and the ability to manage the MIS process by various organizations is one of the major factors that affect the efficient performance of management information system in Nigeria. The poor data base management in most organizations is another factor militating against the efficient performance of MIS in Nigeria, other factors like Rigidity in MIS process, pattern and structure which prevent easy information flow and accessibility to all information end user and the inability of most businesses in Nigeria to develop suitable computer software and program to meet their growth and expansion.

Conclusively, lack of management skills on MIS process by most business organizations in Nigeria does not only affect the effective performance of MIS but also reduce their ability to compete favorably in the market with their large scale industrialist counterpart which has been a major stumbling block for the development and growth of business organizations in Nigeria.

5.3 Recommendations

The following recommendations are made based on the findings of this study. They are as follows:

- 1 As a result of the great potential of MIS to generate employment for the masses, government should directly get involved in the financing of MIS in most business organizations to promote economic growth and development.
- 2 There should be the introduction and operation of central-data-base management system through which information can be produced and communicated to various users at any point in time within the firm.

- 3 There should also be flexibility in the nature/pattern and structure of management system in organizations so as to permit informed and easy information flow and accessibility to all information end-users.
- 4 Organizations should also pay more attention to communication through the media agencies. This goes a long way to promoting the company's control of the market.

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