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IMPLEMENTATION OF COMPUTER-BASED MANAGEMENT INFORMATION SYSTEM (MIS) IN MANUFACTURING ORGANIZATIONS IN NIGERIA

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Abstract: The study examined the implementation of computer-based management information system (MIS) in manufacturing organizations in Nigeria. Specifically, the study sought adopted assess the extent to which the implementation of computer-based management information system in Nigerian's manufacturing organizations is significant, (ii) determine whether management capacity and resistance to change are significant to the implementation of computer-based management information system in manufacturing organizations. Survey research design was adopted in the study. Purposive sampling technique was used in the study. Data was collected using the questionnaire research instrument and oral interview guide. Both descriptive and inferential statistics were used, that is Z-test, and Linear Regression were used for data analysis, at 5% probability level of acceptance (i.e. $p < 0.05$). The extent computer-based management information system being implemented in Nigerian manufacturing organisations was significant ($p < 0.05$, $Z = 6.03$). management capacity to support and sustain the implementation of computer-based MIS and resistance to the implementation of newer/improved systems were significant challenges faced in the implementation of computer-based MIS in Nigerian manufacturing organisations ($p < 0.05$, $Z = 5.48$). We conclude that implementation of computer-based management information system (MIS) significant effect on manufacturing organizations in Nigeria. The study recommended that managements of manufacturing organisations should have a policy document that details the computer-based MIS framework for the organization.

Keyworks: Computer-Based, Implementation, Information, Management, System

1.1 **Introduction**

Management is the process through which an individual takes on the task of managing the affairs of an organization and establishes a method for doing so (Modum, 2005). Consequently, a manager cannot exist without an organization. The degree to which resources are deployed and used depends greatly on the level of societal development and growth in many nations, including Nigeria. Modum (2005) opines that within the overall objective of ensuring that sufficient profit is made to guarantee the survival of the organization in a competitive environment or providing welfare services with maximum efficiency at the lowest cost, the manager possesses considerable freedom to set the company goals and to consider and choose between different options available to him for the achievement of such goals. The exercise of this function depends of course on the nature of the organization, that is to say, the assets and resources which include man, machine, material, money and information of the company and the operational areas, which make up the component parts of the company. In manufacturing companies for example, such operational areas are production, stock control, costing, purchases, sales order,

payroll, staff training etc. In this regard resources include not only financial ones but also other resources created and used by organizations as a result of financial expenditures.

Many different kinds of organizations affect our daily lives. Manufacturers, retailers, service industry, firms, agro-allied business companies, non-profit organizations and government agencies provide us with a vast array of goods and services. All of these organizations have two things in common. First, every organization has a set of goals and objectives. An airline's goals might be profitability and customer services; the police force's goal would include public safety and security coupled with cost minimization. Second, in pursuing for an organization's goals, managers need information. The information needs of management cut across both financial and non-financial purposes for example in production, marketing, legal and environmental issues etc. Generally the larger the organization, the greater is the management's need for information. Information is a commodity, much like wheat or corn. Like other goods, information can be produced, purchased and consumed. It can be of high or low quality, timely or late, appropriate for its intended use or utterly irrelevant; as is true of all goods and services.

Organizations view the effective adoption of information technology (IT) as a way to combat competition by improving productivity, profitability and the level of information which is one common assets shared by all businesses regardless of their nature. This is because it is a vital part of any business entity irrespective of their forms of ownership as it enables conceptualization and creation of new products and services; hence an information system is designed, developed, administered and maintained to accomplish those tasks (Matthews & Perera, 1996). Anderson (1974) opines that when properly collected, organized and indexed in accordance with the requirements of the organization, its stored data becomes accessible to those who need the information. A critical feature of any management information system should be the ability to not only access and retrieve data but also to keep the achieved information as current as possible (Moga, 2007). The management information system is the mechanism to ensure that information is available to the managers in the form they want it and when they need it. It is designed to support their work through providing relevant information for their decision making. Management Information System (commonly abbreviated as MIS) has been an increasingly used tool in the institutionalization and making of decisions. According to Moga (2007), in order to define MIS, it must be principally divided into the three facets that constitute it - which are: management, information, and systems. Management is seen as the process through which managers plan, organize, initiate and control operations within their businesses. Essentially, a management can only exist when there are subjects/ workers to be managed (Al-Zhrani, 2010). Moga (2007) also states that information generally refers to analysed data. In other words, information (with regards to business) results from data that is analysed using business statutes, principles and theories.

1.2 Statement of the Problem

Despite the perceived relevance of computer-based MIS, it would appear that the implementation of computer-based management information system (MIS) is lacking in the manufacturing organizations in Nigeria. The full design and implementation of this system in enhancing the performance of the manufacturing process is lacking in manufacturing firms in the south east, Nigeria. This begs the question as to why this system is not fully implemented in manufacturing organizations in South-East Nigeria. The relevance of this system to product designs, increased market-size, redundancy reduction and cost optimization as experienced by companies who have adopted it particularly in developed countries are essential necessity for advocating for the adoption of the computer-based MIS. Thus, it become imperative that this study be done in order to add to the body of knowledge by critically examining the Nigeria situation using the manufacturing companies in the South East. In other word the study will bring Nigeria experience into focus.

1.3 Objectives of the Study

The general objective of the study is to examine the implementation of computer-based management information system (MIS) in manufacturing organizations in Nigeria.

The specific objectives of the study are to:

i. assess the level of the implementation of computer-based management information system in Nigerian's manufacturing organizations;
ii. determine whether management capacity and resistance to change are relevant to the implementation of computer-based management information system in manufacturing organizations.

1.4 Hypotheses of the study

i. The level of implementation of computer-based management information system in Nigerian's manufacturing organizations is not significant.
ii. Management capacity and resistance to change are not significant to the implementation of computer-based Management Information System in Nigerian manufacturing organizations.

2. Review of Related Literature

2.1 Conceptual Review

Management Information System (MIS)

Management Information System (MIS) is generally thought of as an integrated system providing information to support operations, management and decision-making functions in an organization (Alvarez, 2004). MIS involves three primary resources: technology, information and people. All of these resources are important but the most important resource is people. MIS are regarded to be a subset of the overall internal controls procedures in a business, which cover the application of people, documents and procedures used by management accountants to solve business problems such as costing a product, service or a business-wide strategy (Lynch, & Williamson 1980). An MIS is basically concerned with the process of collecting, processing, storing and transmitting relevant information to support the management operations in any organizations (Laudon & Laudon, 2010).

Oladejo (2013) describes MIS as a system using formalized procedures based on data from both internal and external sources, to enable decision makers make timely and effective decisions, for planning, directing and carrying out the activities for which they have appointed. This connotes that MIS is a system responsible for the collection, processing and communication of defined data in order to enhance prompt decision making. Viewing MIS as data processing or a computer based system would amount to a production oriented view of MIS which places more emphasis on production but generation of information from data processing and the management involvement makes the system distinctly different from data processing.

Lynch and Williamson (1980) asserts that management information system (MIS) is one of the major computer based information systems. Its purpose is to meet the general information need of all the managers in the firm or in some organizational subunit of the firm. Subunit can be based on functional areas on management levels. There are many definitions for MIS, but one of the most appropriate definitions describes management information system (MIS) as "an organizational method of providing past, present and projected information related to internal operations and external intelligence. It supports the planning, control and operation functions of an organization by furnishing uniform information in the proper time frame to assist the decision makers" Warner, (1988). The information in MIS describes the firm or one of its major systems in terms of what has happened in the past, what is happening now and what is likely to happen in the future. The information is made is available in form of periodic reports, special reports and output of mathematical simulations. All managers use the information output as they make decisions to solve the firm's problems (Raymond, 1990).

Management Information System (MIS) in Nigerian organizations is both a process of generating and disseminating information and an operational unit. MIS is a system that optimizes the collection, transfer and presentation of information throughout an organization through an integrated structure of database and information flow. It is, according to Sarv, & Rajiv (2003), a system that uses formalized procedures to provide management at all levels and in all functions with appropriate information, based on data from both internal and external sources. In the same vein, Lynch, & Williamson (1980) viewed MIS as a system to convert data from

internal and external sources into information and to communicate that information in an appropriate form to management at all levels, to function.

2.2 Theoretical Framework

Researchers have employed several theoretical paradigms in examining IT's impact on the organizational performance, including information processing theory, microeconomics, industrial organization theory, and sociology and socio-political paradigms.

2.3.1 Information Processing (IP) Theory

The concept of integrating Information System in manufacturing organisations in Nigeria that is applied in this study is developed around Galbraith's (1977) information processing (IP) theory. IP theory (which is one of several that can be classified as contingency theory (Bolon 1998) postulates that the IP capacity of an organisation must match its information requirements, if IP capacity is to have a significant impact on performance (Galbraith 1977). The theory assumes that an organisation is "… a complex system whose primary problem of relating to its environment is the acquisition and utilisation of information" – the greater the uncertainty, the greater the amount of information that needs to be processed to achieve a given level of performance. Organisations would thus respond to the increasing information demand by increasing or reducing their IP capacity (Galbraith, 1973).

2.3.2 Microeconomic Theory

Microeconomic theory provides a rich set of well-defined constructs interrelated via theoretical models and mathematical specifications. The theory of production has been particularly useful in conceptualizing the process of production and providing empirical specifications enabling estimation of the economic impact of IT (Bescos, & Mendoza (2000). Researchers have also employed growth accounting (Brynjolfsson & Hitt, 2003; Jorgenson & Stiroh, 1999), consumer theory (Bescos, & Mendoza 2000), data envelopment analysis, and Tobin's *q* (Bescos, & Mendoza (2000). To account for the inherent risk and uncertainty of IT investments, option pricing models have been applied to the IT context. Conducting a real-options analysis of point-of-sale (POS) debit services by an electronic banking network, Bescos, & Mendoza (2000) describe the "the logic of option pricing" as "how it can handle getting the timing right, scaling up or even abandonment, as the organization learns about its business environment with the passage of time." Though the assumptions of microeconomic theory must be carefully assessed within the specific research context, its application within manufacturing organisations has enhanced our understanding of wide-ranging phenomena.

2.3 Empirical Review

Martin and Overman (1988) opine that the management information system is very useful for business decision making not only for long term success but also for achieving short term objectives. The human resource performance will in great extent accelerate through MIS. But often this system does not meet the desirable expectation of the management. The main reason behind this is that there is no proper implementation of the system and they do not balance the cognitive and management hierarchies in the organization. To get favourable result the system must explicitly assimilate the information needs and cognitive hope of the management.

As put by Duliba (1996), the organization when it invests in the information technology or management information system also creates different types of opportunities within the organization which has direct impact on the employees' performance and efficiency as well as on the profitability of the organization. Furthermore various scholars and researchers have found that from their researches that the impact of the technology or management information system not only brings possible changes in the profitability and performance but also in productivity, organization process, economy levels and industry. Information technology that is management information system enables organization to improve performance and efficiency and also make unique in competitive impacts to yield more profit through effective production.

Seyal, Rahim and Rahman (2000) carried out an empirical investigation of use of information technology among small and medium business organisations. They observed that in the last two decades, issues regarding management of Information Technology (IT) within organisations have gained due consideration. They pointed

out that the heavy reliance of IT has caused difficulties for chief executive officers (CEOs) to optimise their computing resources. A survey of fifty-four small and medium sized organisation was conducted to investigate the degree of IT usage in Brunei Darussalam. The study attempted to assess the depth and breadth of IT usage in business. The parameters such as organisational (size, sale or profitability and type of business) and chief executives (educational level and computer literacy, ownership of PC and computer experience) are studied. The study highlighted how sales figures of the organisations, type of business and CEO computer literacy contributed towards the use of IT. None of the other variables were found to be significant.

Dehning and Richardson (2002) note that the value of IT for business is much more than its concept because the scope of IT in business research includes the theoretical, logical, conceptual, and experimental studies. More investment in information technology makes a good role in competitive environment of the organization. The use of information technology in business brings about cost reduction and product differentiation and also its application is useful for competition. They emphasised that in all the management levels, executives should be motivated for the investment in technology and to promote the IT program in the organization which in turn improves the overall performance of the employees and the organization will be able to do all the activities in splendid ways. It was uncovered that proper MIS training to employees may not only create good value for the organization but also ensure employees' achievement of set goals. He emphasized on the need for more investment in the field of technology that is Management information system.

3. Methodology

The survey research design was used for this study. This involved a single observation of the sample population, with observations being descriptively. This design entailed survey by the use of questionnaire administration, which was very useful in obtaining responses from the study population on the various research objectives. Information was obtained using a structured questionnaire and an interview guide that was administered on the respondents. This study was carried out in three of the South-Eastern States of Nigeria; namely Anambra, Enugu and Ebonyi States. The study covered all the manufacturing organisations in Anambra, Enugu and Ebonyi States, Nigeria. The manufacturing organisations in these states in Nigeria were chosen due to easy accessibility. The population was drawn only from the senior staff of 840. The sample of this study was restricted to the most senior staff of the Finance/Admin and IT departments of the manufacturing organisations; comprising the head of Finance/Admin and the head of IT departments, respectively. The sample size of the study is 290 drawn from 145 manufacturing organisations in those states. Whereby two most senior staff were selected. The study adopt 5-point Likert Scale. The data were analyzed using SPSS 17.0 software.

4. Data Presentation and Analysis

4.1 Data Presentation

Data collected from the sampled respondents are presented descriptively using charts, frequency tables, mean and standard deviation.

4.1.1 Return Rate of Questionnaire

Out of the 290 copies of the questionnaire that were distributed, 276 copies were correctly filled and returned. This gave a 95.2% success rate. However, 17 (4.8%) copies of the questionnaire were not correctly filled or returned. Based on the 95.2% success rate, the data from the correctly filled copies of the questionnaire were deemed adequate for use in this study.

4.2.2 Demographic Characteristics of Respondents

The distribution of the respondents based on their demographic characteristics is presented in Tables 4.1 to 4.4 below.

4.2.2.1 Location of Business

The distribution of the respondents based on the state in southeast Nigeria where their businesses are located is presented in Table 4.1.

Table 4.1: Respondents' Distribution based on Location of Business (State)

Location	Frequency	Percent
Anambra	104	37.7
Enugu	100	36.2
Ebonyi	72	26.1
Total	276	100.0

Source: ***Field Survey, 2015***

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4.2.2.3 Gender

The distribution of the sampled respondents based on their gender is presented in Table 4.3.

Table 4.3: Respondents' Distribution by Gender

Gender	Frequency	Percent
Male	168	60.9
Female	108	39.1
Total	276	100.0

Source: ***Field Survey, 2015***

4.2.2.4 Marital Status

The distribution of the respondents based on their marital status is presented in Table 4.4.

Table 4.4: Respondents' Distribution by Marital Status

Marital Status	Frequency	Percent
Married	128	46.4
Single	105	38.0
Divorced	15	5.4
Separated	7	2.5
Widowed	21	7.6
Total	276	100.0

Source: ***Field Survey, 2015***

4.2.3.1 Extent of Implementation of Computer-Based Management Information System in Nigerian's Manufacturing Organizations

Table 4.5 shows the extent to which computer-based MIS is implemented in Nigeria's manufacturing organizations.

Table 4.5: Extent of Implementation of Computer-based MIS

Questions	VLE	LE	ME	SE	VSE	Mean	Std. Dev.
To what extent is computer-based MIS implemented in your organisation?	55 (19.9)	76 (27.5)	106 (38.4)	25 (9.1)	14 (5.1)	3.48	1.07
To what extent does your organisation review/upgrade its MIS to current global practices?	97 (35.1)	87 (31.5)	68 (24.6)	15 (5.4)	9 (3.3)	3.90	1.05
Extent to which trainings are conducted on a regular basis on modern utilisation and implementation of computer-based MIS	61 (22.1)	52 (18.8)	118 (42.8)	23 (8.3)	22 (8.0)	3.39	1.15
Extent to which appropriate and relevant software are obtained to ensure realisation of goals	100 (36.2)	89 (32.2)	63 (22.8)	11 (4.0)	13 (4.7)	3.91	1.08
Extent to which management prioritises activities on the regular maintenance and upgrading of computer-based MIS in your organisation?	51 (18.5)	77 (27.9)	90 (32.6)	32 (11.6)	26 (9.4)	3.34	1.18
Overall Mean						***3.60***	***1.07***

Source: Field Survey, 2015

The data presented in Table 4.5 shows that most of sampled organisations have moderately implemented computer-based MIS in their organisations. This is captured in the responses of 55 (19.9%) respondents who said the extent of implementation in their organisation is very large, 76 (27.5%) respondents who said it is large, 106 (38.4%) respondents who said it is moderate, 25 (9.1%) respondents who said it is small and 14 (5.1%) respondents who said it is very small as well as the mean response score of 3.48 $\pm$ 1.07.

With a mean response score of 3.90 $\pm$ 1.05 and 97 (35.1%) respondents indicating very large extent, 87 (31.5%) respondents indicating large extent, 68 (24.6%) respondents indicating moderate extent, 15 (5.4%) respondents indicating small extent and 9 (3.3%) respondents indicating very small extent, the respondents are of the view that their organisations review/upgrade their MIS to current global practices to a large extent.

Based on the responses of 61 (22.1%) respondents who said to a very large extent, 52 (18.8%) respondents who said to a large extent, 118 (42.8%) respondents who said to a moderate extent, 23 (8.3%) respondents who said to a small extent and 22 (8%) respondents who said to a very small extent, as well as the mean response score of 3.39 $\pm$ 1.15, the respondents said that the extent to which trainings are conducted on a regular basis on modern utilization and implementation of computer-based MIS is moderate.

Having a mean score of 3.91 $\pm$ 1.08 as well as the responses of 100 (36.2%) respondents who said to a very large extent, 89 (32.2%) respondents who said to a large extent, 63 (22.8%) respondents who said to a moderate extent, 11 (4%) respondents who said to a small extent and 13 (4.7%) respondents who said to a very small extent, the respondents are of the view that their organisations, to a large extent, obtain appropriate and relevant software to ensure realisation of goals.

The sampled respondents noted that the management to a moderate extent prioritises activities on the regular maintenance and upgrading of computer-based MIS in their organisations. This opinion is captured in the responses of 51 (18.5%) respondents who said to a very large extent, 77 (27.9%) respondents who said to a large extent, 90 (32.6%) respondents who said to a moderate extent, 32 (11.6%) respondents who said to a small extent and 26 (9.4%) respondents who said to a very small extent as well as the mean response score of 3.34 $\pm$ 1.18. Having an overall mean score of 3.60 $\pm$ 1.07, the respondents are of the view that their organisations implement computer-based MIS to a large extent.

4.2.3.2 Significant Challenges facing the Implementation of Computer-based Management Information System in Manufacturing Organizations

The challenges manufacturing organisations face in the implementation of computer-based management information system is presented in Table 4.6.

Table 4.6: Challenges faced in implementation of the computer-based MIS

Question	VLE	LE	ME	SE	VSE	Mean	Std. dev.
Lack of basic computer-based MIS infrastructure	77 (27.9)	102 (37.0)	55 (19.9)	23 (8.3)	19 (6.9)	3.71	1.16
Lack of adequate management capacity to support and sustain the implementation of computer-based MIS	111 (40.2)	92 (33.3)	66 (23.9)	5 (1.8)	2 (0.7)	4.11	0.88
Inappropriate and inadequate strategic implementation formulation for the computer-based MIS	76 (27.5)	115 (41.7)	52 (18.8)	15 (5.4)	18 (6.5)	3.78	1.11
Insufficient personnel training and development	54 (19.6)	93 (33.7)	102 (37.0)	17 (6.2)	10 (3.6)	3.59	0.99
High cost of implementing computer-based MIS	48 (17.4)	31 (11.2)	45 (16.3)	87 (31.5)	65 (23.6)	2.67	1.40
Resistance to implementation of newer/improved systems	65 (23.6)	81 (29.3)	77 (27.9)	33 (12.0)	20 (7.2)	3.50	1.18
Overall Mean						***3.56***	***1.07***

Source: Field Survey, 2015

As presented in Table 4.6, 77 (27.9%) respondents and 102 (37%) respondents said that to a very large extent and large extent respectively, lack of basic computer-based MIS infrastructure is a challenge facing the implementation of computer-based MIS. 55 (19.9%) respondents said it affect it to moderate extent, 23 (8.3%) respondents said it affected it to a small extent while 19 (6.9%) respondents said it affected it to a very small extent. Based on the mean score of 3.71 $\pm$ 1.16, it is the determination of the respondents that lack of basic computer-based MIS infrastructure is a challenge facing the implementation of computer-based MIS to a large extent.

From the responses of 111 (40.2%) respondents who said to a very large extent, 92 (33.3%) respondents who said to a large extent, 66 (23.9%) respondents who said to a moderate extent, 5 (1.8%) respondents who said to a small extent and 2 (0.7%) respondents who said to a very small extent, as well as the mean score of 4.11 $\pm$ 0.88, the respondents are of the general view that lack of adequate management capacity to support and sustain the implementation of computer-based MIS is a challenge that faces the implementation of computer-based MIS to a large extent

Inappropriate and inadequate strategic implementation formulation for the computer-based MIS to a large extent is a challenge facing the implementation of computer-based MIS in manufacturing organisation. This view is

captured in the responses of 76 (27.5%) respondents who noted to a very large extent, 115 (41.7%) respondents who noted to a large extent, 52 (18.8%) respondents who noted to a moderate extent, 15 (5.4%) respondents who noted to a small extent and 18 (6.5%) respondents who noted to a very small extent, and the mean response score of 3.78 ± 1.11.

The responses of 54 (19.6%) respondents who indicated to a very large extent, 93 (33.7%) respondents who indicated to a large extent, 102 (37%) respondents who indicated to a moderate extent, 17 (6.2%) respondents who indicated to a small extent and 10 (3.6%) respondents who indicated to a very small extent as well as the mean response score of 3.59 ± 0.99, reveals that insufficient personal training and development to a large extent is a challenge facing the implementation of computer-based MIS in manufacturing organisations in South-East Nigeria. With a mean response score of 2.67 ± 1.40 and 48 (17.4%) respondents noting to a very large extent, 31 (11.2%) respondents indicating to a large extent, 45 (16.3%) respondents indicating to a moderate extent, 87 (31.5%) respondents indicating to a small extent and 65 (23.6%) respondents indicating to a very small extent, the respondents perceive that high cost of implementing computer-based MIS is a challenge moderately facing the implementation of computer-based MIS in manufacturing organisations.

65 (23.6%) respondents said that resistance to implementation of newer/improved systems is a challenge that to a very large extent faces the implementation of computer-based MIS in manufacturing organisations. 81 (29.3%) respondents said it faces it to a large extent, 77 (27.9%) respondents said it is a challenge facing the implementation to a moderate extent, 33 (12%) respondents noted that it faces it to a small extent while 20 (7.2%) respondents said the extent is very small. Having a mean response score of 3.56± 1.07, the respondents are of the opinion that resistance to implementation of newer/improved systems is a challenge that, to a large extent, faces the implementation of computer-based MIS in manufacturing organisations.

Based on the overall mean of 3.56 ± 0.48, the respondents said that there are challenges that to a large extent face the implementation of computer-based MIS in their manufacturing organisations.

4.3 Test of Hypotheses

The results from the various tests of hypotheses are presented and discussed in this section.

4.3.1 Test of Hypothesis One

The extent of implementation of computer-based management information system in Nigerian's manufacturing organizations is not significant

In testing this hypothesis, the results presented in Table 4.5 are tested using the Z-test statistic.

Table 4.11: One-Sample Kolmogorov-Smirnov (Z) Test Results for Hypothesis One

		MISimplementation
N		276
Normal Parameters[a,b]	Mean	3.6043
	Std. Deviation	1.07357
Most Extreme Differences	Absolute	.122
	Positive	.101
	Negative	-.122
Kolmogorov-Smirnov Z		6.029
Asymp. Sig. (2-tailed)		.001

a. Test distribution is Normal.

b. Calculated from data.

The results for the test of hypothesis one that is presented in Table 4.11 shows that the mean is 3.60 ± 1.07 (also see Table 4.5). This is indicative that computer-based management information system is implemented to a large extent in the manufacturing organisations studied. Based on the deviation from the mean (1.07), a further test is carried out to determine the uniformity of the distribution of the responses (Table 4.5) on the various aspects of the implementation of computer-based MIS in these organisations. The result from the Z-test presents a calculated

value of 6.029. This value is greater than the critical value of 1.96 (at 95% confidence interval). This result is significant as p-value < 0.05. Hence, the null hypothesis is rejected. Therefore, the extent of implementation of computer-based management information system in Nigerian's manufacturing organizations is significant.

4.3.2 Test of Hypothesis Two

Lack of management capacity and resistance to change are not significant challenges facing the implementation of computer-based Management Information System in Nigerian manufacturing organizations.

In testing this hypothesis, the results presented in Table 4.6 are tested using the Z-test statistic.

Table 4.12: One-Sample Kolmogorov-Smirnov (Z) Test Results for Hypothesis Two

		MISchallenges
N		276
Normal Parameters[a,b]	Mean	3.5586
	Std. Deviation	1.07040
Most Extreme Differences	Absolute	.089
	Positive	.089
	Negative	-.086
Kolmogorov-Smirnov Z		5.479
Asymp. Sig. (2-tailed)		.025

a. Test distribution is Normal.

b. Calculated from data.

The results for the test of hypothesis one that is presented in Table 4.12 shows that the mean is 3.56 $\pm$ 1.07 (also see Table 4.6). This is indicative that there are challenges facing the implementation of computer-based management information system to a large extent in the manufacturing organisations studied. Based on the deviation from the mean (1.07), a further test is carried out to determine the uniformity of the distribution of the responses (Table 4.6) on the challenges facing the implementation of computer-based MIS in these organisations. The result from the Z-test presents a calculated value of 5.479. This value is greater than the critical value of 1.96 (at 95% confidence interval). This result is significant as p-value < 0.05. Hence, the null hypothesis is rejected. Therefore, lack of management capacity and resistance to change are significant challenges facing the implementation of computer-based Management Information System in Nigerian manufacturing organizations.

Discussion of Finding

Due to the need to adequately process data and/or information, with a view to ensuring that organizational objectives are achieved, every organization focuses on having a functional information management system. In the dynamic business environment, particular in the manufacturing sector, volumes upon volumes of information need to be adequately processed to enable the organization meet up the complexities of manufacturing processes while remaining very competitive in the industry. To meet up with this demand, there is need for a system that is automated, real time and has the capability of forecasting while proffering projected solutions; hence the computer-based management information system.

Manufacturing organisations are only moderately able to implement computer-based management information system because of the various challenges facing them. Top among these challenges are the lack of basic computer-based MIS infrastructure such as hardware, software program, manpower etc. Without adequate MIS infrastructure, the implementation of computer-based MIS is greatly hampered. Organisations will find it very difficult to have a very efficiently driven computer-based MIS system, which is geared towards optimizing organizational processes. This is always the case when there is lack of adequate management capacity to support and sustain the implementation of computer-based MIS. This forms another challenge in the implementation of computer-based MIS.

5. Summary of Research Findings

The major findings of this study are;

i. The extent computer-based management information system being implemented in Nigerian manufacturing organisations was significant ($p < 0.05$, $Z = 6.029$).
ii. Lack of adequate management capacity to support and sustain the implementation of computer-based MIS and resistance to the implementation of newer/improved systems were significant challenges faced in the implementation of computer-based MIS in Nigerian manufacturing organisations ($p < 0.05$, $Z = 5.479$).

Conclusion

The computer-based management information system has the prospects of reducing redundancy, cost minimization, better products, wider customer-base and profit maximisation. When this is achieved, management is able to make better decisions and the survival of the organisation is ensured. However, the implementation of computer-based MIS in manufacturing organisations in Nigeria is not a smooth sail, as it is besieged with challenges. More pressing among these challenges, are the ones presented by the management and the staff. Despite the observable gains of its implementation, there exists lack of adequate management capacity to support and sustain the implementation of computer-based MIS. We conclude that implementation of computer-based management information system (MIS) significant effect on manufacturing organizations in Nigeria.

Recommendations

Based on the findings of this study, it is recommended that;

i. Computer-based management information system should be integrated into all aspects of the operations of manufacturing organisations in Nigeria. This should be especially implemented in the accounting system of these organisations, as it enhances efficiency and results in better decision making among the management accountants and the management team.
ii. Managements of manufacturing organisations should design and implement computer-based MIS framework for the organisation. This framework should comprehensively cover the definition, purpose and fundamental components of the computer-based MIS, its effective communication, the processes for initiating, developing and completing computer-based MIS implementation. This will serve as a reference point to seeing how the organisation is performing and what needs to be done at different times, with respect to the implementation of the computer-based MIS.

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