

IMPACT OF MANAGEMENT INFORMATION SYSTEMS ON CORPORATE DECISION MAKING IN ENERGY AND POWER COMPANIES IN DELTA STATE

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Abstract:

Information has become a valuable resource for corporate management in today's digital and knowledge-based economy. This study was carried out to examine the relationship between management information system and corporate decision making among selected energy and power companies in Delta State, Nigeria. The objectives of the study include to ascertain the influence of MIS on quality of decision making, business innovativeness, and service delivery. The study adopted a survey research design as primary data were collected through deployment of structured questionnaires as research instruments. The study population was drawn from staff of three (3) selected energy and power transmission companies in Delta state. The hypotheses formulated for the study were tested using the chi square analysis at 5% level of significance.

Findings of the study indicate that implementation of MIS influences the decision-making process has a positive impact on business innovativeness. Further, the study shows a positive and significant effect of MIS on the service delivery of energy and power firms in Delta State, Nigeria. The study concludes that implementation of MIS is imperative to enhance informed corporate decision making in a digital economy and recommends amongst others that companies should use modern ICT that will enhance business innovativeness and by extension service delivery.

Keywords: Management Information System, Decision Making, Business Innovativeness, Service Delivery, Digital Economy.

1. Introduction

Information is becoming a useful resource for company management in the digital age. The business environment has become dynamic, unpredictable, and turbulent in today's digital and knowledge-based economy; as a result, there is a growing need for more current, accurate, economical, relevant, and complete information useful for making informed decisions that will highlight administrative capacities to exploit opportunities and mitigate losses. A useful tool that offers planned and organized information to support corporate management decision-making is the management information system (MIS). The human resources, business practices, data/information, software, and IT facilities that make up MIS collaborate to collect, process, store, retrieve, and report information

for important decisions that have an impact on organizational performance. Using MIS, various organizational departments, segments, sections, and units can collaborate to achieve organizational objective congruence. (Ghaffarzadeh, 2015; Shaqiri, 2014; Meiryani, et al., 2020)

MIS application is considered a vital tool in modern business environment because it forms an integral part of business operations. In view of the competitive nature of today's global environment, corporate managers are now making efforts to install management information system that will promote investments in innovative products, provide platform that will enable the firm compete in the changing market environment, improve sales and customer satisfaction and by extension earn more returns on investment.

Every corporate manager's primary responsibility is to make the best judgement possible.

Accurate and timely information is helpful while making such decisions. According to Lucey (2005), pertinent information is helpful for planning, controlling, coordinating, and evaluating activities since it increases knowledge and reduces ambiguity. While it is stated that excellent management cannot be replaced by good information, it is equally held that management cannot be effective without sufficient knowledge. Information systems not only aid in administrative decision-making but also in coordination and control as well as improving staff members' capacity to comprehend complicated ideas, solve difficulties, and embrace product advances. (Olumoye, 2013; Adebayo, 2007; Ajayi, Omirin, & Fadekemi, 2017; Mohammed, 2018; Olumoye, 2013; Adetuya et al., 2021) However, the issue of how much organisations use and integrate management information systems in decision support systems to ensure efficient service delivery, boost productivity, and meet overall organizational objectives arises. This study focuses on the extent of MIS deployment and how it affects corporate decision making in Energy and Power enterprises in Delta State.

Objectives of the Study

The broad objective of this study is to examine the relationship between management information system and corporate decision making using the Energy and Power companies in Delta State. The specific objectives include:

- i. Examine the association between management information system and the quality of corporate decision making;
- ii. Find out the how management information system affects business innovation; and iii. Ascertain to what extent management information system influence service delivery of a firm.

2. Literature Review

Management Information System

The three components of the acronym MIS are management, information, and system. To grasp MIS better, each component's description is sufficient. Management is the process of arranging a company's resources to meet organizational goals as effectively and efficiently as possible. Planning, regulating, harmonizing, evaluating, and making choices are additional steps in the management process. In support of his theories, Kumar (2006) defines

management as the method through which managers organize, start, plan, and oversee corporate operations. Fundamentally, management involves organizing all of the company's resources, including cash, people, processes, and equipment. Information makes up the second component of the MIS acronym. When data is examined using business concepts and ideas, the outcomes are referred to as information in business language (Rhodes, 2012). Finally, a system is described as a group of components working together to achieve a single goal. Systems vary from one organization to the next based on the organization's nature, priorities, size, and structure (Davenport & Short, 1990).

Based on the descriptions of the various components given above, a management information system is a structured environment where information is used to run businesses effectively. Since the management, information, and system components of MIS are interrelated and operate together to support organizational goal congruence, if one component fails, other constituents will also fail (Davenport & Short, 1990; Davis & Geist, 2004). MIS is defined by Barton and Parolin (2005) as a system that offers information assistance for organizational decision-making. It is an integrated system made up of people, processes, software, and hardware that uses data to support operations and the decision-making process within an organization. It is an information system powered by computers.

Decision Making

The process of obtaining processed information and making an informed decision based on the facts at hand is known as decision-making. It entails a sequential process of problem identification, definition of alternatives, and decision-making based on critical assessment, judgement, and thought processes. Making a decision involves selecting one course of action from among two or more options, to put it simply. When solving problems, decisions can be made through reasoning, intuition, or a combination of the two. According to Asemi, Safari, and Zavareh (2011), the stages of the decision-making process are as follows: (i) formulating problems and understanding them; (ii) gathering and analyzing pertinent data; (iii) developing alternatives; (iv) evaluating those alternatives; (v) selecting the best option; (vi) carrying out the decision; and (vii) evaluating the results of the decision. From the perspective of an organized business setting, decisions can range from simple decision, recurring decisions to long-term strategic decisions. According to Wahyono (2003), the indices used to measure the value of information are determined from the costs and benefits. This is in keeping with economy as one of the characteristics of information. It is argued that the cost of obtaining information should not be higher than the value derived from use of the information.

Management Information System and Decision Making

The evolution of information and communication technology (ICT) has affected managerial decision-making processes and altered societal structures (Otuya, Ofeimun & Akpotor, 2022). ICT has a variety of effects on MIS. First off, it makes it simpler for corporate managers to gather information that improves the decision-support

system. Second, the use of ICT makes decision-making more efficient by enabling quick, precise, and extensive data processing. It enhances decision-making and helps firms perform better in a highly competitive environment on a global scale. Making decisions is a crucial component of management. Corporate managers make judgments using MIS to direct organizational policies, set goals, put organization design into reality, make selections, and evaluate managerial practices of all kinds (Lucey, 2005).

Divergent findings have been obtained from several studies on the influence of MIS on decision making. For instance, Shaqiri (2014) highlighted in a study how management information systems are flow-processing procedures based on computer data, integrated with other procedures, and designed to deliver information in a timely and efficient manner to support decision-making and other management functions. The study's findings revealed an exponential rise in the availability of current business data and information, and that only timely, accurate, and high-quality information is important for effective business decision-making. In a 2019 study, Garedew evaluated how accounting data affected the Wolaita Development Association's ability to make wise decisions. In-depth and open-ended questionnaires were employed to acquire primary source data from 62 office workers for the study. A descriptive research design was adopted, and a department that directly relates to accounting-related operations was purposefully chosen. The study's key conclusions demonstrate that the decision-making process in development associations is significantly impacted by the accounting information system. In another study, Ortega (2017) aimed to ascertain the extent to which SMEs' usage of accounting information systems aids their decision-making. According to the findings, SMEs should have a sound accounting information system in place so that they can prepare accounting and financial reports using systematized processes.

Awan and Khan (2016) analyzed 31 organisations in Pakistan to evaluate the effect of management information systems on the performance of the organisations. Questionnaires were used to gather primary data. A random sample of 200 responses from the 31 organisations was chosen. To determine the link between variables, regression and correlation tests were used. Results indicate a strong correlation between management information system performance and organizational performance. In a related study, Hamzah and Madhulika (2016) suggested that information is a crucial resource for businesses and should be managed effectively for good decision-making. The survey was carried out in 45 manufacturing organisations, and the responses were from managers with decision-making power within the organization. Based on turnover, companies are divided into three groups for an efficient comparison analysis. The data was gathered by surveys, interviews, and observation, and statistical analysis was done using the Binomial-Test. According to the report, MIS helps managers make better decisions. Information systems have become a crucial component of any corporate organization, particularly the insurance sector, according to a study by Olukoya (2013). This is because they facilitate decision-making, the planning process, and the possibility of accomplishing organizational goals and objectives. In order to empirically examine

the relationship between information systems as used by management for decision-making, speed, availability of information, and involvement of subordinates in decision-making, the study used field survey responses from senior management staff of five different insurance companies. The data were analyzed using simple percentages and the chi-square statistical approach. The management of any organization is embracing information systems because the study's findings show that they would eliminate conventional, geographic, and marketing constraints. In a related study, Mohammed (2018) assessed the effects of management information systems on organizational decision-making. The goals of the study were to determine the effects of management information systems and the connection between management information systems and organizational decision-making. The study used a descriptive design, and secondary sources were used to get the data. After studying a variety of literature, the study's findings showed that management information systems give the management structured and timely information.

3. Methodology

The research is based on assessing the relationship between management information system and corporate decision making. The study adopted a survey research design as primary data were collected through research instruments. The study population was drawn from staff of three (3) selected energy and power transmission companies in Delta State, Nigeria. These include Transnational Corporation of Nigeria (Transcorp) Ughelli, (28); CMEC/Eurafrica Energy Limited (Sapele Power Plc) Sapele (18) and Delta Electric Power limited, Oghareki (26) making a total of 72 staff of the companies.

Based on the small population size, the study adopted a census sampling method hence the entire 72 staff of the three companies were used for the study.

Data on the impact of management information systems on the decision-making process in the sampled organisations were gathered using questionnaires. To do this, employees of sampled organisations were given a self-developed questionnaire with a 5-point Likert scale ranging from highly agree (5), agree (4), undecided (3), disagree (2), to strongly disagree (1). There are four sections to the questionnaire. While Section A aims to gather data on respondents' demographics, Sections B, C, and D contain questions evaluating respondents' opinions on topics related to decision support, innovation, and service delivery, respectively. The chi square analysis was used to assess the study's hypotheses, using a 5% level of significance.

4.0 Data Presentation and Analysis

68 questionnaires with 94 percent accuracy were located and used for analysis. The demographic breakdown of the responses reveals that women make up 52% of the sex distribution. Additionally, it has been noted that the age range of 33 to 45 has the highest percentage (28.1%) and that of 56 and older has the lowest percentage (15.9%). Additionally, the demographic variable reveals that 86.5 percent of the sample is made up of administrative and accounting employees, with 54 percent of respondents having work experience ranging from

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6 to 15 years. Seventy-one percent of the respondents had attended tertiary institutions, according to their educational background.

Test of Hypotheses

Hypothesis One: Management information system does not have a significant positive effect on the quality of corporate decision making

Table 1: Hypothesis One Table Statistics

Statements□	1	2	3	4	5	6	OE	EE	(OE-EE)	(OE-EE) ²
Strongly Agree	14	33	25	21	25	27	145	81.6	63.4	4019.56
Agree	18	16	28	33	19	19	133	81.6	51.4	2641.96
Undecided	1	3	1	0	0	2	7	81.6	-74.6	5565.16
Disagree	32	4	9	4	21	11	81	81.6	-0.6	0.36
Strongly Disagree	3	12	5	10	6	6	42	81.6	-39.6	1568.16
Total	68	68	68	68	68	68	408	408		13795.2
			X² cal. (OE-EE)²/EE							33.81

KEY: X² = Chi-square, OE = Observed Frequency, EE = Expected Frequency.

Source: Fieldwork, 2022.

Decision: From the table, the calculated X² is 33.81 The X² table value, given a degree of freedom of 20 and 0.05 significant level is 31.41 Since the calculated chi square value is greater than the table value (33.81.>31.41), we therefore have enough evidence to reject the null hypothesis and accept the alternative. This implies that Management information system does have a significant positive effect on the quality of corporate decision making in the Energy and Power companies in Delta State.

Hypothesis Two: Management information system does not have a significant positive effect on business innovativeness.

Table 2: Hypothesis Two Table Statistics

Statements□	7	8	9	10	11	12	OE	EE	(OE-EE)	(OE-EE) ²
Strongly Agree	31	18	36	21	17	31	154	81.6	72.4	5241.76
Agree	28	35	18	36	23	21	151	81.6	69.4	4816.36
Undecided	4	0	1	0	3	0	8	81.6	-73.6	5416.96
Disagree	9	11	10	9	13	12	64	81.6	-17.6	309.76
Strongly Disagree	6	4	3	2	12	4	31	81.6	-50.6	2560.36
Total	68	68	68	68	68	68	408	408		18345.2
			X² cal. (OE-EE)²/EE							44.96

KEY: X² = Chi-square, OE = Observed Frequency, EE = Expected Frequency Source: Fieldwork, 2022.

Decision: From the chi square table, the critical value is 31.41 using 0.05 level of significance and degree of freedom of 20. The X^2 calculated from the above table is 44.96. Since the calculated value is more than the critical value, we therefore reject the null hypothesis and accept the alternative which states that management information system has a significant positive effect on business innovativeness.

Hypothesis Three: Management information system does not have a significant positive effect on service delivery of a company. **Table 3: Hypothesis Three Table Statistics**

2	Statements□	13	14	15	16	17	18	OE	EE	(OE-EE)	(OE-EE)
	Strongly Agree	41	28	38	12	54	38	211	81.6	129.4	16744.2
	Agree	11	21	16	26	8	11	93	81.6	11.4	129.96
	Undecided	0	1	2	0	0	0	3	81.6	-78.6	6177.96
	Disagree	12	3	11	21	2	12	61	81.6	-20.6	424.36
	Strongly Disagree	4	15	1	9	4	7	40	81.6	-41.6	1730.56
	Total	68	68	68	68	68	68	408	408		25207
		X^2 cal. (OE-EE)²/EE									61.78

KEY: X^2 = Chi-square, OE = Observed Frequency, EE = Expected Frequency Source: Fieldwork, 2022.

Decision: From the table, the calculated X^2 is 61.78. The X^2 table value, given a degree of freedom of 20 and 0.05 significant level is 31.41. Since the calculated chi square value is greater than the table value ($61.78 > 31.41$) we therefore have enough evidence to reject the null hypothesis and accept the alternative hypothesis. This implies that Management information system does not have a significant positive effect on service delivery of a company.

Discussion of Findings

The study was carried out to examine the role of management information system in corporate decision making in selected Energy and Power companies in Delta State.

The findings of the study revealed that management information system is well practiced in the surveyed firms. It was also observed that most companies adopt the use of information and communication technology in implementing MIS. Based on survey results and data computed, the study is also able to establish that management information system implementation practices have a significant influence on the corporate decision making of energy and power companies in Delta State. The implication of this finding is that when companies adopt better management information system, they are able to make better and informed business decisions which will improve corporate performance.

Further, the study also revealed that MIS implementation enhances corporate innovativeness. This implies that firms can adopt modern information and communication technology to meet with the changing business and economic environment and adapt to changes in the industry. Findings also revealed that effective implementation

of MIS enhances better service delivery for the company. The implication is that MIS has several tools useful to measure customer feedback and ensure effective service delivery and satisfaction.

Conclusion and Recommendations

The aim of the study was to empirically examine the role of management information system on corporate decision-making process of Energy and Power firms in Delta State, Nigeria. In achieving this aim, the study obtained data through survey on variables which were believed to have relationship with MIS and decision making. The factors this study focused on are decision making, business innovativeness and service delivery.

The study as part of its findings discovered that implementation of MIS influences the decision-making process of Energy and power firms. The study is also able to establish that MIS positively influences business innovativeness of firms. Further, the study showed a positive and significant relationship between MIS and the service delivery of energy and power firms in Delta State, Nigeria. The study concludes that implementation of MIS is imperative to enhance informed corporate decision making in a digital economy.

In line with the findings of this study, the following recommendations have been drawn:

1. It was established better MIS will enhance better decision making, in this regard, this study recommends that management should make greater use of MIS tools to improve on corporate decision making.
2. There is need for corporate managers to practice good management information system that will enhance effective service delivery.
3. Management should adopt feedback mechanism with modern communication techniques that will enhance business innovativeness and by extension service delivery.

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