

Impact Of Information Systems On Management Decision-Making In The Nigerian Insurance Sector

Mosud Y. Olumoye

Abstract: Information systems have become an integral part of every corporate organization, especially the insurance industry in facilitating decision-making, planning process and the prospect of achieving organizational goals and objectives. The enormous numbers of employees engaged in the insurance sector coupled with numerous customers made decision taking and dissemination of information by the management time consuming thereby leading to inefficiency. In order to tackle this challenge it becomes imperative to introduce information systems into the management of the organization so as to facilitate decision-making. This study uses field survey responses from senior management staff of five different insurance companies to empirically examine the relationship of information systems as used by the management for decision-making, speed, availability of information and involvement of subordinates in decision-making. Simple percentage and Chi-square statistical method were used to analyze the data. However, the result of the study clearly indicated that information systems would expunge traditional, geographical and marketing limitations; hence the management of every organization is embracing information systems.

Index Terms: Decision-making, Information systems, Insurance, Management

1 INTRODUCTION

The role of information in decision-making cannot be overemphasized; and effective decision-making demands accurate, timely and relevant information. As the numbers of employees, customers and transaction increases in an organization the more it become multifaceted, and the information needed for effective management, planning, decision-making and control invariably becomes more complex. Decision-making is the task of every top management in an organization and they need relevant and timely information to assist in taking decisions. According to Lucey (2005), relevant information increases knowledge, reduces uncertainty and is usable for the intended purpose. However, there are difficulties in producing relevant and timely information, but with the advent of information systems most organizations in Nigeria especially the insurance corporations collect data which are raw facts to produce useful and meaningful information which can be used for decision-making which affects the current and future operations of the organization. Although, information does not serve as an alternative for good management but conversely management cannot be good without adequate information. Laudon [6] defined information systems as a set of interrelated components that collect, process, store, and distribute information to support decision-making, coordination, and control in an organization. In addition to supporting decision-making, coordination, and control, information systems may also help managers and workers analyze problems, visualize complex subjects, and create new products.

The evolution of high computer technology plays significant role in implementing and developing the use of information systems which transforms raw data into useful information through the three basic activities, input, processing and output. In today's insurance business, there is growing need for information. The information requirement increases on daily basis and thus become more complex in nature. The implication of this is that the manual method of processing data becomes inadequate; hence the global business seeks a better way of accomplishing this goal and this lead to the development of computerized systems which is information systems that will satisfy the needs of the management.

1.1 Information Systems and Decision-Making

The objective of information systems in an organization is to provide the management, managers and stakeholders with information for more precise planning, forecasting, monitoring and controlling of business. More so, the use of powerful computer software and network information systems have helped organizations to become more flexible, removing layers of redundant management functions, separate work from location and also restraining work flows. In order to maximize the benefits of information systems in today's highly globalized and information based economy, there is a greater need to plan the information architecture and infrastructure. The Encyclopedia Britannica [3] pointed out that with the emergence of smart phones, tablets, and other computer-based mobile devices, all of which are connected by wireless communication networks, information systems have been extended to support mobility as the natural human condition. It also stated that information systems has enabled more diverse human activities, they have exerted a profound influence over the society. These have quickened the pace of daily activities, affected the structure and mix of organizations, changed the type of products bought and influenced the nature of work; although, the dependence on information systems has also brought new threats. Information systems as described by Whitten [13] is an arrangement of people, data, process and interface that interacts to support and improve day-to-day operations in a business as well as support the problem-solving and decision-making needs of the management and users. This can also be described as all equipment and methods that provide information to managers to support their operations and decision-making within an organization.

- Mosud Y. Olumoye holds a Master Degree in Information Technology from Ladoke Akintola University of Technology, Nigeria. He is a lecturer and consultant on ICT, Project Management and HSE. PH- +2348023383547. E-mail: myolumoye@yahoo.com

1.2 Classifications of Information Systems

1.2.1 Transaction Processing System (TPS)

This is also referred to as data processing system. It performs the essential role of collecting and processing the daily transactions of the organization. They serve at operational levels of the organization. Examples of transactions include purchase payroll, reservation, invoices, payments, shipping, registrations, orders and sales.

1.2.2 Management Information System (MIS)

This is an application of information systems that provides management oriented report in predetermined fixed format. MIS help managers on planning, monitoring and controlling business operations by providing weekly, monthly or yearly results and not daily activities. Examples of MIS are budget fore-casting and analysis, financial reporting, inventory reporting, production scheduling, salary analyses, sales forecasting and sales reporting.

1.2.3 Decision Support System (DSS)

It is an application of information system that help users to make decisions by providing useful information that supports unstructured decisions (i.e. decision-making situations that cannot predicted) whenever a decision-making situation arises. DSS also serve at the management level of the organization. When it is applied to executive managers, these systems are sometimes called executive information system (EIS). Decision support system does not actually make decision or solve problems but people do. It is only concerned with the provision of useful information to support the decision process. Users and Managers use DSS tools to access data warehouse to get relevant information. A data warehouse is a read-only informational database that contains detailed information generated by other transaction and management information systems.

1.2.4 Expert System

This is an extension of the decision support system. It is a programmed decision-making information system that captures and reproduces the knowledge and expertise of experts and then simulates the thinking or actions of that expert to help users with less expertise. These applications are implemented with Artificial Intelligence (AI) technology. Artificial intelligence is a computer-based technology that has the ability to behave like humans, learn languages and emulate human expertise and decision-making.

1.2.5 Office Automation System

This system supports a wide range of business activities. Office systems are applications designed to improve workflow and communicate among workers regardless of their physical locations. Typical office system handles and manages document (through word processing, desktop publishing, document imaging and digital filings), scheduling (through electronic calendars) and communication (through electronic mail, voice mail and video conferencing).

1.2.6 Personal and Work Group Information Systems

Personal information system is the system designed to meet the needs of a single user while work group system is designed to meet the needs of a workgroup and to increase

the productivity of the group.

1.3 Statement of the Problem

In today's insurance business, there is growing need for information. The necessity for information increases on daily basis and thus becomes more complex in nature. And as business keeps growing the management, staff and other users of information within and outside the organization continues to depend and demand for information to support the management duties and operations of the business. This information required should be accurate, timely and aimed at the correct recipients. In view of this the researcher attempt to establish what information systems connotes and the significant relationship between information systems and management decision. The management is also becoming increasingly aware that information system can be used to produce meaningful information on which they can base their decisions in addition to performing the detailed paper work functions of the organization.

1.4 Research Questions

This study identifies several research questions which are the main objectives this paper:

- ❖ What are the effects of information systems on management decision-making in the insurance sector?
- ❖ Is there any significant relationship between information systems and management decision?
- ❖ Is there any significant relationship between information systems and staff strength?
- ❖ Does information system provide relevant, timely and accurate information for effective decision-making?
- ❖ Does management performance increase with information systems?
- ❖ Does information systems speeds up decision-making in the insurance operations?

1.5 Research Hypothesis

In order to proffer solutions to the research questions, the following hypotheses were formulated and tested to guide the research work:

Hypothesis 1

H₀: There is no significant relationship between information systems and management decision

H₁: There is significant relationship between information systems and management decision.

Hypothesis 2

H₁: Information systems does not provide relevant, timely and accurate information for effective decision-making

H₀: Information systems provide relevant, timely and accurate information for effective decision- making

2 REVIEW OF LITERATURE

An information system as described by Encyclopedia Britannica [3], is an integrating component for collecting, storing and processing data; and for delivery information, knowledge and digital products. Business firms and other organizations rely on information systems to carry out and manage their operations, interact with their customers and suppliers, and compete in the market place. As major and new technologies for recording and processing information have

been invented over the millennia new capabilities have appeared. One of the first computers used for information processing was the UNIVAC I installed at the U.S Bureau of the census in 1951 for administrative use and at General Electric in 1954 for commercial use. Starting in the late 1970s, personal computers brought some of the advantages of information systems to small businesses and to individuals. Early in the same decade the Internet began its expansion as the global network of networks. In 1991 the World Wide Web invented by Tim Berners-Lee as a means to access the interlinked information stored in the computers connected by the Internet was installed to become the principal service delivered on the network [3]. The introduction of the Internet without any doubt has enabled access to information and other resources; this has facilitated forming relationships among people and organizations at an unprecedented scale. Rhodes [11] added that Management Information Systems (MIS) give managers quick access to information. This may include interaction with other decision support systems (DSS), information inquiries, cross referencing of external information and potential data mining techniques. Nowduri [9] highlighted in his related study that MIS provides a fitting platform for good decision-making. He further declared that without the established systems of getting information in MIS, it would be extremely difficult for organizations to make their decisions. Agwu [1], submitted in their study that information systems directly affects how decisions are made in an organization by altering the manner and frequency by which information is delivered to key decision makers. In corroborating the effects of information systems on decision-making, Ajayi [2] stressed the need for MIS decision-making as it provides information that is needed for better decision-making on the issues affecting the organization regarding human and material resources. Obi [10] in his publication submitted that Management Information Systems (MIS) is useful in the area of decision-making as it can monitor by itself disturbances in a system, determine a course of action and take action to get the system in control.

3 METHODOLOGY

For the purpose of this study which is to examine the impact of information systems on the management decision-making in the Nigerian insurance sector, a structured questionnaire was used as the main instrument for carrying out the research. Five insurance companies in Nigeria namely: Great Nigeria Insurance Plc, Nigerian Agricultural Insurance Corporation, Nigerian Reinsurance Corporation, Union Assurance Company Limited and Unity Capital Insurance Plc out of about fifty-one insurance companies in Nigeria were selected for the study on the basis that they have branches in all the states in Nigeria. Since all the branches of companies were scattered over Nigeria it becomes unnecessary and impracticable to make use of the entire group of interest. All these that are concerned cannot be entirely included; hence, a sampling technique was used. A total of 200 questionnaires were distributed to each of the 40 staff selected in each of the 5 insurance companies. The 40 staff comprises of 8 senior management staff, 14 middle management staff and 18 managers. Out of the 200 questionnaires distributed, 140 were returned to the researcher representing 70%. The data collected through the questionnaires were analyzed, summarized and interpreted using simple percentages and Chi-square method to measure the incongruities existing between the observed and expected

frequencies; and to also prove the level of significance in testing the stated hypotheses. Alongside with the questionnaire, the researcher also conducted personal interviews with six senior management staff above the level of assistant general manager in order to gain an appreciation of the effects of information systems on management decision-making. Secondary sources of data such as academic journals, research works and textbooks were also consulted. The responses from the questionnaires were measured with a five point rating scale namely: strongly agree, agree, neutral, disagree and strongly disagree.

4 RESULTS AND DISCUSSIONS

The responses obtained from the questionnaires presented in the tables and subsequently analyzed.

Table 1: Gender

	Respondent	Percentage
Male	80	57.14
Female	60	42.86
Total	140	100.00

Source: Field survey, 2013

Table 1 shows that 80 or 57.14% of the respondents were male while 60 or 42.86% were females. From the survey it was revealed that more of the respondents were male.

Table 2: Staff Status

	Respondent	Percentage
Senior Management Staff	24	17.14
Middle Management Staff	47	33.57
Manager	69	49.29
Total	140	100

Source: Field survey, 2013

Table 2 shows that 24 or 17.14% of the respondents were senior management staff in the insurance companies, 47 or 33.57% were middle management staff, while 69 or 49.29% were managers. Thus, the survey revealed that the most of the respondents were managers.

Table 3: Work Experiences

	Respondent	Percentage
0 – 5 years	46	32.86
6 – 10 years	41	29.29
11 – 15 years	38	27.14
16 years and above	15	10.71
Total	140	100

Source: Field survey, 2013

From table 3, it was shown that 46 or 32.86 % of the respondents had experience of less than 5 years, 41 or 29.29 % had between 6 to 10 years, while 15 or 10.71% had over 16 years of experiences. Consequently, the survey revealed that majority of the respondents has less than 5 years of experience.

Table 4: Information Systems Has an Impact on Management Decision-Making in the Insurance Sector

	Respondents	Percentage
Strongly Agree	85	60.71
Agree	44	31.43
Neutral	7	5.00
Disagree	4	2.86
Strongly disagree	-	-
Total	140	100

Source: Field survey, 2013

Table 4 shows that 85 or 60.71% of the respondents strongly agreed that information systems has an impact on management decision-making in the insurance sector while 44 or 31.43% of the respondents are of similar opinion. Significantly, majority of the respondents strongly believed that information systems have an impact on management decision-making in the insurance sector.

Table 5: There is Significant Relationship between Information Systems and Management Decision-Making

	Respondents	Percentage
Strongly Agree	77	55.00
Agree	52	37.14
Neutral	5	3.57
Disagree	6	4.29
Strongly disagree	-	-
	140	100

Source: Field survey, 2013

Table 5 shows the responses of the staff with the respect to the fact that there is significant relationship between information systems and management decision-making. About 77 or 55.00% strongly agreed, 52 or 37.14% only agreed, while 5 or 3.57% were neutral and 6 or 4.29% disagreed. However, the survey showed that majority of the respondents strongly agreed that there is significant relationship between information systems and management decision-making.

Table 6: Information Systems Provides Relevant, Timely and Accurate Information for Effective Decision-Making

	Respondents	Percentage
Strongly Agree	87	62.14
Agree	40	28.57
Neutral	11	7.86
Disagree	2	1.43
Strongly disagree	-	-
	140	100

Source: Field survey, 2013

From table 6 it was shown that 87 or 62.14% strongly agreed that information systems produces relevant, timely and accurate information for effective decision making, 40 or 28.57% of the respondents agreed, 11 or 7.86% were neutral and 2 or 1.43% only disagreed that information system produces relevant, timely and accurate information for effective decision making. From the survey, majority of the

respondent believed that information systems produces relevant, timely and accurate information for effective decision making.

Table 7: Deployment of Information Systems Has Improved the Quality of Decision-Making Thereby Leading to Higher Productivity in the Insurance Sector

	Respondent	Percentage
Strongly Agree	92	66.71
Agree	39	27.86
Neutral	9	6.43
Disagree	-	-
Strongly Agree	-	-
	140	100

Source: Field survey, 2013

From table 7, 92 or 66.71% of the respondents strongly agreed that the deployment of information systems has improved the quality of decision-making thereby leading to higher productivity in the insurance sector. 39 or 27.86% of the respondents agreed while 9 or 6.43% were neutral. From the survey, it was shown that majority of the staff in the insurance company strongly believed that deployment of information systems has improved the quality of decision making thereby leading to higher productivity.

Table 8: Information Systems Facilitates Various Operations in the Insurance Company

	Respondent	Percentage
Strongly Agree	86	60.43
Agree	49	35.00
Neutral	5	3.57
Disagree	-	-
Strongly disagree	-	-
	140	100

Source: Field survey, 2013

Table 8 indicates that 86 or 60.43% strongly agreed that information systems facilitates various operations in the insurance company, 49 or 35.00% of the respondents only agreed, while 5 or 3.57 % were neutral. Thus, the survey revealed that most of the respondents strongly agreed that information systems facilitate various operations in the insurance company.

5 TESTS OF HYPOTHESES

Chi-square (χ^2) statistical tool was used for testing the hypotheses of this research work for the primary data collected. The formula for calculating chi-square (χ^2) is stated as follows:

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Where O is the observed frequency,
E is the expected frequency.

Hypothesis 1

H₀: Information system does not have impact on management decision-making in the insurance sector

H₁: Information systems has an impact on management decision-making in the insurance sector

Table 9: Test of Hypothesis 1

Respondent view	Observed O	Expected E	Residual O - E	$(O - E)^2$	$\frac{(O - E)^2}{E}$
Strongly Agree	85	28.00	57.00	3,249.00	116.036
Agree	44	28.00	16.00	256.00	5.818
Neutral	7	28.00	-21.00	441.00	15.750
Disagree	4	28.00	-24.00	576.00	20.571
Strongly Disagree	-	28.00	-28.00	784.00	28.00
Total	140	140.00			186.175

Source: Computed from data, 2013

Calculated Chi-square (X^2) = 186.175

Degree of freedom (d.o.f) = n - 1

Therefore, d.o.f = 5 - 1 = 4

Tabulated (X^2) at 0.05% level of significance for 4 degrees of freedom is 9.488

Decision: Since the calculated Chi-square is greater than the tabulated, the null hypothesis (H_0) is rejected and the alternative (H_1) is accepted. Consequently, this indicated that information systems have impact on management decision-making in the insurance sector.

Hypothesis 2

H_0 : Information systems does not provide relevant, timely and accurate information for effective decision-making

H_1 : Information systems provide relevant, timely and accurate information for effective decision-making.

Table 10: Test of Hypothesis 2

Respondent View	Observed O	Expected E	Residual O - E	$(O - E)^2$	$\frac{(O - E)^2}{E}$
Strongly Agree	87	28.00	59.00	34.81.00	124.321
Agree	40	28.00	12.00	144.00	5.143
Neutral	11	28.00	-17.00	289.00	10.321
Disagree	2	28.00	-26.00	676.00	24.143
Strongly Disagree	-	28.00	-28.00	784.00	28.000
Total	140	140.00			191.728

Source: Computed from data, 2013

Calculated Chi-square (X^2) = 191.928

Degree of freedom (d.o.f) = n - 1

Where n is number of rows

Therefore, d.o.f = 5 - 1 = 4

Tabulated X^2 at 0.05% level of significance for 4 degrees of freedom is 9.488

Decision: Since the calculated Chi-square is greater than the tabulated, the null hypothesis (H_0) is rejected and the alternative (H_1) is accepted. Thus, this indicates that information systems provide relevant, timely and accurate information for effective decision making.

6 EMPIRICAL FINDINGS

Based on the primary data analyzed in this study, the following findings were made:

- (i) More than 60% of the respondents were of the opinion that information systems have impacts on management decision-making in the insurance sector.
- (ii) Majority of the respondents (55%) strongly agreed that there is significant relation between information systems and management decision-making.
- (iii) Quite considerable respondents (62.14%) strongly agreed that information systems produces relevant, timely and accurate information for effective decision-making.
- (iv) Over 66% of the respondents strongly agreed that the deployment of information systems has improved the quality of decision-making thereby leading to higher productivity.
- (v) A significant proportion of the respondents (60.43%) strongly agreed that information systems facilitates various operations in the insurance sector.

6.1 Further Observations and Findings

The study further revealed that information systems produce useful and meaningful information for the insurance companies which they use for effective decision-making. Also, introductions of information systems have quickened the pace of day-to-day operations, affected the structure and influenced the productivities of these sectors. Moreover, information systems support the problem-solving and decision-making needs of the management. It also helps the industry to perform calculations, process their paper works faster than the conventional methods which were manuals and assist them to learn more about the purchasing patterns and performances of their customers.

7 CONCLUSIONS

This study dealt with the impact of information systems on management decision-making in the Nigerian insurance sector as perceived by the staff on the selected insurance companies in Nigeria. The study revealed that information system plays a very crucial role on management decision-making. The adoption of information systems has influenced the ways decisions are made in insurance companies by changing the manner and rate at which information is provided for decision makers. It was also made known in the study that information systems provide relevant, timely and accurate information for the management for effective decision-making. The management of various insurance companies in Nigeria are becoming more aware that information systems can be used to produce meaningful, relevant and accurate information

which they can base their decisions. In view of this, it is recommended that the insurance companies in Nigeria should develop the various information system strategies to meet the changes in competition of their various operations. Also, the companies need to develop productivity enhancing strategies that will enable them to successfully integrate the new technologies with their present operations; and the information systems unit in the sector should be well financed and given adequate maintenance to ensure adequate flow of information for decision-making on short term and long term planning. Lastly, organizations should give their staff adequate training and proper orientation to ensure the effective use of information systems in the provision and circulation of information for efficient and effective decision-making.

8 END SECTIONS

8.1 Acknowledgments

I acknowledge my wife and children for their words of encouragement. Also, I acknowledge the various authors as cited in this paper; I say more power to their elbows.

8.2 References

- [1]. Agwu, C.I.C., Adeola, R. O., Etefia, C. F. and Ogwu, J.N. (2010). The Effect of Information System on Management Decision Making, A Case Study of Wema Bank PLC", August, 2010
- [2]. Ajayi, I.A., Omirin, K. and Fadekemi, F. (2007). The Use of Management Information Systems (MIS) In Decision Making In The South-West Nigerian Universities. Educational Research and Review, Vol. 2(5), May 2007, pp 109-116.
- [3]. Encyclopedia Britannica. (2012, October 10). Information System. [Online] Available: <http://www.britannica.com/EBchecked/topic/287895/information-system> (September, 20, 2012)
- [4]. Idowu, P.A., Alu, A.O. and Adagunodo, E.R. (2002). The Effect of Information Technology on the Growth of the Banking Industry in Nigeria. The Electronic Journal on Information Systems in Developing Countries, Vol 10 (2), 2002, pp 1-8.
- [5]. Keen, G.W., "Information Systems and Organizational Change", Communications of the ACM VOL 24(1), (Jan 1981) pp 24-33.
- [6]. Laudon, K.C. and Laudon, J. P. (2001). Essentials of Management Information Systems. (4th ed.) New Jersey: Prentice Hall, (Chapter 1-3).
- [7]. List of Insurance Companies and Their Addresses. [Online] Available: <http://resourcedat.com/2010/12/list-of-insurance-companies-and-their-addresses/>(October 17, 2012).
- [8]. Lucey, T. (2005). Management Information Systems. (9th ed.). London: Thomson Learning, (Chapter 3).
- [9]. Nowduri, S. (2011). Management Information Systems and Business Decision Making: Review, Analysis and Recommendations. Journals of Management and Marketing Research, pp 1-8.
- [10]. Obi, E. (2003). "Educational Management Theory and Practice". Enugu: JAMOE Nigeria Enterprises, 2003.
- [11]. Rhodes, R. (2012). The Role of Management Information System. [Online] Available: http://www.ehow.com/facts_7147006_role-nformation-system-decision-making.html (September 12, 2012)
- [12]. Safarzadeh, H., Soloukdan, A. and Khosravi (2011). Explaining the Pattern of the Impact of Information Technology on Knowledge Management in Iranian Insurance Industry", American Journal of Scientific Research, Issue 19, 2011, pp 66-75.
- [13]. Whitten, J.L., Bentley, L.D. and Dittman, K. C. (2001). Systems Analysis and Design Methods. (5th ed.) New York: McGraw-Hill, (Chapter 1& 2).