Effect of Management Information System on Performance of Food and Beverages Companies in North Central Nigeria

Dorathy Doose Tsetim[1] & Dorathy Doose Orabunde[2]

[1]Department of Office Management and Technology, Federal Polytechnic Nasarawa, Nigeria, [2]Department of Public Administration, Nasarawa State University Keffi, Nigeria

Abstract: This study looked at how North Central Nigerian food and beverage enterprises performed in relation to their management information system. The study specifically looked at how the organizational performance of food and beverage industries in North Central Nigeria was affected by decision support systems, process control systems, enterprise resource planning systems, and human resource planning systems. The study used a cross-sectional survey approach that included six North Central Nigerian food and beverage enterprises. Eight hundred and one employees from the six companies made up the study's population. The study determined that 267 respondents would make up the sample size using Taro Yamene's formula. Data were gathered using a closed-ended questionnaire on a five-point Likert scale. The hypotheses were tested using regression analysis with the help of SPSS. The study discovered that the food and beverage enterprises in North Central Nigeria perform significantly better when they have decision support, process control, enterprise resource planning, and human resource planning systems in place. Thus, the study came to the conclusion that management information systems had a favorable and significant impact on the performance of food and beverage enterprises in North Central Nigeria. This study suggests a slight rise in the effort aimed at improving staff members' skills in managing information system utilization, given the ongoing advancements in technology that necessitate skill updates.

Keywords: Decision Support System, Process Control System, Enterprise Resource Planning, System, Human Resource Planning System, Organisational performance

1.0 INTRODUCTION

1.1 Background to the Study

The 21st century corporate landscape has been profoundly impacted by the dynamic nature of performance management, which has created a competitive edge for companies that recognize and value the pertinent impact of management information systems (MIS). The highly competitive business environment of today's market, which is characterized by stiff competition among businesses, shifting consumer preferences and expectations, and adjustments to the production process, makes the adoption of management information systems imperative (Tantua & Godwin-Biragbara, 2020). Business organizations are starting to realize how important management information systems are to maintaining long-term organizational success. Food and beverage companies must implement and continuously improve management information systems to support their competitiveness in the market, given the dynamic nature of today's business environment and consumers' insatiable desire for high-quality service delivery (Nworie & Oguejiofor, 2023). Food and beverage enterprises in North Central Nigeria may have an appropriate foundation for attaining high performance once their management information system has been configured to fit their environment, structure, and task requirements.

The cumulative effects of all organizational work processes and activities make up organizational performance (Osodo & Jemaiyo, 2015). According to Jenatabadi (2015), the assessment of a company's functional elements is to determine its capacity and ability to reach its desired objectives through efficiency and effectiveness. An organization can support tasks through data collection, retrieval, and processing to improve

task function by using a management information system, which is a computer-based information system used for decision-making, synchronization, control, analysis, and visualization of information (Raheem & Ayorinde, 2023). Organizations can implement a variety of management information systems, including decision support systems, process control systems, enterprise resource planning systems, and human resource information systems.

According to Kitsios and Kamariotou (2016), a decision support system is software that makes it easier for individuals to get information by modeling, retrieving, and reporting functions that are user-friendly. This enables people to produce data that they think will be useful to them in their decision-making. One component of a process control system is a data distribution and collection system that collects and stores data from many sources, some of which may have utilized proprietary techniques to obtain or produce the data in the first place. An enterprise resource system is a tool used to manage and optimize the use of an organization's resources, hence increasing organizational efficiency. An organization's whole human resources activity can be managed, tracked, and entered using data using an HR information system, which is an online tool or program.

Information management is regarded as crucial to efficient managerial decision-making in contemporary businesses. The idea of a management information system (MIS) has drawn a lot of attention from businesses, indicating that MIS is a key tool that helps them carry out their tasks successfully and effectively (Liao, Liu & Li, 2023). There is a gap to be filled by the current study, nonetheless, as there are few studies that are known to have demonstrated the impact of MIS on organizational performance in the Nigerian food and beverage industry. In order to streamline the examination of the food and beverage industries in North Central Nigeria, this study was conducted.

1.2 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 the performance food and beverages companies in North Central Nigeria
ii. Ascertain the extent to which process control system affects the performance food and beverages companies in North Central Nigeria

iii. Assess the effect of enterprise resource planning system on the performance food and beverages companies in North Central Nigeria
iv. Evaluate the extent to which human resource information system affects the performance food and beverages companies in North Central Nigeria

1.3 Research Hypotheses

i. Decision support system has no significant effect on the performance food and beverages companies in North Central Nigeria.
ii. Process control system does not significantly affect performance food and beverages companies in North Central Nigeria.
iii. Enterprise resource planning system has no significant effect on performance food and beverages companies in North Central.
iv. Human resource information system does not significantly affect performance food and beverages companies in North Central Nigeria

2.0 REVIEW OF RELATED LITERATURE

2.1 Theoretical Framework

The resource-based view theory will serve as the foundation for this study. The resource-based view (RBV), which was first put forth by Wernerfelt in 1984, is a prominent theory that contends that firms have resources, some of which provide them a competitive edge and some of which result in better long-term performance. According to the theory, a corporation's competitive advantage can be created by valuable and uncommon resources, and that advantage can last for longer if the firm can guard against resource imitation, transfer, or substitution. Most of the time, information systems are regarded as a very vital and significant kind of resource. Proponents of RBV contend that it is far more practical to take advantage of outside chances by repurposing resources than it is to try to reinvent the wheel and pick up new skills for every opportunity. When management information systems are fully implemented in an organization, they can help improve the functional activities and create a competitive advantage where an organization's resources become immobile (i.e., critical resources cannot be moved quickly and competitors cannot replicate its resources and implement the same strategies) and heterogeneous (i.e., skills, capabilities, and other resources that organization possess differ from others). Intangible assets including information, procedures, intellectual property, and brand equity are typically immovable.

2.2 Conceptual Clarifications
2.2.1 Decision Support System

Decision support systems (DSS) offer management a number of streamlined approaches for translating and analyzing data. Through modeling, institutions can create several scenarios based on existing data and determine the potential consequences of different decision combinations. Additionally, it makes efficient information retrieval of user-friendly modeling, retrieving, and reporting capabilities possible, enabling people to produce the data they believe will be helpful to them in making decisions (Kitsios & Kamariotou, 2016). Management can choose from a number of streamlined models for data translation and analysis thanks to decision support systems (DSS). With the use of modeling, institutions can create several scenarios and determine the potential results of different combinations of decisions by using the data that is now accessible. In order to enable people to develop the information they believe will be helpful to them when making decisions, it also makes efficient information retrieval of simple modeling, retrieving, and reporting capabilities possible.

2.2.2 Process Control System

According to Nworie and Oguejiofor (2023), a process control system (PCS) is a device that generates output signals in response to inputs from a process, related equipment, other programmable systems, and/or an operator. This allows the process and related equipment to operate as intended and within standard production constraints. A process control system comprises a data distribution and collecting system that gathers and saves information from multiple data sources, each of which may have used an exclusive method to obtain or create the information in the first place. The main motivation behind the implementation of process control systems is economic. Even yet, non-safety-related components still need to be planned, implemented, run, and maintained in order to prevent unexpected rate demands from being placed on the protective system throughout its design (Ojo *et al*. 2022).

2.2.3. Enterprise Resource Planning System

A software program called an enterprise resource planning system (ERPS) assists you in managing your entire company by automating procedures and operations related to finance, HR, manufacturing, supply chain, services, procurement, and other areas (Onodi, et al. 2021). An ERP system's primary goal is to improve an organization's organizational efficiency by controlling and optimizing the use of its resources. Automatic information creation, flexibility, openness, and centralized database design are the four key components of an enterprise resource planning system (Azeez & Yakub, 2019). This software system is powered by a comprehensive general database and operates in real time. Accounting, inventory management, human resources, supply chain management, manufacturing execution systems, manufacturing scheduling, and financial reporting are a few examples of the functions that are commonly included in ERP systems.

2.2.4 Human Resource Information System

A software program called a human resources information system (HRIS) is used to process, manage, and keep track of personnel data as well as regulations and procedures pertaining to human resources. According to Osodo and Jemaiyo (2015), HRIS is a software or online solution used for data tracking, data entry, and data administration of all human resources operations of a business. Tantua and Godwin-Barigbara (2020) define HRIS as a software or online solution used for data entry, data tracking, and data administration of all human resources operations of a business. As a result, it is an easily available and useable database that supports all HRIS housed on the company's server, in the cloud, or by an outside vendor. Because the workplace is always changing due to digital disruption, HRIS and procedures must also change to reflect a data-driven, technology-driven, and people-centered reality. Over the past ten years, HRMIS systems have also changed to accommodate these new workplace patterns.

2.2.5 Organizational Performance

The degree to which an organization successfully pursues its goals or generates results that advance those goals is referred to as organizational performance (Trabulsi, 2018). Organizational performance, according to Shafiq, Lasrado, and Hafeez (2019), is an organization's capacity to obtain and make use of its precious and limited resources in an efficient and effective manner in order to meet its objectives. Epstein, Elkington, and Herman (2018) define performance as the outcomes attained or actions taken in the form of goods and services provided by an individual or organization. Regarding performance measurement, one approach is to consider the degree to which the company's goals are met. One way to gauge the success of commercial commerce, business services, and industrial firms is through business performance. As a result, all business organizations—individual companies as well as company groups—strive to continuously enhance their operational efficiency. The degree to which a business's goals are met can be used to measure its performance. According to Akram, Goraya, Malik, and Aljarallah (2018), doing the right thing at the right time with the appropriate quality is one of the effectiveness metrics for a company. Effectiveness can be

Page 125

defined as the ratio of actual output to expected output, productivity as the traditional output to input ratio, quality of service as the outcome of comparing customer expectations with perceived service performance, and innovation as a management system that places an emphasis on the organization's mission, identifies success metrics, looks for specific opportunities, and searches for new opportunities. Effectiveness is used to measure performance for the purposes of this study.

2.2.6 Management Information System and Organizational Performance

Bello (2022) assessed how management information systems affected Nigerian universities' operational effectiveness. A survey design was chosen, and the main tool for gathering primary data was a questionnaire. A sample of 29 Lead City University principal employees was taken. The analysis of the data was done by descriptive statistics. Given that the respondents had a very favorable impression of the benefits of using management information systems, the results demonstrated that the institution's operational efficiency has been impacted by the implementation of these systems, which include transaction processing, management reporting, decision support, and office information systems. Okeke (2021) investigated how organizational performance in industrial companies in Anambra State, Nigeria, was impacted by management information systems. Data was gathered from manager-owners and other important officials in the chosen organizations using a questionnaire and survey approach. The study's sample size was 334, and its population consisted of 1454 workers from 15 carefully chosen manufacturing companies in the Anambra State industrial clusters of Onitsha and Nnewi. The study's hypotheses were tested using the t-test in multiple regression analysis. The outcome showed that, in manufacturing organizations, artificial intelligence has a considerable impact on performance efficiency, while decision support systems and process control systems have a big impact as well. The relationship between management information systems and business performance was studied by Kitsios and Kamariotou (2016).Human resource planning systems and decision support systems served as stand-ins for management information systems. Data were gathered using a questionnaire, and the exploratory investigation discovered a substantial relationship between both proxies and business performance. The impact of management information systems on the efficacy and efficiency of Islamic Azad universities in the province of Esfahan was examined by Eshraghi, Ganjouei, and Esmaeili (2015). 202 people made up the study's population, and 180 of them completed and returned the questionnaires. The transaction processing system, enterprise resource planning system, and decision support system have a considerable impact on organizational performance, according to the results of inferential statistics.

3.0 METHODOLOGY

This study used a cross-sectional survey approach that included six North Central Nigerian food and beverage enterprises. These businesses are Serina Food and Beverages Lokoja, Michga Foods Nigeria Limited Minna, Crown Flour Mill Ilorin, Grand Cereals Limited Jos, Nigerian Breweries Plc Makurdi, and Tabosky Foods Nigeria Limited Lafia. Eight hundred and one employees from the six companies made up the study's population. The study determined that 267 respondents would make up the sample size using Taro Yamene's formula. The main tool used to collect data was a closed-ended questionnaire on a five-point Likert scale. A pilot research was carried out on 89 workers of various food and beverage establishments in Makurdi who were not included in the sample of people under investigation in order to determine the validity and reliability of the instrument. The pilot study's findings demonstrated that every concept had Cronbach's alpha values more than 0.7, indicating the validity and dependability of the instrument. The data was analyzed using regression analysis with the help of SPSS to determine why the t-test and p values in the regression model were used to test the hypotheses.

4.0 RESULTS AND DISCUSSION

4.1 Result of Regression Analysis

Table 1: Regression Results

		R	R^2	Beta	T	P-value
	Constant	.769[a]	.591		1.349	.180
	Decision Support Systems (DSS)			.203	2.058	.028
1	Process Control System (PCS)			.228	2.404	.018
	Enterprise Resource Planning System			.567	6.984	.000
	Human Resource Information System			.235	2.259	.022

a. Dependent Variable: Organizational Performance

***Source**: SPSS Output, 2024.*

The preceding Table 1 result demonstrated that there is a positive association between the set of independent factors and the dependent variable, as indicated by the regression coefficient, R =.769. 59.1% of the variation in organizational performance is described by decision support systems, process control systems, enterprise resource planning systems, and human resource information systems, according to the coefficient of determination (R^2), which was found to be .591.

Table 1 also clearly shows that the systems that contribute more significantly to organizational performance are the enterprise resource planning system (β =.567; t = 6.984, P (.000) < 0.05), the process control system (β =.228; t = 2.404, P (.018) < 0.05), the human resource information system (β =.0235; t = 2.259, P (.022) < 0.05), and the decision support systems (β =.203; t = 2.058, P (.000) < 0.05). This suggests that there is a proportional increase of.203, .228, .567, and.235 in organizational performance for each unit change in decision support systems, process control systems, enterprise resource planning systems, and human resource information systems, respectively.

4.2 Hypotheses Testing and Discussion of Findings

The test in Table 1 demonstrated that the decision support system has a substantial impact on organizational performance [P (.000) < 0.05], refuting hypothesis 1, which claims that the system has no discernible influence on the performance of food and beverage enterprises in North Central Nigeria. This suggests that there is statistical evidence to refute the premise and draw the conclusion that the performance of food and beverage enterprises in North Central Nigeria is significantly impacted by decision support systems. This outcome is consistent with Bello's (2022) findings, which assessed the impact of management information systems on the operational effectiveness of Nigerian universities and discovered that decision support systems have a major influence.

Furthermore, the study discovered that the process control system has a substantial impact on organizational performance [P (.018) < 0.05], refuting the second hypothesis, which claims that the performance of food and beverage enterprises in North Central Nigeria is not significantly affected by it. This suggests that process control has a major impact on the performance of food and beverage enterprises in North Central Nigeria and that there is statistical evidence to reject the null hypothesis. This outcome is consistent with Okeke's (2021) research, which looked at how management information systems affected organizational performance in Nigerian industrial companies located in Anambra State.

Moreover, the study found that the enterprise resource planning system has a significant impact on organizational performance, refuting the third hypothesis, which holds that the system has no discernible effect on the performance of food and beverage companies in North Central[(.000) < 0.05]. This suggests that there is statistical support for rejecting the null hypothesis and drawing the conclusion that the performance of food and beverage enterprises in North Central Nigeria is significantly impacted by the implementation of enterprise resource planning systems. The present outcome is consistent with the research conducted by Eshraghi, Ganjouei, and Esmaeili (2015), who investigated the impact of management information systems on the efficiency and effectiveness of Islamic Azad universities in the province of Esfahan. Their findings indicated that the implementation of an enterprise resource planning system had a significant effect on organizational performance.

Regarding the fourth hypothesis, which posits that the performance of food and beverage companies in North Central is not significantly impacted by human resource information systems, Table 1's test result indicates that organizational performance is significantly impacted by human resource information systems [P (.022) < 0.05]. This suggests that there is statistical support for rejecting the null hypothesis and drawing the conclusion that the performance of food and beverage enterprises in North Central Nigeria is significantly impacted by the HRIS. The results are consistent with Kitsios and Kamariotou's (2016) investigation into the impact of management information systems on business performance, which revealed a significant impact of HRP systems on business performance.

5.0 CONCLUSION AND RECOMMENDATIONS

This study looked at how North Central Nigerian food and beverage enterprises' organizational performance was affected by their management information system. A theoretical section of the study looked at organizational performance in the food and beverage subsector as well as management information systems. In this study, an enterprise resource planning system, decision support system, process control system, and human resource planning system were all considered subsystems of the management information system.

The study's conclusions demonstrated that the performance of food and beverage businesses in North Central Nigeria is positively impacted by the implementation of decision support systems, process control systems, enterprise resource planning

systems, and human resource planning systems. The enterprise resource planning system, process control system, human resource planning system, and decision support system are the four components that contribute most to organizational performance. Thus, this study concludes that management information systems have a favorable and significant impact on the organizational performance of food and beverage enterprises in North Central Nigeria. This report suggests a slight increase in the effort aimed at improving the staff members' MIS usage skills, given the ongoing advancements in technology that necessitate skill updates.

REFERENCES

Akram, M. S., Goraya, M. A. S., Malik, A., & Aljarallah, A. M. (2018). Organizational performance and sustainability: exploring the roles of IT capabilities and knowledge management capabilities. *Sustainability*, 10(10), 3816.

Bello, M. D. (2022). Management Information System and Operational Performance of Tertiary Institutions in Nigeria. Thesis submitted toCentria University of Applied Sciences in partial fulfillment of the requirements for masters in International Business.

Epstein, M. J., Elkington, J., & Herman, B. (2018). Making sustainability work: Best practices in managing and measuring corporate social, environmental and economic impacts. Routledge.

Eshraghi, H., Ganjouei, F. A. & Esmaeili, M. R. (2015).Effect of Management Information Systems on Productivity in Faculties, Groups and Offices of Physical Education and Sport Sciences in Esfahan Islamic Azad Universities. *Indian Journal of Fundamental and Applied Life Sciences*, 5(S3), 1010-1017.

Jenatabadi, H. S. (2015). Situation of Innovation in the Linkage between Culture and Performance: A Mediation Analysis of Asian Food Production Industry. *Contemporary Engineering Sciences,* 7(7), 323-331.

Kitsios, F., & Kamariotou, M. (2016). Decision support systems and business performance: a conceptual framework for strategic information systems planning. 6th International Conference on IT Convergence and Security (pp. 1-5).

Liao H, Liu Y & Li P (2023). Information systems adoption and knowledge performance: An absorptive capacity perspective. *Frontiers in Psychology,* 13:1062780. doi: 10.3389/fpsyg.2022.1062780.

Meeßen, S.M., Thielsch, M.T. and Hertel, G., (2020). Trust in management information systems (MIS): a theoretical model. *Zeitschrift für Arbeits-und Organizations psychologies A&O*, 64(1), 6-16.

Nita, B., (2015). Methodological issues of management reporting systems design. Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu, (375), 67-74.

Nwiyii, B. J., Amanawa, D. E. & Uelee, M. N. (2022). Management information systems (MIS) and organizational performance of selected production companies in Southern Nigeria. *International Journal of Academic Information Systems Research,* 6(11), 19-28.

Nworie, G. O., & Oguejiofor, B. C. (2023). Management information system and performance of cement firms in Southeast Nigeria. *International Journal of Accounting and Management Information Systems*, 1(1), 1-15.

Ojo, M. O., Ringin, K. J., & Shuibu, H. (2022). Impact of management information system on organizational performance of mtn nigeria. *International Journal of Management, Social Sciences, Peace and Conflict Studies*, 5(2).

Okeke, C. O. (2021). Effect of management information system on organizational performance in manufacturing firms in Onitsha and Nnewi industrial cluster in Anambra State. *Research Journal of Practice*, 1(10), 30-38.

Onodi, B. E., Ibiam, O., & Akujor, J. C. (2021). Management accounting information system and the financial performance of consumer goods firms in Nigeria. *European Journal of Business and Management Research,* 6(1), 112-120.

Osodo, O. P. & Jamaiyo, B. (2015). Relationship between the use of management information systems and employee job performance: evidence from Kenindia Assurance Company limited. *British Journal of Marketing Studies*, 3(5), 61–70.

Raheem, L. O. & Ayorinde, A. M. (2023) Management Information System and Organisational Performance of Service Industry in Nigeria. *Acta Universitatis Danubius*, 19(2), 315-332.

Tamunomiebi, M. D., Adim, C. V., & Adubasim, I. E. (2018). Telecommuting and Organisational Performance of Mobile (GSM) Telecommunication companies in

port *International Journal of Business & Entrepreneurship Research Sciences*, 16(1).

Tantua, E., & Godwin-Biragbara, F. (2020). Management Information System and Office Productivity of the Print Media in Rivers State, Nigeria.

Trabulsi, R. U. (2018). The Impact of Accounting Information Systems on Organizational Performance: The Context of Saudi Arabiâ's SMEs. *International Review of Management and Marketing*, 8(2), 69-73.