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Effect of Management Information System on Workers' Productivity

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Abstract

Management information system (MIS) is best suited in identifying problems and helping managers to understand these problems and help them to make suitable and correct decisions that will help productivity in an organisation, but the main weakness of this management Information System is that it is not aimed at the specific need of the individual rather it is tailored to group of decision makers. This study therefore examined the impact of management information system on workers' productivity. The study adopted a probability sampling technique to select one hundred (100) staff from four supermarkets in Ibadan, Oyo state, Nigeria, where self- administered questionnaires developed in line with the objectives of the study were distributed to the respondents and multiple regression analysis and Pearson Product Moment Correlation were adopted to analyzed the hypotheses formulated for the study. The findings revealed that transaction processing system has an impact on the workers' effectiveness. Also, it was discovered that transaction processing system has significant relationship with workers' effectiveness. This study conclude that the use of management information systems for operations facilitated management activities such as: planning, organizing, coordinating and controlling which are very essential for business success. Finally, the study recommends that management should try to provide proper management information system which will help them in reducing the operational cost of the business and also to reduce the time spent while working so has to improve the quality of the output produced within the organization likewise the profitability.

Keywords: Management Information System, Transactional Processing System, Workers' Effectiveness, workers' Efficiency

Introduction

In present changing world, where competition among businesses is tough and innovation becomes paramount for survival, only the firms that who able to keep up with innovations and cope with the situation by making the necessary chances in their business processes are expected to keep their performance on the required level and stay competitive. During last decade, a high percentage of organizations frequently used Management Information Systems to facilitate the provision of services, and that the speed of the adoption is expected to grow further as the technology expands.

In recent years, the success of any business is directly related to the level and quality of information technologies that are being used in the company and ability to use that

information correctly (Lipaj & Davidavičienė, 2014). For many organizations, the time of rapid technological change is also the time of unstopped struggle for maintaining a competitive advantage. Currently, organizations are in the race for enhancing their capability in order to survive in the competitions of the new century global market. Therefore, organizations are attempting to advance their agility level by improving the operational process to be more efficient and highly effective to meet the successive fluctuations of the market. In an effort to achieve this, many modern organizations, are concerned with a cycle of progressive investments in and adopted new management information systems components especially those that will improve their day-to-day operations.

Management information system is used in organization for its business operation. It provides strong advancement in the field of information technology through which an organization can easily achieved the strategic objectives. It helps in decision support, venture management, resource and people management and data base retrieval application. The use of management information system in business organization support business processes, competitive strategies and business operation which result and impact the performance of the work force of the specific organization (AL-Gharaibeh & Malkawi, 2013). Management information system plays the life blood role for an organization as no business can compete strongly without it. Investment in Management information system by the organization support it in core competencies, it also help in production process, human resources records, financial records and controlling and monitoring of the various activities which in turn impact the organization growth and development and also provide sound basis for strategic decision making process.

Statement of the Problems

Management information system (MIS) is best suited in identifying problems and helping managers to understand these problems and help them to make suitable and correct decisions that will help productivity in an organisation, but the main weakness of this management information system is that it is not aimed at the specific need of the individual rather it is tailored to group of decision makers (Afolayan, 2018). Transaction processing systems are subset of the overall information systems of management covering the application of people, documents, technologies, and procedures by operational managers used to solve business activities problems/constraints such as costing a product, provision of service, provision of customer's record. Transaction processing systems are distinct from others information systems because they are available to implement other information systems since they are used for operational activities in the organization (Munirat, *et al*., 2014). Therefore, the cost and management of these transaction processing systems at times becomes constraints in increasing business profitability, likewise the decision on which of these systems are to be used to encourage more profit for the organisation?

The main objective of this study was to examine the impact of management information system on workers' productivity where transactional processing system was used as the only MIS component for this study. The specific objectives are to:

i. examine the impact of transactional processing system on workers' effectiveness
ii. determine the relationship between transactional processing system and workers' efficiency

The following hypotheses were tested for the study:

$H0_1$: Transactional processing system does not have any significant impact on workers' effectiveness

$H0_2$: There is no significant relationship between transactional processing system and workers' efficiency

Literature Review

Management Information System

Management Information System according to Princy (2017) refers to a computer-based system that provides managers with the tools to organize, evaluate and efficiently manage departments within an organization. Management Information System or 'MIS' is a planned system of collecting, storing, and disseminating data in the form of information needed to carry out the functions of management (Ahmad, 2016).

Munirat, Sanni and Kazeem (2014) Management information system is a set of computer hardware and software, gathered, organized, summarized, and reported information for use by managers, customers and other users. Management Information System is kind of organizational information computer systems that take internal information from operating processing system and summaries them to meaningful and useful forms as management reports to use in performing management duties (Heidarkhani, *et. al*., 2023).

Types of Management Information System

As there are different levels of managers in an organisation, so different types of information they need to work, and there are different computerized systems to fulfil their information need (Muhammad, 2019). The following discussion gives an analysis of specific types of computerized management information systems that correspond to each organizational level.

Transaction Processing Systems (TPS)

Transaction processing systems are the cornerstones of a company's information system and compile their daily business operations. Transaction processing systems gather, process and store data and reflect business transactions such as sales, purchases, payments, and so on (Rafael & Carlos, 2012). Transaction processing systems are the basic business systems that serve the operational level of the organizations. These are computerized system that performs and records the daily routine transactions necessary to conduct the business. A Transaction processing system is a computer-based information system that keeps track of the transactions needed to conduct business

(Mohammed, 2019). At the operation level, tasks, resources, and goals are predefined and highly structured; therefore theses systems cater only operational level tasks. These systems do have clearly predefined inputs and outputs, and there is an emphasis on efficiency and accuracy.

Forms of Transactional Processing System (TPS)

There are basically two forms of transaction processing, these are:

Batch processing system: In a batch processing system, the processing of transactions takes place over batches and transaction data are accumulated over a period of time and processed periodically. For example, if a company is processing the transactions of customers on weekly or bi-weekly basis.

Real-time processing system: Under real-time processing, every single transaction is processed with immediate effect. There is no time delay in the real-time processing system.

Real-time processing systems process transaction data immediately after they are generated and can provide immediate output to end users.

Components of a Transaction Processing System (TPS)

Following are the major components of TPS:

1. **Inputs:** The source documents fetched from the transactions made by customers or organizations and contain information regarding money. These may be bills, invoices, coupons, customer orders, and so on.

2. **Outputs:** The documents generated after the complete processing of the inputs are called outputs.

3. **Processing units:** Processing refers to the step where the information provided at the input step is broken down into segments to be processed into relevant output.

4. **Storage:** The location in the memory where all the desired information is stored is called memory. Generally, the information is stored in the form of ledgers.

Knowledge Work Systems (KWS)

Knowledge work system is an information system that aids knowledge workers in the creation and integration of new knowledge in the organization. A knowledge worker job consists primarily of creating new information and knowledge, one example of a Knowledge work system is the computer-aided design system (Muhammad, 2019). Knowledge work system is a knowledge based information system to support creation, organization and disseminating business knowledge to employees and manager throughout the company (Taruna, & Sanjeev, 2015).

Office Automation Systems (OAS)

Office Automation System is a computer system such as word processing, electronic mail system, and scheduling system that is designed to increase the productivity of data

workers in the office (Muhammad, 2019). They assist primarily of secretaries, accountants, filing clerks, or managers whose jobs are principally to use, manipulate, or disseminate information (Ray & Acharya, 2010).

Decision Support Systems (DSS)

It must be said that all information systems support decision making, even if only indirectly (Rhodes, 2020). Decision Support Systems have been expressly developed to support the decision making process. These systems facilitate dialogue with the user when he or she is considering alternative solutions to a problem, and the system provides database access and models constructed to present information (Yousef, 2016). Decision support systems are interactive, and aim to expand human reasoning capacity to resolve specific non-structured decision-making problems (Rafael & Carlos, 2012). Al-Nakib and Ahmed (2016) stated that there are two types of decisions - programmed and non-programmed decisions. Programmed decisions are basically automated processes, general routine work, where: These decisions have been taken several times and these decisions follow some guidelines or rules. For example, selecting a reorder level for inventories is a programmed decision while Non-programmed decisions occur in unusual and non-addressed situations,

so: It would be a new decision, there will not be any rules to follow, these decisions are made based on the available information and these decisions are based on the manger's discretion, instinct, perception and judgment.

Executive Support Systems (ESS)

ESS-are the information systems at the strategic level of an organization designed to address unstructured decision-making through advanced graphics and communications. ESS are computer-based systems that provide top managers with the capability to attain easy access to internal and external information which is relevant to strategic decision making and other executive responsibilities (Ray & Acharya, 2010). An executive who uses an ESS has a greater capacity to analyse all aspects of the company's operations and to seek out problems and opportunities. Since companies timidly began to adopt Information Technologies, there has been a growing conviction that it cannot easily be applied to managerial tasks: the more complex and ambiguous the activity is, the less useful computer-based tools prove to be (Awan *et al.*, 2015).

Workers Productivity

Workers Productivity refers to the value added by the process divided by the value of the labor and capital consumed safety which measures the overall performance of the organization and the working environment of its employees (Afolayan, 2018). It involves all aspects which directly or indirectly affect and relate to the work of the employees. Workers productivity is any job outcome of a worker and how well those activities were executed (Afolayan & Sowole, 2018).

Measurement of Productivity

Workers Effectiveness: is a process characteristic indicating the degree to which the process output (work product) conforms to the requirements (Robbins, 2010). Effectiveness of teams can be disturbed by organizational decision. An individual in an organisation may encounter some frustration when a certain obstacle is in the way of him/her achieving his/her goal, thereby creating what is called frustration (Luthans, 2018). This, in turn, may create a kind of defense such as justification, withdrawal, aggressive behavior, inertia or the acceptance of a compromise or an alternative.

Workers Efficiency: is a process characteristic indicating the degree to which the process produces the required output at minimum resource cost (Robbins, 2010). Efficiency may be hampered if one employee delays in meeting deadlines which in turn affects the department that rely on him (Afolayan, 2018).

Theoretical Review

Technology Acceptance Model

The Technology Acceptance Model was developed by Davis (1989) is one of the most influential research model in studies of the determinate of information systems and information technology acceptance to predict intention to use and acceptance of information systems and information technology by individuals. In the Technology Acceptance Model, there are two determinants including perceived ease of use and perceived usefulness (Chen, *et al.,* 2011). Perceived usefulness (PU), this was defined by Davis (1989) as the degree to which a person believes that using a particular system would enhance his or her job performance. Perceived ease-of-use (PEOU) Davis (1989) defined this as the degree to which a person believes that using a particular system would be free from effort.

Empirical Review

Panagiotis (2023) studied the impact of management information systems' effectiveness on task productivity. The field research was conducted using a structured questionnaire in a cross-sectional sample of banks in Athens, sixteen (16) different banks and forty two (42) bank branches participated in the survey. The survey respondents selection was based on their affiliation to MIS, regardless of their hierarchical position, in order to ensure a level of MIS effectiveness awareness. Multiple regression was used to analyze that gathered information and the result revealed that management information system have positive impact on task productive of banks because management information system capabilities support decisions that brings about innovativeness, creativity and environment scanning (open system) as well as modelling, optimizing and forecasting (rational) at the expense of internal controlling, monitoring, excessive documentation and stability (internal process).

Al Omari (2012) analysed the impact of management information systems computerized on the performance of employees in the Palestinian Telecommunications Company, the study had several conclusions, including: the impact of significant statistical requirements for the operation of management information systems (physical, software, human resources, organizational) on the performance of employees in the telecommunications company, its recommended as the need to keep pace with technological developments in the field of management information systems, participation of workers in the process of designing management information systems development and work to make information available to users to meet up with job demand. Therefore, this study aimed at filling a particular gap by limiting the study to the direct impact of Management Information System (MIS) on the workers' productivity focusing on Transactional Processing System only as an independent variable and workers' effectiveness and workers' efficiency as dependents variables.

Methodology

The study adopted a probability sampling technique to select one hundred (100) staff from four supermarkets in Ibadan, Oyo state, Nigeria. The supermarkets selected are Vanguard supermarket (Challenge branch and Wofun olodo branch), Feedwell supermarket (Bodija and Idi ape branch), Ace supermarket (Bodija branch and Akobo branch), Foodco supermarket (Akobo branch and Bodija branch) where two branches were selected from each of the supermarket selected. Questionnaire was developed in line with the objectives of the study and distributed to the respondents where multiple regression analysis and Pearson Product Moment Correlation were adopted to analyzed the hypotheses formulated for the study.

Presentation of result and discussion of finding

Result of hypothesis one

$H0_1$: Transactional processing system does not have any significant impact on workers' effectiveness

Table 1. Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	43.748	2.295		19.060	.000
Provision of available detail information needed for operations	.944	.147	.419	6.403	.000
Service based system (SBS) enhancement	-3.173	.481	-1.498	-6.598	.002
Task accomplishment	3.716	.605	2.250	6.142	.000
The quality of the work	-1.344	.218	-.485	-6.165	.001
Gather, process, store data and reflect business transactions	-4.630	.635	-2.443	-7.296	.000

a. Dependent Variable: Total Productivity

Source: Researcher's Field Survey, 2024

The coefficients table 1 represents the effect of transaction processing system on workers' productivity. The result shows that transaction processing system dimensions (detail information, enhancement, task accomplishment, quality of work and reflect business transaction) has an effect on workers' productivity. The result is shown by its probability value of each dimension respectively (p-value; 0.000, 0.002, 0.000, 0.01 and 0.000) which are less than the chosen 5% significance level (0.05) each. This means that transaction processing system dimensions such as detail information, enhancement, task accomplishment, quality of work and reflect business transaction positively affect the workers' productivity. This indicates that the null hypothesis was rejected (i.e Transaction processing system does not have significant effect on workers' productivity) while and alternate hypothesis was accepted (i.e Transaction processing system has a significant effect workers' productivity).

Result of hypothesis two

$H0_2$: There is no significant relationship between transactional processing system and workers' efficiency

Table 2. Correlations

		Transaction processing systems	Workers' productivity
Transaction processing systems	Pearson Correlation	1	.001
	Sig. (2-tailed)		.225
	N	204	204
Business profitability	Pearson Correlation	.001	1
	Sig. (2-tailed)	.225	
	N	204	204

Correlation is significant at the 0.01 level (2-tailed).

Source: Researcher's Field Survey, 2024

As shown in table 4.4.2.1 statistically, there was a significant correlation between transaction processing system and workers' productivity which was presented at 0.001 level of significance. The relationship between transaction processing system was positively correlated and this implies that null hypothesis will be rejected (i.e There is no significant relationship between transaction processing system and workers' productivity) while alternate hypothesis will be accepted (i.e There is a significant relationship between transaction processing system and workers' productivity).

Discussion of the Research Findings

From the outcome of the study conducted on the impact of management information system (MIS) on workers' productivity from the selected supermarkets in Ibadan. The study focused on transactional processing system of MIS and revealed that transactional processing system has a significant effect on workers' effectiveness. This implies that effective utilization of transactional processing system helped the worker to gather, process, store data with ease and accomplish their task effectively. The study also revealed that transactional processing system has a significant relationship with workers' efficiency which implies that using transactional processing system allowed the workers to accomplish their tasks with little effort, time and resources. Therefore, management information system affects workers' productivity in the selected supermarkets in Ibadan. The outcome of this finding is alignment with the study of Panagiotis (2023) and Al Omari (2012) on the impact of management information systems' effectiveness on task productivity and the impact of management information systems computerized on the performance of employees respectively.

Conclusion and Recommendation

In conclusion, the finding revealed that management information system has a positive impact on workers' productivity and serves as an important technological tool for today's business. The following were conclusions were raised;

The use of management information systems for operations facilitated management activities such as: planning, organizing, coordinating and controlling which are very essential for business success. This is because information systems enable effective and efficiency operation within an organisation in such way that daily activities are completed with minimum effort and without wasting time and resources which helps in discharging proper management activities which are channeled toward increasing productivity.

Finally, it was concluded that both managerial and operational mistakes are less while making use of transaction processing system for business activities. Information systems that are available for use at both top and lower management level are effective for operation and this makes it possible for them to have outputs that are less or free from errors.

The following recommendations were made in line with the research objective:

I. Business organizations should pay more attention to the development of a good and up-to-date management information system, so as for facilitate the management processes such as planning, organizing, coordinating and controlling because of the great potential of management information system to generate more market for the business and improvement in product development.
II. Management should try to provide proper management information system which will help them in reducing the operational cost of the business and also to reduce the time spent while working so has to improve the quality of the output produced within the organization likewise the profitability.
III. Lastly, skillful and experienced IT workers should be employed to manage the IT department of the company. This is because without competent staff, managerial and operational mistakes might be high because of lack of qualified IT personnel who will address any errors in managerial operations.

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