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Executive Information System and Organizational Productivity of Manufacturing Companies in Rivers State, Nigeria

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ABSTRACT: This study examined the relationship between executive information system and productivity of manufacturing companies in Rivers State, Nigeria. The study adopted a cross-sectional research survey design. Primary data was generated through self-administered questionnaire. The population for the study was the thirty-six manufacturing companies in Rivers State, Nigeria registered with the Manufacturers Association of Nigeria (MAN). A census sampling was adopted since the population was small. However, five (5) managers were selected from each of the 36 manufacturing companies which gave a total of 180 study respondents. The reliability of the research instrument was determined by the use of the Cronbach Alpha coefficient with all the items scoring coefficients above 0.70. The hypotheses were tested using the Spearman's Rank Order Correlation Statistics. The findings revealed that there is a significant relationship between accounting information system effectiveness and productivity of manufacturing companies in Rivers State, Nigeria. The study, thus, concluded that executive information system significantly influences productivity of manufacturing companies in Rivers State, Nigeria. The study therefore recommends that manufacturing companies should ensure that it recruits the services of third party firms that are trustworthy and credible in providing credible accounting information services. It is therefore of greater importance that measures are put in place to check that information provided are well secured protected. Also timeliness and accuracy of the provided information should be emphasized.

Keywords: Executive Information System, Organizational Productivity, Profitability and Quality Service Delivery

I. INTRODUCTION

Information systems are generally designed and implemented to enhance organizational impacts. The rapid changes in technology and the dynamic nature of the business environment, as well as increasing demand from customers, have transformed the activities of making business at both the technical level and strategic level of the organization (Damera, Garilli, & Ricciardi, 2013). The success of organizations depends on their ability to respond to changes in the market environment they are operating. In this way, managers strive to ensure that their organizations successfully adapt to such changes. The acquisition and use of information are key factors in successful executive performance. Although there are various and different media that executives use to obtain information, in the last decade the academic research has emphasised computer-based systems. Inside this group of systems, we can find the Executive Information Systems (EIS), which are tools that can help executives to obtain relevant information more efficiently. Recently, EIS have been analyzed through the Technology Acceptance Model (TAM) with significant results (Giner & Fernandez, 2009).

Many organizations are upgrading from management instinctive decisions to decisions support systems to make decisions for business growth, not only because of the bad result they get often from the instinctive decisions but from the fact that they need to mine the daily increase in data, look at the trends and patterns, and look for an accurate data so as to make better decisions. Also because of its wide support for business convenience and ease of use (Bestman and Chinyere, 2020). One of such tools that facilitates decisions based on the data mined is the executive information system. Executive Information Systems (EIS) are flexible tools that provide broad and deep information support and analytic capability for a wide range of executive decision-making (Giner & Fernandez, 2009). EIS content internal and external data (Watson *et al.*, 1991; Young & Watson, 1995), which comes from different sources of information with different origins: transactional systems, financial reporting systems, commercial information sources, text files and manual recollection (Vandenbosch & Huff, 1997). EIS's may also include environmental scanning data, access to external databases (Young &

Watson, 1995) and soft information (Watson, OHara, Harp, & Kelly, 1996). EIS support the work of senior management by providing rapid access to critical information (Arnott, Jirachiefpattana, & O'Donnell, 2007) and executives must utilize this software technology for strategic decision-making and managing daily business activities in order to remain competitive (Nord & Nord, 1995).

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An important executive activity is to be actively engaged in the strategic management process (SMP) in order to take actions that lead to the accomplishment of organizational objectives (Tyran, Dennis, Vogel & Nunnamaker, 1992). This process requires information that is not always readily available (Drucker, 1999). A lack of relevant information to support strategic management, arguably the most important task of senior executives, can have a deleterious effect on organizational performance. An EIS has the potential to provide information that supports the SMP (Crockett, 1992). Such a system can improve the efficiency and effectiveness of executives who use it (Vandenbosch & Huff, 1987).

The purpose of this study was to examine the relationship between executive information system and organizational productivity of manufacturing companies in Rivers State, Nigeria. Furthermore, this study was guided by the following research questions:

- i. What is the relationship between executive information system and profitability of manufacturing companies in Rivers State, Nigeria?
- ii. What is the relationship between executive information system and quality service delivery of manufacturing companies in Rivers State, Nigeria?

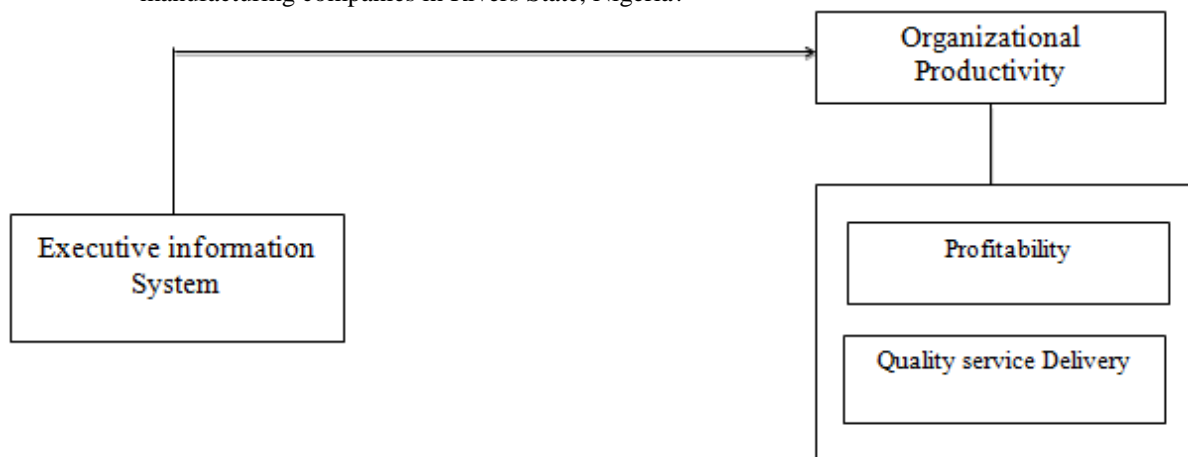


Fig.1 Conceptual Framework for the relationship executive information system effectiveness and Organizational Productivity

Source: Desk Research (2020)

II. CONCEPTUAL REVIEW

Executive Information System

Executive information systems (EIS) are computerized systems that provide executives with online easy access to internal and external information relevant to their business success factors (Rainer & Watson, 2005). The aim of EIS is to bring information from the external environment and all parts of an organization and present it in a way that is meaningful to executive users (McBride, 2007). Nonetheless, the actual engagement or use of these systems by executives is relatively low (Young & Watson, 2005; Fitzgerald, 2008). Several studies (Bergeron et al., 2005; Singh et al., 2002) have reported the growing popularity of EIS in organizations as new concepts such as enterprise resources planning (ERP), data warehousing, data mining, web-based portal to

“dashboard” and “scorecards” and the on-line analytical processing (OLAP) engine have paved the way for a new era of managing corporate data. Despite these, the underutilization of EIS by senior managers remained an important challenge to user organizations. Top officers don't use executive information systems (Wilt, 2004). The characteristics of EIS such as, the ability to move freely between a high-level view of data and a detailed view (drill-down'), a concentration on data relating to key performance indicators and critical success factors, the ability to highlight exceptions and variances automatically and to present information in graphical, tabular, textual and colours to the executives make EIS a suitable tool for executives' work (McBride, 2007).

Nandhakumar and Jones (2007) witnessed an EIS development project in their in-depth study of the development methods in organizations where potential executive users were not involved in the design phases. As a result, they suggest that there should be better theoretical conceptualization of the dynamic relationship between the developers and executives to assist in understanding how the relationship shapes, and is shaped by various constraints. McBride (2007) studied the progress of an EIS project within a manufacturing organization in the UK over a 9-year period. The study demonstrates the importance of the interaction between the business environment, the organizational environment and the perceptions and interpretations of events by stakeholders on the success or failure of EIS. Particularly, it illustrates the importance of the organizational context and the dynamic nature of the social, economic and technical factors critical in shaping acceptance and use of EIS in organizations.

Information Communication Technologies (ICT) can provide powerful strategic and tactical tools for organizations, which if properly applied and used, could bring great advantages in promoting and strengthening their competitiveness. The proliferation of the Internet, as a main stream communication media and as an infrastructure for business transactions has generated a wide range of strategic implications for businesses in general as well as for the travel and airline industries in particular (Li-Hua and Khalil, 2006). Internet technology and web based commerce have dramatically transformed the airline industry in the decade (Werthner & Klein, 2005).

Information and Communication Technologies (ICT) have always played a predominant role in the airline sector (Poon, 2003) but with the advent of the Internet and open source technology their impact is becoming increasingly more crucial and evident (Buhalis, 2004; Jacobsen, Gary, Cashman, & Tim, 2008). Web distribution combined with cheaper and more flexible technologies allows new players on the market to implement effective low-cost direct distribution strategies and intensify competition in the sector (Dennis, 2007; Buhalis & Law, 2008).

Adeosun, Adeosun and Adetunde (2009) state that the use of ICT enables strategic management, communication, collaboration, information access, decision making, data management and knowledge management in organizations. ICT causes fundamental changes in the nature and application of technology in businesses. ICT can provide powerful strategic and tactical tools for organizations which, if properly applied and used, could bring great advantages in promoting and strengthening their competitiveness (Buhalis, 2004). Hengst and Sol (2001), state that ICT enables organizations to decrease costs and increase capabilities and thus assist to shape inter organizational coordination. The use of ICT can assist to lower coordination cost and increase outsourcing in organizations. ICT is used to exchange information and it provides a medium for learning. Ramsey et al. (2003) note that organizations generally stand to gain from ICT in areas such as reduced transaction costs, information gathering and dissemination, inventory control, and quality control.

Organizational Productivity

According to Mathis and John (2003), productivity is a measure of the quantity and quality of work done, considering the cost of the resources used. The more productive an organization, the better its competitive advantage, because the costs to produce its goods and services are lower. Better productivity does not necessarily mean more is produced; perhaps fewer people (or less money or time) was used to produce the same amount. McNamara (2003) further states that, results are usually the final and specific outputs desired from the employee. Results are often expressed as products or services for an internal or external customer, but not always. They may be in terms of financial accomplishments, impact on a community; and so whose results are expressed in terms of cost, quality, quantity or time. He further notes that measuring productivity involves determining the length of time that an average worker needs to generate a given level of production. You can also observe the amount of time that a group of employees spends on certain activities such as production, travel, or idle time spent waiting for materials or replacing broken equipment. The method can determine whether the employees are spending too much time away from production on other aspects of the job that can be controlled by the business.

Armstrong (2006) defines performance in output terms as the achievement of objectives and how these objectives are achieved. High performance results from appropriate behavior, especially discretionary, and the effective use of the required knowledge, skills and competencies. Performance may be understood differently depending on the person involved in the assessment of the organizational productivity for instance performance

can be understood differently from a person within the organization compared to one from outside (Lebans& Euske2006). To define the concept of performance is necessary to know elements and characteristics to each area of responsibility. To report an organization's performance level, it is necessary to be able to quantify the results (Petkovic, 2008).

According to Gilbert and Ivancevich (2000), performance refers to the act of performing or carrying into execution or recognizable action, achievement or accomplishment in the undertaking of a duty. Cascio (2006) defines performance as working of individuals in an organization to be more effective. Zaman *et al* (2011) indicated that there is a significant and positive relationship between performance and reward. The other approach in defining organizational productivity that has in the recent past gained popularity in numerous organizations is the Balanced Scorecard (BSC) methodology by Kaplan & Norton (1992). In this method, performance of an organization is measured using four key perspectives financial, customer, internal processes, and Learning and Growth/innovation.

Measures of Organizational Productivity

Profitability

Profitability refers to money that a firm can produce with the resources it has. The goal of most organization is profit maximization (Niresh&Velnampy, 2014). Profitability involves the capacity to make benefits from all the business operations of an organization, firm or company (Muya&Gathogo, 2016). Profit usually acts as the entrepreneur's reward for his/her investment. As a matter of fact, profit is the main motivator of an entrepreneur for doing business. Profit is also used as an index for performance measuring of a business (Ogbadu, 2009). Profit is the difference between revenue received from sales and total costs which includes material costs, labor and so on (Stierwald, 2010). Profitability can be expressed either accounting profits or economic profits and it is the main goal of a business venture (Anene, 2014). Profitability portrays the efficiency of the management in converting the firm's resources to profits (Muya&Gathogo, 2016). Thus, firms are likely to gain a lot of benefits related increased profitability (Niresh&Velnampy, 2014). One important precondition for any long-term survival and success of a firm is profitability. It is profitability that attracts investors and the business is likely to survive for a long period of time (Farah & Nina, 2016). Many firms strive to improve their profitability and they do spend countless hours on meetings trying to come up with a way of reducing operating costs as well as on how to increase their sales (Schreibfeder, 2006).

Quality Service Delivery

Service delivery is a continuous, cyclic process for developing and delivering user focused services. It is further defined in four stages as user engagement, service design and development, service delivery and lastly assessment and positive change of service (Dachset *al.*, 2004). Other scholars have propounded other definitions and according to Carrillat *et al.* (2007), service delivery is the physical access or reachability of services that meet a base standard. The later regularly requires detail as far as the components of service delivery, for example, essential equipment, medications and products, healthy workforce, and rules for treatment. Service delivery denotes the ability of the client to pay for the services where data can be collected by facility visits or by household interviews (Berghman *et al.*, 2006). In this study, service delivery was defined as the willingness and readiness of a workforce to provide services in a dependable, accurate and responsive manner while utilizing the available resources.

The Servqual model was developed by Parasuraman *et al.*, (1988) to define service quality service delivery by means of the gap between the customers' perceptions and the expectations about organization's service quality service delivery performance. The model distinguishes five determinants of administration quality service delivery as effects, unwavering quality service delivery, responsiveness, confirmation and sympathy. It is measured administration conveyance since it is a settled instrument that has been utilized as a part of different reviews and its psychometric properties have been examined by some of the studies (Asubontenet *al.*, 1996; Zhao *et al.*, 2010). Consequently, service quality service delivery is composed of perceived quality service delivery and expected quality service delivery. While perceived quality service delivery can be defined as the customer's judgment about the general position and excellence of the administration they get, expected quality service delivery clarifies the assumptions about the administration they have gotten. Bakiet *al.* (2009) point out that on this scale, otherwise called the crevice examination, benefit quality service delivery is characterized as an estimation of the degree to which the offered benefit quality service delivery empowers to meet client desires. Assurance which is an aspect of service quality service delivery implies the employees' knowledge and courtesy levels and their ability to inspire trust and confidence (this dimension also includes competence, courtesy, credibility, and security).

Executive information System and Organizational productivity

The relationship between executive information system and organizational performance is revealed to be significant at a 95% confidence interval. This finding is in agreement with Nandhakumar and Jones (2007) who witnessed an EIS development project in their in-depth study of the development methods in organizations where potential executive users were not involved in the design phases. As a result, they suggest that there should be better theoretical conceptualization of the dynamic relationship between the developers and executives to assist in understanding how the relationship shapes, and is shaped by various constraints. McBride (2007) studied the progress of an EIS project within a manufacturing organization in the UK over a 9-year period. The study demonstrates the importance of the interaction between the business environment, the organizational environment and the perceptions and interpretations of events by stakeholders on the success or failure of EIS. Particularly, it illustrates the importance of the organizational context and the dynamic nature of the social, economic and technical factors critical in shaping acceptance and use of EIS in organizations.

The study postulates the following hypotheses to be tested:

Ho₁: There is no significant between executive information system and profitability of manufacturing companies in Rivers State, Nigeria.

Ho₂: There is no significant between executive information system and quality service delivery of manufacturing companies in Rivers State, Nigeria.

III. METHODOLOGY

The study adopted the cross-sectional survey in its investigation of the variables. Primary data was sourced through structured questionnaire. The population for the study was the thirty-six manufacturing companies in Rivers State registered with the Manufacturers Association of Nigeria (MAN). A census sampling was adopted since the population was small. However, five (5) managers were selected from each of the 36 manufacturing companies which gave a total of 180 study respondents. The reliability of the research instrument was achieved by the use of the Cronbach Alpha coefficient with all the items scoring coefficients above 0.70. The hypotheses were tested using the Spearman's Rank Order Correlation Statistics. The tests were carried out at a 95% confidence interval and a 0.05 level of significance.

IV. DATA ANALYSIS AND RESULTS

Bivariate Analysis

The Spearman Rank Order Correlation coefficient is calculated using the SPSS 21.0 version to establish the relationship among the empirical referents of the predictor variable and the measures of the criterion variable.

Table 1: Correlation for Executive information System and the Measures of Organizational Productivity

		Executive IS	Profitability	Quality service delivery	
Spearman's rho	Executive IS	Correlation Coefficient	1.000	.846**	.752**
		Sig. (2-tailed)	.	.000	.000
		N	155	155	155
	Profitability	Correlation Coefficient	.846**	1.000	.604**
		Sig. (2-tailed)	.000	.	.000
		N	107	107	155
	Quality service delivery	Correlation Coefficient	.752**	.604**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	155	155	155

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

Source: Research Data 2020 and SPSS output version 23.0

Table 1 illustrates the test for the third two previously postulated bivariate hypothetical statements. The results show that for

Ho₁: There is no significant relationship between executive information system and profitability of manufacturing companies in Rivers State, Nigeria.

The correlation coefficient (r) shows that there is a significant and positive relationship between executive information system and profitability. The ρ value 0.846 indicates this relationship and it is significant at $p < 0.000 < 0.05$. The correlation coefficient represents a high correlation indicating a strong relationship. Therefore, based on this finding the null hypothesis earlier stated is hereby rejected and the alternate upheld. Thus, there is a significant relationship between executive information system and profitability of manufacturing companies in Rivers State, Nigeria.

Ho₂: There is no significant between executive information system and quality service delivery of manufacturing companies in Rivers State, Nigeria.

The correlation coefficient (r) shows that there is a significant and positive relationship between executive information system and quality service delivery. The ρ value 0.752 indicates this relationship and it is significant at $p < 0.000 < 0.05$. The correlation coefficient represents a high correlation indicating a strong relationship. Therefore, based on this finding the null hypothesis earlier stated is hereby rejected and the alternate upheld. Thus, there is a significant relationship between executive information system and quality service delivery of manufacturing companies in Rivers State, Nigeria.

V. DISCUSSION OF FINDINGS

The results from the test of hypotheses revealed that there is a significant positive relationship between executive information system and organizational productivity of manufacturing companies in Rivers State, Nigeria. This finding is in agreement with Nandhakumar and Jones (2007) who witnessed an EIS development project in their in-depth study of the development methods in organizations where potential executive users were not involved in the design phases. As a result, they suggest that there should be better theoretical conceptualization of the dynamic relationship between the developers and executives to assist in understanding how the relationship shapes, and is shaped by various constraints. McBride (2007) studied the progress of an EIS project within a manufacturing organization in the UK over a 9-year period. The study demonstrates the importance of the interaction between the business environment, the organizational environment and the perceptions and interpretations of events by stakeholders on the success or failure of EIS. Particularly, it illustrates the importance of the organizational context and the dynamic nature of the social, economic and technical factors critical in shaping acceptance and use of EIS in organizations.

VI. CONCLUSION AND RECOMMENDATIONS

Executive information systems (EIS) are now successfully providing computer support for senior executives in a growing number of organizations. This study concludes that executive information system effectiveness significantly influence organizational productivity of manufacturing companies in Rivers State, Nigeria.

Based on the foregoing conclusions, the following recommendations are suggested.

The study recommends that executive information system should capitalize on emerging technology to aid the decision-making capabilities of managers of manufacturing companies. Also, this study recommends an upgrade of the current system to a system that can explore more decision-making horizons.

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