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IMPLEMENTATION OF ENTERPRISE RESOURCE PLANNING SYSTEM AND PERFORMANCE IN THE MANUFACTURING FIRMS IN NAKURU CITY COUNTY, KENYA

[1] Adhiambo Donata Mercy, [2]Dr. Machoka Paul (PhD)

[1]Masters student, Jomo Kenyatta University of Agriculture and Technology, Kenya
[2]Lecturer, Jomo Kenyatta University of Agriculture and Technology, Kenya

ABSTRACT

This study sought to examine the implementation of Enterprise Resource Planning (ERP) system and performance in the manufacturing firms in Nakuru city county, Kenya. The following specific objectives guided the study: To determine the influence of top management support in the implementation of ERP by the manufacturing firms in Nakuru city county, Kenya; to find out the influence of user involvement and participation in the implementation of ERP by the manufacturing firms in Nakuru city county, Kenya. The study utilized the use of the following theories: Technology Acceptance Model, Diffusion of Innovation Theory, Resource Based View Theory and Theory of Technology-Organization-Environment. This study utilized the use of Descriptive research design. The target population for this study was 27 manufacturing firms within Nakuru City County. Structured questionnaires were used in the study to gather primary data. The study also applied the use of quantitative and qualitative data analysis techniques. Descriptive and inferential statistics were used to analyze quantitative data while qualitative data was analyzed thematically. The study concludes that top management support has a positive and significant influence on performance in the manufacturing firms. In addition, the study concludes that user involvement and participation have a positive and significant influence on performance in the manufacturing firms. Further, the study concludes that project team composition and competence have a positive and significant influence on performance in the manufacturing firms. The study also concludes that operating environment has a positive and significant influence on performance in the manufacturing firms. From the results, this study recommends that the management of manufacturing firms in Nakuru City County, Kenya should ensure top management support on adoption of various systems to enhance organizational performance. In addition, the management of manufacturing firms in Nakuru City County, Kenya should ensure regular staff training to equip them with the needed skills for system implementation.

Key Words: Implementation of Enterprise Resource Planning (ERP) system, top management support, user involvement and participation

INTRODUCTION

According to Njihia and Mwirigi (2014) Enterprise resource planning (ERP) is one of the key forms of IT applications that is developing as one of the best means of achieving top organizational performance. As a results businesses are increasingly implementing the ERP systems in their operations. According to Wallace & Kremzar (2001) the implementation of ERP system modernizes business operations. Wu & Tagg (2014) state that organizations tend to implement ERP systems for the purpose of achieving strategic and competitive advantages in addition to changing business processes. Furthermore, Ramburn et al., (2013) state that the competitive advantage accrued by implementing ERP system comprises of centralization of an organization information, faster transactions and acquisition of real-time information that help management make quick decisions pertaining to the operation of an organization.

In Australia, Dagher and Kuzic, (2011) carried out a research study on the aspects influencing the application of ERP systems in some of the Australian firms. The research was carried out in five companies, the respondents were five senior managers involved in ERP implementation in their respective companies. The authors successfully showed that ERP implementation is influenced by critical factors such as top management support, user engagement and resources in terms of finances. Moreover, they pointed out that both small and large firms in Australia have implemented ERP whereas others are still in the process of implementing the system due to the reasons pertaining to cost and time involved.

In Nigeria, small and medium enterprises (SMES) are being encouraged to implement the Odoo ERP system which is believed to have the potential of minimizing errors and increasing productivity. Aremu et al., (2020) carried out a research study on the determinants of ERP system adoptions among the medium sized organizations in Oyo State, they concluded that technological change and organizational structure stimulate the implementation of ERP system in organizations. They further noted that there is need for organizations to pay more attention on organization structure when shifting from one system to another to avoid failure. Additionally, they added that technological infrastructures, top management support and communication are also critical factors that influence the adoption of ERP.

According to Monk and Wagner (2012), Enterprise Resource Planning (ERP) has the potential of reducing cost and operational efficiency. Therefore, in order to stay competitive, Kenyan businesses have acquired understandings from global thriving organizations that they have to overhaul their business processes so as to be competitive. Furthermore, there is need for the Kenyan businesses especially the manufacturing firms to work closely with well reputable organizations globally and regionally that have successfully implemented the ERP system so as to realize their goals and objectives and in the long run achieve operational efficiency and cost minimization (Ganesh et al., 2014).

Bank (2014), noted that the manufacturing sector has great potential for growth and investment hence placing Kenya on high economic growth pathway because of its ability to create wide range productive employment due to its connections to almost all other sectors of the economy.
Nonetheless, the sector's performance has been dwindling progressive wise. The sector has lagged behind in the economy in comparison to other sectors and has been experiencing downward trend. For instance, the sector's GDP contribution in 1994 was 13.6 per cent, in 2004 its contribution went down to 10 per cent and in 2016 it continued downwards to 9.2 per cent while in 2017 it further reduced to 8.4 per cent. The downward trend further continued in 2018 which recorded GDP share of 7.6 per cent and in 2019 7.9 per cent (World Bank, 2014; KNBS, 2017).

In today's business environment, manufacturing firms are leaning towards the incorporation of technologies to boost their performances given the dynamic and complex market environment in which they operate. A research survey carried out by the Kenya Association of Manufacturers (2016) established that a huge number of manufacturers have not yet embraced technology to the fullest and hence are still using outdated technologies which are not in the position to help them attain their anticipated degree of efficiency.

Statement of the Problem

Given the fierce business environment today, organizations are embracing the use of technologies in order to improve their performances. ERP as a form of technology is believed to have the capacity to turn around the performance of the organization that implements it in its operations, this is because it integrates information in a single central database across all the organizational functional areas such as manufacturing, human resource, finance and customer relationship management thus making available information in real-time which the management can use to make decisions affecting the organization's operations hence improve the performance (Ramburn et al., 2013).

Many scholars have studied the area of Enterprise Resource Planning systems and have majorly concentrated on the drivers and challenges of ERP implementation, however, only a few have given back feedback pertaining to whether the projected expectations upon completion were realized in the organizations under their studies, that is to say whether the promise of improved organizational performance was achieved, thus there is no sufficient information pertaining to linkage between performance and implementation of the ERP system. Musyimi and Odongo (2015) in their research study on factors influencing the adoption of ERP system in 141 manufacturing firms within Nairobi Metropolitan, only dwelled on the factors influencing the system implementation such as organizational factors comprising of company size, corporate culture, ICT resources, which they concluded that greatly influenced the implementation but did not mention whether the firms' performance were affected in regards to the implementation. Additionally, in another research study carried out by Nzuki and Nduku (2014) on factors determining the adoption of ERP system among 55 companies listed with Nairobi Stock Exchange (NSE), the authors identified factors such as age of the company, firm's size, structure of capital, firm's location and ERP tools familiarity as some of the key factors influencing firms ERP adoption, but did not touch on whether the expectations leading to the adoption of the system were met and thus had an impact on the performance of the companies.

The manufacturing sector holds some potentiality for the country (World Bank, 2014), the introduction and application of information technology in businesses today has renewed interest in the sector. Therefore, with the need to improve the performance of the manufacturing sector in the country, there is need for understanding some of the key factors influencing the implementation of ERP system as well as the linkage between the system and the performance of the sectors for sustainability of competitive advantages. There is therefore inadequate studies in regard to the linkage between ERP implementation and firms' performance and therefore the need for this study.

Objectives of the Study

i) To determine the influence of top management support in the implementation of ERP by the manufacturing firms in Nakuru City County, Kenya.

ii) To find out the influence of user involvement and participation in the implementation of ERP by the manufacturing firms in Nakuru County, Kenya.

LITERATURE REVIEW

Theoretical Review

Technology Acceptance Model (TAM)

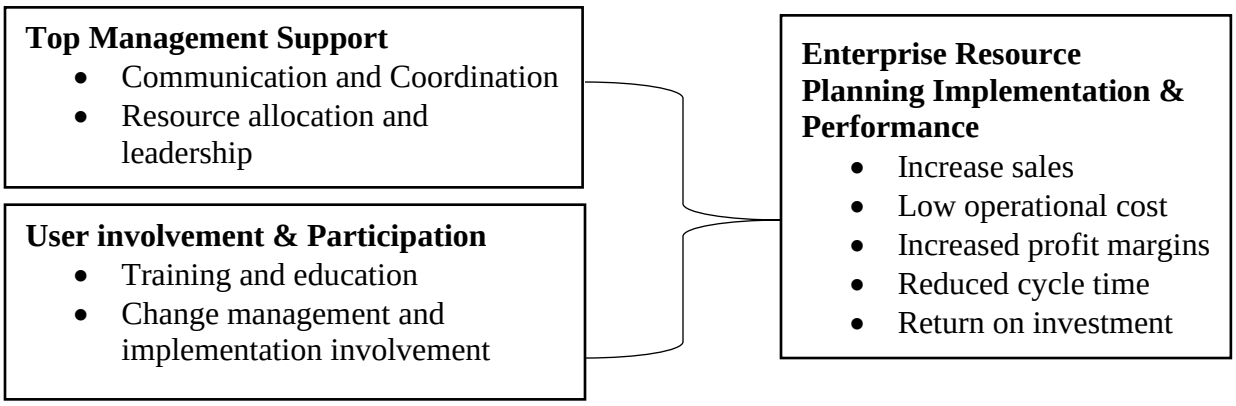
Technology Acceptance Model (TAM) was established by Fred Davis in 1986, it is a model that is based upon behavior and attitude of the user, therefore, used to explain how users come to accept and use technology (Rony, 2015). The model is based upon two factors which suggests the possibility of the potential users using information technology presented to them, thus prediction and acceptability of information technology within an organization. The two factors include perceived usefulness (PU) and perceived ease of use (PEOU) which are deemed as pertinent when it comes to IT use behavior. Davis in his endeavors to enlighten people on TAM, defined perceived usefulness as user's perception that using a given specific information technology system will improve his performance whereas perceived ease of use as the degree to which the user believes that the particular system will not require a lot of effort to use (Mustafa et al., 2014).

The theory will be used in the study to find out the influence of user involvement and participation in the implementation of ERP. TAM is a viable approach since it examines user's ease of use of information technology and perceived usefulness from the point of behavior and attitude. Additionally, TAM can be used as a platform for drawing the relationship between users and organizational acceptance of new technology.

Diffusion of Innovation Theory (DOI)

Diffusion of Innovation Theory (DOI) is a model that was established by Everett Rogers in 1962. It is a theory that is concerned with awareness and decision making of an innovation. The model from the aspect of diffusion refers to the method through which an innovation is relayed or communicated via channels over a period of time among certain group of people or a social system (Rogers, 2003). Therefore, the model postulates that an idea diffuses in a system after its recognition by those within the system which is done so through communication. The model further posits that the end goal for the diffusion is that those within the system accepts or adopts the idea and thereafter carryout their operations or behave differently from the way they used to prior to adopting or accepting the new idea. It is worth noting that the key issue in DOI is that the people within the system have to recognize that the idea presented to them is new or innovative. This theory will therefore be applicable in the investigation of influence of user involvement and participation as well as the influence of top management support in the implementation of ERP.

Conceptual Framework



Top management

Top management support is considered as significant in the ERP life cycle for the purpose of ensuring successful implementation. Zhang et al. (2003) posit that there are key factors played by the top management in ensuring that the implementation of ERP system project is a success. The factors include provision of leadership and provision of needed resources to ensure that the project runs smooth. Moreover, the top management is endowed with the responsibility of establishing realistic objectives necessary to achieve the implementation, demonstration of their commitment to the implementation and overall communicating to the employees within the organization the required and developed strategies to push through the implementation (Umble et al., 2003).

Al-Mashari et al. (2003) postulates that top management role in the implementation of ERP system does not come to stoppage after identification of the need to implement the system and just availing resources, but must continue throughout each and every phase of the system implementation until its completion. Besides, they are required to be around to accord the ERP implementation team direction in addition to monitoring the implementation process and communicating back their findings. When the top management is not attuned to the implementation of the ERP system, then chances of the system being successful is very minimal this is because the top management is the ultimate decision maker in the organization, and without their green light to proceed with implementation, the whole system implementation stalls.

User involvement and participation

User involvement and participation is one of the most mentioned key factor for successful ERP system implementation among others. User involvement and user participation were earlier on used synonymously until when the need to differentiate the two words was initiated by Barki and Hartwick (1989). Barki and Hartwick (1989) in their endeavor to differentiate the two words, defined user participation as behaviors and activities represented throughout the process of implementation, while user involvement as a psychological state of the user that is based upon the perception of the system significance and relevance to them. It is therefore important to allow users to partake in such project implementation because they have vast knowledge in their job domain that they have acquired over a period of time and so their contribution will help with the implementation, since the system will affect their job domain in one way or another, more so putting in mind that ERP is a system that integrates all processes by the use of a common database which enables organizations to collect, store and interpret businesses information in real time (Monk & Wagner, 2012), therefore, through participation, the user satisfaction as well as acceptance of the system is increased this is because of the fact that their needs and point of views are included in the implementation (Esteves et al., 2003). Zhang et al., (2003) mentions that when an organization decides that it wants to implement ERP system in its operations, then the user should be involved from the start of the project, that is from its definition up to the end.

Additionally, the user involvement and participation can be increased by education and training, since ERP system comes with some technicalities that needs training even if one has IT knowledge (Woo, 2007**).** According to Nah et al., (2003) adequate training has the capacity to stimulate successful implementation of ERP. Therefore, with user being involved in the implementation journey, issues pertaining to change resistance like future uncertainty and the feeling of losing control over their jobs are addressed, given that these are some of the issues that make change sometimes difficult in organizations.

Empirical Review

Momanyi (2014) carried out a study on ERP adoption and organizational performance of manufacturing firms. His research was based on cross sectional study whereby structured questionnaires were used as the main data collection tool. The results of the research study indicated that the firms under study had adopted ERP in areas of customer relationship management, procurement, human resource management, manufacturing and financial management. Moreover, the results indicated that factors such as competition, availability of infrastructure, business innovations, cost savings were some of the drivers leading to ERP adoption in the firms. Additionally, the study indicated that majority of the respondents in the study agreed that upon the implementation of ERP, the firms had better return on investment (R.O.I), improved data security, reduced cost of production and enhanced decision-making process. While others agreed to the modest extent that the firms had enhanced efficiency in production; improved competitive advantage and increased customer satisfaction.

Shatat (2015) carried out a research study on the factors influencing the implementation of ERP System in Oman, and postulated that many manufacturing sectors in the country had implemented ERP's in their operations. The author further mentioned that there is need to prepare first before implementing the system so that the implementation can place a company at a competitive edge. Furthermore, the he presented some critical success factors affecting the implementation from the perspective of 35 Omani enterprises and concluded that top management support, user training, user involvement, teamwork, vendor support and clear goals and objective served as critical factors that influenced the implementation of ERP system in the Omani enterprises.

RESEARCH METHODOLOGY

This study applied the use of descriptive survey design. According to Maxwell (2012) descriptive research design enables smooth research operations, thus allowing maximum collection of information using the least amount of finances, time and effort. The aim of descriptive research design is to acquire data which describes a phenomenon, it then organizes, represent, and finally describe the data. Bernard (2011) postulates that descriptive research design more especially tends to answer questions pertaining to what, who, how, where and when concerning the research gap.

This study will apply the use of questionnaire to collect primary data. Questionnaire is a data collection instrument which consists of either printed or typed number of questions. The questions contained in the questionnaire should be well developed in order to address the specific objective of the study. Additionally, questionnaire is broken into two broad categories of questions, that is structured and unstructured questions. Therefore, in this study, structured questions will be used to collect primary data. According to Mugenda and Mugenda (2003) structured questions refer to questions that are followed by a list of possible answers that the persons responding to the questionnaire select from based on how they feel that they best describe their situations.

Given that questionnaires were used as research instruments, thus to ensure smooth analysis, the questionnaires were coded to allow the researcher organize the data in a logical manner. The coded data was then analyzed by using Statistical Package for Social Sciences (SPSS) computer software version 22.

RESEARCH FINDINGS AND DISCUSSIONS

Response rate

The sample size of the study comprised of 27 respondents comprising of employees at the operational levels, supervisory and management level in manufacturing firms in Nakuru City

County. The questionnaires were dropped off and picked up later after they were filled by the respondents. Out of 27 questionnaires which were distributed, 25 were duly filled and returned. The drop-off and pick-up-later method yielded the high response rate of 88.1%. Egbert (2015) indicates that a response rate of 50% should be considered average, 60% to 70% considered adequate while a response rate of above 70% should be regarded as excellent. This implies that the response rate of 92.6% was adequate for analysis, drawing conclusions and reporting.

Descriptive Analysis of the Variables of the Study

Top management and ERP Implementation

From the study results, the respondents agreed that top Management support influence the implementation of ERP system (s) within the firm (*M*=3.936, *SD*=0.585). In addition, the respondents agreed that User involvement & Participation influence the implementation of ERP system (s) within the firm (*M*=3.867, *SD*=0.897).

Table 1: Factors Influencing ERP Implementation

	Mean	Std. Deviation
Top Management support	3.936	0.585
User involvement & Participation	3.867	0.897
Project team composition & competence	3.802	0.547
Environment	3.708	0.897
Aggregate	**3.806**	**0.664**

Extent of ERP Implementation

The respondents agreed that their firm has implemented ERP system in the human resource management department (*M*=4.219, *SD*=0.522). In addition, the respondents agreed that their firm has implemented ERP system in the supply chain management department (*M*=4.193, *SD*=0.787). Further, the respondents agreed that their firm has implemented ERP system in the accounts and finance department (*M*=4.177, *SD*=0.608). The respondents agreed that their firm has implemented ERP system in the manufacturing management department (*M*=4.115, *SD*=0.540). The respondents also agreed that their firm has implemented ERP system in the customer relationship management department (*M*=4.056, *SD*=0.589).

Table 2: The Extent of ERP Implementation

	Mean	Std. Deviation
Human resource management	4.219	0.522
Supply chain management	4.193	0.787
Accounts and Finance	4.177	0.608
Manufacturing management	4.115	0.540
Customer relationship management	4.056	0.589
Aggregate	**4.131**	**0.527**

Correlation Analysis

From the results, there was a very strong relationship between top management support and performance in the manufacturing firms (r = 0.888, p value =0.003). The relationship was significant since the p value 0.003 was less than 0.05 (significant level). The findings are in line with the results of Gachukia (2018) that there is a very strong relationship between top management support and firm performance.

Moreover, findings revealed that there was a very strong relationship between user involvement and participation and performance in the manufacturing firms (r = 0.764, p value =0.002). The relationship was significant since the p value 0.002 was less than 0.05 (significant level). The findings are in line with the results of Kabenei (2016) that there is a very strong relationship between user involvement and participation and firm performance

Table 3: Correlation Analysis

		Firm performance	Top Management Support	User Involvement and Participation
Firm performance	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	25		
Top Management Support	Pearson Correlation	.888**	1	
	Sig. (2-tailed)	.003		
	N	25	25	
User Involvement and Participation	Pearson Correlation	.764**	.294	1
	Sig. (2-tailed)	.002	.089	
	N	25	25	25

Regression Analysis

Table 4 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.931	0.867	0.868	0.06184

Table 5 Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	111.294	4	27.82	62.24	.002
	Residual	8.943	20	.447		
	Total	120.237	24			

Table 6 Regression of Beta Coefficient and Significance

		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	**(Constant)**	0.253	0.088		2.875	0.001
	top management support	0.260	0.076	0.261	3.421	0.002
	user involvement and participation	0.379	0.09	0.381	4.211	0.001

The model summary was used to explain the variation in the dependent variable that could be explained by the independent variables. The r-squared for the relationship between the independent variables and the dependent variable was 0.867. This implied that 86.7% of the variation in the

dependent variable (performance in the manufacturing firms) could be explained by independent variables (top management support and user involvement)

The ANOVA was used to determine whether the model was a good fit for the data. F calculated was 62.24 while the F critical was 2.867. The p value was 0.002. Since the F-calculated was greater than the F-critical and the p value 0.002 was less than 0.05, the model was considered as a good fit for the data. Henceforth, it can be used to predict the influence of top management support and user involvement on performance in the manufacturing firms.

According to the results, top management support has significant effect on performance in the manufacturing firms β_1=0.260, p value= 0.002). The relationship was considered significant since the p value 0.002 was less than the significant level of 0.05. The findings are in line with the results of Gachukia (2018) that there is a very strong relationship between top management support and firm performance.

The results also revealed that user involvement and participation have significant effect on performance in the manufacturing firms β1=0.379, p value= 0.001). The relationship was considered significant since the p value 0.001 was less than the significant level of 0.05. The findings are in line with the results of Kabenei (2016) that there is a very strong relationship between user involvement and participation and firm performance

Conclusion

The study concludes that top management support has a positive and significant influence on performance in the manufacturing firms. Findings revealed that communication and coordination and resource allocation and leadership influence performance in the manufacturing firms. In addition, the study concludes that user involvement and participation have a positive and significant influence on performance in the manufacturing firms. Findings revealed that training and education and change management and implementation involvement influence performance in the manufacturing firms.

Recommendations of the Study

The study found that top management support has a positive and significant influence on performance in the manufacturing firms. This study therefore recommends that the management of manufacturing firms in Nakuru City County, Kenya should ensure top management support on adoption of various systems to enhance organizational performance

In addition, the study found that user involvement and participation have a positive and significant influence on performance in the manufacturing firms. This study therefore recommends that the management of manufacturing firms in Nakuru City County, Kenya should ensure stakeholder involvement when making key decisions affecting the organization.

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