

Effect of Enterprise Resource Planning in Enhancing Service Delivery in the Procurement Function in Public Universities in Kenya, A Case study of Egerton University- Njoro, Kenya

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Abstract: *Enterprise Resource Planning (ERP) in any organization when implemented adequately can greatly contribute to more customers, more orders, more profits, and customer satisfaction while at the same time creating a lean enterprise. The objective of the study was to examine the Effect of Enterprise Resource Planning (ERP) in enhancing service delivery in the procurement function in public universities in Kenya. A case study of Egerton University was examined and the results taken to represent all other public universities in Kenya. The public procurement oversight authority (PPOA) was used as a Moderating variable in the study. The study employed a descriptive research design. The target population of the study comprised of the staff at all levels, from senior managers to the subordinates of Egerton University procurement department, this gave rise to a total population of forty (40) respondents which was the total number of employees working in the procurement department of Egerton University. A census approach was used for the study since the sample comprised all the forty respondents which were equal to the total population. The researcher used self-administered questionnaires to collect the primary data for the study because they provided a high degree of data standardization and adoption of generalized information amongst any population. Secondary data was sourced by referring to existing materials such as journals, past research in the area, financial reports of the institution and all other relevant documents that relate to Enterprise Resource Planning and service delivery. The data was then processed using SPSS and Presented in form of tables. Both descriptive and Inferential Analysis was done. The study findings showed that Enterprise Resource Planning have significant relationship in enhancing service delivery in the procurement function at Egerton University. The researcher recommended that since the implementation ERP systems require long-term planning for their success in improving the efficiency of the procurement function, the management has a great role to play in enhancing service delivery and also ensuring that personnel is trained on the implementation issues relating to the adoption and use of various systems for enhanced service delivery in the procurement function.*

Keywords: Service Delivery, Supply Chain Management, Lead time, Enterprise Resource Planning, Competitive Advantage, E-Procurement

1. Introduction

Global competition and high level of innovation has made organizations re-engineer their mode of operations since customers demand for prompt delivery of goods and services, space and time has been taken in to account when it comes to customer satisfaction. One area that has been maximumly researched on is concept of lead time determinants. Lead time or cycle time is the time that elapses between placing an order for commodities and the time they are received. It's the period between a customer's order and delivery of the final product and may influence customer service and impact inventory costs [11]. Companies that have the capability to promptly and accurately react to the needs of their customers are more likely to attract orders than those that cannot. Ideas such as responsiveness, time compression and time to market rightly earn their place in the developing management philosophies of the new century [1]. In order to participate in the global market, lead time management, low costs and high customer service levels are essential to provide customer satisfaction, and this has made companies more customers focused. Organizations that have put their focus on cycle time as a productivity measure can reduce lead times and improve quality [10]. If a company is seeking competitive advantage by becoming better able to respond to customers' needs as they arise, then it follows that the company will require a

greater degree of responsiveness from its own suppliers [1]. Sometimes it is believed that the possession of appropriate inventories might facilitate the same degree of responsiveness but it is unlikely that an organization can carry the high levels of stock that such a policy would call for, yet still remain price competitive. The achievement of delivery on time is a standard procurement objective. If goods and materials arrive late or work is not completed at the right time, sales may be lost, production halted, and damages clauses may be invoked by dis-satisfied customers [1].

In most organizations, the purchasing /procurement function usually takes at least one third of the total expenses, the procurement function has an important business value which is overlooked in many instances and the costly, time consuming and complexities of paper based procurement processes are very in efficient [8]. Moreover, most organizations regard cash as committed once an order has been placed; failure to achieve supply on time may slow down the cash-to-cash cycle, thus reducing the organizations efficiency or profitability [1]. This is the challenge many companies face when attempting to improve lead time on a product line. Some processes simply take more time to create a high quality product. A custom order may require months of preparation before the factory is capable of mass production. It can be challenging to offer a competitive lead

time to the customer while still maintaining quality control over production. Companies must remain realistic with their lead time estimates, but constantly strive to improve their manufacturing process and reduce lead times. Some of the other factors that affect lead times can be the choices one makes as a designer, the availability of materials and processes which is the first step in understanding lead times for a given design. In order to improve on lead times, the manufacturer needs to know the order time lines and minimum quantities for a special order. Regionally some materials and or processes might be more readily available than others [1].

However, a few companies have reduced lead times from weeks and months to hours and days. In recognition to its strategic importance, lead time has become an important element of a campaign to increase the competitiveness of many companies. The purpose of lead time reduction is highlighted in the greater understanding of supply chain management which is essentially the optimization of material and service flows and also associated information flows involved with organizations' operations [5]. To manage these material and information flows e-business applications are today essential in order to bring the desired benefits. By applying information systems companies can enhance or radically improve many aspects of the supply chain including shorter lead times because it is one of the few strategies that comply with production planning and sales control. From the customers; lessen the impact of cancelled orders; reduce the need to make forecasts about future demand.

An organizations supply chain can be viewed from a systems perspective as the acquisition of resources (inputs) and their transformation (process) in to products and services (out-puts) which are then delivered to customers [5]. Such a perspective indicates that as part of moving to e-business, organizations can review their transformation process and optimize it in order to deliver products and services to their customers with greater efficiency and lower cost. Supply chain management and especially managed lead times can dramatically have a direct impact on the profitability of a company through reducing operating costs and increasing customer satisfaction and so loyalty and revenue. The effects of shorter lead time can only be considered beneficial when they can be achieved without undue sacrifices in other areas such as quality. Nevertheless, since benefits are so attractive, most studies have been done on the factors contributing to the long lead time. The study therefore seeks to consider short lead time as a strategy to enhance service delivery and ensure customer satisfaction. Egerton University was founded as a farm school in 1939 by Lord Maurice Egerton of Tatton, who was a British National and had settled in Kenya in the 1920s and is the oldest institution of higher learning in Kenya.

The s The school was in 1950 upgraded to an Agricultural College that offered diploma programs. In 1979, the government of Kenya and the United States agency for international development (USAID) funded a major expansion of the institution and then in 1986, Egerton Agricultural College was gazette as a constituent college of the University of Nairobi, the following year, 1987, marked

the establishment of Egerton University through an Act of Parliament. Egerton University's Vision is to be a world class university for the advancement of humanity. The university's mission is to offer exemplary education to society and generate knowledge for national and global development. Egerton University has three (3) Campuses and one Campus College.

The main Campus is based at Njoro and houses the Faculties of Agriculture, Arts and Social Sciences, Education and Community Studies, Engineering and Technology, Environment and Resources Development, Science and Veterinary Medicine and Surgery. The Njoro Campus also houses the Board of Undergraduate Studies and Field Attachment, and the Board of Postgraduate Studies. The other Campus is the Nairobi City Campus, offering programmes from the Faculties of Arts and Social Sciences, Commerce, and Education and Community Studies. It also hosts the African Centre for Distance Education (ACDE). The third Campus, Kenyatta Campus, is located five (5) kilometers from Njoro Campus and is planned to house the Open and Distance Learning (CODL) programmes which is currently based at Njoro Campus. The only University's Campus College, Nakuru Town Campus College, hosts the Faculties of Commerce and Health Sciences. The University currently has nine (9) faculties and fifty one (51) academic departments offering a wide range of programmes at diploma, undergraduate, and postgraduate levels. All of them are open to both Government-sponsored and self-sponsored students. The governance structure of Egerton University consists of the Chancellor, the University Council, the University Management Board, the Senate, Deans of Faculties, Directors of Schools, Centers and Institutes, Chairmen of Departments, and Heads of Departments and Sections.

There are three divisions within the University: The Division of Academic Affairs, Administration and Finance, and Research and Extension. The University currently has a population of about 19,000 students; 514 academic staff; and 1,441 non-academic staff. Throughout its history, Egerton University has been guided by the key principles of integrity, continuous improvement of services and products, accessibility to the society, gender equity, and rational use of resources (Annual Admissions Report, 2013). The department of procurement at Egerton University falls under the division of Administration and Finance. Currently, the department is headed by a Chief Procurement Officer with a Deputy and assisted in the management by six (6) section heads. The main functions of the procurement department are to ensure realization of value for public moneys spend, to that the principles of right purchasing like right quality, right quantity, right time, right price, right source and right place of delivery are satisfied at all times while following the laid down procurement procedures. Although the main functions of the procurement department were well spelt out in the University Charter and the Procurement Act, still there were a number of reported complaints in terms of service delivery from the customers and suppliers themselves.

2. Statement of the Problem

The procurement department in Egerton University is based at the main Campus in Njoro and it serves the university and all the other campuses and constituent campus colleges from there. All the procurement activities are centralized and the campuses process their requirements through the procurement department at the main campus in Njoro. However they process the acquisitions of small items for daily running of their activities like stationery by use of petty cash, through the procurement staffs that are attached to the respective campuses and report to the senior procurement officer at main Campus Njoro. This posed a challenge in that whenever a need arose, the users raised a memorandum to the senior procurement officer requesting for the items or services they required, which must be in their procurement plan for that particular financial year. At the moments where the said items are out of stock then the senior procurement officer (SPO) instructs the purchasing department to source for quotations from the pre-qualified suppliers, who in turn respond within the stipulated time. The procurement procedure after the users have identified the need and suppliers have delivered their quotations usually took long and tedious steps until the goods or services were received. This was because after the quotations were summarized by the purchasing department, they were sent to the finance department for approval, after which the user department had to fill a requisition form for the same to the procurement department, who in turn prepared Local Purchase Orders (LPO) in order to signal the supplier to deliver goods or services. The study was therefore meant to establish determinants of use of lead time in enhancing service delivery in the procurement function in public universities in Kenya, with a particular interest of Egerton University.

3. Objective of the Study

The objective of the study was to establish the effect of Enterprise Resource Planning (ERP) in Enhancing service delivery in procurement function in Public Universities in Kenya

4. Research Hypothesis

The study was guided by the following research hypothesis

Ho: There is no significant relationship between Enterprise Resource Planning and Service delivery in the procurement function in Public Universities in Kenya

5. Conceptual Framework

The conceptual framework demonstrates how the independent variable relates to the dependent variable. The independent variable of the study is service delivery in the procurement function while the independent variable is Enterprise Resource Planning

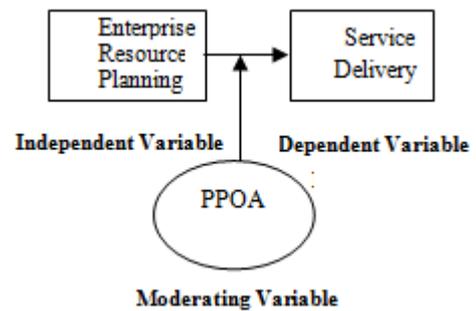


Figure 1: Conceptual Framework

6. Literature Review

This chapter presents a review of both the theoretical and empirical literature on enhanced service delivery in the procurement function with a specific interest in Enterprise Resource Planning. The theoretical framework encapsulates the reviewed theories which will form the basis of the study. The empirical studies were reviewed in line with the study objectives and were conceptualized into a framework.

6.1 Theoretical Literature Review

In this section, theories touching on Enterprise Resource Planning and Service Delivery in the Procurement function were discussed. This enabled the researcher to have a more informed approach to the study. In particular, the researcher looked into the theories of Enterprise resource planning. The basic theory discussed is the Cox Model.

6.1.1 The Cox Model

This is a model to help us understand better the aspect of supplier relationships and how better procurement professionals can take advantage of this model to help firms maximize on income, minimize costs through the procurement function. The Cox model draws heavily on concepts associated with transaction cost and resource based theories of the firm [4]. Transaction Cost Theory (TCT) tries to compare the cost of providing for some product or service if it was purchased in the market place rather than from within the firm [3]. Emphasis is put on three main concepts which are: transaction costs; they comprise search and bargain costs, bargaining and decision costs and policing and enforcement costs. Asset specificity; this is the relative lack of transferability of assets needed for use in a given transaction to other uses. There are six main types of asset specificity namely [3]: physical asset, site, human asset, temporal, brand names, and dedicated assets. The third concept is asymmetrical information distribution which states that parties to a transaction have an even assess to relevant information. It's worth noting that within contractual relationships, either party may involve itself in post-contractual opportunism if the chance of changing to more advantageous partnerships arises.

In Resource Based Theory (RBT) the source of competitive advantage is the creation and exploitation of distinctive capabilities that are difficult to build and maintain, codify and make in to recipes, copy and emulate and can't be bought off the shelf. There are three basic types of distinctive capability namely: corporate architecture which is the capacity of an organization to create and store

organizational knowledge and routines, promote more effective cooperation between network members, achieve a transparent and easy flow of information and adapt rapidly and flexibly. Innovation; which is the capacity to lower costs, improves products or introduces new products ahead of competitors, Reputation; which is the capacity to instill confidence in a firm's credibility, reliability, responsibility, trustworthiness and accountability. The following propositions can be derived from the insights provided by TCT and RBT [4]. Arm's length relationships are associated with low asset specificity and low supplier competences that can easily be bought off the shelf because there are many potential suppliers. Internal contracts are associated with high asset specificity and core competences. And lastly partnership relationships apply to assets of medium specificity and ascend in steps according to the distance of the complimentary competences provided by external suppliers. The five steps in the ladder of contractual relationships represent a higher level of asset specificity and strategic importance to the firm of the specific goods and services. Each step represents relative degrees of power between the relationships participants and in the relative ownership of the goods and services emanating from the relationships. Strategic supplier alliances being the last stage before a company consider a complementary supplier to be so important that vertical integration through merger and acquisition is undertaken [4]. The Cox Model, through its Transaction cost and Resource based theories heavily helps the procurement department in managing a healthy buyer-supplier relationships and reduced lead time, which is a basis for its self-evaluation and performance, service delivery and eventual customer satisfaction.

6.2 Empirical Literature Review

In this section, the researcher reviewed empirical studies touching on the effects of Enterprise Resource Planning on Enhance Service Delivery that had been conducted. The review looks into the pertinent studies carried out globally, regionally and in Kenya respectively. The studies were reviewed in tandem with the study variable which captures the study objective.

6.2.1 Enterprise Resource Planning

Electronic Resource Planning (ERP) concept is an approach whereby the resource requirements of the whole firm and its associates in the supply chain can be considered in the entire planning [1]. It's a multi-mode suite of software that operates on a company-wide basis where all departments operate with the same data and concerned with all the business aspects like procurement, inventories, production, sales, human resource management, marketing and cash flows. Whatever happens in one department has direct effects in others and all the data is reduced to the common denominator of financial data which helps the management with the information it needs to the entire business successfully; for example, the inventory levels and values, status of work in progress, finished goods, etc. are known at all times and this helps in managing favorable lead times for the supply and delivery of goods and services throughout. ERP is an integration of business management practices and modern technology. It was sold as a solution to the problems

with MRP11 but in practice it is just manufacturing resource planning (MRP11) with some additional features [1].

Enterprise resource planning (ERP) is a software package from vendors designed to optimize the resource planning of a company. In the manufacturing process, an ERP system can generate purchasing schedules in order to achieve an ideal Just-In-Time or lean production cycle. ERP software has the ability to automatically generate purchase orders using the bill of materials for the finished product as a basis. The web based ERP system can improve this process by forwarding the purchase orders to suppliers in order to fully automate the procurement process to facilitate the materials or products to be made available in time.

ERP software can also issue rescheduled notices to suppliers which can perform actions such as cancelling, speeding up or altering the size of pending orders [3]. ERP software can be able to envelop a broad range of enterprise-wide functions and integrate them in to a single unified database. Functions such as human resources, supply chain management, customer relationship management, finance, manufacturing, warehouse management and logistics were all stand-alone software applications but they can all work together under ERP architecture [3]. Introducing an enterprise resource planning (ERP) system in an organization can bring about many significant benefits which can only be dependent on an effective implementation of a fully functioning ERP system [9]. Some of the advantages of ERP systems are; an integrated system connecting all the functional areas together, the capability to streamline different organizational processes and workflows, the ability to continuously communicate information across various departments, improved efficiency, performance and productivity levels, enhanced tracking and forecasting and improved customer service and satisfaction [3].

The implementation of Enterprise Resource Planning (ERP) systems in an organization will result in near-term improvements in the operational performance of the firm, firms equipped with ERP systems can be expected to use early improvements as launching points for more bottleneck identification, reduction and control of variability and improvement, all this on condition that continuous improvement is an established norm in the organizational culture [2]. ERP is expected to provide both an initial transformation and a learning dynamic that persists over time as the continuous capabilities of data acquisition of ERP architecture together with the greater visibility and standardization mechanisms it puts in place justifies that an enterprise system is an evolving resource that is well suited to an organization concerned with ongoing learning and process improvement [2]. Despite all the above mentioned benefits of Enterprise Resource Planning (ERP) application, it requires heavy capital outlay and expertise to implement. The costs associated with maintaining experts and in some cases full time employees to run the ERP systems discourage most institutions from adopting the mechanism.

7. Research Methodology

The study adopted descriptive research design. Specifically, the researcher used a case study of Egerton University. This is because case study designs allow an empirical inquiry that

investigates a contemporary phenomenon within its real-life context. Targeted population in this study comprised of all levels, from senior managers to the subordinates, a population of forty (40) people which is the total number of all employees working in the procurement department of Egerton University. The researcher therefore used a census to carry out the study. The researcher relied on the primary data that was collected by use of self-administered questionnaires to all the respondents. Primary data is usually basic, unbiased information, original data from the population and its very reliable in that the researcher collects information for specific purposes of his/her study. Secondary data was sourced by referring to existing materials such as journals, past research in the area, financial reports of the institution and all other relevant documents that relate to lead time factors and service delivery. Pilot testing was done in order to ensure reliability and validity of the questionnaires used for the study. Reliability is concerned with the estimates of the degree to which a measure is free of random error and a reliable instrument can be used with confidence that transient and situational factors are not interfering [6]. This was done by administering ten questionnaires with a clear and brief explanation of the purpose of this study to a selected group of ten (10) respondents who work at the procurement department at Kenyatta University. The expected results for the pre-testing was computed by Cronbach's Coefficient Alpha which should yield a reliability coefficient greater than 0.77 [7]

7.1 Data Processing and Analysis

Correlation analysis was used to determine the degree of relationships between the independent variable and the dependent variable. Regression analysis was used to determine the relationships between variables. The Regression Model was given by the following function

$$\text{Regression Model } Y = \beta_0 + \beta_1 X_1 + \epsilon$$

Where Y is the dependent variable (Enhanced service delivery) and X₁ is the independent variable (enterprise resource planning), β₀ and β₁ are Coefficients and ε is the error term of the model

7.2 Research Findings

The analysis was based on all the questionnaires that were issued to the respondents and returned on time. As a result, the findings were generated from 37 questionnaires out of 40 which were issued. It was reported that all the questionnaires returned were correctly filled hence were used in conducting data analysis of the study. This accounted for 93% response rate based on the sample size.

7.2.1 Enterprise Resource Planning (ERP) and Service Delivery

The study sought to establish the effect of Enterprise Resource Planning (ERP) on lead time in the procurement function at Egerton University. The respondents were asked their views and the findings were as follows;

Table 1: Enterprise Resource Planning and Service Delivery

	N	Min	Max	Mean	Std. Dev.
Contribution to improved customer service by providing	37	4	5	4.62	.492
Provision of the information	37	4	5	4.62	.492
Increase in Inventory Accuracy	37	4	5	4.68	.475
Increase in Inventory Turnover	37	4	5	4.59	.498

According to table 1, it was strongly agreed by majority of the respondents that ERP system contributes to improved customer service by providing the right product in the right place and at the right time as evidenced by the mean of 4.62. Further, the findings revealed that ERP system proactively pinpoints quality issues, providing the information required to increase production efficiency and also eliminate rework. This was evidenced by majority of the respondents who strongly agreed on the matter at a mean of 4.62. It was also established that ERP system can increase inventory accuracy to more than 90% while reducing the need for physical inventory audits as supported by majority of the respondents who strongly agreed (mean=4.68). Consequently, the respondents overwhelmingly agreed (mean=4.59) that ERP system can make an organization increase inventory turns tenfold and reduce inventory costs by 10-40%.

7.2.2 Correlation Between ERP and Service Delivery

Table 2: Effects of ERP on Lead time in enhancing service delivery

		ERP	Service Delivery
ERP	Pearson	1	.141
	Sig. (2-tailed)		.045
	N	37	37
Service Delivery	Pearson	.141	1
	Sig. (2-tailed)	.045	
	N	37	37

As shown in table 2, ERP has r-value of .141 indicating a weak positive relationship between use of ERP and service delivery. This is satisfactory to the objective of the study; to establish the effect of Enterprise Resource Planning (ERP) on lead time in the procurement function at Egerton University. The p value of (.045) is below .05. This implies that the Null Hypothesis (Ho: There is no significant relationship between Enterprise Resource Planning and Service Delivery) was rejected at 5% level of significance. It is therefore concluded that the relationship between ERP and Service Delivery is significant.

7.2.3 Regression Results

Table 3: Regression Model Results

Model	Unstandardized Coefficients		Standardized Coefficients	Sig.
	B	Std. Error	Beta	
(Constant)	8.185	3.263		.017
ERP	.055	.149	.076	.716

From the regression model in table 3, the regression equation was obtained. Using the unstandardized beta coefficient, the following regression equation was developed.

$$Y = 8.185 + 0.055X$$

From the regression model, the beta values were obtained which explained the regression equation. The standardized beta coefficients give a measure of the influence of each variable to the model. The coefficient for Enterprise Resource Planning is Positive (i.e. 0.055). This implies that Enterprise Resource Planning has a positive effect on service delivery.

8. Summary, Conclusions and Recommendations

The researcher summarized the findings in line with the variables and objective of the study. This was followed by drawing of relevant conclusions. Lastly, recommendations for pertinent actions were suggested.

8.1 Summary

The role of ERP was analyzed towards lead time reduction in the procurement function. It was reported that ERP system contributes to improved customer service by providing the right product in the right place and at the right time. Further, the findings revealed that ERP system proactively pinpoints quality issues, providing the information required to increase production efficiency and also eliminate rework. This was evidenced by majority of the respondents who strongly agreed on the matter at a mean of 4.62. It was also established that ERP system can increase inventory accuracy to more than 90% while reducing the need for physical inventory audits as supported by majority of the respondents who strongly agreed.

In addition, it was overwhelmingly agreed upon that ERP system can make an organization increase inventory turns tenfold and reduce inventory costs by 10-40%. The study revealed that among the respondents, majority strongly agreed that management support is very vital for an organization to be able to implement an EDI system effectively. In addition, with the support of the management, the study revealed that procurement officers can better ensure the use of stock maintenance and control tools in an organization as strongly agreed upon by majority of respondents. The findings further showed that majority of the respondents strongly agreed (mean=4.70) that the cost of training employees to use ERP system can be high and management support is required to ensure there is no employee resistance to change.

8.2 Conclusions

The influence of using ERP on service delivery focused on its significance on lead time reduction in the procurement function. The study revealed that among the respondents, majority strongly agreed that management support is very vital for an organization to be able to implement an EDI system effectively. In addition, with the support of the management, the study revealed that procurement officers can better ensure the use of stock maintenance and control tools in an organization as strongly agreed upon by majority of respondents. The findings further showed that majority of the respondents strongly agreed (mean=4.70) that the cost of training employees to use ERP system can be high and management support is required to ensure there is no employee resistance to change.

8.3 Recommendations

It was reported that implementation of ERP require greater level of trust and information sharing. The study recommends that to effectively achieve the objective, there is need for high level of transparency in sharing quality information among the supply chain partners. This would boost the success of the role of ERP in reducing lead time hence service delivery.

8.3.1 Recommendation for further Studies

The research was focusing on the determinants of lead time reduction in enhancing service delivery among public universities. The researcher recommends that similar or related studies should be conducted in other sectors including manufacturing or even health sector among others. It was established that issues surrounding the adoption and implementation of ERP, EDI and stock management techniques are complex and can be expensive. The study recommended that more research should be conducted to clearly present measures that should be undertaken to encounter the challenges associated with successful implementation of various determinants of lead time reduction in an organization.

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