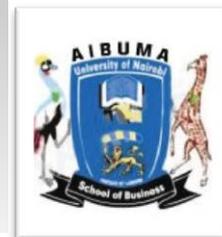




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EFFECT OF INTEGRATIVE SUPPLY CHAIN TECHNOLOGY ON SERVICE DELIVERY IN MINISTRIES, DEPARTMENTS AND AGENCIES IN KENYA

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Abstract

The overall goal of the study was to Effect of integrative supply chain technology on service delivery in Ministries, Departments and Agencies in Kenya. To fulfill this goal, a conceptual model was developed based on previously examined literature. A partial least squares structural equation modeling (PLS-SEM) model that corresponded to the conceptual model was also created. This study adopted a descriptive cross-sectional survey research design. To test the proposed relationship, a survey was done and data collected. This study's population included all public procuring institutions in Kenya. A total of 157 questionnaires were issued. PLS-SEM was used to evaluate the relationship proposed in the conceptual and SEM model of the study. A software with graphical user interface for variance-based structural equation modeling (SEM) using the partial least squares (PLS) path modeling method known as SmartPLS 3.3.3 software was used in the analysis. The objective of the study was to Effect of integrative supply chain technology on service delivery in Ministries, Departments and Agencies In Kenya. Therefore, in order to enhance service delivery, organizations should purposefully manage use of integrative supply chain technology on service delivery to enhance accountability and transparency. Studying service delivery in public entities was limited to the fact that these entities utilize public funds to provide those services. Further research is critical to find out the characteristics of service delivery in the private sector. This will provide information about decision making variables in that environment.

Keywords: Procurement Governance, Integrative Supply Chain Technologies, Procurement Performance, Service Delivery, PLS-SEM

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Introduction

Ellinger et al. (2006) and Van Weele (2010) describe the objectives of service delivery from use of structured integrative technologies to enhance transparency and accountability in the procurement systems. According to Baily, Farmer, Crocker, Jessop, and Jones (2015), integrative supply chain technology philosophies have a favorable impact on the public good. When it comes to service delivery, Yator and Shale (2014) found that empowering employees, innovativeness, and the availability of integrative systems boosted service delivery via visibility of processes. A lack of suitable infrastructure and management support as well as technical help is cited by Malela (2010) as to why integrative supply chain systems are not being used. It's easy for managers to collaborate with each other and identify market demands for their clients thanks to the integrated services (Callender & Schapper, 2003; Soi, 2017).

Functional integration such as use of ERP, e-procurement portals and reverse auction systems eliminate operational wastage; which leads to improved service delivery (Vijayasathy & Tyler, 1997). Integrative supply chain functions lead to efficient operations in organizations (Murphy & Wood, 2008). Supply chain technologies integrate people and functions making proceedings efficient and translating to effective service delivery (Mburu & Njeru, 2014). However, Baily et al. (2015) posit that integrative supply chain technologies cannot enhance service delivery without the participation of the user departments. Input of realistic specifications into the ISCT will lead to equity, fairness and competition. Therefore, incorporating procurement ethical and best practices through integrative systems is crucial to the quality-of-service delivery (Van, 2010). Integrative supply chain technology, according to the findings, has a substantial impact on the interaction between procurement governance and

service delivery in purchasing organizations. It's reasonable to use the Baron and Kenny (1986) technique to examine the variables' relationships and moderations.

Literature review

Integration of internal functions is paramount in offering robust quality service and good delivery from the end to end users perspective (Murphy & Wood, 2008). Implementing integrative supply chain technologies promotes the linkage between functions and people to ensure efficiency in service delivery. However, Baily et al. (2015) and Van (2010) posit that information technology integration require the intervention of user departments to formulate specifications that translate to quality of the service delivery. In meeting consumer and user needs, supply chain operations become agile when they are integrated (Callender & Schapper, 2003; Soi, 2017). This study therefore made the proposition that integrative supply chain technology significantly moderates the relationship between procurement governance and service delivery in the procuring entities.

Procuring entities in Kenya have implemented integrative supply chain technologies in procurement and transactional processing. Throughout the procurement proceeding, compliance with the procurement regulations, adherence to the procurement plan, formulating sound evaluation criteria and good record keeping are sustained in order to achieve performance in procurement (Lysons & Farrington, 2012). Nyakundi et al. (2012) identify procurement as a central operation in every institution that needs to be scrutinized thoroughly. Kioko and Were (2014) found out that staff capacity, compliance with legal framework, integrative technology and institutional culture lead to organizational efficiency in service delivery. Matunga, Nyanamba and Okibo (2013) however established that e-

procurement processes faced inadequate funding, inability to adopt dynamic strategies for change management and lack of trained resources to apply integrative technologies.

The conceptual framework for the study is shown in Figure 1. The key independent variable is procurement governance and the dependent variable is service delivery.

Independent Variable

Dependent Variable

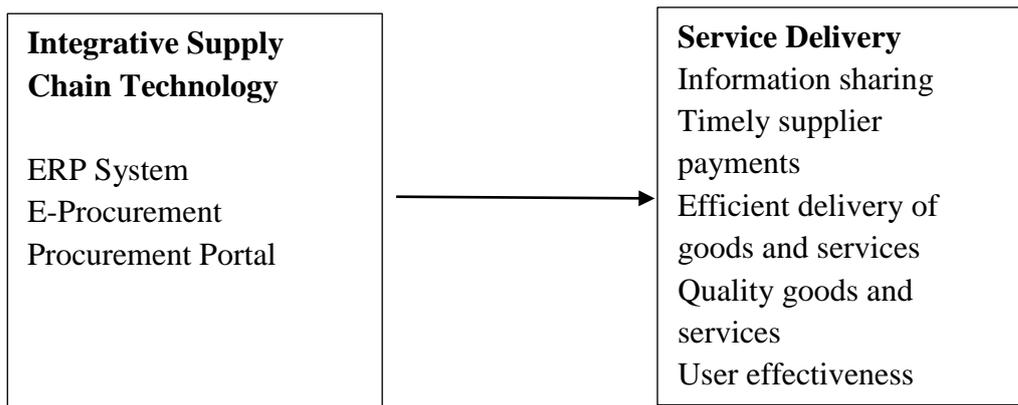


Figure 1: Conceptual Model

Source (Author, 2021).

Research Methodology

This study adopted a descriptive cross-sectional survey research design. The population of this study was all public procuring entities in Kenya. There are 157 public procuring entities comprising government ministries, departments and agencies (MDAs). The MDAs constitute 21 ministries, 42 State Departments, and 94 State Agencies (Government of Kenya, 2019). A census will be the most appropriate for this study and with a population of 157, partial least squares structural equation modeling (PLS-SEM), becomes a suitable data analysis technique for the study (Wong, 2011). Data analysis was completed using Statistical Package for the Social Sciences (SPSS) version 25 and SmartPLS 3.3.3. SEM analytical technique for testing hypothesis, and general test for model predictive relevance were all included in the subsequent inquiry. 138 completed responses were

received, resulting in a response rate of 88%. From 138 returned questionnaires 16 responses were found to be unusable hence rejected and eliminated. Consequently, a total of 122 questionnaires provided the data for subsequent analysis. The study hypothesis was; procurement governance has no significant effect on service delivery.

Research Findings and Discussion

ERP system, e-procurement, and a procurement portal were the three components of the integrative supply chain technology build that were examined. The latent variable was represented by each of these indicators. These supply chain technologies were tested for reliability and construct validity prior to conducting this PLS-SEM analysis. The following sections detail the outcomes of the various supply chain technology constructs studied in this research. The constructs were measured using the Likert metric scale ranging from

1 representing “not at all” to 5 representing “to a very large extent.”

Enterprise Resource Planning System

ERP system construct was measured using four indicators. All indicators were evaluated using the Likert metric scale. The respondents were asked to indicate the extent to which they agreed with the statement about ERP system. “Departments share information through the system functions” indicator had a mean of 4.15 (SD = 0.849, N = 122). “The procuring entity sustains communication with suppliers” had a mean of 4.14 (SD = 0.912, N = 122). “The procuring entity uses integrated system” indicator had an average of 4.13 (SD = 0.760, N = 122).

“The procuring entity has implemented enterprise resource planning system” returned a mean of 3.91 (SD = 0.750, N = 122).

The grand mean of 4.08 indicates that the ERP system effect of integrative supply chain technology on service delivery is significant on average. All item-total correlations were over the 0.3 criterion, demonstrating that the concept validity of the test has been established. The Cronbach's Alpha for the scale was high at 0.785, a sign of the scale's good dependability. Because of this, all four indicators were examined in more detail. Table 1 displays these findings.

Table 1: ERP system

Indicators	N	Mean	Std. Dev.	Factor Loadings	Item-Total Correlation	Alpha if Item Deleted
The procuring entity has implemented enterprise resource planning system	122	3.91	0.750	0.801	0.615	0.723
The procuring entity uses integrated system	122	4.13	0.760	0.798	0.609	0.725
The procuring entity sustains communication with suppliers	122	4.14	0.912	0.780	0.595	0.733
Departments share information through the system functions	122	4.15	0.840	0.749	0.559	0.748

Cronbach’s Alpha = 0.785, Grand mean = 4.08

Source: Research Data, 2021

E-procurement

E-procurement system construct was measured using three indicators. All indicators were evaluated using the Likert metric scale with the highest rated e-procurement measure being “Entities carry out seamless transactions through the system” which had a mean of 4.01 (SD = 0.828, N = 122), and “Entities and suppliers easily access documents and information” with same mean of 4.01 (SD = 0.848, N = 122). The lowest rated measure was the indicator “The procuring entity enhances electronic communication”

with a mean score of 3.96 (SD = 0.786, N = 122).

An average of 3.99 was found, demonstrating that e-procurement had a considerable influence on service quality. There was a wide range of factor loadings and item-to-total correlations between 0.583 and 0.640 in the study. At 0.746, Cronbach's Alpha was deemed to be strong evidence. A high degree of reliability and construct validity was shown by all of these metrics. The results are summarized in Table 2.

Table 2: E-procurement

Indicators	N	Mean	Std. Dev	Factor Loadings	Item-Total Correlation	Alpha if Item Deleted
The procuring entity enhances electronic communication	122	3.96	0.786	0.827	0.583	0.651
Entities carry out seamless transactions through the system	122	4.01	0.828	0.861	0.640	0.580
Entities and suppliers easily access documents and information	122	4.01	0.848	0.756	0.500	0.747

Cronbach's Alpha = 0.746, Grand mean = 3.99

Source: Research Data, 2021

Procurement Portal

Procurement portal construct was measured using four indicators. All indicators were measured using the Likert metric scale ranging from 1 for "absence of extent" to 5 "very great magnitude". The results indicate that the indicator "open tenders are advertised to all tenderers through PPIP" and "Several tenderers access the procurement portal" was rated highest with mean of 4.22 (SD = 0.798, N = 122) and 4.22 (SD = 0.848, N = 122) respectively. "The system links suppliers with procuring entities" indicator was rated third highest with average of 4.21 (SD = 0.845, N = 122). These were

followed by the least rated indicator "Procuring entities save administration costs" with a mean of 4.08 (SD = 0.839, N = 122).

The grand mean was 4.18 indicating that on average, procurement portal had been enhanced to a great extent. Items' factor loadings ranged from 0.633 to 0.773. There was a wide range of item-total correlations, from 0.369 to 0.511. Cronbach's Alpha was 0.649, which was regarded moderate, but acceptable. As a result, the validity of the construct and its dependability were both validated. Table 3 contains this information.

Table 3: Procurement Portal

Indicators	N	Mean	Std. Dev	Factor Analysis	Item-Total Correlation	Alpha if Item Deleted
Open tenders are advertised to all tenderers through PPIP	122	4.22	0.798	0.633	0.369	0.619
Several tenderers access the procurement portal	122	4.22	0.848	0.707	0.438	0.573
Procuring entities save administration costs	122	4.08	0.839	0.773	0.511	0.520
The system links suppliers with procuring entities	122	4.21	0.845	0.674	0.397	0.602

Cronbach's Alpha = 0.649, Grand mean = 4.18

Source: Research Data, 2021

Conclusion and Implications

The grand mean of 4.08 indicates that the ERP system effect of integrative supply chain technology on service delivery is significant on average. All item-total correlations were over the 0.3 criterion, demonstrating that the concept validity of the test has been established. The Cronbach's Alpha for the scale was high at 0.785, a sign of the scale's good dependability. Because of this, all four indicators were examined in more detail. Integrative supply chain technology support ethical standards such as transparency during the procurement process (Lysons & Farrington, 2012).

Despite integrative supply chain technology, Barsemoi et al. (2014) discovered that traditional procurement methods and personnel incompetence were impeding the achievement of procurement governance output. Supply chain technology combine people and functions, resulting in more efficient processes and more effective service delivery (Mburu & Njeru, 2014). According to Magutu et al. (2015), there is a significant correlation between supply chain technology, strategy, and business performance. They observed that supply chain technologies and strategies account for 88.2 percent of the variation in company performance, although previous research on integrative supply chain technology had been scarce.

The study challenges procuring entities to pay close attention to the integrative supply chain implementation and support. The role of integrative supply chain in procuring entities as vehicles of enhanced service delivery is unprecedented. As organisation strive to take advantage associated with technology, huge investments of resources in terms of time money, workforce has been expensed (Bostrom et al., 2009). As

management make decisions to invest and implement integrative supply chain technologies, considerations should be made by managers such as inadequate funding, inability to adopt dynamic strategies for change management and lack of trained resources to apply integrative technologies.

The officers and staff in the MDAs in general can use integrative supply chain technology findings in their efforts to improve speed and accuracy of logistical supply efficiency.

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