European Journal of Business and Management
ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online)
Vol.10, No.29, 2018

Mediating Influence of Information Technology Infrastructure in the Relationship Between Supply Chain Process Integration Capabilities and Supply Chain Performance of Public Universities in Kenya

Judith Nelima Wasike Milimo[1]* Evans Vidija Sagwa[2] Maurice Matendechere Sakwa[3]
1.PhD Candidate, School of Business and Management Studies, Technical University of Kenya, P. O. Box 52428-00200 Nairobi, Kenya
2.School of Business and Management Studies, Technical University of Kenya, Nairobi Kenya,
3.College of Human Resource Development, Jomo Kenyatta University of Agriculture and Technology, Nairobi Kenya

Research conducted under Research Authorization Permit NACOSTI/P/IT/97613/18539 of 20th September, 2017 issued by National Commission for Science Technology and Innovation, Kenya. The Technical University of Kenya sponsored the PhD Course.

Abstract
The purpose of the study was to investigate the mediating effect of information technology infrastructure in the relationship between Supply Chain Process Integration Capabilities (SCPIC) and Supply Chain Performance (SCP) of public universities in Kenya. Information technology was hypothesized to have a positive mediation influence on the relationship between supply chain process integration capabilities and supply chain performance of public universities in Kenya. The study was grounded on Resource Dependency Theory and adopted a descriptive survey design. A self-administered questionnaire was distributed to 31 public universities in Kenya. The response rate was 81%. Descriptive statistics, correlation and regression techniques were used to analyze the data. The results of the study show a statistically significant relationship between SCPIC and supply chain performance. The approach for testing the mediation was adopted from Memon, Cheah, Ramayah, Ting, & Chuah, (2018). The results show that the relationship between SCPIC and SCP is mediated by information technology infrastructure. The study contributes to our understanding of the effect of information technology infrastructure in the relationship between supply chain process integration capabilities and supply chain performance of universities. From the study, an integrated information technology infrastructure enables consistent and real-time transfer of information between supply chain management related applications and functions that are distributed across partners. The study recommends that public universities should invest in technology not only in their institutions but also in partnership with stakeholders like suppliers so as to streamline operations in the supply chain for organizational competitiveness.
Keywords: Supply chain process integration capabilities, Information technology infrastructure, Supply chain performance

Introduction

It is considered a critical task for organizations such as universities to acquire and sustain competitive edge due to turbulence in the marketplace. Technological change, globalization and stiff competitions in the market has mostly focused on cost, quality delivery and technology and have left organizations with no alternative but to look for strategies that would enable them establish and maintain competitive advantage through inter-firm relationships (Latip, Salleh, Omar, &Yaakub, 2014). A supply chain approach to managing business operations, on the one hand, advocates the alignment and integration of key business processes across the entire supply chain with particular emphasis on efficiency, responsiveness and agility. Supply chain integration capabilities advocates for mutual information sharing, risks and rewards and mutual cooperation, as well as sharing of the same goals and focus on serving customers, while building and maintaining long term relationships with supply chain partners (Adebanjo, Teh & Ahmed, 2018).

Integrative practices capabilities of supply chains help to elevate the linkages within each component of the chain and can facilitate better decision making to get all the pieces of the chain to interact more efficiently. Accordingly to Hulthén, Naslund, & Norrman, (2016) integration extending beyond functional silos and firm boundaries is expected to provide value for customers in terms of higher quality, improved service level, and reduced costs. In addition, internal integration allows business functions to align around a single company goal. This type of integration promotes value creation while decreasing redundancies and costs. Yet, regardless of the significant advances in research and practice, many organizations still experience difficulties not only to integrate activities with supply chain partners, but they also struggle to integrate activities within an organization, for example, through implementation of a Sales and Operations Planning (S&OP) process (Hulthén, Naslund, & Norrman, 2016). To tackle these challenges, organizations may need to reconsider why and how they integrate

both internally and externally. However, the previous integration research provides only limited guidelines for how to carry out such evaluations. Many organizations experience difficulties in addressing the complexity related to integration and evaluation of activities internally and with SC partners. The lack of concrete guidelines for evaluation of SCI in theory is seen as one of the reasons for the still sporadic examples of successful SCI in practice (Pietrzak, Paliszkiewicz & Klepacki, 2015).

Areas to integrate covered in previous SCI literature refers to, for example, what to integrate and with whom to integrate. Zhao et al., (2013) identified four areas: 1) flows (physical, information, financial), 2) processes and activities, 3) technologies and systems, and 4) integration of actors (structures and organizations). Ralston, Blackhurst, Cantor, & Crum (2015) concluded that integration of both tangible and intangible areas needs to be integrated (i.e. processes, procedures, information, knowledge, innovations, and strategies.Tina, (2013) opines that the capability building processes and actions in firms tie information technology infrastructure capabilities with the development of customer management capability.

Better information technology infrastructure capabilities enable firms to position their Information Technology (IT) assets and data and information services to capture information about customers as well as disseminate information to customers through the internet, virtual communities and personalized information channels (Deepak & Saji, 2016). The perspective of an integrated information technology infrastructure enables consistent and real-time transfer of information between supply chain management related applications and functions that are distributed across partners. The integrated information technology infrastructures for supply chain management can be blended with inter-organizational processes to develop higher-order capabilities for demand sensing, operations and workflow coordination, and global optimization of resources.

The information technology infrastructure capability offers the appropriate support for process by providing the reach and connectivity to design and manage processes that connect the firm with its customers' suppliers; another significant business partners and a high level of information technology infrastructure enables firms to design metrics and analytics to provide visibility into the real-time performance of various processes, the integration between the various processes and advance warnings about performance degradation in processes and finally a high level of information technology infrastructure capability enables faster and more responsive redesign and reconfiguration of processes in responses to changes in business conditions (Tiwari, Tiwari, & Samuel, 2015). According to Tiwari, Tiwari, & Samuel, 2015) internal infrastructure integration is the degree of coordination between functions within the organization.

Several applications of internal IT systems according to Kembro, Selviaridis & Näslund, 2014) are; Enterprise Resource Planning (ERPS), Distribution Resource Planning (DRP), Capacity Planning Systems (CPS), Radio Frequency Identification (RFID), barcodes, and Electronic Data Interchange (EDI) platforms that are used in supply chain transactions to enhance processing and communication. These tools have enabled firms to be more proactive in the management of inventory in the supply chain. The benefits associated with applying IT in supply chain include lower coordination costs, substantial improvements in transactional efficiencies through increased information sharing and communications capabilities, resulting in improved supply chain performance (Kembro, Selviaridis & Näslund, 2014)

Internal integration involves cross functional teams that may bring together a carefully selected array of specialists who share information and make product, process, and manufacturing decisions, jointly and simultaneously (Otchere Annan, & Anin, 2013). Internal integration is defined as a process of inter-functional interaction, collaboration, coordination, communication and cooperation that bring functional areas together into a cohesive organization (Wagner & Bode, 2014). Furthermore, Supply chain partners who exchange information regularly are able to work as a single entity, and can understand the needs of the end customer better and hence can respond to market change quicker. A prerequisite for successful supply chain management is internal integration. Also, companies with a low internal integration strategy will achieve low level of external integration and companies implementing the full internal integration strategy will have the highest levels of external integration (Otchere Annan, & Anin, 2013).

External supply chain integration reveals two major areas of emphasis: Customer Integration (CI) and Supply Integration (SI). Supplier and customer integration interactions and collaborations ensure an effective flow of products and services to customers (Wagner & Bode, 2014). CI involves sharing demand information, help the manufacturer to understanding better the customer needs and to forecast better customer demand, as well as collaborative involvement of customers with respect to product design, provision of better quality products at lower cost and more flexibility in responding to customer demand (Tiwari et al., 2015).

Theoretical Foundations

Firms in supply chain networks become reliant on others for input such as goods and materials and management of this important relationship (Kito & New, 2015). There is no organization that can be self-reliant due to variations in uncertainty deriving from the organizational environment which is responsible for both internal and external power distributions between organizational entities and participants in the market. According to Snyder

& Nicholson (2017) external power is influenced by dependency relationships that exist as a result of a lack of autonomy. Constraints that organizations face lead to dependency and uncertainty- they cannot exist without purchases of resources from external sources. As supply chain members work together closely, they often become more dependent on each other.

Resource Dependency Theory is based on the premise that organizations are dependent on external resources and therefore seek to manage them to ensure success in the supply chain and also control autonomy minimizing dependence. Thompson, Williams & Kwong, (2017) calls for supply chains to be wary of resource dependency as it may have grave consequences where one member of the chain takes advantage to abuse another and squeeze their margins, however it is impossible for an organization to be entirely self-reliant and therefore resource dependence is inevitable. As supply chain partners seek to build mutual forbearance and trust perhaps resource-sharing structures should be enacted to mitigate resource dependencies and abuse of dependent partner. Kito & New, (2015) opines that the resource dependence theory has high value in supply chain integration and performance management. The asymmetric interdependence that exists in these inter-firm relationships is critical to reduce environmental uncertainty for some firms. In the traditional supply un-integrated supply chain each member tries to avoid becoming overly dependent on other members for fear of exploitation

According to Latip, Salleh, Omar & Yaakub, (2014) the Resource Based View (RBV) also governs the concept of inter-firm relationships. Studies argue that firms engage in cooperative relationships with the objective being to achieve competitive advantage. They reveal that the main outcome of business cooperation is to permit firms to compete effectively in the marketplace. For example, maintaining healthy relationships may enable firms to enjoy uninterrupted supply of material in the long run (Matopoulos, Barros & Van der Vorst, 2015). Therefore, the concept of RBV can be adopted in a dyadic channel relationship since a long term relationship between firms can be viewed as part of a firm's resources that cannot be easily imitated (Sanderson, Lonsdale, Mannion & Matharu 2015).

The Collaborative Network Theory (CNT) argues that the value of the resources can be expanded by its combination with other resources, then building effective inter-firm relationships within the network or supply chain can be more important than resource possessions per se (Festel, De Nardo & Simmen, 2014). The significant contribution of CNT to the determination of the inter-firm relationships is the role played by supply chain partners who yield to trust through supply chain collaborations such as communication as well as mutual adoption in terms of management systems and culture hence the firms' performance. By establishing information sharing and collaborative communication, organizations can build the relationships with their supply partners through the social exchange process to improve their performance (Festel, De Nardo & Simmen, 2014).

Conceptual Framework

The conceptual framework in Figure 1 illustrates the researchers' presumed perception of existing relationship among the variables of the study based on the literature. The framework suggests a mediating effect of information technology infrastructure in the relationship between supply chain process integration capabilities and supply chain performance in the public universities.

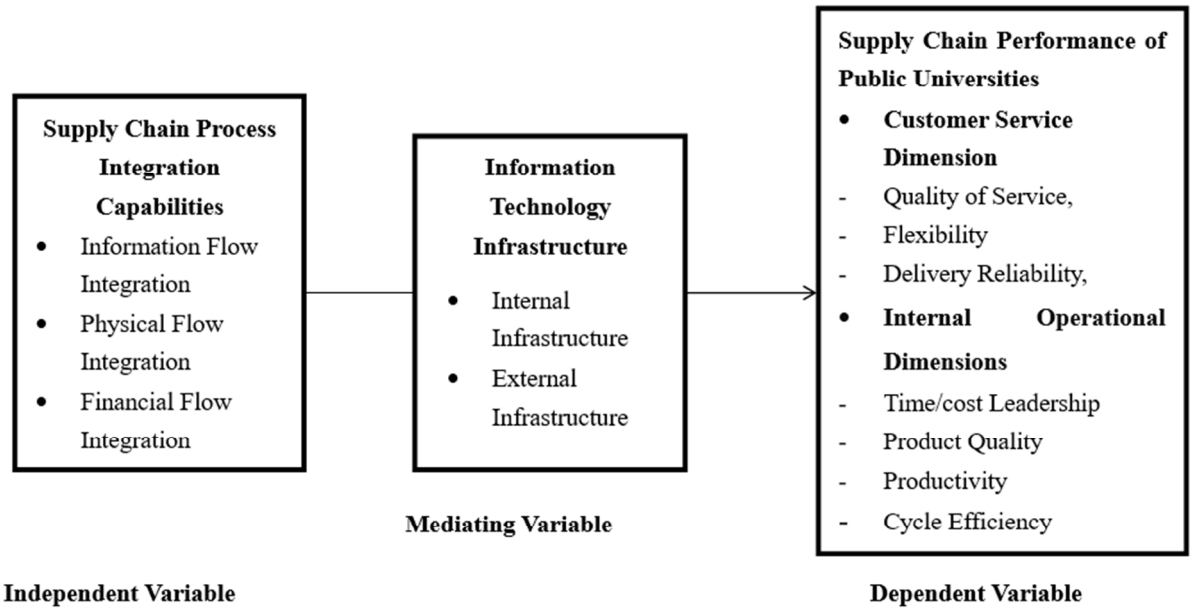

Figure 1: Conceptual Framework

The study hypothesized that the relationship between supply chain process integration capabilities on

supply chain performance of public universities in Kenya is mediated by information technology infrastructure.

Methodology

This study adopted a positivism approach. Positivism involves theory testing and the key argument of positivist orientation is that the world exists externally, and that its properties should be measured through objective methods, rather than being inferred subjectively through sensation, replication or instinct (Hyett, Kenny, & Dickson-Swift, 2014).Equally the positivists argue that the true knowledge is scientific in character and describes interrelationships between real and observable phenomenon. Positivist orientation is related to the quantitative approach, a research strategy or general orientation to conduct research (Rahman, 2017). The study adopted descriptive survey design and a census of all 31 public universities in Kenya to collect relevant data which was used to determine the correlation between the variables of the study. The target population consisted of heads of procurement and Information Communication Technology (ICT) departments totaling to 62 respondents.

The census approach was justified since according to Saunders, Lewis and Thornhill, (2016), data gathered using census contributes towards gathering of unbiased data representing all individuals' opinions in the study population on a study problem. A structured questionnaire was self-administered in the process of collecting data. A pilot, validity and reliability study was done. Instrument validation was achieved through validity and reliability measures. A pre-test was done, on the basis of the pre-test response, the instrument was adjusted appropriately. Validity which indicates whether the instrument is testing what it should was done through examination of content to determine whether it covered a representative sample of the measurement items. Validity can be assessed using expert opinion and informed judgment (Gujarati, Porter & Gunasekar, 2013). The Cronbach Alpha was calculated to test for reliability. The Cronbach's Alpha coefficient was used to measure the internal consistency of measurement scales. This is a scale measurement tool, which is commonly used in social sciences to establish the internal consistency of items or factors within and among variables of study. Saunders, Lewis, & Thornhill, 2016) argues that an alpha coefficient of .700 or above is an acceptable measure. Information technology infrastructure had a Cronbach Alpha coefficient of .941 and supply chain performance of public universities had .934 this indicates that the data collected using the above mentioned instruments was reliable for analysis. Validity tests were also carried out to determine the extent to which the instrument measured what it was designed to. Validity is the ability of the research questionnaire or instrument to measure what is intended to measure in terms of accuracy and meaningfulness (Saunders, Lewis, & Thornhill, 2016). It is a classic evaluation criterion used in science, referring to the extent to which conclusions drawn in a study provide an accurate description or explanation of what happened.There are a variety of validity tests including face to face validity, content validity, construct validity, criterion (predictive) validity and convergent validity. For this study, construct validity and face to face validity tests were adopted. This is because these tests measure the extent to which the set of questions (scale items) measure the presence of the target constructs (Abdolshah, 2013). Face to face validity was dealt with by discussing the questionnaire with experts in procurement and ICT who confirmed their understanding of what the questions sought to measure.

The researcher used expert judgment from a few lecturers of the Technical university of Kenya and the supervisors and the researcher's cohort in the respective departments. Ambiguous, double edged and sensitive questions were cleaned, sorted or dropped. Construct validity on the other hand, was assessed using a factor analysis in order to observe how well the individual measures reflected their constructs. The factors were rotated using the Varimax rotation method while Principal Component Analysis method was employed to extract the factors. All the variables in the study were found to be un-dimensional and valid indicators of the constructs they were to measure. ANOVA and confirmatory factor analysis using statistical packages was used. Correlation and multiple regression and hierarchical regression analysis was done to establish statistical significance and relationships between variables.

Findings and Discussion

The study sought to determine the mediating effect of information technology infrastructure on the relationship between supply chain process integration capabilities and supply chain performance of public universities in Kenya. Based on the study objective, the hypothesis; Information technology infrastructure has significant mediating effect on the relationship between supply chain process integration capabilities and supply chain performance of public universities in Kenya, was formulated. According to Memon et al., (2018) a quad triple method was used to test the hypothesis using regression analysis. Step one involved regressing supply chain process integration capabilities with supply chain performance.

The process moves to step two if step one yields statistically significant results and if not significant, the process terminates and would be concluded that information technology infrastructure does not mediate the relationship between supply chain process integration capabilities and supply chain performance. In step 2 supply chain process integration capabilities was regressed against information technology infrastructure. If the

results are significant, the process moves to step 3 because the necessary condition for mediating effect exist. In step three the influence of information technology infrastructure on supply chain performance is tested using a simple linear regression model.

A statistically significant effect of information technology infrastructure on supply chain performance is a necessary condition in testing for the mediating effect. Finally, Step four tested the influence of supply chain process integration capabilities on supply chain performance while controlling for the effect of information technology infrastructure. These tests were done using simple linear regression analysis. The influence of supply chain process integration capabilities on supply chain performance should not be statistically significant when information technology infrastructure is controlled. This is a necessary condition in testing for a mediating effect. Results from the four steps are presented in Tables 1, 2, 3 and 4 respectively. In step one; supply chain process integration capability was regressed against supply chain performance. The results are presented in Table 1.

Table 1: Regression Results from the Test of the Effect of Supply Chain Process Integration Capabilities on Supply Chain Performance

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Supply Chain process integration capabilities	.584[a]	.341	.327	.45403

a) ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
Supply Chain process integration capabilities	Regression	5.115	1	5.115	24.812	.000[b]
	Residual	9.895	48	.206		
	Total	15.010	49			

b) Combined coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.924	.386		4.991	.000
Supply Chain process integration capabilities	.522	.105	.584	4.981	.000

a. Dependent Variable: Supply chain performance
b. predictor:(Constant), Supply Chain process integration capabilities

The findings in Table 1 indicate a statistically strong and positive relationship between supply chain process integration capabilities and supply chain performance (R=.584). Coefficient of determination (R^2=.341) depicts that supply chain process integration capabilities explains 34.1% of supply chain performance. The F-value of 24.812 with p-value of 0.00 which is less than the level of significance 0.05, hence the model is statistically significant. The results thus confirmed the first step of testing for the mediating effect of information technology infrastructure on the relationship between supply chain process integration capabilities and supply chain performance. The mediation testing then proceeded to step two that involved testing the influence of supply chain process integration capabilities on information technology infrastructure. The results of the tests are presented in Table 2.

Table 2: Regression Results of Supply Chain Process Integration Capabilities and Information Technology Infrastructure

a) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Supply chain process integration capabilities	.572[a]	.327	.313	.49581

b) ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
Supply chain process integration capabilities	Regression	5.731	1	5.731	23.315	.000[b]
	Residual	11.800	48	.246		
	Total	17.531	49			

c) Combined coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.844	.421		4.381	.000
Supply Chain process integration capabilities	.553	.114	.572	4.829	.000

a. Dependent Variable: Information technology infrastructure
b. Predictors: (Constant), Supply chain process integration capabilities

The results presented in Table 2 indicate that supply chain process integration capabilities have a positive and statistically strong relationship with information technology infrastructure (R=.572). Further the coefficient of variation (R^2=.327) depicted that information technology infrastructure is explained by 32.7% of supply chain process integration capabilities. Further the F-value was 23.315 with P-value of .00 which is<0.05, hence the model is statistically significant. The results, therefore suggest that the second step of testing confirms the process of testing the mediating effect to move to step 3. In step three information technology infrastructure was regressed against supply chain performance. The results for the step 3 are presented in Table 3.

Table 3: Regression Results of Information Technology Infrastructure and Supply Chain Performance

a) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Information technology infrastructure	.657[a]	.431	.419	.42170

b) ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
Information technology infrastructure	Regression	6.474	1	6.474	36.406	.000[b]
	Residual	8.536	48	.178		
	Total	15.010	49			

c) Combined coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.479	.392		3.771	.000
Information technology infrastructure	.608	.101	.657	6.034	.000

a. Dependent Variable: Supply chain performance
Predictors: (Constant), Information technology infrastructure

The results in Table 3 indicate that information technology infrastructure had a significant relationship with supply chain performance (R=.657) with information technology infrastructure explaining 43.1% of supply chain performance (R_2=.431) with remaining percent being explained by other factors not considered in the model. The analysis from the model had F-value of 36.406 with P-value of 0.00 which is less than the level of significance 0.05 hence the model is statistically significant. Therefore, the condition in the third step in testing for a mediating effect was satisfied and therefore progressed to step 4 in testing for the mediating effect. Finally, Step four tested the influence of supply chain process integration capabilities on supply chain performance while controlling for the effect of information technology infrastructure. These tests were done using simple linear regression analysis. The influence of supply chain process integration capabilities on supply chain performance should not be statistically significant at α=.05 when information technology infrastructure is controlled.

Table 4: Regression Results Depicting Mediating Effect of Information Technology Infrastructure on Supply Chain Process Integration Capabilities and Supply Chain Performance

(a) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.302[a]	.091	.094	.77199
2	.854	.730	.732	.04492

(b) ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.029	1	.029	14.193	0.231
	Residual	.065	49	.002		
	Total	.093	50			
2	Regression	059	2	.30	26.867	0.000
	Residual	.034	48	.001		
	Total	.093	50			

(c) Coefficients

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
Model					
(Constant)	2.632	.694		3.794	.000
supply chain process integration capabilities	.218	.212	.099	1.029	.0406
Information technology infrastructure	.459	.087	.578	5.263	.041

a. Dependent Variable: Supply chain Performance

The results in Table 4 show that when information technology infrastructure is controlled, the influence of supply chain process integration capabilities on supply chain performance is .406 which is greater than .05 hence not statistically significant. This fulfills the fourth and final step for testing for mediation which indicates that, the influence of supply chain process integration capabilities on supply chain performance when controlling for the effect of information technology infrastructure should not be significant. This is a necessary condition in testing for a mediation effect.

The hypothesis information technology infrastructure mediates the relationship between supply chain process integration capabilities and supply chain performance was therefore accepted. This implies that the attributes of information technology infrastructure discussed are manifested in the public universities in Kenya to the extent of influencing the supply chain process integration capabilities and subsequent the supply chain performance.

The objective of the study was to establish whether information technology infrastructure mediates the relationship between supply chain process integration capabilities and supply chain performance of public universities. It was hypothesized that the relationship between supply chain process integration capabilities on supply chain performance of public universities is mediated by information technology infrastructure. The results in Tables 1, 2, 3, and 4 show that all the conditions for full mediation were met and hence the results supported the hypothesis that information technology infrastructure mediates the effect of supply chain process integration capabilities on supply chain performance of public universities. The findings of the current study are consistent with the study by Fawcett, Stanley, Stephen, Jones, & Amydee, (2012) that affirmed that the use of industry best practice and the application of value-adding technologies enables sustained delivery of high-quality, cost-effective services and capabilities that provide exceptional customer value and that companies that leverage operations excellence as a strategic competitive advantage recognize that the effectiveness of their operation plays a central role in creating and sustaining customer satisfaction and loyalty.

According to Rahimi & Kozak (2017) customer resource management applications help organizations customize their offerings to suit the individual tastes of their customers. This customization enhances the perceived quality of products and services from a customer's viewpoint, and because perceived quality is a determinant of customer satisfaction, it follows that customer resource management applications indirectly affect customer satisfaction. Iqbal (2014) also argues that customer resource management applications also enable firms to provide timely, accurate processing of customer orders, requests, and the ongoing management of customer accounts.

Conclusion

The study objective was to establish whether information technology infrastructure mediates the relationship between supply chain process integration capabilities and supply chain performance of public universities in

Kenya. It was hypothesized that the effect supply chain process integration capabilities on supply chain performance of public universities in Kenya is mediated by information technology infrastructure. These results of the study indicate that all the conditions for full mediation were met and hence the results supported the hypothesis that information technology infrastructure mediates the effect of supply chain process integration capabilities on supply chain performance of public universities.

Implications of the study

The study reveals that information technology infrastructure mediates the relationship between supply chain process integration and SC performance. This indicates that SCPI affects SC performance through increased information technology infrastructure (external and internal integration). The public universities significantly contribute to development of human capital and research for economic development, this call for effective and efficient management of resources and service delivery. Due to the intangible nature of services in most of the universities activities require high levels of integration. Measures have to be instituted to provide superior information technology infrastructure capabilities in order to enhance the supply chain performance of public universities for operational competitiveness and sustainability. This study also provides useful insights on the current status of the universities supply chain process integration capabilities in Kenya that and help stakeholders such as government, policy makers and university managements in the formulation or reviewing policy relating to supply chain management with emphasis on the education sector.

Future Research

The respondents of this study were heads of procurement and ICT departments. The study used one respondent from each department to collect data. To minimize the effect of single respondent bias, future research can use multiple respondents including top, lower and middle managers. This study adopted a cross-sectional survey design and as such, many studies have exposed limitations in providing explanations on the linkage between variables. A longitudinal study could increase understanding of the influence of contingency factors on relationship between SCPIC and SC performance. Therefore, future research should adopt longitudinal research design in data collection to enhance understanding of the relationship between the variables. In this study, SCPIC was conceptualized using the widely used conceptualization in terms of information flow and physical flow and financial flow integration. Future research should broaden the conceptualization of SCPIC to include other aspects such as knowledge flow.

Future studies may consider inclusion of other organizational variables which may influence the relationship between SCPIC and SC performance either as moderating or mediating variables other than information technology infrastructure and government policy as used in this study. The study should be replicated in other service sector to include private firms and manufacturing and even other countries. Such replication could further determine whether the results of this study can be generalized to other sectors or countries with different contextual conditions. This will enhance understanding of the relationship between SCPIC and SC in different contexts.

References

Abdolshah M. (2013). A Review of Quality Criteria Supporting Supplier selection. *Journal of Quality and Reliability Engineering Volume 2013* (2013), Article ID 621073, 9

AdebanjoDotun, Teh, Pei-Lee & Ahmed Pervaiz K. (2018). The impact of supply chain relationships and integration on innovative capabilities and manufacturing performance: the perspective of rapidly developing countries. *International Journal of Production Research* 56(4), 1708-1721

Deepak Dahiya & Saji K. Mathew.(2016).IT assets, IT infrastructure performance and IT capability: a framework for e-government", Transforming Government: People, Process and Policy, *Emerald Group Publishing Limited, 10* (3), 411-433.

Fawcett, Stanley E., Stephen L., Jones, & Amydee, M. (2012). Supply chain trust: The catalyst for collaborative innovation. *Business Horizons, 55(*2), 163-178.

Festel Gunter, De NardoMikko., &SimmenTimo (2014).Outsourcing of pharmaceutical Manufacturing– A Strategic Partner Selection Process", October 201*4, International Journal of Operations & Production Management, 35*(9).

Gujarati Damodar, Porter Dawn, & Gunasekar Sangeetha.(2013).*Basic Econometrics*, (5thed), New Delhi, Tata McGrawHill Education. Pvt Ltd

Hulthén, H., Naslund, D., and Norrman, A. (2016). "Framework for Measuring the Performance of the Sales and Operations Planning Process: A Multiple-case Study". *International Journal of Physical Distribution & Logistics Management, forthcoming Vol. 46*, No. 9, pp. 1-28.

Hyett, N., Kenny, A., & Dickson-Swift, V. (2014).Methodology or method?A critical review of qualitative case study reports. *International Journal of Qualitative Studies on Health and Well-Being*, *9*, 10.3402/how.

v9.23606.

Iqbal.Aneeza, (2014).Effect of Relationship Quality on customer loyalty. *International Journal of Information, Business and Management*, 6(2), 2076-9202

Kembro, J., Selviaridis, K., &Näslund, D.(2014). Theoretical Perspectives on Information sharing in supply chains: A systematic literature review and conceptual framework. *Supply Chain Management: An International Journal*. 19 (5/6), 609-625.

Kito, T., & New, S. (2015). Towards capturing heterogeneity of supply network structures and their temporal transitions: an investigation of supply relationships in the Japanese automobile industry. *Evolutionary and Institutional Economics Review, December Volume 12*, Issue 2, pp 333–347

Matopoulos, Aristides., Barros Ana., & Van der Vorst Jack. J.G.A.J. (2015). Resource-efficient supply chains: A research framework, literature review and research agenda, Supply Chain Management. *An International Journal, Vol. 20* Issue 2 pp. 218 -236.

Memon, M. A.; Cheah, J.; Ramayah, T.; Ting, H.; &Chuah, F. (2018).Mediation Analysis Issues and Recommendations.*Journal of Applied Structural Equation Modeling*.2(1), I-ix.

Latip,NAM Salleh,M I., Omar,B., Yaakub,K B., (2013). A Resource-based Perspective on Technological Competencies and Relationship Performance: An Empirical Analysis South East Asia, *Journal of Contemporary Business, Economics and Law 3* (2), 18-22.

Otchere, A.F., Annan, J. & Anin, E.K. (2013).Achieving Competitive Advantage through supply chain integration in the cocoa industry: A case study of Olam /Ghana Limited and Produce Buying Company Limited.*International Journal of Business and Social Research (IJBSR).3(2), pp.131-145*.

Pietrzak Michał, Paliszkiewicz Joanna & Klepacki Bogdan. (2015). The application of the balanced scorecard (BSC) in the higher education setting of a Polish university, *A Publication of the International Institute for Applied Knowledge Management, Volume 3,* Issue 1, 2015 pp99-115.

Rahman MdShidur (2017) The Advantages and Disadvantages of Using Qualitative and Quantitative Approaches and Methods in Language "Testing and Assessment" Research: A Literature Review *Journal of Education and Learning; Vol. 6*, No. 1.

Rahimi Roya &KozakMetin. (2017). Impact of Customer Relationship Management on Customer Satisfaction: The Case of a Budget Hotel Chain, *Journal of Travel & Tourism Marketing, 34*:1, 40-51.

Ralston, P.M., Blackhurst, J., Cantor, D.E. and Crum, M.R. (2015), "A structure-conduct-performance perspective of how strategic supply chain integration affects firm performance", *Journal of Supply Chain Management 51*(2):47-64.

Sanderson, J, Lonsdale, C, Mannion, R &Matharu, T .(2015). 'Towards a framework for enhancing procurement and supply chain management practice in the NHS: lessons for managers and clinicians from a synthesis of the theoretical and empirical literature' *Health Services and Delivery Research, Vol 3*, no. 18, pp. 1-134. DOI: 10.3310/hsdr03180

Saunders, M., Lewis, P., & Thornhill, A. (2016). *Research methods for business Student*: (7th ed), L.E.G.O. S.p.A., Italy.

Snyder Christopher & Nicholson Walter. (2017), *Micro economic theory: Basic Principles and Extensions*, 12th ed, South Western Cengage Learning, Canada

Thompson Piers, Williams Robert & Kwong Caleb, (2017). Factors Holding Back Small Third Sector Organizations' Engagement with the Local Public Sector, *Nonprofit Management and Leadership*, Vol.**27**, Issue:4, (513-531).

Tina Bjørnevik Aune. (2013). Managing Suppliers in Business Networks: Exploring Innovation, Capability Development, and Network Pictures, October 2013

Tiwari, A.K. Tiwari, A., & Samuel, C., (2015). Supply chain flexibility: a comprehensive review. *Manag. Res. Rev. 38* (7), 767–792.

Wagner Stephan M. & Bode Christoph. (2014) Supplier relationship-specific investments and the role of safeguards for supplier innovation sharing. *Journal of Operations Management* ***3***2:3, 65-78

Zhao, L., Huo, B., Sun, L. and Zhao, X. (2013), "The impact of supply chain risk on supply chain integration and company performance: A global investigation", Supply Chain Management: *An International Journal 18*(2):115-131.