Internal Integration and Operational Performance of Public Hospitals in Kenya

Anne W. MBUGUA[1], Timothy C. OKECH[1]

1. Chandaria School of Business, United States International University-Africa

Corresponding Author: *tcokech@usiu.ac.ke*

ABSTRACT

The purpose of this study was to determine the influence of Internal Integration and operational performance in Kenya's level five public hospitals, as well as the moderating effect of public procurement to the relationship. The study adopted causal and cross-sectional study design to examine the relationship between internal integration, operational performance using empirical data. One hundred sixty-four respondents drawn from the level five public hospitals participated in the research. These were selected from supply chain key personnel working in the supply by applying stratified sampling. Data was collected through a structured questionnaire that contained both open-ended and closed-ended questions. Data collected was first checked for completeness before it was cleaned, coded and analyzed to obtain both descriptive and inferential statistics. The results show a significant relationship between internal integration and operational performance (β_1=0.286, $p<0.05$) with an R-square of 0.421, implying that 42.1% of the variation in the operational performance in level five public hospitals is attributed to changes in internal integration. This is in terms of responsiveness, integrated system, and real-time inventory management, online integration with internal customers, suppliers and warehouse, cross-functional teams, real-time logistics information, functional planning meetings, team building, and regular briefings. Public procurement was also found to significantly moderate the relationship between internal integration and operational performance (β_2=0.378, $p<0.05$) of the level five public hospitals. The study recommends robust and effective internal integration by strengthening the facilities capabilities through information sharing, structuring of internal operations and process integration before they can engage in meaningful external integration.

Keywords: Internal Integration, Operational Performance, Public Hospitals

I.   INTRODUCTION

Supply chain integration (SCI) entails the alignment, linkage and coordination of intra-organizational and external supply chain partners, processes, strategies, resources and information sharing (Stevens & Johnson, 2016). It is considered a means for the firm to acquire external resources necessary for achieving its strategic goal. The SCI strategic goal is to fulfill the requirement gaps that the firm is not currently able to accomplish in meeting the organizational goals. SCI aims at the effective and efficient flow of resources in terms of monetary, material, information, and knowledge sharing to meet customer needs (Pakurár et al., 2019). Various resources have been identified that cut across all the echelons of SCI including information integration; resource coordination and sharing; and, the firm structural relationship linkage (Alfalla-Luque, Medina-Lopez, & Dey, 2013). One of the benefits of SCI is that it enables the management of firms to operationalize several activities by seamlessly connecting the relevant business processes within the firm and across organizations (Ralston et al., 2015).

Developing distinctive capabilities through SCI, firms are expected to achieve competitive advantage in the market, which results in superior SCI operational performance (Huang, Yen & Liu, 2014; Ngo et al., 2016; Maestrini et al., 2017). Supply chain integration is a recent concept of partnerships process that seeks to realign the internal processes with those of external partners to enhance collaboration and coordination through sharing of information and resources (Mackelprang et al., 2014; Cao et al., 2015). Scholars theorize that a fully integrated supply chain will result in superior performance in terms of competitiveness and efficiency (Kot, Onyusheva & Grondys, 2018; Kot, Goldbach & Ślusarczyk, 2018; Kim, 2013). Despite the premise that a fully integrated supply chain is desirable, achievement of these are yet to be fully explored and there exist conflicting results (Tsanos, Zografos & Harrison, 2014). For instance, whereas a few studies report positive impact of SCI dimensions on operational performance (Schoenherr & Swink, 2012; Flynn, Huo & Zhao, 2010), others have reported negative relationship between SCI and operational performance (Rosenzweig, Roth & Dean, 2003; Vickery et al., 2003).

Various dimensions of SCI have been identified including internal integration, supplier integration and customer integration and information technology (Flynn et al., 2010; Danese & Bortolotti, 2014; Ajmera & Cook 2009; Prajogo & Olhager, 2012). Others categorize SCI simply as internal integration and external integration (Flynn et al., 2010; Barratt & Barratt, 2011; Wong, Wong & Boon-itt, 2013). The relationship between external integration and internal integration is considered strategic importance and scholars have continued to emphasize that higher levels of integration results in superior performance (Flynn et al., 2010; Fabbe-Costes & Jahre, 2008). Internal integration involves the collaboration, coordination and integration of supply chain activities with other functional areas in an organization (Flynn et al., 2010; Yunus & Tadisina, 2016). It also involves the functional areas such as operations, warehousing, distribution, marketing and purchasing to unify the position of the organization in addressing supply-related challenges. External integration includes both supplier and customer integration since the two

relate to external partners (Topolsek et al., 2009). Supplier integration is an organization process between buyers and suppliers in which they share information at all levels of decision making with the aim of generating mutual benefits (Kim, 2013). On the other hand, customer integration relates to collaboration and sharing of information between the firm and the key customers, which enables visibility of customers' requirement (Wong, Boon-itt & Wong, 2011). Available literature shows that internal integration must take specific logic sequence with culture taking place first before external integration to ensure a quick and smooth process.

To attain supply chain excellence, Stevens and Johnson (2016), opine that those responsible should pursue the integration of their operations and functions internally before pursuing external integration. This has also been echoed by others who assert that internal integration is a precursor to external integration (Jin, Fawcett & Fawcett, 2013; Horn, Scheffler & Schiele, 2014). Notwithstanding the benefits accruing from internal integration, the topic has not been adequately understood with calls for a more studies to have detailed understanding to complete the SCI research (Flynn et al. 2010; Mackelprang et al., 2014; Frankel & Mollenkopf, 2015; Turkulainen et al., 2017).

The benefits of SCI have mostly been in the manufacturing context, while a few scholars have replicated the same in the service industry and by extension, the health sector (Afshan, & Sindhuja, 2015). The need for a well-managed supply chain research in the healthcare industry has continued to be of concern (Afshan & Sindhuja, 2015). This it is been argued the that the service sector contributes to fifty-eight (58) percent of the world's gross national product (Baltacioglu et al., 2007; Cho et al., 2012) and in the developed economies, it accounts for two-thirds (Shahin, 2010). Furthermore, the service sector has been reported to be the driving force in influencing the economic growth of the developed nations (Giannakis, 2011). One of the service sector that can benefit from the superior performance is the public health sector.

The Kenya health sector is characterized by regular stock-outs of supplies and drugs and patients must rely on the out-of-pocket to purchase drugs medicines, which affect the operational performance of the facilities. This is the process has a negative effect on the low-income citizens who depend on public facilities (Bigdeli et al., 2014; Ewen et al., 2017). The lack of drugs may be attributed to procurement shortcomings which can be mitigated through the proper relationship between the supplier and facilities led by public procurement and hence better processes (Waako et al., 2009; Wiedenmayer et al., 2015). It is within this context that this study endeavored to bridge the gap between the researches carried out in the developed countries and more so in the manufacturing sector and replicating them in the health sector. The health sector is crucial in meeting Kenya big four agenda and universal health coverage.

The study incorporates public procurement, given it is the link between the internal customers, suppliers and products in meeting the final customer's requirement. Study of how internal integration influence on the operational performance will not only add to the literature on service SCI but will also impact on public sector SCI which stands to benefit tremendously in the efficient management of the scarce resources. The study objective was to determine the influence of the internal integration and the operational performance of the of Kenya's level five public hospitals as well as the moderating role of public procurement on the relationship between internal integration and operational performance.

II. METHODOLOGY

The study adopted the post-positivist philosophy, as an ideal philosophy necessary for the empirical examination of the influence of the internal integration and operational performance in Kenya's level five public hospitals. The post-positivist approach diminishes the complexity enabling the researcher to examine the causal relationships between the three study constructs. The research design adopted was causal and cross-sectional. The design also takes on a confirmatory element based on prior hypotheses deduced from existing theories and empirical studies. The target respondents for the study were personnel involved in the supply chain activities of the facilities. These included biomedical engineers, county staff, chief nurses, hospital secretary, procurement officers, information technology officers, finance officers, public health officers, medical superintendents, pharmacists, chief laboratory technician.

Using Slovin's Formula a sample size of one hundred and ninety-six was computed and stratified sampling applied to select respondents from the target population. In terms of data collection, the study utilized a structured questionnaire that had both closed-ended questions (on a Likert scale from 5-1 and ranged from strongly disagree to strongly agree) and open-ended. The questionnaire was favoured because it enabled the respondents to provide, to some extent, their opinions. Furthermore, it allowed the study to use the quantitative approach effectively with the use of statistics for data interpretation. The questionnaire also included general information such as demographic data of the respondents.

Upon approval of the proposal, ethical review was sought from USIU-A's Institutional Review Board and final a research permit from the National Commission for Science Technology and Innovation (NACOSTI) applied and granted (*NACOSTI/P/18/39474/22492*). In order to guarantee the validity of the instruments, the study engaged peer review, and pilot testing of the tool to aid in fine-tuning any ambiguously formulated variables. The pilot study was conducted to test for internal consistency of the instrument Cronbach's alpha, which is a measure for reliability for dichotomous items and multiple-point scaled items. The general rule is for Cronbach's alpha values above 0.70 is considered acceptable. Ten items were considered for internal and public procurement variables, while 24 items were considered for measuring operational performance. The Cronbach's alpha test to estimate the proportion of variance that is consistent in the test scores. The results are presented in Table 1.

Table 1:

Reliability Analysis

Variable	No of Items	Respondents	α=Alpha	Comment
Internal Integration	10	11	.923	Reliable
Procurement	10	11	.937	Reliable
Operational Performance	24	11	.970	Reliable

Cronbach's Alpha coefficient was higher than 0.7 for all the variables. Therefore, no editing was required for the instrument as far as the independent and the dependent variables were concerned. The Kaiser-Meyer-Olkin (KMO) test was computed to assess sample adequacy for the use of Factor Analysis. The KMO examines the variance proportionality amongst the variables that may be in common variance proportionality amongst variable. The rule of the thumb is to accept if the value is above 0.6. Further, the study utilized the Durbin-Watson test to examine the independence of error terms. The autocorrelation test was carried out on the variables and the values were within acceptable levels and are represented in Table 2.

Table 2:

Autocorrelation Test Results

Variable	KMO	Durbin-Watson
Internal Integration	0.759	1.382
Public Procurement	0.830	1.626
Operational Performance	0.868	1.167
Aggregate		1.888

III. RESULTS

The study applied both inferential and descriptive statistics. The descriptive statistics summarized information on demographics such as gender, education level, age, and employment. Inferential statistics were utilized to test the study hypotheses. To ensure that all the assumptions of regressions are fulfilled, the study, undertook diagnostics tests among them linearity normality, autocorrelation and multi-collinearity. The collected data satisfied the assumptions for multiple linear regression.

Descriptive Statistics

The descriptive statistics in Table 3 indicate that the organizations had regular functional planning meetings (M = 4.20; SD=0.250), team building was encouraged (M = 4.12; SD=0.781) and that the organization had information sharing among internal sections (M = 4.07; SD=0.910) and that the organization had regular briefings on what was happening in other sections as reflected in the mean and standard deviations of 4.05 and 0.769, respectively. The standard deviation, which is less than 1 shows that the responses do not vary significantly from the mean value and therefore changing the population units studied would not alter the current results significantly. In other words, the presence of hospitals had internal integration, and this affected the level of operational performance.

Table 3:

Descriptive of Internal Integration

(N-164)	Mean	Std. Deviation	Skewness		Kurtosis	
There is a high level of responsiveness within our section to meet requirements of other sections	3.86	0.910	-.768	.190	.628	.377
An integrated system across functional areas	3.82	1.012	-1.157	.190	1.362	.377
Information sharing among internal sections	4.07	0.910	-.985	.190	1.267	.377
Real-time inventory management	3.95	0.995	-.958	.190	.738	.377
An online integration between warehouse, suppliers and internal customers	3.78	1.156	-.982	.190	.299	.377
Cross functional team's information exchange	3.98	0.981	-1.067	.190	1.069	.377
Real-time access to logistics-related information	3.89	0.959	-.748	.190	.268	.377
Regular functional planning meeting	4.20	0.250	11.365	.190	139.995	.377
Team building is encouraged	4.12	0.781	-.842	.190	1.118	.377
Regular briefings on what is happening in other sections	4.05	0.769	-.585	.190	.152	.377
Average mean	3.97	1.172	0.327	0.19	14.689	0.377

All the questions that covered the aspects of internal integration assumed a positive kurtosis value, meaning that the data outlier character was less extreme in terms of normal distribution. The values were modest and indicated that the departure from normality was insignificant and thus not severe. All the responses were negatively skewed except for functional planning meeting, which had positive skewness. A negative skew indicates that the tail on the left side of the probability density function is longer than the right side and the bulk of the values (possibly including the median) lie to the right of the mean. The study carried out factor analysis for internal integration, which yielded three (3) components loadings and is illustrated in Table 4.

Table 4:

Principal Component Analysis

| Component Matrix	Component		
	1	2	3
There is a high level of responsiveness within our section to meet the requirements of other sections	.751		
An integrated system across functional areas	.734		-.339
Information sharing among internal sections	.712		-.360
Real-time inventory management	.667		.387
An online integration between warehouse, suppliers and internal customers	.649	-.406	
Cross-functional team's information exchange	.629		
Real-time access to logistics-related information	.508		.364
Regular functional planning meeting	.358	.729	
Team building is encouraged	.480	.544	-.442
Regular briefings on what is happening in other sections			.497

Extraction Method: Principal Component Analysis.
a. 3 components extracted.

In the first component, the highest factor loading of 0.751 was an integrated system across functional areas. The second component the highest factor loading was high level of responsiveness within our section to meet other sections requirements of 0.729. For the third component, a regular functional planning meeting had the highest factor loading of 0.497. Results are as shown in Table 4. To determine the factors numbers to retain, a scree plot was generated.

A scree plot shows the eigenvalues on the y-axis and the number of factors on the x-axis and is a visualization of variability magnitude of the components extracted. The scree plot shows the eigenvalues, as presented in Figure 1.

Figure 1:

Scree Plot for Internal Integration
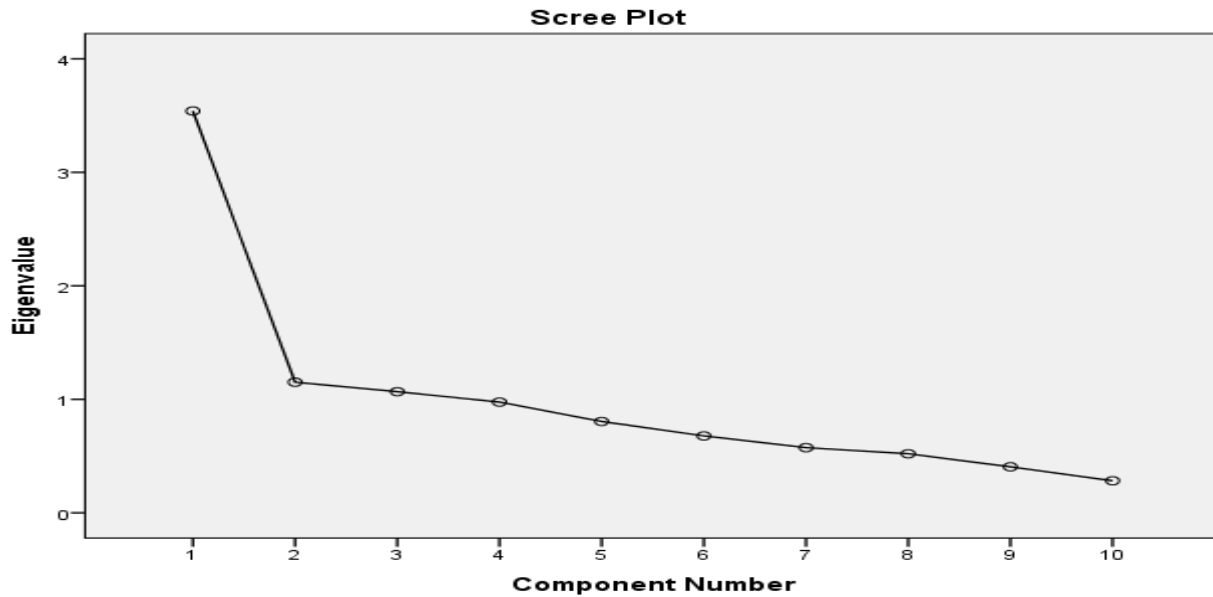
As shown in Figure 1, the scree plot that was inspected for the inflexion points, where the slope of the curve is leveling off indicates the number of factors that ought to be generated by the analysis. The scree plot shows the inflexion point to be factor 4. It is confirming that three factors under internal integration construct would be retained. The casual relationship among the study variables was tested using regression analysis. The estimates of the regression coefficients explaining the relationship between the operational performance of Kenya's public health sector (dependent), internal integration (independent variables) are illustrated in Table 5.

Table 5:

Model Summary

			Model Summary	
Model	R	R Square	Adjusted R Square	Std. error of the Estimate
1	.569ᵃ	.324	.319	.42455

a. *Predictors: (Constant), Internal Integration*
b. *Dependent Variable: Operational performance of Kenya's public health sector*

The regression analysis model presented in Table 5 shows that there was a moderate linear relationship between internal integration and operational performance (R=0.569; R^2 =0.324). The result implies that 32.4% of the variation in the operational performance is attributed to changes in internal integration while 67.6% of the variation in operational performance of Kenya's public health sector is therefore explained by other variables not considered in the study other than the error term. The ANOVA results are explained in Table 6 and the P-value of the F-statistic is less than 0.05 showing that the coefficient estimates of the model are jointly not equal to zero.

This implies that the model is statistically significant in predicting how the independent variables (internal integration) influence the dependent variable (operation performance). This implies that t the regression model has a less than 0.05 likelihood of giving a wrong prediction. This suggests that the regression model has a confidence level of above 95% hence high reliability of the results.

Table 6:

NOVA for Operational performance and Internal Integration, Customer Integration, Supplier Integration

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18.523	3	6.174	40.093	.000[b]
	Residual	24.640	160	.154		
	Total	43.162	163			

a. Dependent Variable: Operational performance
b. Predictors: (Constant), Internal Integration, Customer Integration, Supplier Integration

The estimates of the regression coefficients, the t-statistics, and the p-values for the relationship between the dependent variable (operational performance) and the independent variable (internal integration) are illustrated in Table 7.

Table 7:

Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.129	.202		10.555	.000
	Internal Integration	.441	.050	.569	8.802	.000

a. Dependent Variable: Operational performance of Kenya's public health sector

The study shows that Internal Integration had a significant effect on operational performance, implying that a unit increase in internal integration leads to a change of 0.569 in the operational performance of Kenya's public health sector. The optimal linear regression model was linking internal integration and operational performance. The study introduced Public procurement was the moderating variable and the regression model yielded the following results illustrated in Table 8.

Table 8:

Model Summary Public Procurement and Internal Integration

			Model Summary	
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.649[a]	.421	.413	.39411

a. Predictors: (Constant), Public Procurement, Internal Integration
b. Dependent Variable: Operational performance of Kenya's public health sector

The regression analysis model presented in Table 9 shows that there was a relatively strong linear relationship between internal integration and operational performance when moderated by public procurement, as shown by an R=0.649 and R^2 =0.421. This implies that 42.1% of the variation in the operational performance of Kenya's public health sector attributed to changes in internal integration and public procurement. The Regression model when the moderating variable was introduced as summarized in Table 9.

Table 9:

Regression Coefficient's for Public Procurement and Internal Integration

	Model	Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.293	.247		5.240	.000
	Internal Integration	.286	.055	.370	5.194	.000
	Public Procurement	.378	.073	.370	5.196	.000

a. Dependent Variable: Operational Performance of Kenya's public health sector

From Table 9, internal integration has a significant effect on operational performance. The results imply that a unit increase in Internal Integration as a dimension of supply chain integration would lead to a change of 0.370 in the operational performance of Kenya's level five public hospitals. Further, the moderating variable has a positive and significant effect on operational performance and a unit increase in public procurement would lead to a change of 0.370 in operational performance of Kenya's level five public hospitals. The study also reveals that the variations of operational performance explained by Internal Integration increased from 32.4% to 42.1% when the moderating variable was introduced in the model. The regression analysis, therefore, shows that public procurement significantly moderated the relationship between internal integration and operational performance. Thus, we can conclude that public procurement moderated the relationship between internal integration and operational performance of the Kenya public health sector. The study findings (b=0.286, p <0.05) established that internal integration had a significant impact on the operational performance of Kenya's public health sector; hence, the null hypothesis was rejected. The second hypothesis of the study asserted that public procurement had no significant moderating influence between internal integration and operational performance. The study findings (b=0.378, p <0.05) established that public procurement had a significant moderating influence between internal integration and the operational performance of Kenya's public health sector.

IV. DISCUSSION

The research determined that appropriate incorporation of the aspects of internal integration enables health facilities to identify new ways of improving their practices and efficiency and thus guard against challenges that could derail operational performance and undesirable impact on patients' expectations. The results indicated that 67.6% of the variation in operational performance of Kenya's public health sector is explained by other variables not considered in the study with internal integration only explaining 32.4% of the variation in the operational performance Kenya's public health sector. The null hypothesis was rejected, therefore implying that internal integration, when regressed individually against operational performance, has a significant effect on the operational performance. The results imply that a unit increase in internal integration as a dimension of supply chain integration leads to a change of 0.441 in the operational performance of Kenya's public health sector.

Further, when the moderating variable was introduced into the regression model, the study established that internal integration as a dimension of supply chain integration still had a positive and significant effect on operational performance. The study showed that the variations of operational performance explained by internal integration increased from 32.4% to 42.1% when the moderating variable was introduced in the model. The regression analysis, therefore, shows that public procurement significantly moderated the relationship between internal integration and

operational performance. Thus, we can conclude that public procurement moderated the relationship between internal integration and operational performance of the Kenya public health sector. This agrees with Horn et al. (2014) who opined that internal integration was very vital for the performance of all companies involved in the SCI system. Studies by Stevens & Johnsons (2016); Flynn et al. (2010) noted similar results and noted the importance of internal integration in ensuring the operational performance. The results confirm the findings by Wong, Wong & Boon-Itt (2013), who emphasize that internal integration is vital and without it, external integration is not possible across firms.

The results of the moderating variable are in concurrence with those of Heydari, Govindan and Jafari (2017) who argue that government involvement in SCI creates unnecessary disruptions which are not in the control of health facilities. Bartolini (2012), agrees with these findings and further states that public procurement and logistics are considered paramount in the improvement of healthcare organizational performance. Besides, the study alludes to the importance of sustainable public procurement to not only deal with environmental impacts but other broader perspectives where the social and economic dimensions are considered as well. In a study conducted by Primo (2010) between firms in the electronics industry and its suppliers, found that procurement was a barrier to attainment of supply chain integration. In this study, when public procurement was introduced as a moderating variable, it had a significant effect on the relationship between internal integration and operational performance. The results indicate that for a firm to fully achieve internal integration, the firm should consider first integrating its internal operations such as the public procurement department which will foster visibility, collaboration and ensure the organization gets the best value for money. This has also been echoed by Barratt and Barratt (2011) who noted that internal integration is dependent on the existence of interconnections between the various functional departments such as logistics, procurement, marketing and production.

Conclusion

Internal integration is important to public health facilities, however, only a few have embedded this critical aspect of SCI in their operations. A large majority of respondents were of the opinion that regular functional planning meetings, team building and information sharing amongst the internal functions were essential indicators of internal integration and influenced the operational performance of the facilities. This implies that incorporation of these aspects of internal integration will enable the facilities to identify new ways of improving their practices and efficiency, and in the process positively impact on operational performance. The findings have highlighted the necessity of integration across various departments to streamline operations and work towards common objectives. Such could be achieved through regular meetings, inter-departmental meetings and the directions set by management. An organization with a robust internal integration system has cross-functionality across all the departments to significantly enhance synergistic processes by eliminating silo mentality and enhancing coordination for the benefit of the customers. It is essential to first fully integrate internally before integrating backward and forward with the suppliers and customers.

Public procurement is guided by legislation, regulations and policy mechanisms which are put in place to improve the performance of the health services received by citizens. Furthermore, all the services, goods and works acquired by the facilities are acquired based on the requirements of the Public Procurement and Asset Disposal Act, unlike the private sector, which can easily choose strategic partners. The study found that health facilities aligned their acquisition/procurement plan to the established standards of procurement and published the same with the suppliers. The study respondents confirmed that ordinarily, the facilities followed the acquisition/procurement plan consistently.

Recommendations

The study recommends robust and effective internal integration by strengthening the facilities' capabilities in system, data, and process integration before they can engage in meaningful external integration. Implementation of a unified system of measuring operational performance is thus recommended. This will require the government as the owner of the facilities to adopt a performance measurement for health facilities in the development of the strategic plans and evaluation matrix to meet the anticipated operational performance. One of the measurements that the government can adopt is the balanced scorecard, SCOR Model or a mix of both given the health sector is service-centric as they offer a continuous and hybrid dynamic framework for service SCI. Further, the facilities need to harness the ability to link and integrate systems and processes based on the existing supporting government policies and procedures including procurement procedures aimed at enhancing internal integration and eventually operational performance.

Acknowledgement

Conflict of Interest
There is no conflict of interest as this was extracted from a dissertation submitted towards the award of a degree of Doctor of Business Administration

V.   REFERENCES

Afshan, N., & Sindhuja, P. N. (2015). Supply chain integration in the healthcare industry in India: challenges and opportunities. *Journal for Global Business Advancement*, *8*(4), 469-478

Ajmera, A., & Cook, J. (2009). A multi-phase framework for supply chain integration. *SAM Advanced Management Journal*, *74*(1), 37.

Alfalla-Luque, R., Medina-Lopez, C., & Dey, P. K. (2013). Supply chain integration framework using a literature review. *Production Planning & Control*, *24*(8-9), 800-817.

Baltacioglu, T., Ada, E., Kaplan, M. D., Yurt and, O., & Cem Kaplan, Y. (2007). A new framework for service supply chains. *The Service Industries Journal*, *27*(2), 105-124

Barratt, M., & Barratt, R. (2011). Exploring internal and external supply chain linkages: Evidence from the field. *Journal of Operations Management*, *29*(5), 514-528.

Bartolini, A. (2012). CPO Rising 2012: Keeping Score. *Ardent Partners, Boston, NY*.

Bigdeli, M., Peters, D. H., Wagner, A. K., & World Health Organization. (2014). Medicines in health systems: advancing access, affordability and appropriate use.

Cao, Z., Huo, B., Li, Y., & Zhao, X. (2015). The impact of organizational culture on supply chain integration: a contingency and configuration approach. *Supply Chain Management: An International Journal*, *20*(1), 24-41.

Danese, P., & Bortolotti, T. (2014). Supply chain integration patterns and operational performance: a plant-level survey-based analysis. *International Journal of Production Research*, *52*(23), 7062-7083.

Ewen, M., Zweekhorst, M., Regeer, B., & Laing, R. (2017). Baseline assessment of WHO's target for both availability and affordability of essential medicines to treat non-communicable diseases. *PloS one*, *12*(2), e0171284.

Fabbe-Costes, N., & Jahre, M. (2008). Supply chain integration and performance: a review of the evidence. *The International Journal of Logistics Management*, *19*(2), 130-154.

Flynn, B. B., Huo, B., & Zhao, X. (2010). The impact of supply chain integration on performance: a contingency and configuration approach. *Journal of operations management*, *28*(1), 58-71.

Frankel, R., & Mollenkopf, D. A. (2015). Cross-functional integration revisited: Exploring the conceptual elephant. *Journal of Business Logistics*, *36*(1), 18-24.

Giannakis, M. (2011). Management of service supply chains with a service-oriented reference model: the case of management consulting. *Supply Chain Management: An International Journal*, *16*(5), 346-361.

Heydari, J., Govindan, K., & Jafari, A. (2017). Reverse and closed loop supply chain coordination by considering government role. *Transportation Research Part D: Transport and Environment*, *52*, 379-398.

Horn, P., Scheffler, P., & Schiele, H. (2014). Internal integration as a pre-condition for external integration in global sourcing: a social capital perspective. *International Journal of Production Economics*, *153*, 54-65.

Huang, M. C., Yen, G. F., & Liu, T. C. (2014). Reexamining supply chain integration and the supplier's performance relationships under uncertainty. *Supply Chain Management: An International Journal*, *19*(1), 64-78.

Jin, Y., Fawcett, A. M., & Fawcett, S. E. (2013). Awareness is not enough: Commitment and performance implications of supply chain integration. *International Journal of Physical Distribution & Logistics Management*, *43*(3), 205-230.

Kim, D. Y. (2013). Relationship between supply chain integration and performance. *Operations Management Research*, *6*, 74-90.

Kot, S., Goldbach, I. R., & Ślusarczyk, B. (2018b). Supply chain management in SMEs – Polish and Romanian Journal of International Studies Vol.12, No.2, 2019 144 approaches. Economics and Sociology, 11(4), 142-156. doi:10.14254/2071-789X.2018/11-4/9

Kot, S., Onyusheva, I., & Grondys, K. (2018a). Supply Chain Management in SMEs: Evidence from Poland and Kazakhstan. Engineering Management in Production and Services, 10 (3), 23-36.

Mackelprang, A. W., Robinson, J. L., Bernardes, E., & Webb, G. S. (2014). The relationship between strategic supply chain integration and performance: a meta-analytic evaluation and implications for supply chain management research. *Journal of Business Logistics*, *35*(1), 71-96.

Maestrini, V., Luzzini, D., Maccarrone, P., & Caniato, F. (2017). Supply chain performance measurement systems: A systematic review and research agenda. *International Journal of Production Economics*, *183*, 299-315.

Ngo, H. V., Kumar, V., Kumari, A., Garza-Reyes, J. A., & Akkaranggoon, S. (2016). The Role of Supply Chain Integration in achieving competitive advantage: A study of UK Automobile Manufacturers.

Pakurár, M., Haddad, H., Nagy, J., Popp, J., & Oláh, J. (2019). The Impact of Supply Chain Integration and Internal Control on Financial Performance in the Jordanian Banking Sector. *Sustainability*, *11*(5), 1248.

Prajogo, D., & Olhager, J. (2012). Supply chain integration and performance: The effects of long-term relationships, information technology, and sharing, and logistics integration. *International Journal of Production Economics*, *135*(1), 514-522.

Primo, M. (2010). Supply chain integration mechanisms for alleviating supply problems in manufacturing firms. *Operations management research*, *3*(1-2), 43-59.

Ralston, P. M., Blackhurst, J., Cantor, D. E., & 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.

Rosenzweig, E., Roth, A., & Dean Jr., W., (2003). The influence of an integration strategy on competitive capabilities and business performance: an exploratory study of consumer products manufacturers. *Journal of Operations Management*,21 (4), 437–456.

Schoenherr, T., & Swink, M. (2012). Revisiting the arcs of integration: Cross-validations and extensions. *Journal of Operations Management*, 30, 99-115.

Shahin, A., 2010. SSCM: service supply chain management, *International Journal of Logistics Systems and Management,* 6, (1), 60-75.

Stevens, G. C., & Johnson, M. (2016). Integrating the Supply Chain… 25 years on. *International Journal of Physical Distribution & Logistics Management*, *46*(1), 19-42

Topolsek, D., Lipicnik, M., & Gajsek, B. (2009). The importance of internal integration for a successful external integration of the supply chain. *Business Logistics in Modern Management*, *9*, 45-54.

Tsanos, C.S., Zografos, K.G. & Harrison, Al. (2014). Developing a conceptual model for examining the supply chain relationships between behavioral antecedents of collaboration, integration and performance, *The International Journal of Logistics Management,* Vol. 25 No. 3, pp. 418-462.

Turkulainen, V., Roh, J., Whipple, J. M., & Swink, M. (2017). Managing internal supply chain integration: integration mechanisms and requirements. *Journal of Business Logistics*, *38*(4), 290-309.

Vickery, S.K., Jayaram, J., Droge, C., Calantone, R. (2003). The effects of an integrative supply chain strategy on customer service and financial performance: an analysis of direct versus indirect relationships. *Journal of Operations Management*, 21 (5), 523–539.

Waako, P. J., Odoi-adome, R., Obua, C., Owino, E., Tumwikirize, W., Ogwal-okeng, Anokbonggo, W, Matowe L., & Aupont, O. (2009). Existing capacity to manage pharmaceuticals and related commodities in East Africa: an assessment with specific reference to antiretroviral therapy. *Human Resources for Health*, *7*, 21.

Wiedenmayer, K. A., Kapologwe, N., Charles, J., Chilunda, F., & Mapunjo, S. (2015). The reality of task shifting in medicines management-a case study from Tanzania. *Journal of pharmaceutical policy and practice*, *8*(1), 13.

Wong, C. W., Wong, C. Y., & Boon-itt, S. (2013). The combined effects of internal and external supply chain integration on product innovation. *International Journal of Production Economics*, *146*(2), 566-574.

Yunus, E. N., & Tadisina, S. K. (2016). Drivers of supply chain integration and the role of organizational culture: empirical evidence from Indonesia. *Business Process Management Journal*, *22* (1), 89-115