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Effect of Regulatory Compliance on the relationship between Public Procurement of Innovation and Supply Chain Performance

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Abstract:
The Kenya government has n recent times aggressively advocated for the utilization of public procurement's buying power to stimulate and diffuse innovation, but the additional requirement placed on public procurement has made procurement practitioners cautious about the move given that public procurement is a regulated process whose ultimate agenda is to ensure value for money is achieved. Surprisingly, extant literature on Supply chain Performance in Kenya owned State Corporations has paid much attention to the direct relationship between functional aspects and supply chain performance, to the exclusion of the moderating effect of regulatory compliance on these relationships. This paper sought to examine the effect of regulatory compliance on the relationship between public procurement of innovation and supply chain performance in Kenya owned State Corporations. The study employed a cross-sectional census survey design targeting 187 Kenya owned State Corporations. Primary data was collected using close and open ended questionnaires while secondary data was retrieved from Public Procurement Regulatory Authority website. The results revealed that regulatory compliance had a positive and statistically significant effect on supply chain performance. The study recommends for regulatory compliance as interventionist measure in the utilisation of public procurement of innovation to stimulate diffusion of innovation.

Keywords: Public procurement of innovation, Supply chain performance, Regulatory compliance, Kenya owned State Corporations

Introduction

Both public procurement and innovation are well-established research themes in social sciences. The cross-fertilisation of these two themes – Public procurement of innovation, which refers to how public procurement can be used to stimulate innovation (Edquist and Zabala-Iturriagagoitia 2012; Edler and Georghiou 2007; Lucchese and Pianta 2012), however, remains at the periphery of academic research. For a considerable time now, developed countries have directed public procurement towards purchasing innovative products, services and works; and in the past three decades, these elements have become the subject of a growing body of research. In fact, extant research shows that most of the reviewed literature apply a case study method of exploring PPI, but they also indicate that PPI could be a more effective way of inducing innovation in comparison with other, more often used instruments such as research and development (R&D) subsidies. However, the trend is not visible in less developed countries and only a small number of existing studies focus on smaller and less developed countries.

But much as the public procurement of innovation policy interest has been most conspicuous within the developed countries, notwithstanding with mixed level of ambition, public procurement of innovation is on the agenda in most parts and levels of the world (OECD 2011; Lember, Kattel, and Kalvet 2014; UNOPS 2014) including Kenya (Kiraka, Kobia, & Katwalo, 2013, Chimwami, Iravo, & Tirimba, 2014). Whereas some governments deliberately opt for the ''no policy'' policy because they assume that public funds should not be used to intervene into the economy (as markets know best how to innovate) and governments' actions should be limited to fixing market failures only (as opposed

to systemic failures), or, governments are considered to be prone to failing in policy intervention even if the cause was perceived as right, the Kenyan government has instead adopted a broader and a more strategic policy towards this end (Ngeno, Namusonge, & Nteere, 2014; Marendi, 2015, Constitution of Kenya, 2010).

The purpose and actions of the public procurement system transcend meeting functional objectives. It recognizes the significant role public procurement can play in generating positive public value. In this regard, the procurement system in Kenya recognizes the equal status of functional and horizontal objectives in public procurement (Chemoiywo, 2014). This is expressed in the legal frameworks which govern public procurement. As such, horizontal public procurement practices are anchored in different legal frameworks that guide purchasing in public sector. The horizontal policies are grounded in the Kenyan Constitution (Ng'eno, Namusonge, & Nteere, 2014). Article 227 of the Constitution of Kenya recognizes that public procurement aims to achieving efficiency and equity in the society (RoK, 2010) while the Public Procurement and Asset Disposal Act (2015) operationalizes horizontal expectations as outlined in the constitution.

The significant economic role of public procurement provides the Kenya government with notable market power which it continues to use to stimulate innovation (Ngeno et al, 2014; Korir, Komen, Cherop & Kihara, 2015). This is demonstrated over the years-where notable growing policy interest in re-orienting public procurements expenditure towards solutions that are more compatible with innovation considerations has been observed.

Public Procurement, State Corporations and Diffusion of Innovation

The use of public procurement as a tool to stimulate demand for innovative products or services in Kenya is fragmented and based on priorities and policies set by various public bodies. One of the ways is through public procurement in Kenya Owned State Corporations (KoSCs), commonly referred to as parastatals, are established and regulated under the State Corporation's Act of the laws of Kenya. They are a body corporate established by an Act of parliament, or other written law, whose whole or controlling majority share is owned by the government or another state corporation (Njiru, 2008). Over the years, the corporations have played an important role in the social transformational and sustainable development process of the country.

But although KoSCs have been particularly significant agents of social transformation and sustainable development, the specific role played by the KoSCs in direct contribution to the transformational and social development agenda is rarely examined. The purposes and actions of the public procurement in KoSCs transcend functional objectives of meeting utilitarian needs to embrace broader societal aims (Arrowsmith, 2010; Arrowsmith, Linarelli, & Wallace, 2010, Odhiambo & Kamau, 2003). Hence, assessing supply chain performance in these sector is frequently multifaceted and, consequently, more difficult to quantify (Rha, 2010). The unique, politically strategic and public value laden nature of procurement decisions in the public sector appear to have been somewhat overlooked.

Public procurement represents a major share of the KoSCs' expenditure budget. According to the National Treasury estimates (2015), procurement in the State corporations in Kenya is the second biggest of expenditure budget in most state corporations after staff expenditure (RoK 2015). Again, according to Chemoiywo (2014), procurement accounts for over 60% of the State corporation's budget. This is a significant purchasing power which can be used as a lever to realize not only functional but also horizontal outcomes such as diffusion of innovation. Indeed, in the last few years, a new interest in the Kenyan government has emerged in the meaning of demand-side approaches to innovation and, more concretely, in the use of public demand (procurement) as an engine for the development and diffusion of innovations (Nawire, Ogolla & Kiarie 2014). This has been particularly evident in the state corporations which represent the public sector charged with the responsibility of being significant agents of social transformation and sustainable development.

For decades, supply chain performance in KoSCs has been attracting great attention from practitioners, academicians and researchers due to poor levels of performance (Njogu, 2016). Despite government efforts for improvement, the fact that public procurement systems and operations is still marred by shoddy works, poor quality goods and services as recent as 2015 is a major indicator that all is not okay (Chimwani, Iravo & Tirimba, 2015). A casual look into the supply chain performance in KoSCs shows poor performance. However, a deeper analysis points to other underlying causes of

performance concerns (Marendi, 2015). The complexity of balancing different and sometimes, somewhat contradictory, objectives as required by different stakeholders in public procurement make it difficult to measure supply chain performance in Kenya Owned State Corporations (Awino & Marendi, 2015, Rha, 2015) .

Nonetheless, conflicting procurement priorities present a challenge to innovation-oriented procurement. According to Thai (2001) procurement agents often struggle to balance traditional procurement goals such as cost effectiveness, performance, and fairness, and being held accountable for an unfavourable outcome of the procurement process tends to inhibit government officials from applying new procurement practices, even if they are not specifically sanctioned by procurement regulation. In addition, from the perspective of cost-effectiveness, public procurement of products embodying novel technologies can be criticized if their initial costs are high relative to alternatives serving the same purpose (Coggburn and Rahm, 2005).

Regulatory Compliance

Regulatory compliance, which refers to obedience of regulations by a target population (OECD, 2000), is an important aspect in public administration since regulation that fails to elicit an adequate level of compliance not only fails to meet its underlying policy objective, but also creates unnecessary costs through fruitless administration and implementation, postpones the achievement of the policy objective and erodes general confidence in the use of the regulation. Cumulatively this leads to the undermining of other regulations and the regulation itself, which can lead to a vicious cycle in which more and more rules are promulgated while public confidence in government regulation lessens and compliance outcomes become worse (Gelderman, Ghijsen, & Brugman, 2006).

Public procurement is a regulated process and its ultimate agenda is to ensure that value for money is achieved. According to Handler (2015), compliance with the fundamental principle of public procurement is considered to be the main tool and the moderating factor in the implementation of any horizontal (environmental, social industrial, innovation policies). Governments often regulate public procurement in accordance with their national obligations which are motivated by achieving value for money in addition to achieving certain horizontal policy objectives (Arrowsmith, Linarelli, & Wallace, 2010). Some of these objectives may conflict: for example, the use of discretionary and unstructured procedures to achieve horizontal outcomes can raise the risk of corruption and abuse.

Nonetheless, there appears to be agreement that the key principles of competition, objectivity (including fair treatment) and particularly transparency assist in achieving other procurement goals, whatever the relevant emphasis. Therefore, compliance with the fundamental regulation of public procurement remains the main consideration in public procurement and that the pursuit of any horizontal objectives need to not only respect the requirements of undistorted competitive tendering, but also ensure that there is transparency, accountability and ultimately, and value for money (Graells, 2015). This position also takes cognizance of the complexity of public procurement which entails balancing of different and sometimes, somewhat contradictory, objectives. The interaction between regulatory compliance, public procurement of innovation and supply chain performance has been gaining visibility in recent years. Despite this, there is little research that closely examines intermediate outcomes. This interaction starts to be recognized as an important factor in achieving balance between functional objectives and horizontal objectives such as promotion of innovation objectives through public procurement. It is a widely held view that public procurement can only generate public value, including, public procurement of innovation, instead of trying to mandate or 'drive' such innovation.

It is a widely held view that public procurement should serve the purpose of providing taxpayers with the best value for money (Prier, McCue & Dise, 2007). While public procurement can be used to further other objectives, majority views advocate for a moderated approach and instrumental utilization of procurement for the promotion of ancillary objectives (Semple, 2015, Strömbäck, 2015, Graells, 2015).

Statement of the Problem

The Kenyan government is aggressively advocating for the utilization of public procurement's buying power to stimulate and diffuse innovation yet public procurement is a regulated process whose ultimate agenda is to ensure the value for money is achieved. Procurement professionals, academicians and practitioners are cagey about the additional requirements placed on public procurement. Additionally, the discourse on the simultaneous pursuit of basic procurement objectives and

innovation objectives in public procurement continue to paint a mixed picture. Some scholars consider the pursuit of innovation objectives through procurement as unnecessary, costly, unfair, bureaucratic, discriminative, counterproductive, and detrimental to supply chain performance (Rolfstam, 2009). Others express concern over the "uneasy mixture" of public procurement policies whereby cost efficiencies compete with innovation objectives (Pickernell *et al*,2011) while others draw attention to possible incongruence between the basic procurement concerns and innovation expectations of public procurement which may ultimately affect Supply chain performance(Cabras 2011).

Surprisingly, pertinent literature on supply chain performance in KoSCs has paid much attention to the direct relationship between functional aspects and supply chain performance, to the exclusion of the moderating or otherwise effect of regulatory compliance (Muraguri 2013; Nawire, Ogolla and Kiarie 2014). Contextually, studies conducted in the area of regulatory compliance (Migosi, Ombuki, Ombuki, & Evusa, 2014, Gesuka & Namusonge, 2013, Ntayi, Ngoboka, & Sitanda, 2012) have paid much attention to explanatory aspects of non-compliance. Methodologically, most studies on supply chain performance in KoSCs have either been conceptual in nature (Flynn & Davis, 2014) or purely depended on subjective data. This paper is a summary of work done to fill the evident knowledge gap, by examining the effects of horizontal procurement practices on performance of state corporations in Kenya using descriptive cross-sectional census survey design

The Study objectives

The general objective of the study was to investigate the effect of regulatory compliance on the relationship between public procurement of innovation and supply chain performance in Kenya Owned State Corporations

Research Methodology

The study employed a positivist research paradigm and a cross-sectional census survey design. The target population was all the 187 Kenya owned State Corporations. Closed and open ended questionnaires were distributed to procurement practitioners and interview guides were conducted with the Accounting Officers to gather primary data, whereas secondary data was retrieved from existing documents of the Public Procurement Regulatory Authority as hosted in its website.

Research Hypothesis

The following research hypothesis was formulated and tested

H_{01}: Regulatory Compliance has no significant moderating effect in the relationship between PPI and Supply Chain Performance in KoSCs.

A regression analysis was done to determine the effect that regulatory compliance has on the relationship between public Procurement of innovation and Supply Chain Performance in Kenya owned State Corporations.

Results

To test the hypothesis the following models were fitted:

Model 1: $\mathbf{Y= \beta_0 + \beta X+ e}$

Model 2: $\mathbf{Y= \beta_0 + \beta X+ \beta_M M + e}$

Model 3: $\mathbf{Y= \beta_0 + \beta X+ \beta_M M + \beta_M X_M + e}$

Where Y= Supply chain Performance
X1= Public procurement of innovation (PPI)
M= Moderator (Regulatory Compliance)
e= Error Term

The results in Table 1(b) show that the three models were all significant (p-value <0.000 in all the three models). Table 1(a) reveal that the Coefficient of Determination (R^2) for the first model was .272 meaning that PPI practices, on its own, contributed 27.2% to the change in supply chain performance in KoSCs. The model changed marginally with the introduction of RC as a predictor. The introduction of RC as a predictor changed from .272(27.2%) to .307 (30.7%) an increase of 0.035 and still remained significant (F change= 8.255, p-value =0.005). This means that PPI together with Moderator (Regulatory Compliance) can explain up to 30.7 % of SCP in KoSCs. The addition of the interaction term (X*M) improved the model further (R^2=.330) and still remained significant (F Change=5.643, p–value=0.019). This implied that M (Regulatory Compliance) has some predictive value and moderates the relationship between PPI (X) and SCP(Y) in KoSCs.

The equation of the models is as follows.

Model 1: Y= 3.615+0.3.19 X

Model 2: Y= 3.287+0.296X+0.97M

Model 3: Y= 3.232-0.060X+0.110M+0.108XM

a) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics R Square Change	F Change	df1	df2	Sig. F Change
1	.522[a]	.272	.268	.3641220	.272	61.277	1	164	.000
2	.554[b]	.307	.299	.3563259	.035	8.255	1	163	.005
3	.575[c]	.330	.318	.3513573	.023	5.643	1	162	.019

b) ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.124	1	8.124	61.277	.000[b]
	Residual	21.744	164	.133		
	Total	29.868	165			
2	Regression	9.172	2	4.586	36.121	.000[c]
	Residual	20.696	163	.127		
	Total	29.868	165			
3	Regression	9.869	3	3.290	26.648	.000[d]
	Residual	19.999	162	.123		
	Total	29.868	165			

c) Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	3.615	.028		127.513	.000		
	X	.319	.041	.522	7.828	.000	1.000	1.000
2	(Constant)	3.287	.117		27.973	.000		
	X	.296	.041	.484	7.280	.000	.962	1.040
	M	.097	.034	.191	2.873	.005	.962	1.040
3	(Constant)	3.232	.118		27.362	.000		
	X	-.060	.155	-.099	-.389	.698	.064	15.602
	M	.110	.034	.216	3.254	.001	.937	1.067
	XM	.108	.046	.598	2.375	.019	.065	15.344

Table 1: Moderating effect of RC on PPI and Supply Chain Performance

a. Dependent Variable: SCP
b. Predictors: (Constant), X
c. Predictors: (Constant), X, M
d. Predictors: (Constant), X, M, XM

Where Y= Supply chain Performance
X=Public Procurement of Innovation
M=moderating Variable (Regulatory Compliance)
XM=Interaction Term between Public Procurement of Innovation and Regulatory

Results in Table 1(b) show that the beta for PPI in Model 1 was 0.319 (β=.319, t= 7.828, p-value<0.001) that is PPI alone contributed 0.319 measures to SCP in KoSCs. In Model 2, when RC was combined with PPI, the beta improved marginally from (β=.319, t= 7.828, p-value<0.001) to (β=.296, t=7.280, p-value <0.001) hence statistically significant thus concluding that RC, as a predictor, was significant in the model. In Model 3, the introduction of the interaction term (X*M) saw a further deterioration in beta (β=.108, t=2.375, p-value=0.065) and thus became insignificant.

This finding on the effect of regulatory compliance on the relationship between public procurement of innovation and supply chain performance lend support to Graell's (2015) assertion that compliance to competition is the main moderating factor in the implementation of any horizontal (green, social, innovation). Similarly, the findings are in agreement with Marendi (2015) who established that policy compliance has a positive and significant effect on organizational performance. In addition, the results concur with the theoretical positions assumed by several (Lazarides, 2011, Lisa, 2010, Heneghan & O'Donnell, 2007, Karjalainen et al., 2009 and Tukamuhabwa, 2012) on the effect of compliance on organizational performance.

Conclusion

The results indicate that regulatory compliance has a moderating influence in the relationship between public procurement of innovation and Supply chain performance in Kenya owned State Corporations. The study recommends for regulatory compliance as interventionist measure in the utilization of public procurement's tremendous purchasing power to stimulate diffusion of innovation in the economy. The large purchasing power of public procurement can be a significant pull demand for innovation and can also create a signaling effect as lead user hence influencing the diffusion of innovation.

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