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**ABSTRACT**

*Supply chain risk management has gained popularity in recent years. Every organization tries to optimize the performance of their supply chain by managing any possible interference and disturbances which can possibly prevent the achievement of predefined objectives. This study sought to determine the effects of supply chain risk management practices on supply performance of public universities in Kenya. The study adopted a correlation research design on a sample of 55 procurement personnel from 10 selected public universities in Kenya. Multiple regression analysis of the data indicated that there is a moderate positive relationship ( $R=0.695$ ) relationship between supply chain risk management practices and supply chain performance of public universities in Kenya, and also that 48.3% of supply chain performance of public universities in Kenya is accounted for by Supply chain risk management practices ( $R^2=0.483$ ). The study therefore concluded that supply chain risk management practices moderately affects the supply chain performance of public universities in Kenya. It was therefore recommended that public universities need to invest on the risk management aspects of their supply chains so as to realize improved performance.*

**Key Word:** Supply Chain Risk Management, Public Universities in Kenya

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## INTRODUCTION

A supply chain comprises the organizations, activities and processes associated with the flows of products, services, information and capital, from their origin to the ultimate consumer. The Council of Supply Chain Management Professionals (CSMP) defines supply chain management (SCM) as the planning and management of all activities associated with procurement, production, distribution and coordination among supply chain members. Over time the SCM has suffered transformations concerning activities, processes and the actors involved. It showed that focus has shifted gradually from integration at organizational level to integration of activities and business process at the supply chain level. Supply chains maximize the benefits for all the participants through either a strategy of operational excellence or collaborative closeness. It shows that supply chain is by definition the extended enterprise where business engagement is based not only on cost-driven considerations but also on incentives, rewards, knowledge exchange and commitment.

In today's turbulent supply markets and volatile, global business environment, corporate supply chain professionals need to make consistently superior decisions. Developing a formal, structured, risk management capability for supply chain activities is an outstanding way to do that [2]. One consequence of Supply Chain Risk Management (SCRM) is that supply chain risk has emerged as a comprehensive topic in its own right rather than being a facet of specific but fragmented supply chain tasks. The benefit of this promotion up management's agenda is the requirement for more clarity about what is 'supply chain risk' and greater awareness that risks can lurk in areas where traditionally they have not been sought (Russill, 2008). According to survey results, the global recession made

organizations significantly more aware of the need for advanced risk management practices. 50% percent of responding companies gave more attention to supply chain risk management in 2009 than they did in previous years (Accenture, 2010).

Dynamic supply chains believe in continuously improving performance. This has become a critical issue for many suppliers, manufacturers, and the retailers who intend to achieve and sustain competitiveness. In practice, supply chain based companies have used different performance management tools to support their supply chain strategies (Cai, Xiangdong and Zhihui, 2008). AON's 2009 Global Risk management Survey includes supply chain failure in its top ten most pressing risks around the world. Interestingly, at least half of the risks in the top ten can be directly related to supply chain activity, and hence would fall within the remit of Supply Chain Risk Management (Russill, 2008).

Existing studies in the field of SCM focus on the relationship between organizational performances and performances in supply chains (Florian and Constangioara, 2013), or on the problem of entrepreneurial supply chains (Antoncic and Scarlat, 2005; Antoncic and Prodan, 2008). This study shifts focus to the problem of supply chain risk management (SCRM), identifying the policy considerations and effects of risk management competencies of the supply chain professionals. Current knowledge in this area is fragmented and incomplete. In order to remedy this gap the study approaches the problem of SCRM in the general framework provided by SCM.

Sodhi, Son and Tang (2012) show that researchers in the field consider SCRM a subset of SCM, with additional focus on risks and strategies dealing with unknown, disruptions and supply-demand

stochastic. Sharma and Chrisman (1999) defined risks in supply chains as a "variation in the distribution of possible supply chain outcomes, their likelihood, and their subjective value." Accordingly, supply chain risks might result not only in negative outcomes but also on positive ones. This approach is also embraced by many researchers in the field of SCRM, who consider that risks in supply chains are associated with chance of danger, loss, damage or any other undesired consequence (Wagner and Bode, 2008).

Wright and Datskovska (2012) depict the impact that changes in business environment have on operations and supply chains management. They show that while globalization might have increased the performances in supply chains through facilitating access to markets, resources and factors, many organizations are increasingly relying on outsourcing and off-shoring which made local concentrated risks become globally diffused, involving multiple actors. Geographical concentration of production has increased the disruption impact of local events. Increasing the complexity of products and networks induced reliance on multiple parts and players which made quality monitoring more difficult. Single sourcing corroborated with the reduction of buffer stocks reduced the number of alternatives. Finally, increased information availability made operations increasingly reliant on information flows and volatile governmental policies, such as the implementation of performance contracts, and legislation might impede the efficient flows within the supply chains hence its expected performance.

Wagner and Bode (2008) observe that coping with supply chain risks necessitates adequate strategies. They provide the indicators of supply chain risk management to include: collaboration with suppliers to develop transparent supply

chains and an open sharing of information and business continuity or contingency plans addressing several supply chain risks. The indicators also include monitoring suppliers for possible supply chains risks; product differentiation for reducing demand side risks; a distinct organizational policy on SCRM; and insurance against supply chain risks. In so far as the empirical evidence are concerned, Wager and Bode (2008) and Wagner and Neshat (2011) document the negative relationship between supply chain risks and organizational performances. The study however, has not included the dimension of performance contracting in the relationship.

Badasha (2012), examining supply chain management in the public sector, observes that leaders are unprepared for supply chain failures and that supply chain risks rate as third type of major incidents threatening public sector behind severe weather and financial crisis. He notes that just over 6% of public sector leaders regarded supply chain failures as likely to happen to their organizations. He found that whilst the current budgetary environment is driving increased outsourcing, most public sector leaders do not see supply chain risks as increasing the likelihood of a major incident and concluded that many of the public sector leaders do not think strategically about managing risks within the supply chain and across partners. This finding reinforces the need to find out the contribution of supply chain policy were it to be part of strategy considerations of organizational leaders.

Wood and Hadi (2012) investigated how to improve performance through active supply chain risk management. The study identified internal and external risk factors and established the role of SCRM in supporting organizational performance. The study found that internal and external risks must be properly managed and that

SCRM can sustain hotel performance. The study recommended that SCRM requires further study in different sectors to enrich understanding of key constructs. It also recognized that there are only few studies that analyze the relationship between SCRM and different dimensions of performance hence a motivation for the current study.

Githinji (2012) studying the relationship between logistics outsourcing and supply chain performance among universities in Nairobi County, Kenya, established the challenges faced by universities in their attempt to outsource activities. This study focused on logistics practices of the universities omitting the general supply chain risk management practices. Solomon (2013) investigated the relationship between strategic innovations and supply chain performance of public universities in Kenya. The study established a positive relationship between strategic innovation and performance of public universities in Kenya, leaving a gap on the contribution of supply chain risk management practices and the moderating effect of performance contracting.

Ritchie and Brindley (2007) studied supply chain risk management and performance and employed conceptual and empirical work in SCM field to develop a framework of SCRM. The study examined the constructs underpinning risk management and explored its applications in the supply chain context through the development of a framework. It proposed a framework to help integrate the dimensions of risk and performance in supply chains and provide a categorization of risk drivers. The study emphasized that performance and risk were interconnected requiring deliberate and robust implementation of supplier management tools to maximize performance whilst controlling the consequential risks but failed to look into the relationship

between SCRM practices such as SCRM policy and contingency planning and supply chain performance.

### **Research Problem**

Public universities in Kenya form parts of several supply chains since the institutions consume supplies like any other organization. They have to employ the services of supply chain personnel who are expected to perform the relevant supply chain functions in their organizations. Public universities have however faced a variety of challenges ranging from stock outs of critical supplies, late deliveries, and stalled projects, among others. This has put in doubt the role played by the supply chain sections with regard to the management of supply chain risks.

### **Study Objectives**

The main objective of this study was to investigate the effects of supply chain risk management activities on the performance of supply chains of public universities in Kenya

### **METHODOLOGY**

The study adopted a correlation research design on the 55 supply chain personnel from 12 public universities using saturated sampling approach on 84 officers. Structured questionnaire was dropped in each institution the respondents were briefed on the document, left with them for one week then picked later. At the end of the exercise, only 46 questionnaires were received back representing 83.6% response rate. Regression analysis was conducted on the primary data collected and results, summarized in frequency tables, used in presenting the inferences that follow.

### **FINDINGS**

The objective sought to determine the effect of supply chain risk management practices on the supply chain performance of public universities in

Kenya. To achieve this objective, the study obtained scores on two key components supply chain risk management practices which were the risk management policy framework and the risk management competency of the university officials. The findings in Table 1 below showed that there was a moderate positive relationship ( $R=0.695$ ) between supply chain risk management practices and supply chain performance of public universities in Kenya.

**Table 1: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	the Durbin-Watson
1	.695 <sup>a</sup>	.483	.458	.62658	1.277

a. Predictors: (Constant), COMPE, POLICY

b. Dependent Variable: PERF

Source: Research Data, 2017

From table 1 above, it was clear that 48.3% of supply chain performance of public universities in Kenya was accounted for by Supply chain risk management practices ( $R^2=0.483$ ). Furthermore,

The model summary and regression results of supply chain risk management practices of public universities in Kenya measured by risk management policy framework and staff risk management competency on supply chain performance of public universities in Kenya are as presented in table 1 and 2 below:

it was clear that supply chain performance of public universities had a moderate positive relationship with Supply chain risk management practices.

**Table 2: Regression results**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error			
1	(Constant)	.480	.301		1.595	.118
	POLICY	.429	.127	.437	3.380	.002
	COMPE	.316	.113	.362	2.801	.008

a. Dependent Variable: PERF

Source: Research Data, 2017

From the regression results in table 2 above, it was established that a standard unit increase in supply chain risk management policy framework would lead to 43.7% unit increase in supply chain performance of public universities ( $\beta_1=0.437$ ,  $p<0.05$ ). This implied that whenever the universities invest in formulation of supply chain risk management policy framework, they would

also realize an improvement in their supply chain performance.

Further, it was established that a standard unit increase in staff competencies in supply chain risk management competence would lead to 36.2% increase in supply chain performance of public universities ( $\beta_2=0.362$ ,  $p<0.05$ ). This implies that whenever the universities invest in improving

employee competence, they would realize an improvement in their supply chain performance.

### CONCLUSION AND RECOMMENDATIONS

The objective sought to determine the effects of supply chain risk management practices (as measured by supply chain risk management policy framework and supply chain risk management competence) on the supply chain performance of public universities in Kenya. Using Pearson product moment correlation, the study found out that supply chain risk management practices had a moderate positive relationship with the supply chain performance of public

universities in Kenya. The correlation between supply chain risk management policy and supply chain performance was the highest while the least correlation was between staff competency on supply chain risk management and supply chain performance. While the research hypothesis was that there is no significant correlation between supply chain risk management practices and supply chain performance of public universities in Kenya, the alternative hypothesis was adopted since there was a positive significant correlation between the two variables.

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