

EFFECT OF SUPPLY CHAIN OPERATIONAL CAPABILITIES AND FIRM PERFORMANCE IN STATE CORPORATIONS IN KENYA

Korir Loice 

Dept of Marketing and Logistic, School of Business and Economics, Moi University, Kenya

joykorir@gmail.com

Ronald Bonuke

Dept of Marketing and Logistic, School of Business and Economics, Moi University, Kenya

Joel Chepkwony

Dept of Marketing and Logistic, School of Business and Economics, Moi University, Kenya

Abstract

The main aim of the paper was to determine effect of supply chain operational capabilities and firm performance in state corporations in Kenya. The study is informed by resource dependency theory. The research design was explanatory survey research design. The target population of this study was 187 state corporations in Kenya. From the target population of 687 employees, a random sample of 245 employees was selected. This study used questionnaires to collect data relevant to the study. Hypothesis were tested using Multiple Regression Analysis Model. Findings logistic capability, structure capability and technology capability has a positive and significant effect on firm performance. The State corporations can enhance their overall performance by ensuring the information available in the corporation is accurate and timely. There is need for the corporations to have an IT system that is compatible with those of supply chain partners to take advantage of market opportunities. Therefore, there is need for the functions in the state corporations to be well integrated in such a way that it is easier to solve problems between functions.

Keywords: Technology capability, logistic capability, structure capability, performance

INTRODUCTION

Performance of firms is of vital importance for investors, stakeholders and economy at large. For investors the return on their investments is highly valuable, and a well performing business can bring high and long-term returns for their investors (Mirza and Javed, 2013). Hausman et al. (2003), proposed several metrics to measure performance in the Supply Chain organized around three main pillars: services, activities and speed, other authors such as Lambert & Pohlen (2001) propose indicators that are established on the basis of financial performance indicators and economic the entire SC. From another perspective, Kleij & Smits (2003), suggest that measuring the performance of a SC should consider the fact that each company is a particular economic system and a different legal entity.

To garner firm performance benefits, Firms need capability from overall operations, including cooperation and reconfiguration (Flynn et al., 2010; Wu et al., 2010). The capabilities that enable firms to cope with uncertainty and gain a firm performance through supply chain responsiveness are imperative. In fact, the operation encompasses all facets of firm's activities directed toward producing a product or rendering a service. The operational capability allows the respective manufacturing systems to become highly responsive in terms of equipment, material and labor (Wu et al., 2010). Operational capabilities are "firm-specific sets of skills, processes, and routines, developed within the operations management systems that are regularly used in solving its problems through configuring its operational resources" (Wu et al., 2010). The operational cooperation (OC) is the ability to coordinate all related parties to work together as a whole to exchange information and develop a shared definition of the solution needed (Flynn and Flynn, 1999). In addition, the operational reconfiguration (OR) is about reshaping (investing and divesting) operations resources in order to catch up with environmental changes (Wu et al., 2010).

Operational capability continues to play critical roles in influencing a firm's ability to compete in the market. Studies are increasingly looking across the supply chain, beyond their encompassing concept, to establish the link between operations and SCM (Robb et al., 2008; Chen and Kim, 2007; Zhang and Dhaliwal, 2009; Oliva and Watson, 2011), with the aim of creating a seamless flow of goods/services and information from suppliers and operations to the customers. However, to the best of the authors' knowledge, the linkages between SCI and operational capability have not yet been addressed explicitly and modeled collectively. Indeed, previous studies have found there is a link between SCM practices and firm performance (Tan, 2002; Min and Mentzer, 2004; Li et al., 2005; Chow et al., 2008; Chong et al., 2011; Cook et al., 2011). For example, Li et al. (2005) suggested an overarching framework to address downstream, internal and upstream sides of the supply chain. They found that organizations

achieve better performance when they embrace a higher level of SCM practice. However, this framework is not applicable in the context of small- and medium-sized manufacturers (SMMs), as there are inconsistent results about the direct relationship between SCM practices and business performance in large companies and SMMs. SCM practices in SMMs are more relevant to operational performance and have an indirect relationship between SCM practices and firm performance. As indicated by Koh et al. (2007), implementation of SCM practices has a significant impact on operational efficiency of small manufacturers in developing countries.

Firm performance of the state corporations is considered as a source of concern to both public and private sector clients. State corporations performance remains a prominent issue in service delivery all over the world (Robinson et al. 2005). However, in State Corporation, Gwayo et al. (2014) noted, there is a growing concern regarding the reasons why the requisite objectives are not achieved as per the public expectation. Muchung'u (2012) lamented that, some projects takes as many as 10 years before they are completed due to supplier related problems. The foregoing has resulted in evitable cost overruns, time overrun, idling resources, and also inconveniences to the targeted beneficiaries of such projects (Kikwasi, 2012). This is so due to the fact that, incomplete and/or unsuccessfully completed construction projects effect state corporation performance.

The challenge of demand for quality service and upcoming competitions for most of the firms has realized the need for quality service delivery and efficiency. Supply chain operational capabilities play a key role in ensuring that this is achieved (Chepng'etich *et al.*, 2015). State corporations are one of the most crucial corporations in Kenya's economy. They contribute a significant percentage of the Gross National Product (GNP) and employ tens of thousands of workers. However, a lot of concern has been raised by members of public and development partners on deteriorating performance of State Corporation. Major scandals in Kenya, like in other countries, revolve around ineffective performance, which could have been avoided by incorporating strategic alliances policies in the public procurement cycle (Ayoyi and Odunga, 2015). If state cooperation can adopt supply chain operational capabilities, they may hence their performance. However, limited studies particularly in emerging economies have attempted to show extent to which supply chain operational capabilities can improve supply chain performance. The study hypothesized that;

H₀₁: There is no significant effect of logistics capability on firm performance in State Corporation

H₀₂: There is no significant effect of technology capability on firm performance in State Corporation

H₀₃: There is no significant effect of structure capability on firm performance in State Corporation

THEORETICAL REVIEW

In proposing the resource dependence theory, Pfeffer and Salancik (1978, 2003) attempt to explain the behavior of organizations—in terms of actions and decisions—by looking at their interactions with a number of factors in their environments. There are several findings directly linking the RDT to the field of supply management. In supply management practices the desirable tactics for managing supply forms a continuum from least to most constraining tactics, in order to minimize uncertainty and dependency, and maximize the autonomy of the organization (Davis & Cobb, 2010, p. 6). Based on the RDT, the vertical integration of an organization in its supply chain depends on the perceived certainty of resource acquisition. According to the RDT, strategic items consists of resources which have a critical impact on the organizations activities and performance (Shook *et al.*, 2009, p. 2). The empirical findings to exposed in this thesis will present the current state of the RDT in the field of organizational behaviour research, showing its significant impact and great influence. In the supply chain context, supply chain members often work closely together to achieve common goals and become increasingly dependent on each other, thus, RBT offers a strong explanatory power in this context. Several authors discuss implications of this theory for key aspects of supply chain management (Crook and Combs 2007; Ireland and Webb 2007). In summary, RDT complements the RBV in that it views the organization as seeking to exploit and recombine unique and inimitable resources that may be outside the realm of the organization and where strategic orientation towards the relationships could lead to the appropriation of these resources (Fynes et al. 2004).

LITERATURE REVIEW

Logistics Capability and Firm Performance

A firm's logistics capabilities can be regarded as a key strategic resource or capability for acquiring sustainable competitive advantage, and may have significant impacts on firm's and even supply chain's competitiveness and performance (Rakovska, 2013). Although many scholars have demonstrated that various logistics capabilities are positively associated with competitive advantage and/or financial performance, empirical studies have rarely focused on logistics management in China but mainly have concentrated on firms in western developed countries. There is still insufficient evidence to conclude that logistics capabilities such as process, flexibility and information integration capabilities have significant effects on firm performance

Shang and Marlow (2005) suggest that information integration and general integration capabilities comprise logistics capabilities. Compared with related researches abroad, those in China are still at an early stage. Ma Shi-hua and Meng Qing-xin (2005) point out that the

essential elements of supply chain logistics capabilities include tangible, intangible and synthesized elements. Ma Shi-hua and Shen wen (2005) analyze the influence factors from the viewpoint of logistics resources and systematical structure and discuss some interactive mechanism of the factors. GuiHua-ming and Ma Shi-hua (2005) analyze the elements influencing logistics capabilities and the outsourcing strategy of enterprises with different capabilities. It is also proved that logistics and its last evolution phase supply chain management (Bielecki, 2012, p. 163) significantly influence performance. Obviously there is a link between strategy and logistics as a means for realizing it.

Besides, the contribution to the company's performance is also related to the adoption of third party logistics (3PL) or logistics outsourcing, and it will improve a firm's capability in logistics activity (Cho et al., 2008). Most scholars ascertain that firm's performance and logistics capability are related to each other either in the context of traditional or new markets development (Cho et al., 2008; Ellinger et al., 2000). However, this capability also contributes to the differences in opinion. The differences could arise in the implementation methods, such as leveraging third party's expertise. In fact, different countries have different capability in managing their logistics activities. For instance, Indochina countries (i.e.: Cambodia, Laos, Myanmar, and Vietnam) are less efficient in their logistics operations than in any developing countries in the same region (Goh and Ang, 2000).

Studies have acknowledged the importance of logistics capabilities in imparting the firm with competitive advantage (Esper et al, 2007; Gligor and Holcomb, 2012). Logistics capabilities are those specialized skills, attributes and knowledge within a firm that helps a firm to manage its logistics activities (for e.g. transportation and distribution of raw materials and finished goods) efficiently and effectively (Gligor and Holcomb, 2012). Although the terms, logistics and supply chain have been used interchangeably; the current study distinguished between the two and posited logistics as an integral part of supply chain management (Mentzer et al, 2004; Gligor and Holcomb, 2012). Further, most of the studies in this area have adopted different classifications of logistics capabilities (e.g. Mentzer et al., 2004; Stank et al., 2005; Esper et al., 2007 etc.).

Logistics capabilities do influence the way a firm operates in the market. Lynch et al. (2000) investigated the effect of logistics capabilities and strategy on firm performance. Capabilities are the skills and knowledge that enable firms to make use of their assets. Logistics capabilities are capabilities that essentially support the logistics functions of the firms to be executed properly. The study conceptualized strategy as either cost leadership or differentiation. The study proposed that corporate strategy is most effective when pursued with resources/capabilities that "fit".

Cho et al. (2008) empirically examined the relationship between firm's logistics capability, logistics outsourcing and its performance in an e-commerce market environment. The study argued that e-commerce firms have a higher likelihood of creating a sustainable competitive advantage and improving performance if they have strong logistics capability. Studies have also explored the direct contribution of logistics capabilities to competitive advantage. Sandberg and Abrahamsson (2011) explored the link between (operational and dynamic) logistics capabilities and sustainable competitive advantage. The study used two Swedish retail companies for investigating the proposed links. The study used resource based view as the theoretical backdrop for the aforesaid study. The study argued that the success of these two Swedish companies was based on logistics: operational and dynamic capabilities.

Technology Capability and Firm Performance

Technological capability has been observed as an important element in the economic growth of a nation, since the development of an enterprise depends on the capability to introduce new products over time. Scant research has been developed involving technological capability and the internationalization of companies from emerging economies, such as Russia, India, Brazil, Mexico, and China (Chitter & Ray, 2007; Vääätänen, Podmetina & Pillania, 2009; Dechezleprêtre, Glachant & Ménière, 2009).

Technological capability is the ability of the company to execute any relevant technical function, including the ability to develop new products, processes, and technological knowledge in order to obtain higher levels of organizational efficiency (Tsai, 2004). Through technological capability, the company can gain a competitive edge within the industry, particularly in a high-tech environment (Duysters & Hagedoorn, 2000; Afuah, 2002; Archibugi & Coco, 2004; Ortega, 2010), such as the chemical, electronic, or pharmaceutical industry (Schoenecker & Swanson, 2002; Tsai, 2004; Wong, 2014).

Technological capability is key to gaining competitive advantage (Afuah, 2002; Tsai, 2004), as multinational companies seek to accelerate the transfer from technology units located in developed countries to its subsidiaries positioned in developing countries (Niosi, 1999; Chakrabarti & Bhaumik, 2010; Si, Liefner & Wang, 2013), for example: China (Yin, 1992; Chakrabarti & Bhaumik, 2010; Li, 2010), Russia (Vääätänen, Podmetina & Pillania, 2009), Mexico, Brazil, and India (Chittoor & Ray, 2007; Dechezleprêtre, Glachant & Meniere, 2009). However, depending on the diffusion capability of domestic technologies, the country of origin may have a lower rate of technology internationalization, such as in India (Chittoor & Ray, 2007; Dechezleprêtre, Glachant & Meniere, 2009). Some reasons that can justify advancing technological capability are: the need for developing and maintaining internal capabilities,

changes in technologies underlying the control system, R&D, closer relations with universities, research institutes, and specialized suppliers (Terawatanavong et al., 2011; Wang & Zhou, 2013), development of new technology components, long-term system

Technological capability (TC) is widely known as a strategic source of growth and wealth at the national and the firm levels (Monopoloulos et al, 2009).Resource-based view of IT suggests that firms can and do differentiate themselves from competitors by means of their IT resources (Chen & Tsou, 2012). On the other hand, while it is difficult to acquire or imitate each distinct IT resources, firms can achieve competitive advantage through learning to combine their existing IT resources effectively (Bharadwaj, 2000)

Some studies (Mithas et al., 2005; Mithas et al., 2011) suggest that IT capability more affects the performance indirectly by mediation of other organizational capabilities like customer and market focus, performance management, and information management capability, although a direct relationship between IT capability and performance has been verified too. IT resources in combination create a firm-wide IT capability (Bharadwaj, 2000) that leads to competitive advantage and better firm performance by increasing its revenue and decreasing its costs.

Firms need, in fact, to accumulate resources and competencies which allow them to have a more developed technological capability than their competitors. In that sense, the technological capability relates to the absorption and transformation of a technology as a way of reaching higher levels of technical-economic efficiency (Zawislak; Alves; Tello- Gamarra; Barbieux; Reichert, 2012; Trez; Steffanello; Reichert; De Rossi; Pufal, 2012). Calantone, Cavusgil and Zhao (2002), say that learning leads the firm to innovate, which affects its performance. Accordingly, they argue that firms need to focus on the learning process to obtain competitive advantage in the market. Sirmon, Hitt and Ireland (2007: 277) say that the firms' ability to leveraging relates to its "capability to create value for customers and wealth for owners.

Guifu and Hongfu (2009) have classified firm-level TC into three distinctive levels: TAC – technological acquiring capability, TOC – technological operating capability, and TUC – technological upgrading capability. TAC ascribes to capabilities to acquire new knowledge through formal, informal, internal and external channels. In general, they form their own TC by gradually absorbing, digesting and improving this knowledge. TOC refers to capabilities to operate, use and sustain production equipments and facilities. Accompanying with the TC promotion, firms shorten the gaps with other leading companies when they continuously introduce more advanced product and process innovation. TUC concerns capabilities which improve greatly on products and processes depending on firm's own strength and on changing market demands. The upgrading results will allow the firms to reach higher TC level.

Structure Capability and Firm Performance

Another enabler necessary for successful SCOC is structure capability. Structure capability could be referred to 'people'. People are the most important element that contributes to the development of structure capability. Mostly, the success of an organisation is supported by its 'people' rather than its 'products'. It is proved by the various corporate statements of the organisations that proclaim 'people' as the most important asset than others (Zairi, 1998).

There are two important structures that contribute to the prosperity of a firm: internal and external structure. OC establishes an organizational culture where the existing mental models regarding the collection, retention and utilization of customer knowledge are gradually replaced with new ones in order to better exploit market opportunities which translate customer needs into value added offerings. This way firms can dynamically generate new ways of collecting, interpreting and utilizing customer knowledge and enable synergistic diffusion of this knowledge, mutual comprehension through an organization-wide integration (Cambra-Fierro et al., 2011). OC also imposes an open minded approach which boosts the willingness to critically evaluate the organization's operational routines and achieve an integrated organization-wide, customer-oriented, technology-supported and cross functional CRM (Shieh, 2011). A shared vision of open-mindedness throughout the organization does not just focus on collecting and utilizing customer information rather allows the organizing of functional components so that they better fit with the external knowledge environment, better leverage their stock of knowledge and experience into customer support processes, continuously renew and adapt according to environmental fluidity and accordingly create, widen and improve flexible solutions to all stakeholders (Mithas et al., 2005; Chen and Popovich, 2003).

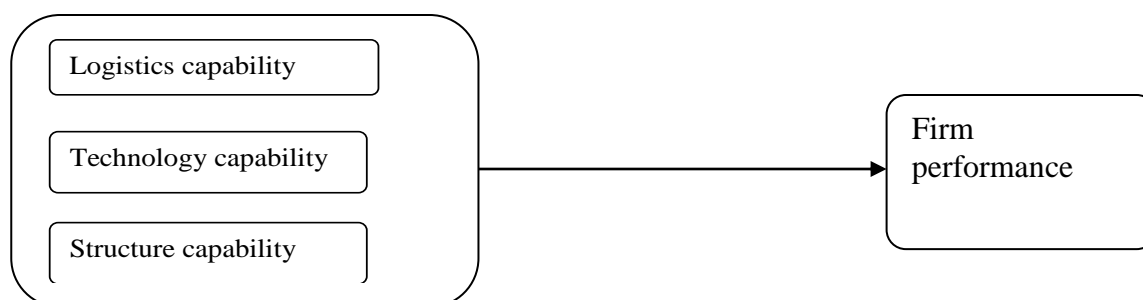
To make its functional tasks to more efficient, companies should formalize the operations activities. This formalization is influenced by technology, size, and organizational traditions (Hahn, 2007). However, different types of formalization influence different companies. It can be concluded that large companies do need the formalization structure more than small companies do.

Structure Capability establishes a mechanism through which coordination and combination of resources and capabilities is achieved decreasing time and cost of identifying market needs, satisfying customer requirements and responding to changes in the environment by added-value (Prieto and Revilla, 2006). This way also the experimentation and the freedom of the employees to take initiatives in improving their business processes, interactions with the external as well as internal environment and responsibility enhances the commitment and satisfaction of employees resulting in increased firm performance (Chiva and Alegre, 2009).

CONCEPTUAL FRAMEWORKS

The hypothesized model linking the interaction between absorptive capacities, competitive advantage, supply chain operational capabilities and firm performance is depicted in Figure 1. The model is mainly grounded within the resource-based view (RBV) and network perspective theory to explain firm-specific and relational capabilities. Two research questions surround the theoretical framework for this study. First, which kinds of SCOC practices do state corporation need? Following the studies of, they argue that logistic capability, technology capability and structural capability important kinds of SCOC practices needed by firms to achieve enhanced performance .

Figure 1. Conceptual framework



RESEARCH METHOD

The Study

The research design used explanatory survey research design. The target population of this study was 687 supply chain top management drawn from 187 state corporations in Kenya, which include the commercial state corporation, executive agencies, independent regulatory agencies, research institutions, public universities, tertiary education and training institutions (RoK, 2013). The choice of the state corporations is justified by the fact that supply chain practices issues are becoming a major concern with the government fighting hard to ensure that there is value for money on services performance. The study employed stratified and random sampling method to randomly sample of 245 employees. This study used questionnaires to collect data relevant to the study.

Measurement of Variables

Dependent variable

For this study, the measurement scales and the indicators will be adopted from previous studies. Firm performance will be measured using 12 items derived from (Dingti, 2012;

(Ozdemir and Aslan, 2011). They include ROI, ROA, market share growth, financial performance, total cost reduction, return on investments, net profit, customer satisfaction performance, the reduction degree of product return ratio and customer complaints

Independent variables

Logistics capability will be measured using 10 items derived from Shang and Marlow (2007) they include utilizing time-based logistics solutions, active programmes to capture the experience and expertise of individuals, integrates operations with customers and/or suppliers by developing interlocking programmes and activities, Logistics information systems, effectively shares operational information between departments, share both standardized and customized information externally with suppliers and /or customers, active programmes to enforce standardized logistical performance.

Technology capability will be measured using 10 items adopted and modified from Agan (2011) and Nielsen and Momeni (2016) such as direct computer-to-computer links with our key supply chain partners, IT system is compatible with those of our supply chain partner, IT system can be seamlessly connected with those of supply chain partners transmit information to our major customers electronically and receive information from our customers electronically Structural Capability (Nielsen and Momeni, 2016), Strategy And Goals, Managerial Capacity, Management Style, Stability of Management, Resource Availability, Flexibility Cultural Capacity Diversity ,Risk Acceptance , Communication Network, CommunicativeCapacity Cooperation with others, Organizational Learning, Organizational Knowledge Capacity, Knowledge Storage , Knowledge Absorption

The Content Validity Index (CVI) was used to quantify the content validity. Variables were tested for reliability by computing the Cronbach alpha statistical tests where reliability coefficients around 0.90 was considered excellent, values around 0.80 as very good and values of around 0.70 as adequate (Koul, 2005).

Data Analysis

Data was analyzed using descriptive statistics to give the profile of the target population i.e. frequencies and percentages, means, standard deviations whereas Multiple regressions and correlation as a form of inferential statistical analysis were used in determining the relationship between the dependent and independent variables.

FINDINGS

Table 1 illustrates the firm characteristics of the targeted State corporations in Kenya. Focus was on firm age and size. As evidenced in table 4.1, the state corporations have been in operation for the past 24 years (mean = 24.6004) and have an average of 211 employees (mean = 211.455).

Table 1. Sample Characteristics

	Mean	Sd
Firm age	24.6004	5.49377
firm size	211.455	46.00045

Factor analysis

Table 2 shows that the Cronbach's alpha result for the study variables. The Cronbach value for each variable were above 0.7. This implies that all the factors were retained for further analysis. According to Tathan, Anderson and Black (1998) factors with factor loadings of above 0.7 are excellent and should be retained for further data analysis.

Furthermore, the factor loading for each item sorted by size are shown in table 4.2. Any item that fails to meet the criteria of having a factor loading value greater than 0.5 and loads on one and only one factor is dropped from the study (Liao et al., 2007; TohTsu Wei et al, 2008). The study requested that all loading less than 0.5 be suppressed in the output, hence providing blank spaces for many of the loadings. Thus, from the findings all values for all the factors were more than 0.5 reflecting the accepted value of factor loading. Finally, sampling adequacy was tested using the Kaiser- Meyer- Olkin Measure (KMO measure) of sampling adequacy. As evidenced in table 2, KMO was greater than 0.5, and Bartlett's Test was significant.

Table 2. Factor analysis

	loadings	Total	Cum%	KMO	Bartlett's Test	Cronbach Alpha
Logistics information systems in the Corporation are being expanded to include applications that are more integrated.	0.778	4.161	41.608	0.891	3018.898	0.781
The information available in The corporation is accurate, timely and formatted to facilitate use.]	0.817	2.047	62.083			
The corporation effectively shares operational information between departments.	0.706					

The corporation has active programmes to enforce standardized logistical performance.	0.774					
The corporation benchmarks performance metrics	0.666					
The corporation uses accurately capture the events/activities being measured.	0.672					
The logistics measures The corporation uses are interpreted similarly by internal users.	0.64					
The logistics measures The corporation uses are readily understandable by decision-makers.	0.651					
The logistics measures The corporation uses promote coordination across functions and divisions.	0.741					
Our IT and business strategies are well aligned	0.619	2.525	25.253	0.749	1143.903	0.904
We make IT investments decision with a long-term perspective.	0.807	1.75	42.749			
Our IT expertise is up to date with current technologies.	0.569					
We have better IT infrastructure than most of our competitors.	0.652					
There are direct computer-to-computer links with our key supply chain partners.	0.684					
Our IT system is compatible with those of our supply chain partner.	0.596					
Our IT system can be seamlessly connected with those of supply chain partners.	0.6					
We transmit information to our major customers electronically.	0.544					
We receive information from our customers electronically.	0.711					
I receive adequate information regarding how well I am doing in my job.	0.6	4.228	42.279	0.899	3918.347	0.8817
I receive adequate information regarding how well I am being evaluated.	0.741	2.539	67.669			
The company provides a number of rules, procedures and policies.	0.815					
Execution of tasks on a daily supervised.	0.737					
The functions in our corporation are well integrated	0.687					

Problems between functions are solved easily, in this corporation.	0.781					
I receive adequate information regarding how my job-related problems are.	0.765					
I receive adequate information regarding how organizational decisions are made that affect my job.	0.648					
Our customers are satisfied with the products and services of our firm.	0.777	3.251	32.505	0.886	3399.439	0.836
Our customer retention rate is as high as or higher than that of our competitors.	0.859	3.133	63.836			
Our organization has good reputation in the sector.	0.785					
The products supplied by the firm are considered high quality.	0.613					

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Descriptive statistics

Findings in Table 3 showed that logistic capability had a mean of 4.2 meaning that logistic capability was high among the state corporation. Also, technology capability was high suggesting that there is development of new technology components in the state corporations (mean =4.12).

Structure capability was relatively low (mean = 4.04) compared to both logistic and technology capability. Firm performance was at a mean of 3.95.

Pearson Correlation results in table 3 showed that logistics capability positively related with firm performance with a Pearson Correlation coefficient of $r= 0.507$ which is significant at $p < 0.01$.

The output also shows that technology capability is positively related with firm performance, with a coefficient of $r = 0.596$ which is also significant at $p < 0.01$. Additionally, structure capability was also positively related with firm performance, with a coefficient of $r = 0.538$ which is significant at $p < 0.01$.

Findings provided enough evidence to suggest that there was linear relationship between these constructs and firm performance.

Table 3. Descriptive statistics

	Mean	SD	Skweness	Firm Performance	Logistics Capability	Technology Capability	Structure Capability
Firm							
Performance	3.95	0.845	-0.581	1			
Logistics							
Capability	4.2	0.863	-1.374	.507**	1		
Technology							
Capability	4.12	0.861	-0.942	.596**	.624**	1	
Structure							
Capability	4.04	0.796	-0.338	.538**	.452**	.653**	1

** Correlation is significant at the 0.01 level (2-tailed).

Test of Hypotheses

The results of table 4 showed that the standardized coefficient beta and p value of logistics capability was positive and significant (beta = 0.616, $p < 0.05$). Thus, the researcher rejects the null hypothesis and it is accepted that, logistic capability has a positive and significant effect on firm performance. In conformity with the results, Rakovska, (2013) posits that a firm's logistic capabilities are key in gaining competitive advantage and may have significant impacts on firm's and even supply chain's competitiveness and performance. In a similar vein, findings of the extant literature suggest that logistics capabilities are effective in imparting the firm with competitive advantage (Esper et al, 2007; Gligor and Holcomb, 2012). To further corroborate the study findings, Bielecki, (2012) elucidates that logistics capabilities significantly influences firm performance. As well, Sandberg and Abrahamsson (2011) study on the link between logistic capabilities and sustainable competitive advantage found out that the success of a firm is dependent on its logistical capabilities. Generally, the results are in tally with that of the extant literature suggesting that logistics capability is key in enhancing firm performance.

Furthermore, the results of multiple regressions, as presented in table 5 revealed that technology capability has a positive and significant effect on firm performance with a beta value of $\beta_2 = 0.13$ (p -value = 0.026 which is less than $\alpha = 0.05$). Therefore, the researcher rejects the null hypothesis and it is accepted that for each unit increase in technology capability, there is 0.13-unit increase in firm performance. Consistently, technology capability makes it possible for a firm to gain a competitive edge in a high-tech environment within the industry (Duysters & Hagedoorn, 2000; Afuah, 2002; Archibugi & Coco, 2004; Ortega, 2010). As well, Monopoloulos *et al*, (2009) note that technology capability is a strategic source of growth and wealth at both national and firm level. Further support to the study findings is by Bharadwaj, (2000) who

elucidates that IT capability leads to competitive advantage and improved firm performance by its increasing revenue and decreasing its costs.

Finally, findings showed that structure capability had coefficients of estimate which was significant basing on $\beta_3 = 0.147$ (p-value = 0.007 which is less than $\alpha = 0.05$) thus we fail to accept the hypothesis and conclude that structure capability has a significant effect on firm performance. This suggests that there is up to 0.147-unit increase in firm performance for each unit increase in structure capability. In line with the results, Prieto and Revilla, (2006) stipulate that structure capability establishes a mechanism whereby there is coordination and combination of resources and capabilities in such a way as to reduce time and cost of identifying market needs. The eventual outcome is improved firm performance. Similarly, Chiva and Alegre, (2009) posit that structure capability allows for employee freedom to take initiative in improving their business processes, interactions with the external as well as internal environment and enhances the commitment and satisfaction of employees resulting in increased firm performance.

Table 4. Regression model

	Unstandardized		Standardized			Collinearity		
	Coefficients		Coefficients			Correlations	Statistics	
	B	Std. Error	Beta	t	Sig.	Zero-order	Tolerance	VIF
(Constant)	1.126	0.179		6.298	0			
Logistics								
Capability	0.508	0.035	0.616	14.578	0	0.699	0.841	1.189
Technology								
Capability	0.098	0.044	0.13	2.245	0.026	0.473	0.45	2.224
Structure								
Capability	0.146	0.054	0.147	2.697	0.007	0.371	0.506	1.978

a Dependent Variable: Firm performance

Conclusion and Recommendations

Evidence from the study suggests that logistics capability has a positive and significant effect on firm performance. Consequently, the State corporations can enhance their overall performance by ensuring the information available in the corporation is accurate and timely. Precisely, operational information needs to be shared between departments to make it possible for the corporations to gain a competitive advantage. Moreover, to exhibit exemplary performance, it is

important for the corporations to share both standardized and customized information externally with suppliers and institute active programmes to enforce standardized logistical performance.

Furthermore, there is remarkable evidence from the study indicating that technology capability positively influences firm performance. Technology capability allows the firm to have direct computer-to-computer links with key supply chain partners as well as communicate electronically with customers. As such, technology capability makes it possible for the corporations to improve greatly on their products and processes in accordance with the changing market demands. Therefore, there is need for the corporations to have an IT system that is compatible with those of supply chain partners to take advantage of market opportunities. Besides, with such an IT system, the corporations will be able to communicate with the major customers electronically hence gaining competitive advantage.

Finally, the study has indicated that structural capability positively influences firm performance. Therefore, there is need for the functions in the state corporations to be well integrated in such a way that it is easier to solve problems between functions. Besides, it is crucial for employees to receive sufficient information pertaining how organizational decisions are made and the implications they have on their job. Also, employees need to be aware of how well they are doing in their job and how they are being evaluated. With the above put into consideration, improved firm performance will be realized. However, the study was limited to State Corporations in Kenya and only used three dimensions of supply chain operation capabilities

REFERENCES

- Afuah A. (2002). Mapping technological capabilities into product markets and competitive advantage: the case of cholesterol drugs. *Strategic Management Journal*: 23:171–9.
- Agan Y. (2011), Impact of Operations, Marketing and Information Technology Capabilities on Supply Chain Integration, *Journal of Economic and Social Research*, vol. 13 (1), 27-58.
- Archibugi, D.; Coco, A. (2004) A new indicator of technological capabilities for developed and developing countries (ArCo). *World Development*, 32 (4), p. 629-654. doi:10.1016/j.worlddev.2003.10.008
- Bharadwaj, A.S. 2000. "A Resource-Based Perspective on Information Technology Capability and Firm Performance: An Empirical Investigation," *MIS Quarterly* (24:1), pp. 169-196.
- Bielecki, M. (2012) "The Influence of Development Stages of Logistics Management on the Logistics Strategies of Small Manufacturing Enterprises", Grzybowska (ed.) *Logistics - Selected Concepts and Best Practices*, Publishing House of Poznan University of Technology, Poznan, pp. 159-179.
- Calantone R.J., Cavusgil S.T., and Zhao Y., 2002. Learning orientation, firm innovation capability, and firm performance, *Industrial Marketing Management*, 31: 515 –524.
- Cambra-Fierro Jesus J., Hart Susan, Fuster Mur Ana, Polo Redondo Yolanda (2011) Looking for Performance: How Innovation and Strategy May Affect Market Orientation Models, *Innovation: Management, Policy & Practice*, vol. 13, n. 2, pp. 154-172.<http://dx.doi.org/10.5172/impp.2011.13.2.154>

Chakrabarti, A. K.; Bhaumik, P. K. (2010) Internationalization of technology development in China: an evaluation using patent data. *Journal of Technology Management in China*, 5 (2), p. 122-140. DOI: <http://dx.doi.org/10.1108/17468771011053153>

Chen IJ & Popovich K (2003) Understanding customer relationship management (CRM)-People, process and technology, *Business Process Management Journal* 9(5): 672-88.

Chen, C & Kim, J-K 2007, 'Optimization for intelligent operation of supply chains', *Chemical Engineering Research and Design*, vol. 85, no. 12, pp. 1611-1629

Chen, J.-S., & Tsou, H.-T. (2012). Performance effects of IT capability, service process innovation, and the mediating role of customer service. *Journal of Engineering and Technology Management*, 29 (1), 71-94. doi: 10.1016/j.jengtecman.2011.09.007

Chepng'etich E, Nyamwaro SO, Bett EK, Kizito K. 2015. Factors That Influence Technical Efficiency of Sorghum Production: A Case of Small Holder Sorghum Producers In Lower Eastern Kenya. *Advances in Agriculture*, 2015

Chittoor, R.; Ray, S. (2007) Internationalization paths of Indian pharmaceutical firms: A strategic group analysis. *Journal of International Management*, 13 (3), p.338-355. doi:10.1016/j.intman.2007.05.008

Chiva, R. and J. Alegre, 2009 'Organizational learning capability and job satisfaction: An empirical assessment in the ceramic tile industry'. *British Journal of Management*, 20: 323-340

Cho, J. J.-K., J. Ozment, et al., 2008. Logistics capability, logistics outsourcing and firm performance in an e-commerce market. *International Journal of Physical Distribution & Logistics Management* 38(5), 336-359.

Chong, AYL, Chan, FTS, Ooi, KB & Sim, JJ 2011, 'Can Malaysian firms improve organizational/innovation performance via SCM?', *Industrial Management & Data Systems*, vol. 111, no. 3, pp. 410-431

Chow, WS, Made, CN, Kuei, C-H, Lu, MH, Lin, C & Tseng, H 2008, 'Supply chain management in the US and Taiwan: an empirical study', *Omega: The International Journal of Management Science*, vol. 36, pp. 665-679.

Cook, LS & Heiser, DR & Sengupta, K 2011, 'The moderating effect of supply chain role on the relationship between supply chain practices and performance: an empirical analysis', *International Journal of Physical Distribution & Logistics Management*, vol. 41, no. 2, pp. 104-134.

Dechezleprêtre, A.; Glachant, M.; Ménière, Y. (2009) Technology transfer by CDM projects: A comparison of Brazil, China, India and Mexico. *Energy policy*, 37 (2), p. 703-711. DOI:10.1016/j.enpol.2008.10.007

Dingti, Luo & Li, Liu; , (2012), Effects of Logistics Capabilities on Performance in Manufacturing Firms. *Proceedings of the 3rd International Conference on*

Duysters G, Hagedoorn J. (2000). Core competencies and company performance in the worldwide computer industry. *Journal of High Technology Management Research*: 11(1):75-91

Ellinger, A. E., P. J. Daugherty, et al., 2000. The relationship between marketing/logistics interdepartmental integration and performance in U.S. manufacturing firms: An empirical study. *Journal of Business Logistics* 21(1), 1-22.

Esper, T. L.; Fugate, B. S.; Davis-Sramek, B. 2007. Logistics learning capability: sustaining the competitive advantage gained through logistics leverage, *Journal of Business Logistics* 28(2): 57-81. <http://dx.doi.org/10.1002/j.2158-1592.2007.tb00058.x>

Flynn, B & Flynn, E 1999, 'Information-processing alternative for coping with manufacturing environment complexity', *Decision Sciences*, vol. 30, vol. 4, pp. 1021-1052.

Flynn, BB, Wu, SJ & Melnyk, S 2010, 'Operational capabilities: hidden in plain view', *Business Horizons*, vol. 53, pp. 247-256.

Gligor, D. M.; Holcomb, M. C. 2012. Understanding the role of logistics capabilities in achieving supply chain agility: a systematic literature review, *Supply Chain Management: An International Journal* 17(4): 438-453

- Goh, M. and A. Ang, 2000. Some logistics realities in Indochina. *International Journal of Physical Distribution & Logistics Management* 30(10), 887-911.
- GuiHua-ming, Ma Shi-hua. 2005. How to Improve the Logistics Capabilities in Enterprises and its Outsourcing Strategy, *Logistics Technology*, 11, 3-6. (in Chinese)
- Guifu, G., and M. Hongjia (2009). 'Technological capabilities and firm upgrading: An empirical study of high-tech firms'. in *ICIII 2009: Proceeding of the IEEE Computer Society*, IEEE, Los Alamitos, USA., No.4, pp.452-456.
- Gwayo, A.O., Masu, S.M., &Wanyona, G. (2014). A Critical Analysis of the Causes of Project Hahn, M., 2007 Formalization in Organizations. 1-2
- Kikwasi, G.J. (2012). Causes and Effects of Delays and Disruptions in Construction Projects in Tanzania. *Australasian Journal of Construction Economics and Building*, Conference Series, 1(2): 52-59.
- Koh, SCL, Demirbag, M, Bayraktar, E, Tatoglu, E &Zaim, S 2007, 'The impact of supply chain management practices on performance of SMEs', *Industrial Management & Data Systems*, vol. 107, no. 1, pp. 103-124.
- Koul and Omkar N. 2005. *Studies in Kashmiri Linguistics*. New Delhi, India: Indian Institute of Language Studies. ISBN 978-81-86323-20-5
- Lynch, D. F., S. B. Keller, et al., 2000. The effects of logistics capabilities and strategy on firm performance. *Journal of Business Logistics* 21(2), 47-67.
- Mentzer, J. T.; Min, S.; Bobbitt, L. M. 2004. Toward a unified theory of logistics, *International Journal of Physical Distribution & Logistics Management* 34(8): 606-627. <http://dx.doi.org/10.1108/09600030410557758>
- Min, S &Mentzer, JT 2004, 'Developing and Measuring Supply Chain concepts', *Journal of Business Logistics*, vol. 25, no. 1, pp. 63-99
- Mirza S.A and Javed A. 2013. Determinants of financial performance of a firm: Case of Pakistani stock market. *Journal of Economics and International Finance*.Vol. 5(2), pp. 43-52, DOI: 10.5897/JEIF12.043.
- Mithas, S., Krishnan, M. S., and Fornell, C. 2005. "Why Do Customer Relationship Management Applications Affect Customer Satisfaction?," *Journal of Marketing* (69:4), pp. 201-209.
- Mithas, S., Ramasubbu, N, and Ramamurthy, V. 2011. "How Information Management Capability Influences Firm Performance," *MIS Quarterly* (35:1), pp. 237-256.
- Monopoloulos, D., P. Dimitratos, S. Young and S. Lioukas (2009). 'Technology sourcing and performance of foreign subsidiaries in Greece: The impact of MNE and local environmental contexts', *Management International Review*, Vol.49 No.1, pp.43-60.
- Nielsen, S. B., &Momeni, M. (2016).Impact of Personnel Capabilities on Organizational Innovation Capability. *Journal of Management and Innovation*, 2(2).
- Nielsen, S. B., &Momeni, M. 2016. Structural Capability of an Organization toward Innovation Capability. *Journal of Management Research*, DOI: 10.5296/jmr.v8i2.8987
- Niosi, J. (1999) The Internationalization of Industrial R&D From technology transfers to the learning organization. *Research Policy*, 28 (medical especial), p. 107-117
- Oliva, R & Watson, N 2011, 'Cross-functional alignment in supply chain planning: a case study of sales and operations planning', *Journal of Operations Management*, vol. 29, pp. 434-448
- Ortega, M. J. R. (2010) Competitive strategies and firm performance: technological capabilities' moderating roles. *Journal of Business Research*, 63 (12), p. 1273-1281. Doi:10.1016/j.jbusres.2009.09.007
- Prieto, M. I., and E. Revilla. 2006. Learning capability and business performances: A non-financial and financial assessment. *The Learning Organization* 13 (2): 166-85

- Robb, DJ, Xie, B & Arthanari, T 2008, 'Supply chain and operations practice and performance in Chinese furniture manufacturing', *International Journal of Production Economics*, vol. 112, pp. 683-699
- Robinson, W. D., J. N. Styrsky, & J. D. Brawn. 2005. Are artificial bird nests effective surrogate measures of predation on real tropical bird nests? *Auk* in press
- Sandberg, E.; Abrahamsson, M. 2011. Logistics capabilities for sustainable competitive advantage, *International Journal of Logistics: Research & Applications* 14(1): 61–75. <http://dx.doi.org/10.1080/13675567.2010.551110>
- Schoenecker, T.; Swanson, L. (2002) Indicators of firm technological capability: validity and performance implications. *IEEE Transactions on Engineering Management*, 49 (1), p. 36-44. DOI:10.1109/17.985746
- Shang, K. and Marlow, P.B. (2007), "Logistics Capability and Performance in Taiwan's Major Manufacturing Firms", *Transportation Research Part E*, Vol. 41, pp. 217-234.
- Shang, K.-c. and P. B. Marlow, 2005. Logistics capability and performance in Taiwan's major manufacturing firms. *Transportation Research Part E* 41(3), 217-234.
- Shieh, C. J. (2011), Study on the relations among the customer knowledge management, learning organization, and organizational performance, *Management Failures in Kenya. International Journal of Soft Computing and Engineering*, 4(1): 64-69.
- Sirmon, D. G., Hitt, M. A., & Ireland, R. D. (2007) Managing firm resources in dynamic environments to create value: Looking inside the black box. *Academy of Management Review* 32(1): 273-292.
- Tan, K. C., 2002. Supply chain management: Practices, concerns, and performance issues. *Journal of Supply Chain Management* 38(1), 42-53.
- Terawatanavong, C.; Whitwell, G. J.; Widing, R. E.; O'Cass, A. (2011) Technological turbulence, supplier market orientation, and buyer satisfaction. *Journal of Business Research*, 64 (8) p. 911-918. DOI:10.1016/j.jbusres.2010.09.003
- Shieh, C. J. (2011), Study on the relations among the customer knowledge management, learning organization, and organizational performance, *The Service Industries Journal*, 31(5), pp.791-807.
- Tsai, K-H. (2004) The impact of technological capability on firm performance in Taiwan's electronics industry. *Journal of High Technology Management Research*, 15 (2), p. 183-195. DOI:10.1016/j.hitech.2004.03.002
- Väätänen, J.; Podmetina, D.; Pillania, R. K. (2009) Internationalization and Company Performance: A Study of Emerging Russian Multinationals. *Multinational Business Review*, 17 (2), p. 157-178. DOI: <http://dx.doi.org/10.1108/1525383X200900014>
- Wang, Y.; Zhou, Z. (2013) The dual role of local sites in assisting firms with developing technological capabilities: Evidence from China. *International Business Review*, 22 (1), p. 63-76. DOI:10.1016/j.ibusrev.2012.02.003
- Wong, S. K-S. (2014) Impacts of environmental turbulence on entrepreneurial orientation and new product success. *European Journal of Innovation Management*, 17 (2), p. 229-249. DOI: <http://dx.doi.org/10.1108/EJIM-04-2013-0032>
- Wu, SJ & Melnyk, SA & Flynn, BB 2010, 'Operational capabilities: the secret ingredient', *Decision Sciences*, vol. 41, no. 4, pp. 721-754
- Yin, R.K. 1992. Case study research. 4th ed. Thousand Oaks et al.: Sage
- Zairi, M., 1998. Building human resources capability in health cares: a global analysis of best practice – part I. *Health Manpower Management* 24(3), 88-99.
- Zawislak PA, Alves Cherubini A, GamarraTello J, Barbieux D, Innovation capability: from technology development to transaction capability. *Journal of technology management & innovation* 7 (2), 14-27, 2012
- Zhang, C & Dhaliwal, J 2009, 'An investigation of resource-based and institutional theoretic factors in technology adoption for operations and supply chain management', *International Journal of Production and Economics*, vol. 120, pp. 252-269