



EFFECT OF LEGAL RISKS ON PERFORMANCE OF MANUFACTURING FIRMS IN KENYA

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ABSTRACT

The past decades have witnessed growth and expansion in supply chains, with the aim to increase productivity, lower costs and fulfill demands in emerging markets. The increasing complexity in a supply chain hinders visibility and consequently reduces one's control over the process. To achieve this, there is a need to identify potential risks and evaluate their impacts, and at the same time design risk mitigation policies to locate and relocate resources to deal with risk events. The study specifically determined the effect of legal risks and performance of manufacturing firms, and to determine the moderating role of supply chain adaptability on the relationship between legal risks and performance of manufacturing firms among the manufacturing firms in Kenya. The research design was explanatory survey research design. The target population of this study were 682 manufacturing firms in Kenya. From the target population of 682 firms, a random sample of 169 firms were selected where procurement manager and assistance manager were chosen giving a total sample size of 338. This study used questionnaires to collect data relevant to the study. The variables were tested for reliability by computing the Cronbach alpha statistical tests. Quantitative data collected were analyzed using descriptive statistical techniques which were frequencies, mean, standard deviation. Whereas inferential statistics to be used were, ANOVA/T test, Pearson correlation and the Regression Analysis Model. To test moderating effect the study used hierarchical regression model at 0.05 level of significance. The study established that legal risk have a positive influence on the performance of manufacturing firms. In addition, supply chain adaptability significantly moderated the relationship between legal risks and firm performance. Therefore, it is utmost necessary for manufacturing firms to comply with the country's law and regulations on supply chain operation. Finally, it is important for firms to enforce environmental incident notices at manufacturing sites and undertake environmental and financial due diligence when purchasing or selling goods/services.

Key Words: Legal Risks, Supply Chain Adaptability, Performance, Manufacturing Firms

Background of the Study

Business is becoming riskier nowadays because of the increasing use of outsourcing, globalization of supply chains, and shorter product life-cycle (Barry, 2014; Waters, 2017; Christopher et al., 2016). Risk makes supply chains more complicated and more time sensitive than ever before, and therefore companies within a supply chain need to strategically cooperate with their key suppliers and customers to survive, compete, and prosper (Frohlich and Westbrook, 2011; Zhao et al., 2018; Flynn et al., 2014).

Supply chain Risks (SCRs) have become a serious problem as turbulent environments, uncertain supply and demand, and unpredictable disruptions are more common nowadays. It is difficult for most supply chains to respond to changes and they are vulnerable to SCRs (Tang and Tomlin, 2018). Therefore, the challenge for companies is how to conduct SCI under risky environments, and various risks may play different roles in implementing different types of supply chain adaptability (SCI).

Supply risk is the probability of an incident associated with inbound supply from individual supplier failures or the supply market, in which its outcomes result in the inability of the purchasing firm to meet customer demand or cause threats to customer life and safety (Zsidisin, 2013). Ellis, Henry and Shockley (2017) described SC risk as ‘an individual’s perception of the total potential loss associated with the disruption of supply of a particular purchased item from a particular supplier.

Among various aspects of supply risks, supply chain delivery risk may be the most important because more and more companies expect their suppliers to make just-in-time deliveries. Suppliers who fail to provide on-time delivery will cause many problems for purchasing firms, for example, regarding manufacturing, inventory, and sales functions. Demand risk includes risks associated with turbulent environments, and unstable and dynamic customer needs (Chen and Paulraj, 2004). Unstable demand is usually the biggest challenge for today’s companies, which leads to high inventory costs, low levels of customer service, and unreliable deliveries. Therefore, this study attempts to empirically explore the impact of legal risks.

Supply chain adaptability (SCA) is advocated as the key to creating value in supply chain management (SCM) (Horvath, 2011). While SCA is considered a powerful weapon to gain competitive advantages, there are still many unanswered questions regarding the mechanism of SCA implementation (Frohlich, 2002; Power, 2005; Flynn et al., 2010; Zhao et al., 2011). For example, how can SCA be implemented to solve supply chain risk and hence performance of manufacturing firms? And more so, which factors hinder the implementation of SCA? Few prior studies have addressed this question.

For example, Frohlich (2002) investigated supply, internal, and demand barriers in web-based SCA implementation. Richey et al. (2009) considered internal planning failure and external monitoring failure as barriers to SCA. However, research in this area is still in its infancy and further empirical studies are required to reveal the “barriers to SCA” to supply chain managers. The main barrier discussed in this study is supply chain risk (SCR).

In Kenya, the manufacturing sector is important and it makes a substantial contribution to the country’s economic development. But in recent years, the sector’s contribution to gross domestic product (GDP) has worsened due to unforeseen disruptions like workers strikes, terrorist activities, draught incidences, volatility in international oil prices and high cost of production (Arani, 2015).

Manufacturing firms constantly face the problem of on-time delivery. As the production capacity of manufacturers is limited, they need to allocate their limited production resources to meet the requirements of the varying demand at a reasonable cost.

Regarding production schedule attainment, firms need to receive the materials and components on time. Through integration with suppliers, manufacturing firms share order and inventory information with suppliers, which helps suppliers prepare high-quality materials and services on time. Therefore, the biggest challenge for the manufacturing sector is on how to deal with unexpected disruptions in order to build supply chain adaptability ((Arani, 2015).

Performance of manufacturing firms has become an important focus of competitive advantage for manufacturing industry. Effective performance of manufacturing firms is important to build and sustain competitive advantage in product and services of the firms. Gunasekaran and Ngai, (2014); Sufian (2010) stated that the performance of supply chain was influenced by managing and integrating key element such as total quality management and information into their supply chain.

In the past decade however, companies have begun to recognize not only the need for continual quality improvement and meeting the needs of their immediate customers, but also the necessity of competing quickly and efficiently in ever changing global markets. As a result, SCM has come to the forefront as a philosophy by which firms can operate inter organizationally, and merge both strategic initiatives and upstream and downstream processes in order to achieve business excellence (Dale et al., 2013). However, thus, the general objective of this study is to investigate moderating role of supply chain adaptability on the relationship between supply chain risks and performance of manufacturing firms in Kenya.

Statement of the Problem

The past decades have witnessed growth and expansion in supply chains, with the aim to increase productivity, lower costs and fulfill demands in emerging markets. The increasing complexity in a supply chain hinders visibility and consequently reduces one's control over the process (Posadas, 2000). Cases of service delivery disruption, as is common with many Government departments, have shown that a risk event occurring at one point of the supply chain can greatly affect other aspects of the system, if the disruption is not properly controlled (Palas and Wood, 2009). Supply chain management thus faces a pressing need to maintain the expected output of the system in risk situations (Musa, 2012). To achieve this, there is a need to identify potential risks and evaluate their impacts, and at the same time design risk mitigation policies to locate and relocate resources to deal with risk events.

According to the data released by the Kenya National Bureau of Statistics in 2014, Gross domestic product at market price contributed by manufacturing firms has been: 9.8% in 2010, 9.6% in 2011, 9.5% in 2012, 8.9% in 2013 and employment has moved from 261,700 in 2010, 270,200 in 2011, 271,000 in 2012 to 280,300 in 2013. The role of the manufacturing sector in Vision 2030 is to create employment and wealth. The sector's overall goal in the millennium development goals (MDG) is to increase its contribution to the GDP by at least 10% per annum over the medium term period 2013 - 2017 as envisaged in the Vision 2030 and propel Kenya towards becoming Africa's industrial hub.

In the context of the manufacturing industry, the challenges are diverse: short shelf life and perishability, competition from imports, increased consumer safety and health concerns (RoK, 2014). The short shelf life and perishability of products along with the challenges of infrastructure

pose a serious threat to manufacturing firms. Secondly, consumer concerns on environmental and welfare issues have put further pressure on manufacturers to ensure products are produced sensitively and safely. The other problem is the slow growth in the overall industry due to major increase in Kenyan imports of consumer-ready (KAM, 2015).

The value of imports is projected to continue increasing over the next five years to over \$ 400 million (World Bank, 2014). Local manufacturers are no longer the dominant source of supply to consumers. A number of manufacturing firms are closing down creating massive loss of jobs resulted in slower economic growth (KAM, 2015). According to Samir and Aman (2010), management of supply chains requires speed, accurate and intelligent decision making to cope with the complex dynamic competition and uncertainty from external demands and variables. In order to attain that, several strategies exist towards supply chain risk management (Tang & Musa, 2011).

In spite of having various studies undertaken on supply chain risks by various researchers, (Posadas, 2010; Gituma, 2013) and others, none of the studies have specifically addressed the supply chain risks within the manufacturing firms. There is also limited literature available on manufacturing firms supply chain processes and this has created a major knowledge gap amongst supply chain managers on how to improve the process in manufacturing firms. It is therefore against this background that this study was undertaken to investigate supply chain risks within the manufacturing firms.

In addition, although several studies have been conducted in the area of manufacturing, none has addressed the supply chain risks and performance of manufacturing firms in manufacturing firms as moderated by supply chain adaptability in greater Nairobi, Kenya. The risks and challenges manufacturing firms face differ from one country to another. One country's risks and challenges may not be another country's risks and challenges. Therefore, the purpose of the study was to establish the moderating role of supply chain adaptability on the relationship between supply chain risks and performance of manufacturing firms in Kenya.

Specific Objectives of the Study

The study was guided by the following objectives;

- i. To determine the effect of legal risks on performance of manufacturing firms in Kenya.
- ii. To determine the moderating role of supply chain adaptability on the relationship between supply chain risks and performance of manufacturing firms among the manufacturing firms in Kenya.

LITERATURE REVIEW

Theoretical Framework

Institution Theory

Institutional Theory provides a theoretical lens through which researchers can identify and examine influences that promote survival and legitimacy of organizational practices, including factors such as culture, social environment, regulation (including the legal environment), tradition and history, as well as economic incentives, whilst acknowledging that resources are also important (Baumol et al., 2009; Brunton et al., 2010; Hirsch, 1975; Lai et al., 2006; Roy, 1997).

Institutional Theory is traditionally concerned with how groups and organizations better secure their positions and legitimacy by conforming to the rules (such as regulatory structures, governmental agencies, laws, courts, professions, and scripts and other societal and cultural

practices that exert conformance pressures) and norms of the institutional environment (DiMaggio and Powell, 1983, 1991; Meyer and Rowan, 1991; Scott, 2007). According to Institutional Theory external social, political, and economic pressures influence firms strategies and organizational decision-making as firms seek to adopt legitimate practices or legitimize their practices in the view of other stakeholders (Jennings and Zandbergen, 1995; North, 1990)

Institutional Theory can be used to explain how changes in social values, technological advancements, and regulations affect decisions regarding supply chain (Ball and Craig, 2010). For example, Delmas and Toffel (2004) draw on Institutional Theory to examine how different organizational strategies lead to the adoption of environmental management practices. Key drivers in instigating green changes in rules include a core company within a supply chain (Hall, 2001) and government regulation (Rivera, 2004).

Institutions create expectations that determine legitimate actions for organizations (Meyer and Rowan), and also form the logic by which laws, rules, and taken-for-granted behavioral expectations appear natural and abiding (Zucker, 1977, 1987). Thornton explained: 'Institutional logics, once they become dominant, affect the decision of organizations ... by focusing the attention of executives toward the set of issues and solutions that are consistent with the dominant logic and away from those issues and solutions that are not.' (2004).

Therefore, institutions can define what is appropriate or legitimate (i.e., what is acceptable behavior, Scott, 2007), and thus render other actions unacceptable or even beyond consideration (DiMaggio and Powell, 1991). This will then affect how organizations make decisions. It is this that can provide insights into the role of different actors in the development of sustainable supply chains and their role in the achieving conformity.

The institutional perspective allows for the focus on the role of conformity, regulatory and social pressures in driving organizational actions (Westphal et al., 1997). The study explores the role of different actors in the supply chain and their approach to sustainability, and question whether this is strategic (Hillestad et al., 2010). We do this to gauge what stakeholders are doing in order to increase energy efficiency and their plans to do more.

The study applies institutional theory which is an alternative theoretical lens to previous research that has focused on legal framework and so on (Bai and Sarkis, 2010; De Ron, 1998; Herron and Braiden, 2006; De Brito et al., 2008; Wong et al., 2012). Applying such organizational theories to supply chain management is an area which is currently in its infancy (Ketchen and Hult, 2007); particularly where the focus of attention is on sustainability and greening supply chains (Etzion, 2007; Sarkis et al., 2011). Previous research applying Institutional Theory has focused on organizations, whereas this study explores a supply chain disruption of legal risk.

Conceptual Framework

A review of literature in the area of supply chain management has presented various research approaches used in the analysis of supply chain risk management. What is also clear is the lack of exhaustive literature in the area of supply chain management. The complex and interconnected nature of supply chain further necessitates the study of supply chain risk management as well as the research methods and approaches used in its analysis. This lays credence to informing the research methods and approaches to be used in this study. Conceptual framework refers to a diagrammatic set of interrelated ideas on a particular phenomenon and it's characterized by cause and effect relationships which helps interpret more and hence making it easily understandable. This makes it more straightforward and also easily predictable (Svinicki, 2010). Fig 2.1 shows a conceptual framework depicting the relationship between the legal risks and performance of manufacturing firms moderated by supply chain adaptability guiding this study.

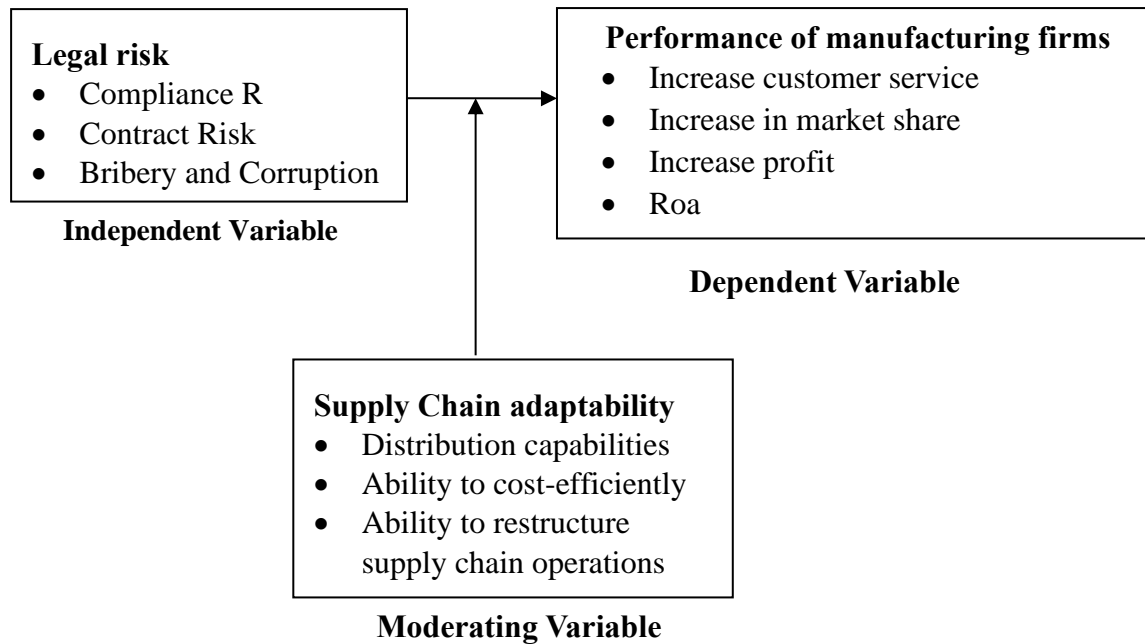


Figure 1: Conceptual Framework

Legal risk

Legal risk is a growing concern for organizations, as non-compliance with anti-bribery and corruption (ABC) regulations in the global supply chain can lead to serious financial and reputational repercussions (Manea and Popa, 2016). As defined by Kennedy Jr. (1988), legal-governmental risk is driven by events produced by the legitimate authority structure within the state, whereas extra-legal risk stems from events that are considered “illegitimate” by the existing political system. Without clear visibility into third parties and a legal risk management strategy, it can be incredibly difficult to monitor legal risk in business operations. To protect against financial and legal penalties, organizations must manage and mitigate legal risk across the supply chain, staying in compliance with various ABC laws and regulations.

In order to prevent supply chain and business disruptions, you must monitor and manage the many types of legal risk. All types of legal risk can have adverse effects on a business, and can result in reputational, financial and strategic damage (Olson and Wu, 2010).

Compliance Risk: To avoid financial and legal penalties, you and your supply chains must comply with the country’s laws and regulations in which you operate. One type of compliance risk that many organization face is modern slavery, especially in developing countries, where laborers may be forced to work in unethical and illegal conditions (Wagner and Bode, 2018).

Contract Risk: When a third-party business partner or supplier fails to hold up the terms outlined in a contract, your organization could face financial and/or reputational damage. The same goes when you fail to meet the terms of a contract. You could face legal or financial penalties (Kim, 2014).

Trademark/Patent Infringement: These are both examples of non-contractual legal risk. Infringing on a third party’s patent is considered a misuse of intellectual property, and unauthorized use of a trademark can be damaging to your organization legally and financially (Kelly, 2017).

Bribery and Corruption: One type of legal risk in supply chains is failure to comply with ABC laws like the Foreign Corrupt Practice Act (FCPA). Without a legal risk management strategy, you

could be exposed to risk due to corrupt actions undertaken by suppliers or other third parties acting on your company's behalf (Christopher, et al., 2012).

In making decisions in the coastal zone, this uncertainty can give rise to a *legal risk*. Many decision makers want to know how to minimise the risk of legal challenges and future legal liability. While it is impossible to have zero risk when dealing with climate change, by using principles of 'legal reasoning' legal risk can be minimized to an acceptable level.

Supply Chain adaptability

Supply chain adaptability is defined as the ability of the firm to sense long-term, fundamental changes in the supply chain and market environment (e.g. economic progress, political and social change, demographic change, radical technological advances), and to respond to such changes by flexibly adjusting the configuration of the supply chain (e.g. developing new supply bases, relocating production facilities, outsourcing). This conceptualisation of flexibility as a dimension of supply chain adaptability is in line with Christopher and Holweg (2011), who define structural flexibility as the ability of firms to build flexible options into the design of their supply chains in response to fundamental shifts in multiple variables that determine the supply chain and market environment. Structural sensing is crucial for supply chain adaptability, as effective structural change requires mapping and understanding of relevant processes in the entire value chain (Aitken, Christopher, and Towill 2002).

Supply chain adaptability can result in significant cost savings. Structural flexibility (e.g., outsourcing) encourages the firm to improve responsiveness (Christopher & Holweg, 2011; Lee, 2004). Supply chain adaptability can also improve performance of manufacturing firms (e.g., Lee, 2004; Whitten et al., 2012). There are sufficient arguments to support that supply chain adaptability directly impacts performance of manufacturing firms. However, one cannot ignore the possibility of the indirect effect of supply chain adaptability under the mediating effect of supply chain agility.

The agile capabilities of supply chain network are also due to adaptable capabilities, such as, collaboration with third-party logistics (3PL) and other supply chain partners to reduce lead time and improve delivery of products/services. Supply chain alignment can directly impact performance of manufacturing firms but particularly in the HSC network design, the mediating role of leadership cannot be ignored. Supply chain adaptability stems from flexibilities produced by structural and relational investments and choices (Stevenson & Spring, 2007), whereas product innovation capability is more focused and specific. As such, supply chain adaptability provides a context for the development and refinement of a firm's product innovation capability.

Performance of manufacturing firms

The right side of the hypothesised model – SC performance – is used to examine the degree of risk in the SC. Traditionally cost is recognised as a key performance indicator for assessing the efficiency of a supply chain. It is a key objective in supply chain management as minimising cost – and waste – results in a better performing supply chain. However, this measure tends to be historical and does not demonstrate the current situation of the business environment and future performance (Quang et al. 2016).

Some authors have suggested Return on Investment (ROI) and Growth as a 'solution' for SC performance measurements. Quang et al. (2016) argued that ROI fails to provide an objective assessment of smaller companies that may be owner-managed. Moreover, according to Andersen and Jordan (1998), this variable is useful to compare similar firms within their sector, but restricts cross-sector comparisons. Likewise, growth measures, e.g. revenue growth, profitability growth and productivity growth, have become meaningless since comparing enterprises in different

sectors – such as an ineffective firm operating in the software industry (a high growth sector) – will have higher revenue growth/profitability growth, etc., than effective apparel enterprises.

Naturally, financial measures still have an important role. Yet, in attempting to have a comprehensive performance scale, it is necessary to be balanced with more contemporary, intangible and strategic-oriented measures. Kaplan and Norton (1992) argued that the contemporary approach emphasises on how short- and long-term measures affect firm performance. This disputation led to the development of two concepts: • Lagging indicators describe what has actually happened in the past, e.g. financial variables. • Leading indicators provide an early warning of what might happen in the future. An example of such is customer oriented variables, e.g. customer satisfaction, delivery performance, lead times, flexibility and quality, or human resource-oriented variables, e.g. employee satisfaction and morale.

Developed by Kaplan and Norton (1992), the balanced scorecard model recognises the limitations of traditional firm performance measurement and translates a firm's strategy into performance objectives, particularly focusing on intangible assets such innovation, value chain, employee skills and knowledge levels, customer and supplier relationships. This new approach shifts the conventional focus on physical assets to emphasise both physical and intangible resources in a firm for a purpose of corporate long-term development in the future.

A scorecard has four balanced perspectives, including financial, customer, internal processes and innovation and learning, which are able to cover leading and lagging indicators. As such, this study defines a set of measures for SC performance based on the balance scorecard model comprising five crucial dimensions as supplier performance, internal business, innovation and learning, customer service and finance.

In attribute of performance is a set of indicators that are used to express a competitive strategy (Feng, 2017). The performance is the ability of the SC to offer products and services with good quality, on time and in precise amounts, while minimizing the costs (Green Jr., et al., 2012). According to the SC literature review, when designing models, it is important to consider the current and emerging elements, such as globalization, always with the aim to improve specific performance indicator.

The evaluation of performance extends to all the companies that make up the SC chain to ensure their sustainable growth. For a company, it is necessary to know its performance measures and compare their standards with the competing chains. Organizational performance refers to how well an organization achieves its market oriented goals as well as its financial goals, and that's why organizations adopt suitable strategies and policies for better organizational performance (customer satisfaction, innovation and learning, and financial performance).

Typically, the research work has tended to emphasize quantitative factors to measure operational competitiveness while there are few models that capture qualitative attributes (Bhatnagar and Sohal, 2015). A SC requires analyzing performance, using assessment techniques that include not only quantitative attributes, but also qualitative attributes. As it is the case of Abu-Suleiman et al., who considered attributes of planning, material procurement, production, distribution, and customer service (Abu-Suleiman, et al., 2015).

Performance of manufacturing firms is measured through attributes or metrics that permit know if the strategic goals provide information and direct feedback of the processes involved in the SC. The attributes are also the basis to identify and evaluate alternatives that will help achieve decision criteria to improve the business processes (Chan, 2016). Performance measurement can be defined as a process of quantifying the efficiency and effectiveness of an action (Gunasekaran and Kobu, 2017).

To measure the SC performance it is important to monitor the viability of strategies, and also identify the performance measurement method, but each implementation must be taking into account its own specific variables (Gunasekaran, et al., 2015). All participants in the supply chain should be involved and committed to common goals, such as customer satisfaction and enhanced competitiveness (Tang and Tomlin, 2016). Although the configuration of supply chains may not undergo changes at a great scale as a result of climate change, adjustments should be made which could reduce vulnerabilities while offering a competitive advantage. These adjustments stem from the different level of vulnerability their building blocks present to climate change hazards. Certain supply chain configurations, that will have the capacity of absorbing any negative effects attributed to climate change, could create a competitive advantage.

Empirical Review

Legal risk

Olande rand Norrman, (2012) studied advanced third/fourth party logistics (3/4PL) relationship in which the logistics service provider extended normal services by taking ownership of the goods during global distribution. It also aims to describe and analyze the approach to the legal rules a 3/4PL provider and its client company took in their contract, and present some remarks on the extent to which these contract solutions are legally sound. A cross-functional (business law and logistics) approach is applied to a single case study. The main data source is a written contract, complemented by in-depth interviews with the 3/4PL's managing director.

A legal analysis is made from four perspectives of non-mandatory and mandatory commercial legal rules. Issues between the offered service, the legal function and reaction in contracts are pointed out, e.g. doubts regarding the legal risk of sales uncertainty, the ownership of goods, the product liability, and the roles as commercial agent and as freight forwarding agent. These kinds of advanced logistics services are not clearly handled, e.g. in the standard-form contracts for freight forwarding.

Bavarsad et al., (2014) provided a model for evaluating supply chain risk factors which affect supply chain operation activities of Iran's automotive industry. Therefore, supply chain risk factors will be studied and organizational performance assessment factors will be introduced. Meanwhile, research conceptual model will be evaluated by Amos Graphics 18 Software. Research findings provide evidence that supply chain risk factor has significant and negative effect (-0.63) on organizational performance. Also, the results show that macroeconomics risks are most important factors which imperil organizational performance.

Supply Chain adaptability

Supply chain adaptability can result in significant cost benefits. Structural flexibility (e.g. outsourcing to contract manufacturers and third-party logistics firms) improves firms' access to capacity when required, converting fixed costs into variable costs (Christopher and Holweg 2011). DHL, for example, collaborates with vehicle manufacturers, creating joint aftermarket logistics systems that share trucks and warehousing facilities. Changing suppliers, identifying new suppliers and markets, relocating production facilities, and constantly innovating in terms of products and processes can further enable firms to reduce costs. By relocating production facilities from the US to other countries and outsourcing manufacturing when structural shifts in global printer markets occurred, HP was able to reduce costs (Lee 2004).

Similarly, Microsoft and Flextronics managed to significantly reduce costs by flexibly adapting supply chain structures for the Xbox (Lee 2004). Supply chain adaptability can also affect

operational performance. Developing new supply bases and markets and relocating production facilities can safeguard quality levels and ensure delivery and steady service in times of structural shifts in markets and economies (Lee 2004; Whitten, Green, and Zelbst 2012). Achieving structural flexibility through diversified manufacturing and sourcing footprints enables firms to improve delivery and service level performance. For example, manufacturers can make or source base demand in low-cost countries and shift production of surge demand to countries closer to key markets, resulting in shorter lead times and enhanced ability for delayed configuration (Christopher and Holweg 2011).

During the launch of the Prius in the US, Toyota was able to reduce inventory costs and improve delivery performance by flexibly adapting its distribution network (Lee 2004). GAP managed to increase delivery performance by adapting its supply chains to the nature of markets for products (Lee 2004). Moreover, relocating production facilities or switching suppliers may be needed in light of regulatory (e.g. ban of products) and political shifts to safeguard stable quality, delivery and service. Innovativeness promotes short development lead times, reduced design cycles and flexible design capabilities: all of which help in launching innovative products and accessing new markets at the right time.

Supply chain adaptability can also be considered vital under high product complexity. A high number of product variants and components is likely to result in different organisational requirements for manufacturing, quality assurance and information management (Jacobs and Swink 2011), making resources within the existing supply chain less likely to be sharable across products. Thus, adaptive capabilities become more beneficial for firms in their efforts to improve delivery performance, enhance service levels, and optimise quality and cost of diverse products. HP, for example, has outsourced basic production capacities to contract manufacturers, but used its own factories for late configuration and production of complex products (Christopher and Holweg 2011).

Supply chain adaptability includes the ability to cost-efficiently tailor the supply chain structural configuration to a variety of products to get the best manufacturing and distribution capabilities for each offering (Lee 2004). The ability to restructure supply chain operations can result in reduced cost and increased profitability under high product complexity (Meeker, Parikh, and Jhaveri 2009). Multi-firm collaborative organisational forms enabling innovative processes and strategies and response to uncertainty over emerging properties and changes in customer requirements are considered especially effective under high product complexity (Hobday 1998).

In general, supply chain adaptability is considered to be particularly essential in an environment characterised by shortening technology and product life cycles going along with growing demand for product variety (Whitten, Green, and Zelbst 2012). Cisco provides a good example of increased benefits of supply chain adaptability under high product complexity (Lee 2004). Specifically, Cisco produces and sells a variety of products, ranging from standard, high-volume networking products to highly customised, low-volume products. Tailoring its supply chain structural configuration to different target markets and customers, Cisco was able to secure profits and gain market share. This included, for example, flexibly changing suppliers, partially outsourcing, manufacturing and commissioning contract manufacturers when needed.

RESEARCH METHODOLOGY

The research design was explanatory survey research design. This study uses a positivism research philosophy. The study was based on theoretical foundations from which hypotheses derived, and quantitative methods were used for logic and evidence testing. The target population of this study were 682 registered manufacturing firms in Nairobi County (KAM, 2018). The study targeted management's team in supply chain who included Heads of Department and Purchasing Officers because they are perceived to have more knowledge and information of any activities that involve

supply chain in firm. The choice of the manufacturing firms is justified by the fact that supply chain practices issues are becoming a major concern with the stakeholders fighting hard to ensure that there is value for money on services performance.

The sample size was obtained using coefficient of variation. Nassiuma, (2000) asserts that in most surveys, a coefficient of variation in the range of $21\% \leq C \leq 30\%$ and a standard error in the range $2\% \leq e \leq 5\%$ is usually acceptable. Therefore, a coefficient variation of 30% and a standard error of 2% was used. The higher limit for coefficient of variation and standard error was selected so as to ensure low variability in the sample and minimize the degree or error. Using this formula, a sample of 169 firms were selected where the researcher selected 2 HODs (finance and supplier chain) this gives sample of 338. The study then used random sampling technique to select the firms sampled.

This study used simple random sampling technique in selecting employees. Simple random sampling procedure using the lottery technique was used to pick the sample size in every stratum. This study used questionnaires to collect data relevant to the study. Once the questionnaires were collected by the researcher, they were coded and keyed into SPSS computer software and analyzed. Quantitative data collected was analyzed using descriptive statistical techniques which were frequencies, mean, standard deviation. Collected data was analyzed using multiple regressions and correlation analysis, the significance of each independent variable was tested at a confidence level of 95%.

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

Out of the 338 questionnaires, 324 were returned. However, of the 324 returned, a total of 318 were reasonably and adequately completed representing approximately 94% response rate. The response rate was deemed satisfactory as suggested by Fowler (1993) who recommends 75% as a rule of the thumb for minimum responses. Further, regarding the works of Jaworski and Kohli, (1993) and Prasad *et al.* (2001), this response rate is considered satisfactory and is comparable to research on similar topics in marketing.

Descriptive Statistics for Study Constructs

Respondents were asked to provide information regarding their level of agreement to items concerning the supply chain risks, supply chain adaptability and firm performance.

Legal risk

The study deemed it important to establish the legal risk of the manufacturing firms. Table 1 highlights the results. Basing on the results, the firms comply with the country's laws and regulations on supply chain operation (mean = 4.47, SD = 0.63). Other than that, the firms are not exposed to risk due to corrupt actions undertaken by suppliers or other third parties acting on the firm's behalf (mean = 4.20, SD = 0.83). There is also no infringement on third party's patent (mean = 4.02, SD = 0.77). In addition, the manufacturing firms face legal risks as they expand their sales operations into other countries (mean = 3.99, SD = 0.90). Besides, it is a requirement for suppliers to hold up the terms outlined in a contract (mean = 3.96, SD = 0.86). As well, the firms have the ability to detect corrupt employees sourcing suppliers for personal gain (mean = 3.92, SD = 0.93). In fact, the firm has adopted a best practice approach in how they communicate their bribery and corruption policies both internally and externally (mean = 3.72, SD = 1.11). However, there is doubt whether the firm is capable of identifying any non-legally compliant requirements that have

been specified (mean = 2.80, SD = 1.39). Overall, the findings on legal risk summed up to a mean of 3.66 and a standard deviation of 0.73.

Table 1: Legal risk

n=318	Mean	Std. Deviation	Skewness	Kurtosis
we comply with the country's laws and regulations on supply chain operation	4.47	0.63	-1.24	2.48
Our supplier must hold up the terms outlined in a contract	3.96	0.86	-0.70	0.74
The company do not Infringe on a third party's patent	4.02	0.77	-0.78	1.62
We are not exposed to risk due to corrupt actions undertaken by suppliers or other third parties acting on our company's behalf	4.20	0.83	-1.21	2.06
We face legal risk as we expands sales operations into other countries	3.99	0.90	-0.36	0.93
We are able to detect corrupt employees sourcing suppliers for personal gain	3.92	0.93	-0.60	0.24
We are able to identify any non-legally compliant requirements that have been specified	2.80	1.39	-0.03	1.42
We adopt a best practice approach in how we communicate their bribery and corruption policies both internally and externally	3.72	1.11	-0.74	0.08
Legal risk	3.66	0.73	-1.12	0.88

Supply chain adaptability

Supply chain adaptability refers to the ability of the firm to sense long-term, fundamental changes in the supply chain and market environment and to respond to such changes by flexibly adjusting the configuration of the supply chain. The study therefore found it necessary to establish supply chain adaptability among the manufacturing firms. The results are as presented in table 2. The findings of the study have shown that the firms have supply chain incentive creation (mean = 4.260, SD = 0.564). They also maintain excess capacity in productions, storage, handling and/or transport (mean = 4.25, SD = 0.623). Besides, there is joint efforts share risk-related information (mean = 4.18, SD = 0.745). Moreover, the firms have joint efforts to prepare supply chain continuity plans (mean = 4.17, SD = 0.671). Also, the firm imposes contractual obligations on suppliers (mean = 4.15, SD = 0.859). Further, the firms drop specific products, markets, suppliers, service providers or customer organizations (mean = 4.12, SD = 0.787). As well, there are joint efforts with suppliers to improve supply chain visibility and understanding (mean = 4.12, SD = 0.712). In addition, the firms increase stockpiling and the use of buffer inventory (mean = 4.09, SD = 0.831). Finally, the firms use different distribution channels (mean = 4.00, SD = 0.792). Generally, the results on supply chain adaptability summed up to a mean of 3.566, standard deviation of 0.677, skewness -0.961 and kurtosis 0.873.

Table 2: Supply chain adaptability

n=318	Mean	Std. Dev.	Skewness	Kurtosis
The firm drops specific products, markets, suppliers, service providers or customer organizations	4.120	0.787	-0.885	0.779
There is joint efforts with suppliers to improve supply chain visibility and understanding	4.120	0.712	-0.278	-0.644
There is joint efforts to share risk-related information	4.180	0.745	-0.665	0.200
The firms has Joint efforts to prepare supply chain continuity plans	4.170	0.671	-1.158	3.780
The firm uses different distribution channels	4.000	0.792	-0.799	1.421
The firm increases stockpiling and the use of buffer inventory	4.090	0.831	-0.576	-0.058
The firm maintains excess capacity in productions, storage, handling and/or transport	4.250	0.623	-0.856	3.485
The firm imposes contractual obligations on suppliers	4.150	0.859	-0.619	-0.438
The firm has supply Chain Incentive Creation	4.260	0.564	-0.344	1.305
Supply chain adaptability	3.566	0.677	-0.961	0.873

Firm Performance

This section of the analysis highlights the results on firm performance. Basing on the findings in table 3, there is a degree of satisfaction concerning the sales margin (mean = 4.4, SD = 0.558) and the growth in profits (mean = 4.28, SD = 1.208). Additionally, the customer retention rate is as high as or higher than that of competitors (mean = 4.18, SD = 0.816). Moreover, the products supplied by the firm are considered to be of high quality (mean = 4.05, SD = 0.804). Consequently, the organization has good reputation in the sector (mean = 4.05, SD = 0.624). The firms' customers are satisfied with the products and services of the firm (mean = 4.03, SD = 0.779) though the degree of satisfaction with the grown in sales is minimal (mean = 3.44, SD = 1.274). Finally, there is no satisfaction concerning financial profitability (mean = 1.07, SD = 0.259). The findings on firm performance summed up to a mean of 3.6878, standard deviation of 0.42973, skewness -0.736 and kurtosis 1.007.

Table 3: Firm Performance

N=318	Mean	Std. Dev.	Skewness	Kurtosis
Our customers are satisfied with the products and services of our firm.	4.03	0.779	-0.94	1.093
Our customer retention rate is as high as or higher than that of our competitors.	4.18	0.816	-0.433	-1.117
Our organization has good reputation in the sector.	4.05	0.624	-0.168	0.046
The products supplied by the firm are considered high quality.	4.05	0.804	-0.33	-0.455
Degree of satisfaction concerning financial profitability	1.07	0.259	3.33	9.14
Degree of satisfaction concerning growth in sales	3.44	1.274	-0.711	-0.368
Degree of satisfaction concerning growth in profits	4.28	1.204	-1.822	2.279
Degree of satisfaction concerning sales margin	4.4	0.558	-0.962	5.341
Firm Performance	3.687	0.4297	-0.736	1.007

Correlation analysis

Correlation coefficients are the statistical method utilized to explore the variables legal risk and supply chain adaptability. The results of the correlation analysis are presented in table 4. The correlation between legal risk and firm performance was significant, $r = 0.673$, $P < 0.01$.

Table 4: Correlation analysis

	FP	legal risk
FP	1	
Legal risk	.673**	1
	0.000	

Hypothesis Testing

The first hypothesis of the study stated that there is no significant effect of legal risk on firm performance. However, findings in table 5 showed that legal risk had coefficients of estimate which was significant basing on $\beta_1 = 0.245$ (p -value = 0.001 which is less than $\alpha = 0.05$) thus we reject the null hypothesis and conclude that legal risk has a significant effect on firm performance. This suggests that there is up to 0.245-unit increase in firm performance for each unit increase in legal risk. Also, the effect of legal risk is more than the effect attributed to the error, this is indicated by the t -test value = 3.464.

Table 5 further illustrates the model summary of multiple regression model, the results showed that all the four predictors of legal risk explained 53.7 percent variation of firm performance. This showed that considering the four study variables of independent variables, there is a probability of predicting firm performance by 53.7% (R squared =0.537). Finally, study findings in the table indicated that the above discussed coefficient of determination was significant as evidence of F ratio of 107.775 with p value $0.000 < 0.05$ (level of significance). Thus, the model was fit to predict firm performance using legal risk.

Table 5: Coefficient of Estimates

	Unstandardized Coefficients		Standardized Coefficients			Correlations		Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Tolerance	VIF
(Constant)	1.44	0.116		12.449	0				
legal risk	0.199	0.057	0.245	3.464	0.001	0.684	0.177	0.248	4.025
R		.733a							
R Square		0.537							
Adjusted R Square		0.532							
Std. Error of the Estimate		0.40635							
Change Statistics	R Square								
	Change	0.537							
	F Change	107.775							
	df1	4							
	df2	371							
	Sig. F								
	Change	0.000							

Dependent Variable: firm performance

Moderating Effect Supply chain adaptability on Supply chain risks and Performance of manufacturing firms

The first objective of the study was to establish the moderating effect of supply chain adaptability on the relationship between supply chain risks and performance of manufacturing firms in Kenya. In order to confirm supply chain adaptability making moderation effect on the relationship between Supply chain risks and performance of manufacturing firms. The following steps were carried out; First, the study standardized all variables to make interpretations easier afterwards and to avoid multicollinearity. Second, the study fitted a regression model (model 3) predicting the outcome variable performance of manufacturing firms from the Supply chain risks. The effects as well as the model in general (R^2) should be significant. Third, the study added the interaction effect (SCA*SCR) to the previous model (model 4, 5 and 6) and check for a significant R^2 change as well as a significant effect by the new interaction term. If both are significant, then moderation is occurring. If the predictor and moderator are not significant with the interaction term added, then complete moderation has occurred. If the predictor and moderator are significant with the interaction term added, then moderation has occurred (Marsh *et al*, 2013), however the main effects are also significant.

The hierarchical regression results are presented in Model 1 to 6 in Table 6. H_{04a} specified that supply chain adaptability moderates the relationship between legal risks and performance of manufacturing firms ($\beta = .314, p < .05$). So, the null hypothesis was rejected. This was also confirmed by $R^2\Delta$ of .010 which indicate that supply chain adaptability moderates the relationship between legal risks and performance of manufacturing firms by 1%. This implies that supply chain adaptability enhances the relationship between legal risks and performance of manufacturing firms.

Table 6: Moderating effect supply chain adaptability on Supply chain risks and organizational performance

	Model 1	Model 2	Model 3	Model 4	Model 5
	B(Se)	B(Se)	B(Se)	B(Se)	B(Se)
(Constant)	0.001(.042)	0.006(.038)	0.006(.155)	(-0.012)(.036)	(-0.006)(.035)
Zscore(LR)	0.226(.057)**	0.151(.053)**	0.053(.838)	0.08(.062)	0.079(.06)
Zscore(LR_SCA)			0.314(2.674)**	0.214(.117)	0.22(.113)
Model Summary					
R	0.817	0.855	0.861	0.871	0.88
R Square	0.667	0.731	0.741	0.759	0.775
Adjusted R ²	0.656	0.721	0.73	0.748	0.763
Std. Error	0.587	0.528	0.520	0.502	0.488
Change Statistics					
R ² Δ	0.639	0.064	0.010	0.019	0.015
F Δ	121.464	45.116	7.152	14.528	12.541
df1	3	1	1	1	1
df2	190.000	189.000	188.000	187.000	186.000
Sig. F Δ	0.000	0.000	0.008	0.000	0.001
a Dependent Variable: Zscore (PERF)					
**p<.01, *p.05					
LR= legal risks, SCA=Supply chain adaptability and PERF= Performance of manufacturing firms					
Source: Research Data (2019)					

Conclusion

In conclusion, the targeted manufacturing firms have managed and mitigated legal risk across the supply chain leading to improved firm performance. As such, there is no exposure to risk due to corrupt actions undertaken by third parties or suppliers. Also, it is easier to detect corrupt employees with the intent of sourcing suppliers for personal gain. Other than that, suppliers hold up the terms outlined in the contract. The only challenge is that the firms are incapable of identifying any non-legally compliant requirements that have been specified

Recommendations

Basing on the study findings, management of legal risks has been found to contribute to improved firm performance. Therefore, it is utmost necessary for manufacturing firms to comply with the country's law and regulations on supply chain operation. Also, it is important for the firms to adopt a best practice approach on how to communicate bribery and corruption policies both externally and internally. Moreover, firms need to put in place measures to ensure there is no infringement on third party's patent.

Recommendations for Further Studies

This study focuses on the moderating role of supply chain adaptability on the relationship between supply chain risks and performance of manufacturing firms in Kenya. The emphasis of the study was on legal risk. Future scholars could also incorporate information flow risk and organization characteristic risk. Besides, political risk was found to have no effect on the performance of manufacturing firms in Kenya. There is thus need for further studies on the same. In addition, the study has established that supply chain adaptability positively and significantly moderates the relationship between supply chain risks and firm performance. Future scholars could incorporate a mediator variable.

REFERENCES

- Amit R, Schoemaker P.J.H. (1993). Strategic assets and organizational rent. *Strategic Management Journal*: 14(1):33–46.
- Boyer, K.K., Lewis, M.W., 2002. Competitive priorities: investing the need for trade-offs in operations strategy. *Production and Operations Management* 11 (1), 9–20.
- Calantone R.J., Cavusgil S.T., and Zhao Y., 2002. Learning orientation, firm innovation capability, and performance, *Industrial Marketing Management.*, 31: 515 –524.
- Chahine, S. and Safieddine, A. (2011). Is corporate governance different for the Lebanese banking system? *Journal of Management & Governance*, 15 (2), pp. 207-226
- Chen IJ & Popovich K (2003) Understanding customer relationship management (CRM)-People, process and technology, *Business Process Management Journal* 9(5): 672-88.
- Chiang, H., & Lin, M. (2011). Examining board composition and performance. *The International Journal of Business and Finance Research*, 5(3), 15–28.
- Cho, J. J.-K., J. Ozment, *et al.*, 2008. Logistics capability, logistics outsourcing and performance in an e-commerce market. *International Journal of Physical Distribution & Logistics Management* 38(5), 336-359.
- Cross, K. F. & Lynch, R. L., (1988/89), "The SMART way to sustain and define success", *National Productivity Review*, Vol. 8, No. 1, 23 - 33.
- Day, G. S., 1994. The capabilities of market-driven organizations. *Journal of Marketing* 58(4), 37-52.
- Fazlzadeh, A., Hendi, A. T., & Mahboubi, K. (2011). The examination of the effect of ownership structure on performance in listed firms of Tehran Stock Exchange based on the type of the industry. *Interactional Journal of Business and Management*, 6(3), 249–267

- 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.
- Frohlich, M.T. and Westbrook, R. (2001), "Arcs of integration: an international study of supply chain strategies", *Journal of Operations Management*, Vol. 19 No. 2, pp. 185-200
- García, F.; Avella, L.; Fernández, E. (2012) Learning from exporting: The moderating effect of technological capabilities. *International Business Review*, 21 (6), p. 1099-1111. DOI:10.1016/j.ibusrev.2011.12.001
- Johnson, H. T., & Kaplan, R. S. 1987. *Relevance lost: The rise and fall of management accounting*. Cambridge, MA: Harvard Business School Press.
- Kaplan, R. S. and D.P. Norton (1996b) Using the Balanced Scorecard as a Strategic Management System," *Harvard Business Review* (January-February):75-85
- Kim, S. W., (2014). The effect of supply chain integration on the alignment between corporate competitive capability and supply chain operational capability. *International Journal of Operations & Production Management* 26(10), 1084-1107.
- 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.
- Lee C, Lee K, Pennings J.M. (2001). Internal capabilities, external networks, and performance: a study on technology-based ventures. *Strategic Management Journal*: 22(6):615-40.
- Li, S, Ragu-Nathan, B, Ragu-Nathan, TS & Subba Rao, S 2006, 'The impact of supply chain management practices on competitive advantage and organisational performance', *The International Journal of Management Science*, vol. 34, pp. 107-124.
- Lynch, D. F., S. B. Keller, *et al.*, 2000. The effects of logistics capabilities and strategy on performance. *Journal of Business Logistics* 21(2), 47-67.
- Powell, Thomas C. (2001). "Competitive advantage: logical and philosophical considerations". *Strategic Management Journal*. 22 (9): 875-888. doi:10.1002/smj.173.
- Rao, K., A. J. Stenger, *et al.*, 1994. Training future logistics managers: logistics strategies within the corporate planning framework. *Journal of Business Logistics* 15(2), 249-272.
- Swink, M., Narasimhan, R., Wang, C., 2007. Managing beyond the factory walls: Effects of four types of strategic integration on manufacturing plant performance. *Journal of Operations Management* 25 (1), 148-164
- Tang Yon. & Gong Feng-mei, Ma Shi-hua, 2007. Empirical Study on the Influence between Logistics Information Capabilities and Performance of manufacturing firms, *Industrial Engineering and Management*, , 2, 12-18.
- Thomas, H., Bogner, W. C., & McGee, J. (2001). Competence and competitive advantage: towards a dynamic model. *British Journal of Management*, 10(4), 275-290.
- Ward, P.T., Leong, G.K., Boyer, K.K., 1994. Manufacturing proactiveness and performance. *Decision Sciences* 25 (3), 337-358
- Wilfred Carr. (2004), 'Philosophy and Education', *Journal of Philosophy of Education*, 38, 1, 55-83
- 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. 2002. *Case study research*. 4th ed. Thousand Oaks *et al.*: Sage