

**AN ASSESSMENT OF EFFECT OF RISK IDENTIFICATION
MANAGEMENT STRATEGY ON SUPPLY CHAIN
PERFORMANCE IN MANUFACTURING
COMPANIES IN KENYA**

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Abstract

Risk Monitoring & Control management strategies and risk Identification management strategies are a key function in improving supply chain performance at a greater extent. This study found out that companies can only ensure there is adequate cost reduction along supply chain function through use of activities based contracts with clean cost management targets, setting annual savings target and reporting achieved saving monthly and competitive bidding, purchasing from suppliers and delivering to customers economic quantities and majority of the companies build alliances through supply chain systems. According to the study findings, in order to enhance a smooth performing of supply chain in a company given the changing nature of markets due to increased diversity adequate risk identification and management is inevitable.

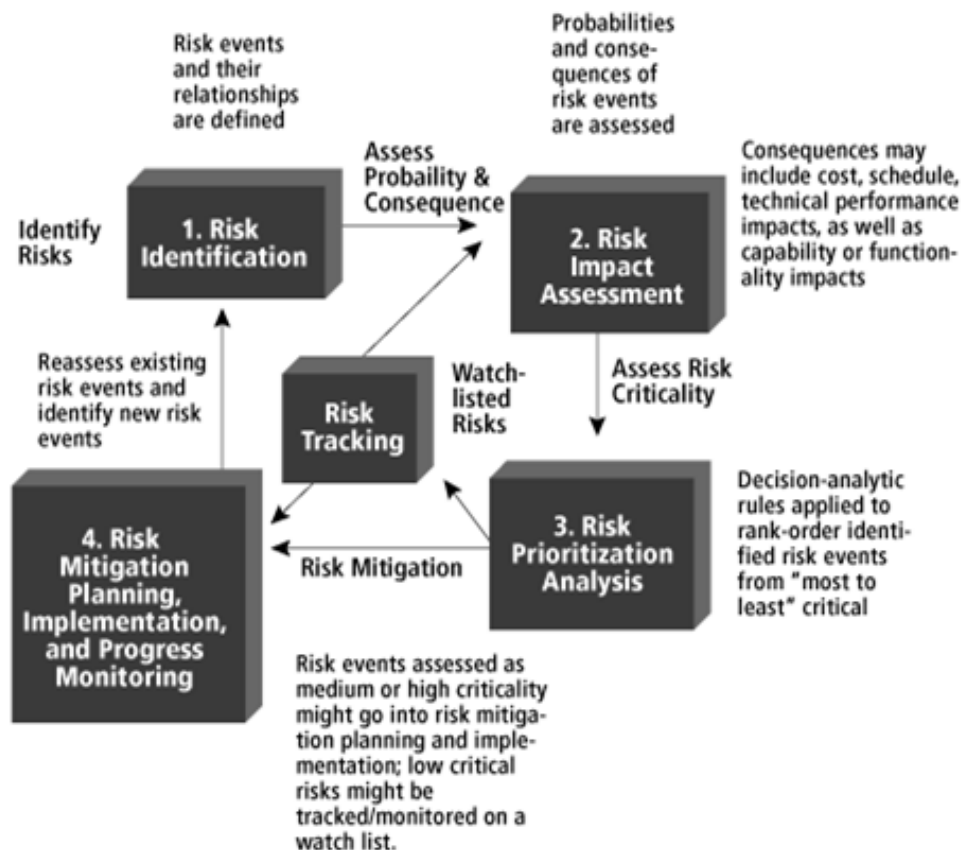
Key words: Supply chain management, Risk Management, Identification, Risk, Strategy

INTRODUCTION

Risk identification is the process of determining risks that could potentially prevent the program, enterprise, or investment from achieving its objectives. It includes documenting and communicating the concern. The objective of risk identification is the early and continuous identification of events that, if they occur, will have negative impacts on the project's ability to achieve performance or capability outcome goals. They may come from within the project or from external sources (Page, 2002).

There are multiple types of risk assessments, including program risk assessments, risk assessments to support an investment decision, analysis of alternatives, and assessments of operational or cost uncertainty. Risk identification needs to match the type of assessment required to support risk-informed decision making. For an acquisition program, the first step is to identify the program goals and objectives thus fostering a common understanding across the team of what are needed for program success. This gives context and bounds the scope by which risks are identified and assessed (Garvey, 2008). Risk identification is the critical first step of the risk management process as depicted in Figure below;

Figure 1: Fundamental Steps of Risk Management



Source: Garvey (2008)

Supply Chain Performance

Most literatures on supply chain management have reflected a developed performance measurement systems, delineated metrics, or benchmarked supply chain practices. However there has been limited reflection on important insights from the wider contemporary literature on effects of implementation of risk management strategies on supply chain performance measurement (Bourne et al., 2002; Kennerley & Neely, 2003).

Supply chain performance measures the effectiveness and efficiency of actions to which customers requirements are met and how economically a firm's resource are utilized when providing a pre-specified level of customer satisfaction (Neely et al, 2000). In supply chain management, there has been relatively few attempts to collate systematically measures for evaluating the performance of which need be to evaluate the cost and non cost measure, evaluation of quality, delivery and flexibility, resource and outputs (Gunasekaran, 2001; Toni & Tonchia, 2001).

The apparent ability of some supply chains to recover from inevitable risk events more effectively than others has more recently triggered a debate about supply chain resilience (SCRES). Whereas supply chain resilience management (SCRM) focuses on the identification and management of risks for the supply chain in order to reduce its vulnerability (Juttner, 2005), SCRES aims at developing the adaptive capability to prepare for unexpected events and to respond to disruptions and recover from them (Ponomarov & Holcomb, 2009). SCRES is based on the underlying assumption that not all risk events can be prevented. SCRM is well explored and a wide range of empirical studies can be cited which investigate the SCRM approach of single companies (Norrman & Jansson, 2004) or industries (Johnson, 2001; Sinha et al., 2004; Blos et al., 2009), explore the current state of action across industries (Juttner, 2005), identify risk drivers (Wagner & Bode, 2006) or confirm the risk reduction effect of strategies such as early supplier involvement (Zsidisin & Smith, 2005), supplier development (Matook et al., 2009) or new designs (Khan et al., 2008).

Risk and Supply Chain Performance in an Organization

In an organization today the importance of supply chain performance support for successful organization strategy implementation has for a long time been recognized in the SCM literature but the management of risks as a result of interruptions has not received adequate attention (Cooper, 2003; Magnan & Christopher, 2005). Chopra and Sodhi (2004) identify the wider consequences of a failure to manage risks effectively. These include not just only financial losses but also reduction in product quality, damage to property and equipment, loss of reputation in the eyes of customers, suppliers and the wider public, and delivery delays. There

is also evidence that economic, political and social developments over the past decade appear to be increasing the risk of supply chain disruptions as supply chains are getting longer and more complex and are involving more partners due to the increase in global sourcing (Hendricks & Singhal, 2005).

A perfect Supply chain environment encourages fierce competition among suppliers, often requiring playing one supplier against the others, and uses rewards or punishment based on performance. In this environment partners are interchangeable and under the discipline of a free market, promote a healthy and vigorous supply base determining the performance of supply chains in most organizations (Brau, 2005). Lewis (2003) notes that, the essence of supply chain management as a strategic weapon to develop a sustainable competitive advantage by reducing investment without sacrificing customer satisfaction. Since each level of the supply chain focuses on a compatible set of objectives, redundant activities and duplicated effort can be reduced. In addition, supply chain partners openly share information that facilitates their ability to jointly meet end-user's needs bringing adequate change to its performance (Lewis, 2003). While reduced cost is typically a result, supply chain performance should emphasize leveraging the skills, expertise, and capabilities of the firms who comprise this competitive network referred to. The importance of getting close to key customers and thus a sustainable supply chain risk management strategy extends these linkages upstream and down (Cooper, 2003).

Supply chain risk strategy development should be part of the business unit planning process which includes efforts aimed at developing and maintaining global information systems, addressing strategic aspects of make-or-buy issues, and accessing and managing innovation with the purpose of protecting and enhancing core technologies (Peck, 2005). Developing a supply chain strategy is based on understanding the elements of sourcing strategy, information flows (internal and external), new product co-ordination, concurrent procurement, teaming arrangements, commodity/component strategies, long-term requirements planning, industry collaboration, and staff development (Maganan, 2005).

Supply chain management is built on a foundation of trust and commitment (Rice & Caniato, 2003). The consensus is that trust can contribute significantly to the long-term stability of an organization (Slack, 2011). Commitment is the belief that the trading partners are willing to devote energy to sustaining this relationship (Smith, 2004). Hence, through commitment partners dedicate resources to sustain and further the goals of the supply chain and to a large degree, commitment "ups the ante" and makes it more difficult for partners to act in ways that might adversely affect overall supply chain performance (Slack, 2011). Trading partners throughout the supply chain become integrated into their major customers' processes and more

tied to their overarching goals. For instance, in most business transactions, supply chain partners willingly share information about future plans and designs, competitive forces, and R&D. Partners recognize that their long-term success is as strong as their weakest supply chain partner (Abdallah & Moneim, 2004).

In today's' global competitive markets, effective supply chain management and performance suggests seeking close, long-term working relationships with one or two partners (both suppliers and customers) who depend on one another for much of their business; developing interactive relationships with partners who share information freely, work together when trying to solve common problems when designing new products, who jointly plan for the future, and who make their success interdependent improving supply chain performance as a whole (Christopher, 2005).

Global Perspective on Supply Chain performance

In today's competitive world, markets have the challenges associated with getting a product and service to the right place at the right time, in the right quality and quantity from the right source at the lowest possible cost; the solution of which is only possible by improving efficiencies within the organization's supply chain of which the understanding and practicing of supply chain management (SCM) has become essential prerequisite for staying competitive in the global race and enhancing profitability (Handfield & Nicholas, 2002).

The supply chain in manufacturing companies, is the network of activities involved in producing and getting a product to consumers, and spans the manufacturing process as well as transport and distribution services. Economic gains from reducing supply chain barriers are also more evenly distributed across countries than the gains associated with tariff elimination (Cooper, 2003). Such large increases in GDP would be associated with positive effects on unemployment, potentially adding millions of jobs to the global workforce. Lowering supply chain barriers among manufacturing companies is effective because it eliminates resource waste and reduces costs to trading firms and, by extension, lowers prices to consumers and businesses. However in trying to increase its competitiveness in today's global markets, the supply chain performance remains the determinant factor in future expectations hence each organization is impacted by its supply chain performance because it has one (WB, 2012). According to Council of Supply Chain Management Professionals (CSCMP), the cost of supply chain activities in manufacturing companies such as logistics in the US was \$1.1 trillion in 2009; 7.7% of Gross domestic product (CSCMP, 2011). Statistics from the United State Bureau of statistics reveals that Supply chain performance in manufacturing companies affects directly the Gross domestic product of each country in the global market such as the transportation-related workforce which

in December 2010 totaled 4.24 million people, representing 3.2 % of the total US workforce (RITA, 2011).

In China, logistics which is a core factor in supply chain performance represents 15-16% of GDP and 11-13% of India's Gross domestic product Supply Chain costs in European such as logistics is significantly low and represents 7.15% of European Gross domestic product (RITA, 2008).

In a study of more than 800 manufacturing companies that announced a supply chain disruption between year 1989 and 2000 globally, Singhal and Hendricks (2005) found that during a three year span, regardless of industry, disruption cause or time period, affected companies experienced poor performance of 33-40% lower stock of returns related to their industry peers. Likewise, share price volatility in the year after the disruption was 13.5% higher compared with volatility in the year before the disruption (Hendricks & Singhal, 2005). It's evident that companies with well-run supply chain continue to out-perform other companies. According to Boston-based Advanced market research (AMR) 2009, the average total return of companies in AMR's "supply chain top 25" in 2007 was 17.89% compared with returns of 6.43% for the Dow Jones industrial Average and 3.53% for companies in standard and poor's 500 index. Further studies showed that when a company adopts a new distribution or logistics innovation, the company's stock price increases (Toni & Tochia, 2001). However a study by Miles Cook (2009) showed that companies employing sophisticated supply chain methods enjoyed 12 times greater profit than companies with unsophisticated methods. Even a less ambitious set of reforms that moves countries halfway to regional best practice could increase global GDP by 2.6% and world trade by 9.4% (WEF, 2009).

RESEARCH METHODOLOGY

This study adopted a cross-section survey of descriptive nature. The cross-section survey formulates a problem for more precise investigation for the discovery of ideas and insights and hence it became flexible and possible to provide opportunity for considering different aspects of the problem under study (Kombo, 2006; Kothari, 2004). A list of manufacturing companies was gotten from Kenya Association of Manufacturers (KAM) and Nairobi Securities Exchange provided a list of all companies that float shares with it.

Population and Sample

The total population of this study was made up of all manufacturing companies in Kenya. There are 153 manufacturing companies in Kenya that are members of Kenya association of Manufacturers in Nairobi industrial area (KAM, 2011). According to Kothari, (2004) a research

should take a big sample where possible to increase the findings confidence of a researcher, therefore this study employed a census approach to collect data from all 153 respondents hence no sampling technique was used. This method was appropriate because it reduced biasness in research since all respondents had an equal chance of participation (Schindler, 2008).

Data Collection Tools and Procedure

Data was collected using questionnaires administered by the researcher as well as research assistants; both primary and secondary data was collected. Primary data was collected using questionnaires but secondary quantitative data was collected using desk top research within the organization.

Drop and pick up of questionnaires was applied. Also a follow up using emails and phone calls as well as personal visits was applicable. Secondary data from research reports and previous studies relating to supply chain performance was used to provide a wider understanding of this issue under study.

Data Analysis Approach

Data was summarized and described using descriptive statistics and SPSS version 21 as a tool of analysis and presented through percentages, means, standard deviations and frequencies in order to enable the researcher to meaningfully describe a distribution of measurements using a few indices or statistics. The type of indices/statistics that was used depended on the type of variables in the study and the scale of measurement (ratio, inferal, ordinal, nominal). Measurement of central tendency was used to determine the typical or expected score or measure from a sample of measurement or a group of scores in a study in order to give expected summary statistics of variables being studied. The Analysis of Variance (ANOVA) was used to test the goodness of fit of the models and significance of the relationship between the dependent and independent variables based on a 5% level of significance. Multiple Regression was adopted as an appropriate method of analyzing the relationship between multiple variables requiring simultaneous comparison.

EMPIRICAL FINDINGS AND PRESENTATION

The sample for the study consisted of all the 153 procurement and supply chain related directors/deputies from the 153 manufacturing companies who were all involved in the research survey in order to ascertain the effect of risk management strategy on supply chain performance. This resulted to 68% response rate.

This satisfied the assertion by Kothari (2004) that a 50% response rate is adequate, 60% good and above, while 70% is very good. This implies that based on this assertion, the response rate in this case of 68% is therefore considered satisfactory to make conclusions for the study.

Risk measures to ensure supply chain performance is uniform

According to the study majority of the company (91%) have risk measures to ensure that its supply chain performance is uniform. The findings relates to Gunasekaran, Toni and Tonchia, (2001) that for a successful supply chain management, there has to be relatively few attempts to collate systematically measures for evaluating the performance of which need be to evaluate the cost and non-cost measure, evaluation of quality, delivery and flexibility, resource and outputs.

Risk management strategies improving supply chain performance

The study sought to identify the extent to which the following risk management strategies are applied in improving supply chain performance in manufacturing companies. From the findings hedging against risk management strategies improving supply chain performance at great extent and risk Analysis & Evaluation management strategies, risk Monitoring & Control management strategies and risk Identification management strategies improving supply chain performance at moderate extent.

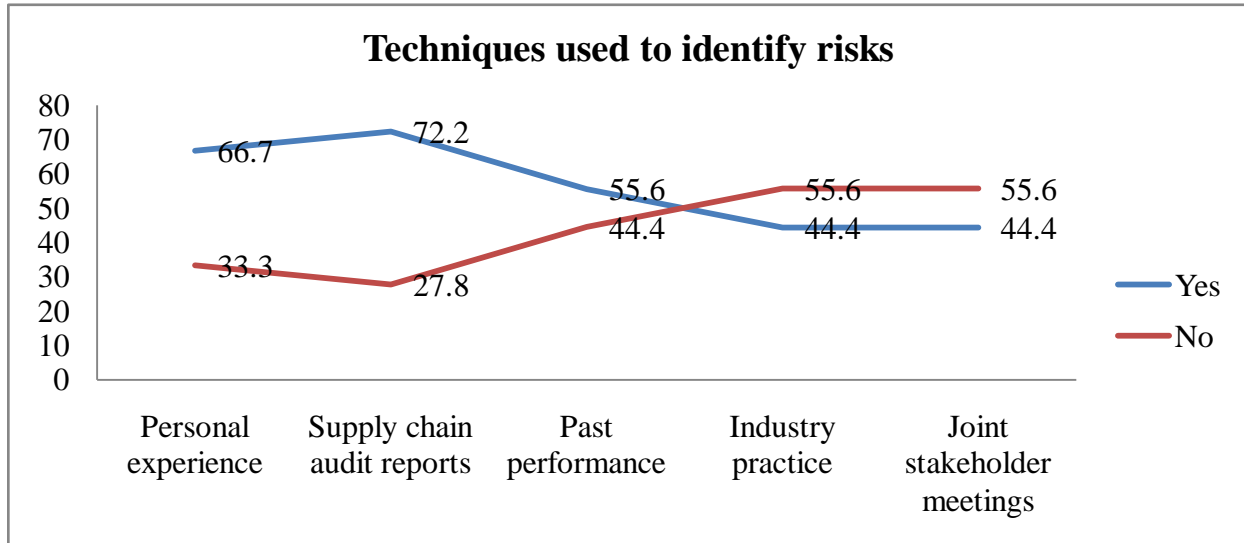
According to Macintosh, (2002) identifying risks is an initiative that a firm must successfully complete in order to achieve the best possible outcome for shareholders and stakeholders, it can be used to identify potential risks.

Risk identification Techniques

The study sought to identify the techniques used to identify risks in manufacturing companies in order to ascertain to extent to which these response can be relied upon in making conclusion relevance to the risk identification along supply chain with reference to its performance. The techniques used to identify risks in companies are supply chain audit reports 72.2%, personal experience 66.7% and past performance 55.6%.

This concur with supply chain collaboration efficiency, their strategies, operational and tactical focus is best reflected in the proponent of supply chain operations reference (SCOR) model which argues that supply chain performance must be measured at multiple levels and assigned to five categories of metric. This includes; reliability, responsiveness, flexibility, cost and efficiency indicators done (Huang et al, 2004; & Li et al, 2005).

Figure 2: Techniques used to Identify Risks



Techniques used to identify risks

This study sought to identify the extent to which different sources of risks affects supply chain performance in order to ascertain whether responses could be relied upon in making conclusions relative to the study. From the findings, turbulence risks, legal risks, political risks, technological risks, organizational structure and culture risks and financial risks at a moderate extent and market risks at little extent.

Table 1: Sources of supply chain risks affect supply chain performance

Supply chain Risks	Mean	Std Deviation
Technological Risks	3.33	1.33
Organizational structure and culture risks	3.17	0.99
Market risks	3.67	1.24
Financial risks	3.39	1.24
Political risks	3.00	1.19
Turbulence risks	2.89	1.13
Legal risks	2.94	1.59
Average	3.20	1.24

Risk identification management strategies affect the performance of supply chain

The study sought to identify the extent the following risk identification management strategies affect the performance of supply chain in their company in order to ascertain if the findings could be relied upon in identifying levels of supply chain performance as a result of their effect. From the findings, joint specifications writing teams is at great extent, periodic procurement audits, joint procurement planning teams and pre-bid meetings with suppliers is at moderate extent.

Juttner, (2005) argues that whereas SCRM focuses on the identification and management of risks for the supply chain in order to reduce its vulnerability, SCRES aims at developing the adaptive capability to prepare for unexpected events and to respond to disruptions and recover from them through risk identifications and management of the same.

Table 2: Risk identification management strategies affect the performance of supply chain

Risk identification management Strategies	Mean	Std Deviation
Pre-screening of supplier's Capacity	3.61	0.98
Joint specifications writing teams	2.67	1.50
Periodic Procurement Audits	3.44	0.98
Inventory Forecasting	3.56	1.38
Pre-Bid meetings with Suppliers	3.39	1.04
Periodic Quality assessment reviews	3.61	0.98
Joint Procurement Planning teams	2.94	1.21
Average	3.32	1.15

Pre-screening of suppliers' capacity in enhancing its supply chain performance

From the findings majority (78.6%) of the companies carry out pre-screening of suppliers' capacity in enhancing its supply chain performance. Companies select the joint specifications writing teams that oversees running of supply chains by specific information on required performance/capacity visit to suppliers' site to assess' capacity by skilled personnel.

Table 3: Pre-screening of suppliers' capacity in enhancing its supply chain performance

	Frequency	Percent
Yes	82	78.6
No	11	10.7
No response	11	10.7
Total	104	100.0

Periodic procurement audits

From the findings majority (78.6%) of the companies carry out periodic procurement audits. Companies carry out inventory forecasts along supply chains through use of planning tools such as material response planning and use of planning processes that are linked to market demand.

Table 4: Periodic procurement audits

	Frequency	Percent
Yes	82	78.6
No	11	10.7
No response	11	10.7
Total	104	100.0

Table 5: Regression Coefficients model

	Un-standardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	.497	.167		2.980	.004
Risk identification management strategy	.685	.142	.826	5.526	.000

According to the study ANOVA findings $X_1 = 0.685$, shows that one unit change in risk identification management strategy results in 68.5% units increase in supply chain performance.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The study revealed that, hedging against risk management strategies improved supply chain performance at great extent and risk Analysis & Evaluation management strategies, risk Monitoring & Control management strategies and risk Identification management strategies improving supply chain performance at moderate extent. Company ensure there is adequate cost reduction along supply chain function through use of activities based contracts with clean cost management targets, setting annual savings target and reporting achieved saving monthly and competitive bidding, purchasing from suppliers and delivering to customers economic quantities and majority of the companies build alliances through supply chain systems.

Conclusion

According to the findings of this study, most organization risk management strategies act as the drivers to any successful organization performance and therefore it's important for any organization to identify its strength and core competences in the market and manage all factors that are a risk to its performance across the supply chain and management of the same demand line through application of risk management strategies in order to reduce the vulnerability nature of their supply chains given the volatility of today's global competitive markets.

As Hendricks and Singhal (2005) showed, not only can the failure to manage supply chain risks effectively lead to a sharp downturn in an organization's share price, which can be slow to recover, but it can also generate conflict amongst the organization's stakeholders.

Recommendations

While this study successfully examined the risk identification management strategy variables in relation to supply chain performance, it also presents rich prospects for several other areas to be researched in future. Future research in the area of supply chain performance in

manufacturing companies need to consider linking supply chain performance with other different industry including service and telecommunication given that the global market is changing from manufacturing to service due to changing customer demands.

It's also important to diversify risk management implementation challenges in supply chain given that most organizations are in a dilemma to adapt the current changing market trends including changes that comes with new technological development and structural changes in organizations. This normally result to difficulties in adoption of new trends such as risk management strategies given that supply chain is becoming complex and dynamic with time.

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