

## Advancement on enterprise risk management and supply chain performance

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### ABSTRACT

The Supply chain enterprise risk management and culture are the objectives of every company. However, supply development as vulnerability affects the proper handling of enterprise risks. This affects Supply Chain Performance (SCP) among citizens and stakeholders. In order to eliminate failure and create benefits, enterprise risk management demands accurate measurement. Companies in the United Arab Emirates (UAE) have become more vulnerable to an increasing number of supply chain threats, but curiously most of them have not taken actions to institutionalize a risk culture to create risk-aware mindset in their employees. Data were collected using selected databases, specifically Springer, Scopus, Science Direct, and Google Scholar. The aim of this research is to propose an advancement of enterprise risk management (ERM) and SCP using a survey approach in order to fill gaps in knowledge. The contribution will benefit UAE manufacturing companies, especially for ERM and SCP effectiveness and Government. Also, salient factors useful to ERM and SCP for handling RMC are identified.

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### 1. Introduction

The fierce competition that characterizes business environment today has forced many companies across industries to align their operations with each other's not only to gain economies of scale and competitive advantage (Jin et al., 2010) but also to undercut sources of risks that dodge every point along their value chain (Mani et al., 2017; Sheffi, 2005). Nowhere is this imperative more critical today than in companies' supply chain, which, because of increasing interdependencies among world economies, necessarily cuts across industries and complex networks. Therefore, it makes it more and more difficult to pinpoint vulnerability points in the supply chain (Sheffi and Rice, 2005). Thus, a crucial and no less daunting responsibility supply chain managers have to cope with today's highly uncertain operating climate the responsibility to manage the intricate complexities and frequent disruptions that now bedevil supply networks (Gurnani et al., 2012). Today, supply networks

consist of loosely or tightly-coupled companies, including their multiple supply partners and numerous end customers and users, who while working individually, must collectively coordinate the flow of critical materials within and among themselves for purpose of advancing mutual benefits and pre-empting adverse possibilities at collective and individual levels (Christopher, 2016; Horvath, 2001). Companies pursue supply chain enterprise risk management in part as a strategy for forestalling disruptions to material and information flow (Li et al., 2015) because unexpected disruptions are known to cause disruptions on purchasing, manufacturing or distribution processes, and companies along the supply chain may face serious problems as a result of such disruptions (Sheffi, 2001; Akkermans and Van Wassenhove, 2018; Scheibe and Blackhurst, 2018). It is in order to attenuate the possible occurrence of such disruptions and mitigates their adverse impacts that companies nowadays develop and implement vulnerability mitigation strategies as part of their overall enterprise risk management system. However, the overriding objective of such strategies is to attain optimum supply chain performance (Wu and Olson, 2010). Fig. 1 shows the key issues in Supply Chain Performance (SCP), namely inventory, transportation, facilities, information, sourcing, and pricing.

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## 2. Ascertaining main problem statement

Companies in the UAE are becoming more and more vulnerable to an increasing number of supply

chain threats, but curiously most of them have not taken measures to institutionalize a risk culture that creates risk-aware mindset in their employees.

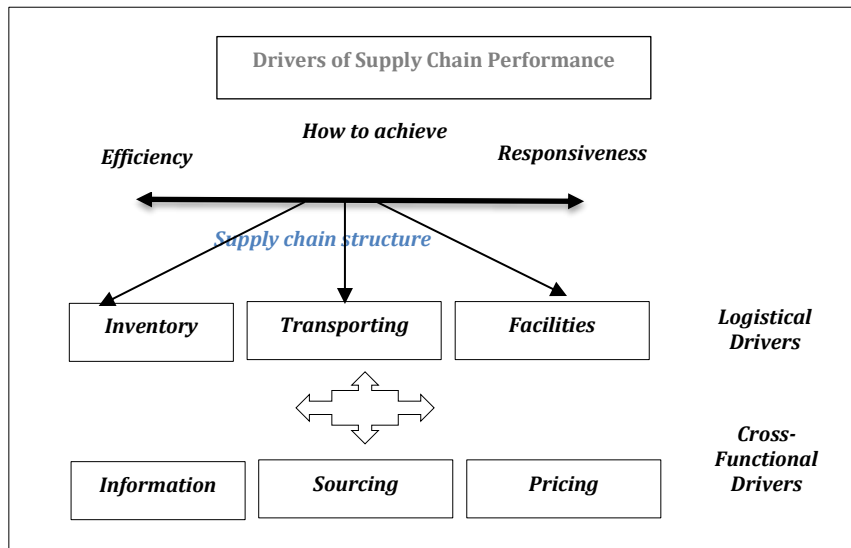


Fig. 1: Overview of supply chain performance (Wu and Olson, 2010)

However, studies have indicated that the development and institutionalization of organization-wide risk-culture and ERM in the UAE is still emergent. For example, firms in the construction in UAE hardly bother to look beyond the traditional reactive form of risk management, with the result that avoidable disasters strike virtually unexpected (El-Sayegh, 2008; Fan and Stevenson, 2018). A number of factors are responsible for the vulnerability status of the supply chain, such as industry dynamism, supply base reduction, lean management, shorter product life cycle, just-in-time inventory system, escalating technological advancement, outsourcing, and pressure on managers for higher levels of efficiency in operations. All these could have negative impacts on supply chain performance. Hendricks and Singhal (2007) have demonstrated that disruptions in a company's supply chain may translate into an 8% fall in the value of the company's publicly traded investment income. To help detect and neutralizes such eventualities, vulnerability mitigation strategies from the ERM need to be embedded into the fabric of the system. However, companies rarely do so (Zhang et al., 2016). Several studies have suggested some measures for the reduction of risks and improvement of Supply Chain Performance (SCP) (Hatani, 2010). To the best of the researcher's knowledge, the usefulness of the recommended mitigation plans for improved supply chain usefulness has not yet been empirically examined. Wagner and Neshat (2010) recommend that not every mitigation plan is real in decreasing supply chain weakness (Alvarez, 2018). Also, despite its significance, slight or no study has been shown regarding how safety culture may affect the relationship between weakness mitigation plans and supply chain usefulness. Therefore, further

investigations are required to solve this serious problem, which motivates the on-going research, and thus, form the basis for this article to suggest possible advancement to address the problem by the adoption of the visible methodology. However, the objective of this paper is to present advancement to ERM and Supply Chain Performance (SCP). In view of the highlighted problem, the following research questions are formulated to answer the stated objective.

1. Can supplier development as a vulnerability subset of ERM and SCP have any relationship?
2. What way can Risk Management Culture (RMC) be employed to extend ERM and SCP?
3. Is there any connection between RMC and SCP?

## 3. Literature survey

The risk management is the study of the vibrant impact and complex functionality of the network structure of the organization to ensure a seamless supply chain services to its partners. The risk management, thus, provides guidance toward the suitable policy to deal with the unpredictable circumstances using an appropriate mitigation strategy. The use of mitigation strategies is required to minimize the susceptibility of the risk. The unwanted effects and perceptions of the consumers about the service and product are considered as a risk. The risk management is the process of understanding and reduces the effects of the risk by focusing on minimizing the after-risk effects. It is also the process to minimize the occurrence of such risk. The strategies of managing risk can be different for different risks and can be identified by assessing the risks (Berg et al., 2008). In general, practice often ignores the high risk at the cost of managing low

impact risk and those with a high frequency of occurrence in their supply chain. However, the catastrophe in the recent past, whether natural or otherwise by a human, compelled the firms to revise the strategies for managing the risks and these firms are now considering not only the internal risk factors but those involve globally which may have an impact on their global partners in the supply chain. There several different sources that originate risk in the supply chain. Globalization is another challenge that makes the local firm more vulnerable to global risks. The basic reason for such vulnerability is the leniency agility in the risk management systems and interdependency of the other organizations. The risk elimination is nearly impossible in any organization; however, reduction in the risk occurrence and reducing the after-risk impact is the main area research in risk management systems' strategies. Such strategies help the organization for easy recovery from the risks. The main issue due to globalization is the different cultures and norms of the interdependent firms, and it can only be tackled by a centralized and uniform approach among all the participating partners in the supply chain to share the knowledge to implement the risk mitigation and risk management strategies.

The last decade identified and recognized the disruption risk as they are more vulnerable to the adverse effects, both in the short term and long term. Therefore, it attracted several researchers to investigate risk factors and its impact on the supply chain (Ho et al., 2015; Nooraie and Parast, 2015). One of the main hurdles in organizational performance is the key challenges associated with supply chain management risks. The supply chain management risk is a subject to identify the possible reasons for the risk and try to implement such risk avoidance policy that helps to prevent the risk or, in case of the risk, provides a better approach to minimize its adverse effects. The more coordination among the partner, the more reliable the strategy will be done (Jüttner et al., 2003). Kamalahmadi and Mellat-Parast (2016) considered the supply chain risk management is a strategy to identify the causes

of the risk among all the partners, local or global, inter-organization or intra organizations, and then following the suitable strategy to mitigate the risk impact in the organization performance by focusing the supply disruption. In view of the foregoing, there is a need for companies to institutionalize a culture of risk visibility and awareness as a bedrock for the overall enterprise risk management to address the ever-present danger of supply chain vulnerabilities. A crucial step, therefore, is to align company risk culture with the exigencies of its supply chain complexities such that the managers can continuously monitor the most critical risk incidence even before they occur and initiate remediation measures in time. Steps to address a vulnerability in supply chain management are shown in Fig. 2. Apart from this research, several papers have discussed database crimes and risks which used by organizations to safe their data (Al-Dhaqm et al., 2018; 2017a; 2017b; 2016; 2014; 2015; Ali et al., 2017a; 2017b).

Table 1 shows the detailed summary of the supply chain risk management based on the existing studies.

#### 4. Proposed method

Vulnerability Mitigation Strategies (VMSs) investigated in this study are specifically related to those deployed in the management of a company's supply chain network (Vilko and Lättilä, 2018). Therefore, those VMSs would be adopted in addition to the work by Goldsby et al. (2013) adopted in this research to fill gaps in knowledge. Furthermore, four VMSs are treated as predictor variables and studied against the criterion of SCP. Both the predictor and the criterion will be studied against the RMC prevalent in the manufacturing industries (Kim and Schoenherr, 2018) with reference to the manufacturing sector of the Emirati economy (Waal et al., 2017). The data for the ongoing research will be created through interviews from well-known experts in the selected company.

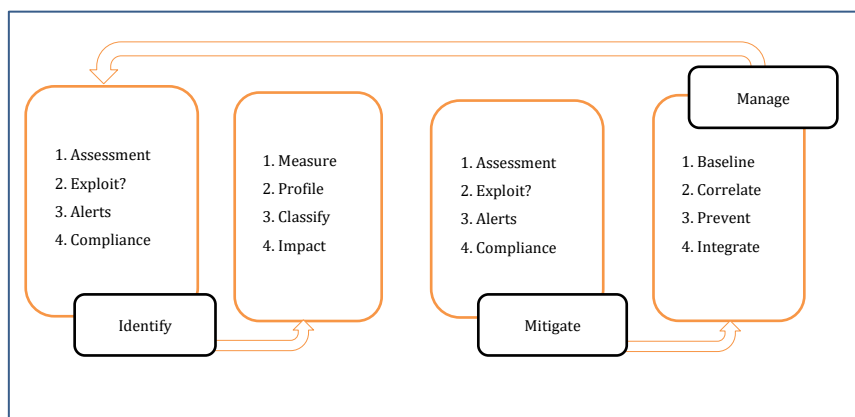


Fig. 2: Remedy to vulnerability assessment

**Table 1:** The detail summary of the supply chain risk management

Title	Findings
Antecedent role of risk management culture to drive firm performance and competitive advantage with the mediation effect of agility in resilient supply chains	The finding shows that there is a relationship between the SCRMC and the competitive advantage, and there is a relationship between SCRMC the organizational business performance while agility plays partial complementary mediating roles. Therefore, organizational agility has a great influence on competitive advantage and firm performance. It enables the firm to react to the changing environment and adapt themselves to it. This will lead to the production process to effectively react to the dynamism of the organization by falling back on the existing resources. The risk management, thus, provides guidance toward the suitable policy to deal with the unpredictable circumstances using an appropriate mitigation strategy. The use of mitigation strategies is required to minimize the susceptibility of the risk. The unwanted effects and perceptions of the consumers about the service and product is considered as a risk. The risk management is the process to understand and reduce the effects of the risk by focusing on minimizing the after-risk effects
Assessing the performance of supply chain risk management programs: a tentative approach	The supply-chain management risk is meant to identify the possible factors that could lead to the risk and try to implement a policy that would prevent the risk or in case of the risk, provides a better approach to minimize its adverse effects
Supply chain risk management: outlining an agenda for future research	Some of the examples of factors that affect the organizational performance include hurricane Harvey in Houston in 2017, Hurricane Sandy in New York in 2012, Fukushima Daiichi nuclear disaster in Japan in 2011, Indian Ocean tsunami in 2004 and fire at a Philips plant in New Mexico in 2000.
Performance outcomes of supply chain agility: When should you be agile? Developing a resilient supply chain through supplier flexibility and reliability assessment.	

## 5. The importance of the research

The significance of this study will be manifested on its completion when empirical pieces of evidence would be brought to bear against the study's theoretical postulates. One of the major significances of this study is that it will unravel the long-term strategic consequences of even minor disturbances in a company's supply chain, thereby proving clear evidence to company executives on the latent danger of not cultivating an organization-wide RMC. Context-wise, the researcher expects this study to be of interest to the generality of the UAE manufacturing sector stakeholders as he hopes the study will advance and showcase clear understanding of the relationship between the vulnerability aspects of ERM and SCP. Finally, it is hoped that practitioners will see the benefits inherent in aligning all the VMSs that positively could have an impact on the effectiveness profile of their supply chain network.

## 6. Contributions of the research

From this study, it was observed that organization performance as it relates to SCP and supply chain management risks are widely studied. ERM and SCP within manufacturing companies received less attention in the literature. Also, attention has not been paid to ERM and SCP with emphasis on their benefits on UAE. However, it is very crucial to the survival of the generality of the UAE manufacturing companies' stakeholders and the entire citizens in the focused area. Most importantly, salient factors useful to ERM and SCP for handling RMC and VMSs were not considered in the previous studies. Only a few studies explore vulnerability strategy, which does focus on UAE manufacturing companies.

## 7. Conclusion

The paper formulates and answered the research question in Section 1.1. This was achieved through a

survey approach that utilized databases search to select only relevant papers in the focused study. Four recognized databases were used as specified in section 3.1. The outcome of the study suggests that; most studies focused on supply chain enterprise risk management and culture; only a few discuss vulnerability issues pertaining to ERM with less emphasis on SCP. Most importantly, UAE manufacturing companies' culture is prone to risk management, and no study has addressed it with the aim of achieving efficient SCP as observed in this paper. In view of this, we concluded that this paper further identified that relationships between RMC and SCP based on UAE have not been investigated from the available literature. The future work will consider the development of a conceptual model that will utilize the finding of this study to establish possible relationships of the variables employed in Section 1 with UAE as a case study.

## Compliance with ethical standards

## Conflict of interest

The authors declare that they have no conflict of interest.

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