

SUPPLY CHAIN RISK MANAGEMENT PRACTICE IN MALAYSIAN
AUTOMOTIVE INDUSTRY

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To my beloved family, my husband and son
who still believe in me when I stopped believing in myself

ABSTRACT

Organizations are experiencing increasing supply chain risks especially due to new business trends such as globalization and offshoring. For that reason, supply chain risk management is required to manage those risks effectively. Although there is a voluminous academic research on descriptive and conceptual model of supply chain risk management, evidences which describe the implementation of supply chain risk management in industry are limited. Therefore, the purpose of this research is to explore the implementation of supply chain risk management among Malaysian small and medium automotive companies. This study also explores the enablers to supply chain risk management implementation and barriers that impede this practice. Case study method was employed at three companies which were selected through purposeful sampling. By using thematic analysis, the data was analyzed and interpreted. The research results indicated that all three companies were heading towards more formal supply chain risk management implementation. Although the companies managed the supply chain risks based on TS16949 standard and company formal procedures, the tools used in the supply chain risk management, risk communication, training and risk responsibility were yet to be completely formalized. Pressure from customers and top management emerged as the primary enablers to such implementation. This study also revealed that barriers rooted from companies internal such as the lack of knowledge impeded the case companies from advancing their supply chain risk management implementation. The findings of this study offer a description of supply chain risk management implementation for organizations.

ABSTRAK

Organisasi berhadapan dengan peningkatan risiko rantai bekalan terutamanya akibat tren baharu perniagaan seperti globalisasi dan penyumberan luar pesisir. Oleh kerana itu, pengurusan risiko rantai bekalan diperlukan untuk menguruskan risiko tersebut dengan berkesan. Walaupun terdapat banyak kajian akademik tentang model deskriptif dan konseptual pengurusan risiko rantai bekalan, bukti-bukti yang menggambarkan pelaksanaan pengurusan risiko rantai bekalan dalam industri adalah terhad. Maka, tujuan penyelidikan ini adalah untuk meneroka pelaksanaan pengurusan risiko rantai bekalan dalam kalangan syarikat automotif kecil dan sederhana Malaysia. Kajian ini juga meneroka pemboleh pelaksanaan pengurusan risiko rantai bekalan dan halangan yang mengekang amalan ini. Kaedah kajian kes dijalankan di tiga buah syarikat yang dipilih melalui persampelan bertujuan. Dengan menggunakan analisis tematik, data dianalisis dan diterjemahkan. Hasil kajian menunjukkan bahawa ketiga-tiga syarikat sedang menuju ke arah pelaksanaan pengurusan risiko rantai bekalan yang lebih formal. Walaupun syarikat tersebut menguruskan risiko rantai bekalan berdasarkan standard TS16949 dan prosedur formal syarikat, alat yang digunakan dalam pengurusan risiko rantai bekalan, komunikasi risiko, latihan dan tanggungjawab risiko belum lagi menjadi formal sepenuhnya. Tekanan dari pelanggan dan pengurusan atasan muncul sebagai pemboleh utama kepada pelaksanaan tersebut. Kajian ini juga mendedahkan bahawa halangan yang berpunca daripada dalaman syarikat seperti kekurangan pengetahuan telah mengekang syarikat kes daripada memajukan pelaksanaan pengurusan risiko rantai bekalan mereka. Dapatan kajian ini menawarkan deskripsi pelaksanaan pengurusan risiko rantai bekalan untuk organisasi.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

SMEs in Malaysia account for 99.2 per cent of 518,996 of total establishments in the three main economic sectors of manufacturing, services and agriculture which contributes 32 per cent of the country's GDP (Wong, 2012). The electric and electronic industry, in particular, contributed RM214.9 billion to gross industry output and RM 282.2 billion export value, which constitute more than half of the nation's total export (Oxford Business Group, 2009). Nevertheless, the nature of business competition has shifted towards competition between supply chains rather than competition between individual companies (Uygun & Schmidt, 2011; Wen *et al.*, 2007; Lambert *et al.*, 1998; Schuetz *et al.*, 1999; Lummus & Vokurka, 1999). With such potential, small and medium enterprises (SMEs) in Malaysia have to remain competitive by embracing best business practice such as the supply chain management.

Based on a review of large number of supply chain management definitions conceptualized by scholars and practitioners, Stock and Boyer (2009) proposed the definition of supply chain management as the following:

“The management of a network of relationships within a firm and between interdependent organizations and business units consisting of material suppliers,

purchasing, production facilities, logistics, marketing, and related systems that facilitate the forward and reverse flow of materials, services, finances and information from the original producer to final customer with the benefits of adding value, maximising profitability through efficiencies, and achieving customer satisfaction.”

(Stock & Boyer, 2009: 706)

Despite the importance of supply chain management, the concept remains vague to many which results in poor implementation (Basnet, Corner & Wisner, 2003; Huber & Sweeney, 2007; Zhang & Li, 2011). Companies find that the definition and scope of the practice are somewhat confusing and hence lead to strong skepticism to implement it. Research evidence also indicated that the actual practice seldom portrays the practice in theory (Fawcett & Magnan, 2002; Naslund & Williamson, 2010). As a result, the evolution of supply chain management practices such as lean and agile supply chain management, reduction of supply base as well as outsourcing have been paradoxically proven to create new risks in supply chains and increase the vulnerabilities (Tang, 2006; Paulsson, 2004; Harland *et al.*, 2003; Juttner, 2005; Norman & Jansson, 2004; Wagner & Bode, 2006; Craighead *et al.*, 2007; Stecke & Kumar, 2009; Ancarani & Di Maro, 2012).

Returning back to the SMEs' context, the SMEs themselves have been identified to increase the risks in supply chain (Henschel, 2008; Finch, 2004). First, Okatch *et al.* (2011) explained that the SMEs were unable to produce high quality products on schedule and had lack of technological capability to compete in industry. Second, SMEs have the lack of formal risk analysis (Vaaland & Heide, 2007) and inadequate risk assessment training compared to large companies (Finch, 2004). As a result, the poor risk management of SMEs leads to business failure (Barnes *et al.*, 1998). To overcome these issues, coupling the supply chain management with risk management is required (Zsidisin & Ritchie, 2009; Kern *et al.*, 2012) so that any possibility of risks rising from the supply chain management activities or SMEs could be alleviated.

In order to understand the concept of supply chain risk management (SCRM), Norrman and Lindroth (2002, p.7) defined SCRM as “to collaboratively with partners in a supply chain or on your own, apply risk management process tools to deal with risks and uncertainties caused by, or impacting on, logistics related activities or resources in the supply chain”. To extract, the essence of SCRM discussion are (1) the risk management tools, and (2) the risks in supply chain. Regarding the former, common risk management process or methodology are risk identification, risk analysis, risk mitigation and risk monitoring (Blome & Schoenherr, 2011; Tang *et al.*, 2007; van Wyk *et al.*, 2008). Several tools oftenly used for risk identification are brainstorming, case-and-effect analyses, historical data, fault trees, likelihood impact matrices, process mapping and scenario planning (Waters, 2007). However, in order to identify supply chain risks, Norrman and Jansson (2004) strongly suggested to use fault tree analyses and the event tree analyses. The tools for risk assessment range from “softer” tool such as simple rating to more advanced tools for example simulation technique, real options, advanced statistical techniques and game theory (Barth, 2011). Meanwhile, the latter as previously discussed is a result of the current advancements of supply chain management practice such as outsourcing and reduction of supplier base as well as partnering with SMEs.

Unfortunately however, the existing literature has not much described the extent of SCRM implementation (Tang & Musa, 2011; Pfohl *et al.*, 2010; Thun & Hoenig, 2011). Due to that, Juttner (2005) stressed that the current understanding about SCRM implementation remained patchy. Responding to this matter, the current research attempts to answer the broad question of “how firms implemented SCRM?”. Eventually, the question of “what enables firms to implement this practice the way they do?” and “what barriers are challenging the implementation of SCRM?” would be addressed. At present, the literature shows that SCRM has been implemented either formally or informally. Formal practice is characterized by standardized procedure established by the management to achieve a degree of uniformity (Smith *et al.*, 2009) while informal practice is indicated by managers’ unawareness of risk management procedure (Smith *et al.*, 2009) and the absence of risk management vocabularies and jargons (Corvellec, 2009). Prior studies revealed

that most firms had implemented informal risk management (Tummala *et al.*, 1997; Burchett *et al.*, 1999; Lee & Ali, 2012).

The informal risk management which is reflected by the lack of cohesion with the standardized risk management procedure is possibly the result of barriers and challenges hindering the formal practice. Past researchers indicated that the lack of knowledge to use risk management tools and techniques emerged as the most frequent and persistent barrier to implement risk management (Ward *et al.*, 1991; Akintoye & MacLeod, 1997; Tummala *et al.*, 1997; Uher & Toakley, 1999; Burchett *et al.*, 1999; Raz *et al.*, 2002; Lyons *et al.*, 2004; Norazian *et al.*, 2008; Azhar *et al.*, 2008; MacNamee & Perera, 2010; Lombardi *et al.*, 2011). Apart from that, the management and employees negative attitude towards risk management practice (Ward *et al.*, 1991; Tummala *et al.*, 1997; Burchett *et al.*, 1999; Lyons *et al.*, 2004; Roa & Marie, 2007; Norazian *et al.*, 2008; Azhar *et al.*, 2008; Kallenberg, 2009), lack of industry model and guideline (Tummala *et al.*, 1997; Lyons *et al.*, 2004; Norazian *et al.*, 2008; MacNamee & Perera, 2010), cost (Carter, 1972; Tummala *et al.*, 1997; Lyons *et al.*, 2004; Roa & Marie, 2007) and time factor (Carter, 1972; Akintoye & MacLeod, 1997; Tummala *et al.*, 1997; Lyons *et al.*, 2004; Roa & Marie, 2007; Low *et al.*, 2009) are consistently debated as the primary challenges in practicing formal risk management. Nevertheless, the tendency of prior researchers to study each of these barriers as separate issues demands an extended investigation in order to determine the real problem, instead of the symptoms.

On the contrary, common enablers to implement risk management results in a standardized procedure which can be called formal practice (Smith *et al.*, 2009). This procedure or format is found in the common practices which are obligated by companies. Accordingly, Manab *et al.* (2010) and Abdullah *et al.* (2012) strongly claimed that rules and regulations were among the drivers to risk management adoption. The literature further indicates that the corporate governance practice emerged as the most influential driver in risk management adoption (Collier, 2005; Manab *et al.*, 2010). However, the effects of corporate governance may be non-existent in SMEs because these companies are usually owned and managed by the similar individual. Since compulsory conduct of risk management is released from SMEs, there is still a slim chance that these companies adopt a formal risk

management due to threats of sanctions or incentives offered by the focal company in the supply chain (Beatrice, 2003). Further evidence pointed that customers' influence is particularly important towards the implementation of SCRM (Bongaerts *et al.*, 2006) and that automotive suppliers have been responding towards their resource providers, the automakers who demanded and selected suppliers that implement SCRM (Norlaile Salleh Hudin & Abu Bakar Abdul Hamid, 2015). Moreover, SMEs could simply adopt SCRM voluntarily because they have higher risk perceptions compared to larger companies (Ellegaard, 2008). As a result, SMEs could implement formal risk management in respond to the acknowledgement of potential benefits, emergence of new business trends or exposure to risk events.

In the past few years, the awareness about SCRM has been increasing among practitioners although the concept is still at its infancy (Thun & Hoenig, 2011; Juttner *et al.*, 2003; Juttner, 2005; Vanany *et al.*, 2009). Thun and Hoenig (2011) further stressed that many companies had recognized the need to deal with risk issues in supply chain but surprisingly no further action has been taken to implement SCRM formally. This phenomenon raised intriguing questions of the barriers that impede these companies from implementing SCRM and inversely, how some other companies have been motivated to perform this practice. Therefore, the objectives of this study are threefold; to explore the implementation of supply chain risk, to explore the enablers that influence how a company implement SCRM, and to explore the barriers that challenged the implementation of SCRM.

1.2 Background

The manufacturing sector in Malaysia had been given emphasized in the Second Industrial Master Plan which was carried out from 1996 until 2005. Some of the industrial clusters under the manufacturing are automotive, petrochemical, textile and apparel and furniture. In regards to the automotive industry, Malaysia has proudly established two car manufacturers which are PROTON (Perusahaan Otomobil Nasional) and Perodua (Perusahaan Otomobil Kedua Sendirian Berhad) in 1983 and 1994 respectively. To ensure these companies' survivability, the

government of Malaysia has geared up the automotive industry with two major development policies.

The first policy which was implemented between 1963 until 1982 aimed at encouraging local assembly and content (Hasli Hassan & Jomo, 2007). Instead of importing completely built-up units (CBU) from Europe, Malaysia strived to assemble the imported completely knocked-down (CKD) kits to open up employment opportunity and substitute imports of automobiles (Siti Iswalah Arshad, 2002). Paradoxically, this policy created the 'infant industry syndrome' in which the local suppliers produced high priced but poor quality parts due to uneconomical scale (Rokiah Alavi & Syezlin Hassan, 2001; Tambunan, 2009). The World Trade Organization (WTO) also found that Malaysia has violated the Trade Related Investment Measures (TRIMs) Agreement and consequently, Malaysia was given until 1st January 2004 to phase out the programme (Rajah Rasiah, 2007).

The SMEs of Malaysian automotive industry confronted the most severe effects from this. Unaware of this abolishment, the SMEs encountered the risks of business failure and affected sales (Rokiah Alavi & Syezlin Hassan, 2001). As widely known, SMEs account for 80 to 90 per cent of economic activity and 50 to 60 per cent of employment opportunities in many developing countries (United Nations, 2005). Malaysia is not an exception whereby SMEs in Malaysia remain the most important driver to support the growth of Malaysian economics. Thus, the materialization of that policy risks does not only affect individual SMEs, but Malaysia economies as a whole.

In response to the abovementioned problems, the second phase of Malaysian automotive industry development was launched from 1983 until present. It is the phase of 'national car' project (Hasli Hassan & Jomo, 2007) in which PROTON and Perodua were established. In 1988, the Vendor Development Programme was launched to stimulate the local automotive industry. According to Rokiah Alavi and Syezlin Hassan (2001) this programme helps to nurture the SMEs by linking these enterprises with foreign and local automotive manufacturers. Through these relationships, the SMEs enjoy the benefits of financial and technological assistance as well as the credibility from anchor companies to produce automotive parts for

them. The Annual Report of PROTON revealed that vendor development emerged among the seven areas of focus (PROTON, 2006). PROTON implemented tiering, rationalisation and consolidation exercise to improve its vendor base (PROTON, 2008) while working closely with vendors to enhance the quality and efficiencies.

The aim of the Third Industrial Master Plan which is to promote the local SMEs in the global supply chains has implied a strong urge to study SMEs especially in automotive industry. This is further supported by the increase of the number of SMEs in the electrical and electronics industry, as well as precision plastics components, stamping, tooling and machining activities, which evolved into global suppliers to multi-national companies (Third Industrial Master Plan, 2006). However, SMEs need to embrace the best business practice to gain the confidence of players in the global supply chains while ensuring that competitiveness and survivability of the SMEs are not questionable.

In the supply chain context, what seems to be more important is Malaysian automotive part manufacturers depend heavily on foreign supplies for raw materials (Sieh & Yiew, 1997). Although local content policy has been put into force, in reality the raw materials been used to manufacture parts are mostly imported (Rosli, 2006; Hassan Naziri Khalid *et al.*, 2006). The collaboration between local automotive part manufacturers and foreign partners is apparently at surface level because the foreign partners seem to fiercely guard their core technologies from changing hands.

As a result, only generic components, non-mechanical parts and low-tech parts can be produced by the local producers while engines, gearboxes and transmissions remain exclusively produced by the foreign partners (Abbott, 2003). In the latest evidence, Tham (2015) supported that Malaysian automotive industry remains a net importer of auto components and parts. This dependency is further extended to purchasing and R&D activities when the foreign partners act as a gate which control the selection of suppliers, purchase of moulds for production activity and monetary flow between the local producers and foreign customers.

Tainted by this over dependency, the future of Malaysian automotive industry seems to be disturbing as it is substantially prone to supply chain risk. Importing raw materials forced the local automotive part manufacturers to deal with high possibility of raw material shortages because the delivery surely can be easily affected by the mode of transportation, climate issue, political situation and regulation imposed by the suppliers' countries, instable currency exchange and natural disasters. Considering the potential contribution of SMEs to Malaysian economy, thus it is paramount to study SMEs. Furthermore, the high representation of small and medium enterprise in the total enterprise of a nation opens up an opportunity to obtain broader perspectives of the SCRM implementation.

1.3 Problem Statement

Malaysian automotive companies have been stretching their supply chain to reach global scale because the current local market is not entirely developed to cater the demands for different types of parts. Obviously, several parts and components have yet been produced locally due to the lack of economies of scale. For example, Wan Hasrulnizam Wan Mahmood *et al.* (2009) reported that a Malaysian automotive company imported raw material from overseas due to the unique specification required for assembly process. In addition, Rashid Abdullah *et al.* (2008) and Tham (2004) provided further support when these studies discovered another automotive company which continuously imported parts and components from foreign suppliers, especially those related to engines, transmissions and fasteners because these parts and components were patented by the parent firm in Japan. Although the average local components have increased, in reality a major automotive company in Malaysia purchased raw materials from Malaysian based Japanese subsidiaries which imported parts from Japan (Tham, 2004; Jomo, 1994). A survey reported that 81.8 per cent of the Malaysian small and medium automotive parts manufacturers imported their raw materials (Hassan Naziri Khalid *et al.*, 2006). This survey further stated that 56.3 per cent of those importers purchased not more than 50 per cent of their raw materials from foreign suppliers while 25.5 per cent of them imported more than 50 per cent (Hassan Naziri Khalid *et al.*, 2006).

More recent study further confirmed that RM 4.4867 billion car parts and components were imported by automotive suppliers in Malaysia compared to only RM 2.2 billion of exports (Lim, 2012). Clearly, these evidences show that Malaysian automotive suppliers have heavy dependence on foreign suppliers through global sourcing and offshoring strategies.

In a bigger picture, global sourcing and offshoring strategies obviously are common practices among Malaysian automotive companies. By implementing global sourcing and offshoring, it indicates that automotive firms in Malaysia have positively responded to supply chain management which is “the management of upstream and downstream relationships with suppliers and customers in order to deliver superior customer value at less cost to the supply chain as a whole” (Christopher, 2011, p. 3). Nevertheless, the risks inherent in such strategies are easily overlooked and neglected due to their tempting return when in fact, other studies of more matured supply chain than the Malaysian’s have strongly proven that globalization strategy created additional dependencies. These additional dependencies raise complexity of supply networks and caused higher risk exposure (Harland *et al.*, 2003; Juttner *et al.*, 2003). The heavy reliance on foreign automotive suppliers has resulted in numbers of concerning situations for Malaysian automotive industry that urgently call for a solution known as SCRM. This is because, SCRM can help to identify potential sources of risks and implement appropriate strategies through a coordinated approach among supply chain risk members to reduce supply chain vulnerability (Juttner *et al.*, 2003).

The first concerning situation which emerges due to strong dependency on foreign suppliers is related to frequent late deliveries. Considering cost constraint, most imported parts and components are delivered to Malaysia through ocean liner compared to air freight. Currently, Malaysia sea ports in Klang, Pasir Gudang and Tanjung Pelepas serve as the main gate to incoming parts for automotive companies which mostly located in industrial park at Port Klang, Shah Alam and Pasir Gudang. However, Williams (2014) reported that logistics system in Malaysia is weak, inefficient and fragmented, thus results in port congestion. Another study found that the clearance procedures at Malaysian ports are also inefficient (Mohd Hafizzuddin Md Damiri, 2008). Due to that problem, Malaysian automotive companies which

depend largely on foreign suppliers are frequently facing late deliveries (Williams, 2014; Wan Hasrulnizam Wan Mahmood *et al.*, 2009).

Second, Resilinc Corporation (2013) reported that many automotive companies from different countries have suppliers located in hotspots for high-tech industrial areas known for susceptibility to natural disasters such as Ayutthaya province in Thailand and Tōhoku region in Japan. Without exception, many Malaysian automotive companies have foreign suppliers located in those areas. Earlier research by Sieh and Yew (1997) consistently reported that Japan based automotive parts and components manufacturers in Malaysia purchased more than 75 per cent of their materials from Japan. Abbott (2003) and Bernama (2014) further strengthen Sieh and Yew's (1997) finding when they reported that the biggest source of automotive parts and component import for Malaysia is Japan. As any other automotive companies in other parts of the world, Malaysian automotive companies therefore, are prone to the risks caused by natural disasters.

This situation is proven in 2011 when Japan was hit by major earthquake and tsunami which severely affected many suppliers that build parts and components for vehicles (Canis, 2011). The second- and third-tier suppliers of a Malaysian automotive company had to overcome depressing part shortages, especially on electronics, brakes, specialized paint and electronic transmissions (Jeffreys, 2011). Similarly, another Malaysian automotive company was also reported to be disrupted as this company used around 80 per cent of Japan-sourced content (Seow, 2011). With respect to PROTON, although the suppliers which are mostly SMEs did not operate in Japan, some of these suppliers sourced parts from Japan (Autoworld, 2011). Also, the major flood occurred in Thailand in 2011 adversely affected 10 Malaysian automotive companies located in that area (Jamaluddin bin Muhammad, 2011). For PROTON and Perodua, the flood caused their sales to drop 28 per cent and 11 per cent respectively for January 2012 (The Edge Markets, 2012).

Poor quality and increased prices of imported parts and components further exposed Malaysian automotive companies to higher risk. Despite strong support from the government to develop local automotive component industry, local suppliers are still relying on foreign technology which is far more advanced.

Moreover, producing parts and components locally is generally considered as uneconomical at the current pace of the local automotive parts and component industry. However, by importing parts and components from overseas, the impacts of any risks inherent in foreign partners are strongly believed to be also burdened by local automotive industry. For example, ASEAN aftermarket including Malaysia is saturated with imported parts from China (Dey, 2002). In 2012, Malaysia imports of car components from China reached 38.2 per cent compared to only 22.4 per cent from Japan. Ironically, Navarro (2008) admitted that in many cases, China automotive parts have poor quality that often lead to dangerous failure. As an instance, Aston Martin was forced to recall their sport cars when counterfeit plastic materials supplied from China was found in the accelerator pedal (Pomfret *et al.*, 2014). Considering the depreciation of Malaysian ringgit which led to higher cost of imported intermediate parts for automotive component sector (Oxford Business Group, 2015; Abbott, 2003) it is afraid that more parts and components will be sourced from China in future.

Despite those alarming evidences showing the vulnerabilities of Malaysian automotive supply chain, study concerning the implementation of SCRM in companies are rare in the current literature. A thorough review of the SCRM studies between 1995 to 2009 conducted by Tang and Musa (2011) reported that prior studies have mainly focusing on developing descriptive and conceptual model instead of exploring the industrial practices (Tang & Musa, 2011). The evidence about the process of SCRM implementation has been completely lacking (Pfohl *et al.*, 2010). In further support, majority of automotive SCRM implementation studies have been found to be conducted in the Western countries for example Blos (2009), Thun and Hoenig (2011), Thun *et al.*(2011) and Lavastre *et al.* (2012). Without detail evidence explaining how risk management is implemented at industrial settings, surprisingly there is a proliferation in the number of studies which focus on investigating the effects of managing supply chain risks toward supply chain and organizational performance. For example, Thun and Hoenig (2011), Norman and Jansson, 2004) and Fan *et al.* (2011) did not discuss in detail how companies in these studies performed risk management in their supply chain although all concluded that this practice caused positive effects on supply chain and organizational performance. In essence, this study does not intend to criticize the

effectiveness of the risk management being implemented. Instead, what is missing is a detail description on how successful SCRM is being carried out. Since supply chain is highly prone to disturbance and disruption, detail description of SCRM implementation can help other automotive companies deal with such risks in a better manner. Due to that reason, in-depth case studies using qualitative interview methods seem to be a better research design to reveal how automotive companies implement a successful SCRM.

In the scope of risk management implementation studies, past researches have shown great tendency to categorize risk management into formal and informal approaches. Nevertheless, many prior studies such as Norman and Jansson (2004), Tummala *et al.* (1997) and MacNamee and Perera (2010) have ignored to define the terms formal and informal risk management. Obviously, their claims are not based on well developed definitions proposed by Alderman and Lewis (1995) and Smith *et al.* (2009), *inter alia*. Consequently, this situation caused confusion among practitioners in setting their risk management implementation plan and envisaging the final outcomes.

What is so depressing about such vague definition is that it misled many automotive suppliers to think that they have implemented sound risk management system. In 1999, for example, General Motors, along with Ford Motors and Daimler-Crysler developed a standardized risk management system specifically for automotive companies which now has been diffused world wide. Surprisingly, many of the automotive suppliers of this Detroit 3 (General Motors, Ford Motors and Daimler-Crysler) such as Collin and Aikman, Delphi, Saab and Dana failed (Rosenberg, 2012; Cooney, 2008). It therefore raised one critical question: what is a good chain risk management? This major question leads us to think how surviving companies implement their SCRM? A formal risk management or informal one? To answer these questions, an interpretivists' approach should be taken compared to positivists' approach because the interpretivists' approach results in detail account of the context which describes multiple reality stemming from multiple perspectives of informants.

In addition, strict dichotomy of formal and informal approaches are usually applied in prior risk management implementation studies. Nevertheless, by taking risk maturity model (Hillson, 1997) and the diffusion of innovation theory (Rogers, 2003) into account, this study strongly argues that such typology oversimplifies the extent of risk management implementation. In the event where risk management practitioners perceived that they are pursuing formal risk management approach for example by complying with risk management standard, the oversimplification of risk management approach can lead them to think that they have formalized all constructs of their risk management practice including risk communication, training and responsibilities, among others when the truth is, several constructs actually require further attention to become formal practice.

The central concern about the lack of practitioners' understanding of formal and informal risk management approach is that practitioners may not realize that informal risk management has been highly criticized for its inadequateness to entirely understand the risks for effective mitigation (Nelson *et al.*, 2008), producing inconsistent results (Carr & Tah, 2001; Muhlbauer, 2004) and more severe implications of mistakes (Muhlbauer, 2004). Although a recent set of studies including Lalond and Boiral (2012), Boholm *et al.* (2012) and Corvellec (2009) strongly defended informal risk management, this study argues that the evidences provided by those studies could also be viewed as rare cases since the results were drawn from only small number of government linked organizations with extreme dominant power over other organizations. In general situation, typical SMEs neither have such strong financial and legislative support from government nor supreme power to control other parties in their supply chain.

Pertaining to the studies which have proven the relationship between SCRM implementation and increased supply chain performance (e.g. Thun & Hoenig, 2011; Norman & Jansson, 2004; Fan *et al.*, 2011), limited insight is found as to what enabled those companies to implement SCRM at the first place. Instead, these enablers are explored in separate studies such as Manab *et al.* (2010) and Abdullah *et al.* (2012), thus how these enablers influence the implementation of SCRM remain unexplained whilst in other branches of risk management discipline, this missing link has been strongly proven. For instance, organization that had failed risk

management was found to implement this practice for compliance with regulation (Collier & Agyei-Ampomah, 2008), reaping the reward for adopting good business practice and as an internal defense purposes (Ericson, 2006; Power, 2004). Based on these studies, reasonably, there is a strong link between companies' enablers and the effectiveness of SCRM. Therefore, studying the enablers that driven Malaysian automotive companies to perform SCRM is strongly needed in order to understand the effects that these enablers have on SCRM implementation. In addition, the result of investigating the link between the enablers and implementation of SCRM can help potential adopters to catch a glimpse of the possible outcome based on what have enabled them to manage supply chain risks.

Nevertheless, it is absolutely inappropriate to simply assume that any implementation of SCRM will fail if companies are driven by compliance with regulation, reward for adopting good business practice and internal defense purposes when there are tonnes of other factors that should be taken into consideration. Recognizing this issue and through extensive review of past studies, this study found that companies are constrained by certain barriers such as the lack of knowledge (Yaraghi & Langhe, 2011; Blos *et al.* 2009; Kleffner *et al.*, 2003), negative attitude (Norazian *et al.*, 2008; Azhar *et al.*, 2008; Kallenberg, 2009) and high implementation cost (Lombardi *et al.*, 2011; Odzaky *et al.*, 2009) which shaped their SCRM practice. Nonetheless, looking deeper into earlier studies, this study doubts that these barriers are interrelated and most of them are suspected to be the symptoms rather than the actual problem. This is because, negative attitude toward SCRM and perceived high implementation cost, for example, could be the results of the lack of knowledge. Earlier, Kleffner *et al.* (2003) verified that firms were uncertain of how managing risks can create values whereas Choudry and Iqbal (2013) found that people had unclear idea of the aim and purpose of implementing risk management system. Responding to this suspicion, case studies which enable in-depth investigation seems to be an appropriate means to clarify this issue.

Another gap in the literature is the lack of findings about risk management implementation among SMEs. The research trend reveals that studies about large firms are more common compared to SMEs (Vanany *et al.*, 2009). Freimut *et al.* (2001), van Wyk and Bowen (2008) and Corvellec (2009), for example, had

exclusively focus on large companies while Shen (1997), Akintoye and MacLeod (1997), Uher and Toakley (1999), Baker *et al.* (1999), Wood and Ellis (2003), Elkington and Smallman (2002), Lyons *et al.* (2004), Tang *et al.* (2007), Azhar *et al.* (2008), Kallenberg (2009), Boholm (2010) and MacNamee and Perera (2010) either showed lesser emphasizes on the size of firms or had a mixture of firm sizes in their studies. Studies of automotive SCRM such as Blos *et al.* (2009) and Thun and Hoenig (2011) also investigated medium and large companies. At the current pace of Malaysian automotive business, investigating SMEs context is extremely important because earlier researches confirmed that having these companies in a supply chain increases overall supply chain risks (Henschel, 2008; Finch, 2004). Worse, when one firm defaults, the other firms in the same supply chain have a higher probability of defaulting (Wagner *et al.*, 2009).

In a nutshell, several factors which are often attributed to SMEs caused the companies in this economic sector to be more susceptible to failure. First, these companies have limited capital and assets (Abor & Biekpe, 2007; Ellegaard, 2008; Smit & Watkins, 2012). Second, they have high employee turnover (Williamson, 2000; Beaver, 2002; Raghavan, 2005; Watt, 2007) and third, they have inadequate management skill and training (Smit & Watkins, 2012). Due to these shortfalls, SMEs are most exposed to the harmful effects of risks (Verbano & Venturini, 2013). These problems become a great concern to local automotive industry because half of Malaysian suppliers are suppliers to PROTON, with 62.7 per cent of them being SMEs (Norizah Mohamad, 2008; MITI, 2004).

In different areas of risk management such as project risk management, financial management and risk management in public sectors, a number of studies used purely qualitative case study approach (e.g. Wood & Ellis, 2003; Corvellec, 2009; Kallenberg, 2009). Compared to many other studies which also examined the implementation of risk management using quantitative approach such as Choudry and Iqbal (2013), Tang *et al.* (2007), Norazian *et al.* (2008), Tummala *et al.* (1997), Akintoye and McLeod (1997), the studies that have taken qualitative approach shown to reveal more detail information and unexpected findings which help to structure a new knowledge in the area. For example, the qualitative research conducted by Corvellec (2009) discovered provoking results that informal risk

management does not mean less beneficial than the formal one. Corvellec (2009) found that common formal methodology or process of risk management do not need to be explicit but can be embedded through managerial tactics. From this example, it shows that qualitative case study approach is utterly beneficial in discovering a different set of truth than commonly agreed by the positivists through their quantitative approach. For that reason, this study adopted the descriptive case study approach.

In addition, the value of the present literature should be further enhanced by accompanying the results with theoretical explanations. Although institutional and contingency theory dominates the current studies of risk management implementation as in Zsidisin *et al.* (2005), Collier *et al.* (2007), Woods (2009), Sarens and Christopher (2010) and Collier and Woods (2011), these theories are not utterly comprehensive to explain the phenomenon of SCRM implementation in Malaysian automotive industry. For example, the institutional and contingency theory have ignored the influence of organizational formalization and organizational innovation process offered by the diffusion of innovation. Without considering those aspects, the understanding of SCRM is limited, hence it is difficult to determine the areas that current practitioners should improve in order to manage their supply chain risks successfully. In addition, the diffusion of innovation theory uses multiple angles to explain the implementation of an innovation compared to the institutional and contingency theory which look at the situation through less broad perspective. In essence, the diffusion of innovation theory provides more plausible explanation by taking into account more interrelating factors rather than relying on explanation offered by the institutional and contingency theory which at times seems to be too parsimonious that it is insufficient to capture the dynamic in human actions. However, this study does not attempt to degrade the institutional and contingency theory, but introducing the diffusion of innovation theory to support the pluralism approach may help to bridge the lack in the current theoretical perspective.

1.4 Research Purpose

The purpose of this case study was to explore the implementation of SCRM among SMEs in Malaysian automotive industries by using descriptive case study approach. At this stage of the research, the implementation of SCRM is defined as SCRM methodology, tools used in SCRM, techniques to minimize risks, risk communication, SCRM training and risk responsibility as proposed by Alderman and Lewis (1995), Henschel (2008), Blos *et al.* (2009), Lavastre *et al.* (2012) and Ceryno *et al.* (2013). The final outcomes are described according to the continuum of formal or informal approach of SCRM. The descriptive case study approach is used because it helps to gain better understanding of the present status (Thomas *et al.*, 2011; Yin, 2003) which in this study refers to the status of SCRM implementation. By understanding how companies implement SCRM successfully, SMEs can avoid business failure which is rooted from poor risk management (Collier & Agyei-Ampomah, 2008; Barnes *et al.*, 1998). Risk management could have been conceptually established but the implementation of these practices remains unclear to the practitioners. Furthermore, the results also helps to devise the current theories being used to explore risk management implementation in industrial settings. Previous researchers had been relying heavily on institutional and contingency theory which unable to relate enablers and barriers of risk management implementation with how companies implement their risk management.

1.5 Research Objectives

The broad aim of this research has led to the development of the research objectives listed below:

- (1) To understand the implementation of SCRM in Malaysian automotive industry.
- (2) To explore the enablers to the implementation of SCRM in Malaysian automotive industry.

- (3) To identify the barriers which have challenged the implementation of SCRM in Malaysian automotive industry.

1.6 Research Questions

Specifically, the current research attempts to address the research questions as follow:

- (1) How would the automotive companies describe their SCRM implementation?
- (2) What are the enablers to manage the supply chain risks among automotive companies? Which are the main enablers?
- (3) What, if any, have challenged them in managing the supply chain risks? Have these challenges been resolved or why do they still persist?

1.7 Scope of the Study

This study primarily focuses on SMEs in automotive industries. This decision is justified by the tendency of high technological industries, such as automotive and electronics, in adopting the SCRM practices ahead of other industries with lesser technological focus. Furthermore, based on the fact that automotive industry is the leader in SCRM implementation (Murphy, 2010), it is best to investigate their current state of implementation as there is high prevalence of other firms in different supporting sectors to imitate or replicate them. In other

words, their current practice would most probably mould SCRM implementation in the later stages of the adoption curve.

In methodology scope, this study was conducted in descriptive case study research approach. Unlike typical used of case study for developing grounded theory, descriptive case study begins with a descriptive theory. The purpose of descriptive case study is to pay significant consideration on contextualization of a phenomenon which results in “thick description” about the situation of interest. These thick descriptions or comprehensive current findings, are then used to compare with the pre-existing theories, thus helping to devise new perspective on this issue. Since this study only investigated small number of firms, the findings of this study was only generalized internally. Other firms excluded from the sample of this study could have diverse approaches in implementing SCRM. Despite this limitation, the current research provides a starting ground for future discoveries in this area especially in relation with the theoretical basis.

Measuring the performance of companies against the implementation of the SCRM implementation is also beyond the scope of this study. Besides the fact that the benefits of this practice are intangible (Francis & Skitmore, 2005), it is difficult to unequivocally attribute the success with risk management (Bannerman, 2008). The success of a company could have been a combination of many factors for instance, good management skills and adoption of new technology. Moreover, unlike Thun and Hoenig (2011) as well as Wagner and Neshat (2012) who studied the performances of firms in Germany, Malaysian firms are relatively new to this concept. Therefore, measuring the company performance without rigor understanding about how companies manage their supply chain risks would seem to be in vain. This argument is in line with Lalonde and Boiral (2012, p. 293) who in parallel stressed that “the effectiveness of ISO 13000 (a risk management standard) is ultimately determined by *how* it is used by organizations, rather than merely whether or not they adopt its management framework”.

1.8 Significance of the Study

The selection of this research topic is justified for several reasons. First, from industrial perspective, manufacturers have shown huge concerns for their suppliers' performances for example the quality and delivery time (Neise, 2009), capability (Monczka *et al.*, 2010) and on-going supplies (Cheverton & van der Velde, 2011). These concerns, consequently, lead to an abundance of supplier selection studies (Javanmardi *et al.*, 2011;). However, the supplier selection does not eliminate these problems entirely because it is just an initial process to manage supply risks. What seems to be more important is to maintain the consistency of suppliers' good performance and this could be done if the suppliers perform a SCRM continuously. Regrettably, there is lack of evidence that shows how supply chain risk are managed although SCRM has been proven to increase company performance (Wagner & Neshat, 2012; Thun & Hoenig, 2011). Additionally, there is extensive descriptive and conceptual models of SCRM (Tang & Musa, 2011) but little have been known about its implementation in industrial settings (Pfohl *et al.*, 2010; Thun & Hoenig, 2011). In other words, while abundance of research were conducted to develop conceptual models of SCRM and another set of research tested the effectiveness of managing supply chain risks, the evidence showing how those conceptual models being applied in real industrial settings and thus lead to the claimed effectiveness is apparently missing.

Second, evidences from studies in banking discipline reveal that although risk management have been performed rigorously based on standardized guidelines, many established banks such as Lehman Brothers and Merrill Lynch still failed during the economic crisis (Sorkin, 2008). Apparently, the issue here is not whether the principles behind risk management theory is flawed or not, but how the practitioners perceived it and implement it. According to Stulz (2008), the failure of risk management has been attributed to several conditions which are (1) heavy reliance on risk metrics, (2) ignoring a known risk because it is perceived as immaterial or difficult to be incorporated into risk models, and (3) extreme risk-taking due to perceived failure-free of risk management system. In addition, Corvellec (2009) and Lalonde and Boiral (2012) strongly argued that risk

management could also create a false safety net if the adopters did not entirely understand it. Past research also found that organization which have failed risk management was only concern with conforming to regulations (Collier & Agyei-Ampomah, 2008) and reaping the reward for adopting good business practice besides using it as an internal defense purposes (Ericson, 2006; Power, 2004). Therefore, it is exceedingly worthwhile to explore how practitioners perceived SCRM and understand the real enabler to SCRM implementation.

Since research on the effectiveness of SCRM is often relegated to the positivists approach, for example those conducted by Wagner and Neshat (2012) and Thun and Hoenig (2011), it assumed that there is only a single truth for a particular question and that this so called “truth” can be verified and validated most of the time with statistical approach. Therefore, data used by the positivists to measure firm or supply chain performance are mostly derived from return on investment (ROI), ROI growth, market share, market share growth, return on sales (ROS), and ROS growth (Sanchez & Perez, 2005), delivery timeliness, product quality, workforce productivity (Bigliardi & Bottani, 2014) and so on.

Nevertheless, the positivists’ researches failed to acknowledge the key aspects of the achievement process. This statement is bolstered by Pfohl *et al.* (2010) and Thun and Hoenig (2011) who found limited studies on SCRM implementation. In stark contrast, interpretivists’ researchers argued that in complex field such as management, the world cannot be completely determined, and that the environment and context where the business actors are functioning is more interesting than understanding the world at large. According to Laws and McLeod (2004), “the interest was in process rather than outcomes”. Sanders (1981, p.44) further elaborated that “case studies help us to understand processes of events, projects, programs and to discover context characteristics that will shed light on an issue or object”. In other words, from the interpretivists’ perspective, this research argues that understanding the details of successful SCRM implementation is far more important than identifying the effectiveness of this practice as commonly studied. For that reason, descriptive case study is performed in order to provide a detailed picture of a phenomenon. A descriptive case study does not attempt to build theoretical models (Thomas *et al.*, 2011). However it enables a study to devise a

conceptual model (Laws & McLeod, 2004) particularly about SCRM implementation in automotive industry.

At present, there is little evidence of SCRM implementation in developing countries particularly Malaysia. In addition, most previous researchers studied large companies and the perspective of SMEs have been neglected. Studies focusing on firms in automotive industries are also deemed to be scarce. Therefore, there is a wide open opportunity to study how firms implement SCRM based on Malaysian small and medium automotive companies' settings as to enrich the present literature. From the policy makers' point of views, the way that SCRM were being implemented could provide invaluable insights about the implications of the policies that the case companies had put into force. Although the evaluation of the effectiveness of such policies is beyond the scope of this research, this study could signal whether the exerted policies and regulations, for example the TS16949 standard, work as they are intended to. Besides, in-depth studies on any challenges that impede the implementation of the SCRM are suitable to be used by policy makers in innovating interventions to prevent those barriers from persisting.

In terms of the academia, the current study would leverage theoretical contribution to the existing literature. To author's knowledge, there is yet a research which is accompanied by theoretical evidence in the field of SCRM, although other risk management fields has little, if not much exploration on this issue. Therefore, this study is conducted to combine contingency, institutional theory and diffusion of innovation theory which previously have been studied separately and turned out to be less successful in producing comprehensive interpretations. By applying pluralism approach, this research extends theoretical contributions to SCRM by bringing in the new perspective in understanding the implementation aspect of this practice.

1.9 Definition of Terms

For the purpose of clarifications, the important terms used in this study were defined as the following.

- Supply chain management is “to collaboratively with partners in a supply chain or on your own, apply risk management process tools to deal with risks and uncertainties caused by, or impacting on, logistics related activities or resources in the supply chain” Norrman and Lindroth (2002, p.7).
- Supply chain risk management (SCRM) is described as a practice which helps a company identify, analyze, assess, handle and control the occurrence and impact of risks inherent in firms and supply chain.
- Risk management approaches is defined as a continuum of formal and informal SCRM implementation instead of a strict typology of the two approaches as shown in Figure .1.
- Enablers refers to the factors that stimulate, encourage or motivate a firm to pursue a purely formalize approach of SCRM implementation which includes corporate governance, compliance to rules and regulations, firm size, firm internal factors, acknowledgment of potential benefits of SCRM, emergence of new business trends, occurrence of risk events, vulnerabilities of SME and customers’ pressures.
- Barriers indicate the factors that limit a company from implementing a purely formalized approach of SCRM implementation which includes lack

of knowledge, negative attitude, difficulties, time consuming, lack of industry accepted model or guidelines, expensive and etc.

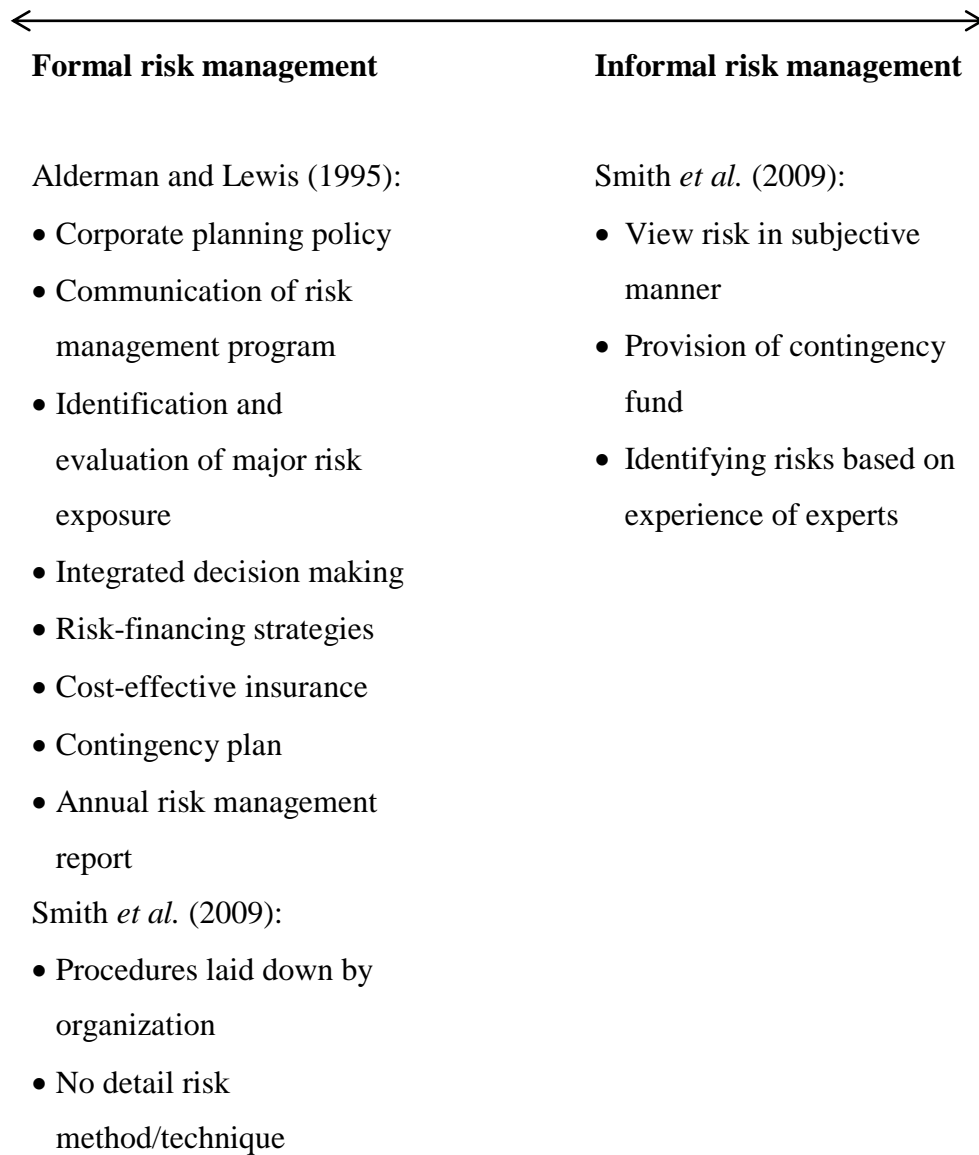


Figure 1.1 : Continuum of risk management approach

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