

Research Gaps in Supply Chain Risk Management: A Systematic Literature Review

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ABSTRACT: Despite growth of research publications, various meaning of knowledge and interpretations of supply chain risk management (SCRM) have evolved and considerable differences between its theory and practice, hence necessitating thorough review in SCRM by concentrating on the research gaps. The main objective of this study paper was to determine the main themes and gaps in literature in the field of SCRM. The study employed a systematic literature methodology on peer reviewed articles in SCRM on five major publishing sites, Emerald, Science Direct, Springer, Taylor & Francis and JSTOR from the period 2006 to 2020. Studies were mined and explored using the keyword “supply chain risk management” in the titles and abstracts with a view to consider all journal articles. A total of 135 articles in 48 journals from the period 2006–2020 were mined revealing SCRM gaps in research. A simple affinity diagram grouped research gaps into themes. Analysis was carried out by an excel database. Interpretivism research philosophy was used to guide the study. Exploratory design was further adopted in the study. Gaps were identified in literature in the field of SCRM and relevant themes revealed. The review was based on only 5 journal publishers. Excluded articles, but which focused on SCRM practices is also a limitation of the present systematic review. Further scholarly work can adopt findings of this study in contributing to the existing body of knowledge. The study diverts from the previous scholarly works by presenting research gaps systematically and thematically.

1.0 INTRODUCTION

The idea of SCRM has appeared to be among the key globally focused supply chain strategies over the last decade (Munir *et al.*, 2020). Today manufacturing companies’ supply chain operate under circumstances that are characterized by risks hence there is need for companies to investigate on the risks affecting the supply chain (Hamdi *et al.*, (2018). SCRM has faced numerous predicaments given the difference in financial structures of economies, as well as globalization and this has exposed supply chains to unprecedented risks (Gurtu and Johny, 2021). In order to mitigate these shorthauls, many organizations transform their traditional supply chain risk management styles (Gurtu and Johny, 2021) and come up with methods that drive improvements in an overall reduction of challenges, such as SCRM (Birkel & Hartmann, 2019). SCRM is an inter-organizational corrective responsibly geared towards managing risks in organizations by identifying, monitor and segmenting mitigation mechanisms against unexpected and unwanted happening which may heavily affect the operation ability of supply chain system and cause losses to organizations (Ho *et al.*, 2015). In the same vein, Aqlan and Lam (2016) alludes that SCRM is a logical and organized mechanism of recognizing and alleviating happenings that may accrue to an organization and cause losses

Carvalho Fagundes *et al.*, (2020) agree that SCRM has received widespread attention and application. Specifically, the concept of SCRM has witnessed is a tremendous increase in the scholalry literature in. Due to an increase in the publications of research studies, systematic review articles on SCRM have also been documented (Prakash *et al.*, 2017). Even though, diverse body of knowledge and interpretations of supply chain risk management have evolved (Munir *et al.*, 2020) and the considerable differences between SCRM theory and practice (Bak, 2018) have caused confusion in their implementation (Heckmann, *et al.*, 2015). Bak (2018) establish that there is need for a literature study reviewing extant literature in the field of SCRM focusing on research gaps, while similarly, Jüttner *et al.*, (2010) agrees there is a growing importance to substantiate the foremost research agenda in SCRM that have not yet been explored.

This systematic review study is different from preceding studies on SCRM which have been published. In detail, the preceding SCRM looked at study articles that concentrated on the following issues: the stages of SCRM and the main elements deviating from the previous SCRM literature, 2003-2013 (Ho *et al.*, 2015); the future requirements of SCRM based on publications from 2000-2010 (Ghadge *et al.*, 2012); relationships in SCRM from 2000 - June, 2014 and the directions for future research (Qazi, *et al.*, 2015); the content analysis approach on SCRM in the preceding studies published between 2003 and 2012 (Ceryno *et al.* 2013); Collaboration, risk and supply chain performance 1989 to 2012 (Kache and Seuring, 2014); classificatory framework by clustering

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existing enablers on SCRM published in literature between 2000 and 2015 (Kilubi and Haasis 2014); the status of improving supply chain risk management documented in literature between 2004-2014 (Prakash *et al.*, 2017); designs and developments of the literature from 2003 to 2014, that showed relationship between supply portfolio and SCRM (Hamdi *et al.*, 2017); supply chain mapping for agri-food SCRM based on studies published from 2004 until 2014. (Septiani *et al.*, 2016).

1.1 Statement of the Problem

Despite the increase in research publications, numerous interpretations of SCRM have arisen, and there are significant disparities between theory and practice, necessitating a full evaluation of SLR in the field of SCRM with an emphasis on research gaps. The above mentioned studies looked at the articles documented before 2013, with some studies looking at study articles documented up to 2015. These studies give future research agenda for supply chain risk management, focusing either on periods up to 2009 or on a unique sector of organizations, for instance, SMEs. Lastly, it is worth to note that no study stated above present their reviews in a systematic manner, the existing gaps in literature on SCRM, they do not put these gaps into analytical themes. It is against this background that the current study will fill this gap. The above stated studies ground the uniqueness of the current study.

1.2 Research Objective

The purpose of the study was to carry out a literature review with a view of determining the main themes and gaps in the existing literature in the field of supply chain risk management.

1.3 Research Question

What are the main themes and gaps in the literature with regard to SCRM?

1.4 Scope of the Study

The focus of the seminar paper was on a systematic literature review from 2006 to 2020 period in top journals and publishing houses in the field of logistics, supply chain, SCM, operations management and other business fields, collected principally from Emerald, Science Direct, Springer, JSTOR and Taylor & Francis. As a result, the study attempted to build an interface between gaps in literature on supply chain risk management. This seminar paper started from September 2021 to December 2021.

1.5 Significance of the Study

The paper provides useful insight on the interplay research gap in SCRM. The findings are important to policy makers and practitioners in business fields as it pens an important understanding of the mechanisms through which SCRM can be modeled. SCRM is a dynamic phenomenon and on the basis of the study findings, the regulatory authorities will be able to develop regulations which may govern the field. The knowledge derived from the study will be of significance to scholarly contribution because it will set pace for future studies on the area of SCRM. Scholars will be enriched from the study through identification of research gaps that could be filled in the further empirical studies.

2.0: MATERIALS AND METHODS

2.1 Research Philosophy & Design

In Saunders *et al.*, (2007), research philosophy is a blue print which explains the way data regarding a phenomenon will be gathered and analyzed. In saying, the writer mentions that there are three main types of philosophies: positivism, interpretivism and realism. The philosophy of positivism holds the thought that realities of the world as they appear can be looked at objectively. The researcher's main intention is being independent and not interfering with the ecosystem of realities as they are (Levin, 1988). The Interpretivism is commonly used in social sciences. According to Hatch and Cunliffe (2006), interpretivism is an anti-positivist. In the words of Blaikie (1993), interpretivism presumes that individuals and groups experiences and memories are the grounds through which the realities of phenomenon can be studied and meaning conclusions drawn. Remenyi *et al.* (1998) agree that there are many different interpretations of reality. From this ground, a clear difference must show how researchers view the realities of happenings Worth noting, interpretivism tries to understand the people's action on the universe, understanding the reality behind happenings grounds this philosophy (Remenyi *et al.*, 1998). Interpretivism research philosophy will be used to guide this study paper

In the lens of positivism, hypothesis or research questions modelled from grounding theories are tested by estimating the social realities. So, positivism is grounded in the natural sciences. Basing their establishment on earlier observed realities and their associations, the philosophy's main underpinning is making estimates about realities.

The thought of realism is grounded in the belief that reality exists but it is distinct from human consciousness. According to this philosophy, realism recognizes that people's view of orientation of knowledge in the world is affected by social structures that are external and different from them. This study considered the research philosophy based on the research question the study- tested. In this regard, the philosophy chosen for this study paper as Interpretivism.

Exploratory research design was chosen for the study. According to Robson (2002), exploratory research design enables the researcher to develop hypothesis and research questions about the phenomena under investigation. In the exploratory design, important data collection techniques are focused group discussions, case studies, literature reviews, interviews among others

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This seminar paper focused on literature review on a range of databases from the period between 2006 to 2020 period in top publishing sites and journals (Logistics, SCM, operations management, production and business fields) obtained from Emerald, Science Direct, Springer, JSTOR and Taylor & Francis. The search was based on databases containing the keyword “supply chain risk management” titles and abstract of the articles was slotted to this seminar paper and delivered an inclusive listing of supply chain risk management journal articles. Besides that, the documents were analyzed into a logical database with the help of the excel.

Steps adopted during literature review

Stage I – planning the review

This stage is made up of the preparation of the literature review (Tranfield, 2003). Top publishing sites adopted were Emerald, Taylor & Francis, Science Direct, Springer as well as JSTOR. Selection criteria was formulated and given as shown in table 1 below so as to confine the review to the articles relevant for the study. The databases containing the keyword “supply chain risk management” in their titles and/or abstract, were considered from 2006 to 2020.

Stage II: Literature review

The search phrases were structured and input in the journal databases. The documents obtained were critically read and screened to see if they conformed to requirements of the inclusion and exclusion criteria. Specifically, the researcher looked at the documents’ titles and The whole document was read if this did not reveal to be meaningful. After this thorough search, 135 articles published in 48 journals was retrieved

Table 1.1: Inclusive and exclusive criteria

| Inclusion criteria | Exclusion criteria |
|--|--|
| Articles published between 2006 and 2020 | Documents up to 2006 and after January 2021 |
| Top publishing journals Emerald, Science Direct, Springer, JSTOR and Taylor & Francis | Non-academic databases |
| Academic journals | Books, Thesis, masters research and gray literature |
| Articles studying supply chain risk management, as well as the strategies and techniques | Articles studying an individual supply chain management strategies |
| Articles containing gaps in literature | Articles with no research gaps |
| English language | Not written in English language |

The articles were analyzed on the basis of the title of the research, the year, type of journal, authors, nature of the paper, area of research, context and participating companies in the research.

An affinity diagram was adopted to organize data. (Tari and Sabater, 2004) explain that an affinity diagram is commonly applied so as to organize the gaps into some form of structure according to the natural affinity. The research gaps were therefore created (Tranfield, 2003).

Stage III: Reporting the results

An excel analysis was established as explained in stage II in order to represent the sample documents. The research gaps were identified thereafter clustering and ranking was further included.

3.0 RESULTS OF THE REVIEW

3.1 Database of the articles reviewed

The table 2.1 below present the articles by the publishing journals. Journals Science Direct and Emerald had the most published articles (50%). Again Science Direct and Taylor & Francis had the most sample articles (68 %). From the data below, many of the articles from each journal were published by few of the journals. 1 journal (9.1%) of Emerald published 17.78 % of the articles of this publisher, 1 journal, of JSTOR (16.7%) published 7.41% of articles of this publisher, 5 journals of Science Direct, (38.5%) published 85.5% of the articles of this publisher while 2 journals (22.2%) of Taylor & Francis published 64.9 % of the sample articles of this publisher.

Table 2: Journals reviewed

| Publisher – Journals | Number of articles | Percentage |
|--|--------------------|------------|
| Emerald | 24 | 17.78 |
| Journal of Advances in Management Research | 1 | 0.74 |
| Benchmarking: An International Journal | 3 | 2.22 |

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| | | |
|---|-----------|--------------|
| International Journal of Physical Distribution & Logistics Management | 3 | 2.22 |
| International Journal of Operations & Production Management | 2 | 1.48 |
| The International Journal of Logistics Management | 4 | 2.96 |
| World Journal of Entrepreneurship, Management and Sustainable Development | 1 | 0.74 |
| <i>Revista de Gestão</i> | 1 | 0.74 |
| <i>Business Process Management Journal.</i> | 2 | 1.48 |
| Industrial Management & Data Systems | 3 | 2.22 |
| Supply Chain Management: An International Journal | 3 | 2.22 |
| Strategic Direction | 1 | 0.74 |
| JSTOR | 10 | 7.41 |
| Journal of Coastal Research | 1 | 0.74 |
| Journal of the Operational Research Society | 2 | 1.48 |
| Risk Management | 4 | 2.96 |
| North Korean Review | 1 | 0.74 |
| The Journal of Developing Areas | 1 | 0.74 |
| Die Unternehmung | 1 | 0.74 |
| Science Direct | 55 | 40.74 |
| The Journal of Information Management | 1 | 0.74 |
| Purchasing and Supply Management Journal | 5 | 3.70 |
| International Journal of Production Economics | 26 | 19.26 |
| European Journal of Operational Research | 4 | 2.96 |
| Journal of Retailing and Consumer Services | 1 | 0.74 |
| Journal of Operations Management | 4 | 2.96 |
| Journal of Cleaner Production | 8 | 5.93 |
| Journal of Manufacturing Systems | 1 | 0.74 |
| International Journal of Critical Infrastructure Protection | 1 | 0.74 |
| Journal of Systems Engineering and Electronics | 1 | 0.74 |
| The Asian Journal of Shipping and Logistics | 1 | 0.74 |
| Supply Chain Management: An International Journal | 1 | 0.74 |
| Journal of Applied Research and Technology | 1 | 0.74 |
| Springer | 9 | 6.67 |
| Journal of the Operational Research Society | 1 | 0.74 |
| Operational Research | 1 | 0.74 |
| The Journal of Supercomputing | 1 | 0.74 |
| <i>Opsearch</i> | 1 | 0.74 |
| Journal of Intelligent Manufacturing | 1 | 0.74 |
| Journal of Optimization Theory and Applications | 1 | 0.74 |
| Logistics Research | 1 | 0.74 |
| Risk Management | 1 | 0.74 |
| Annals of Operations Research | 1 | 0.74 |

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| | | |
|--|-----------|-------|
| Taylor | 37 | 27.41 |
| Journal of Risk Research | 3 | 2.22 |
| <i>EDPACS</i> | 3 | 2.22 |
| Enterprise Information Systems | 1 | 0.74 |
| International Journal of Logistics Research and Applications | 8 | 5.93 |
| International Journal of Production Research | 16 | 11.85 |
| Journal of Risk Research | 2 | 1.48 |
| Journal of the Operational Research Society | 2 | 1.48 |
| Latin American Business Review | 1 | 0.74 |
| Production Planning & Control | 1 | 0.74 |
| final samples articles published | 135 | |
| journals | 48 | |

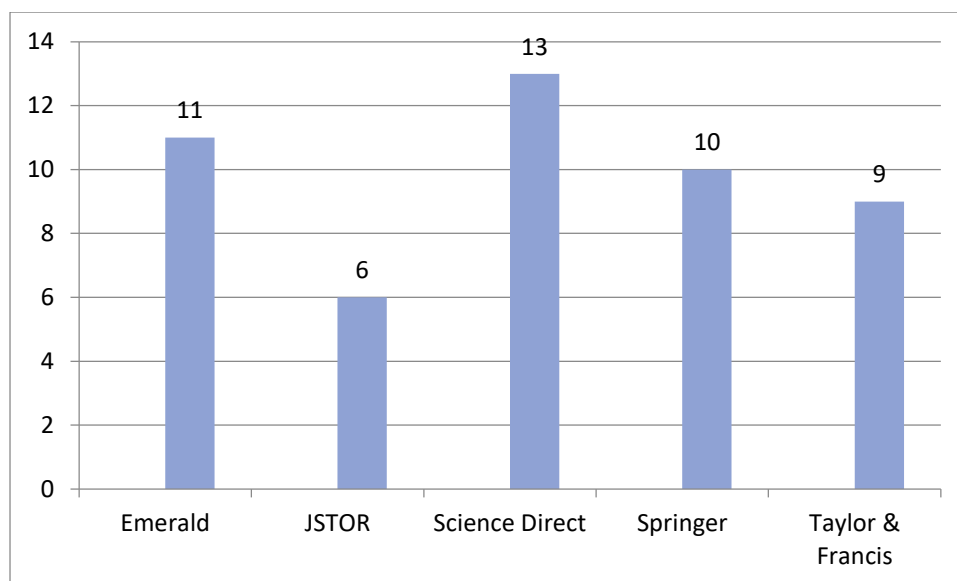


Figure 1. Journals per publisher

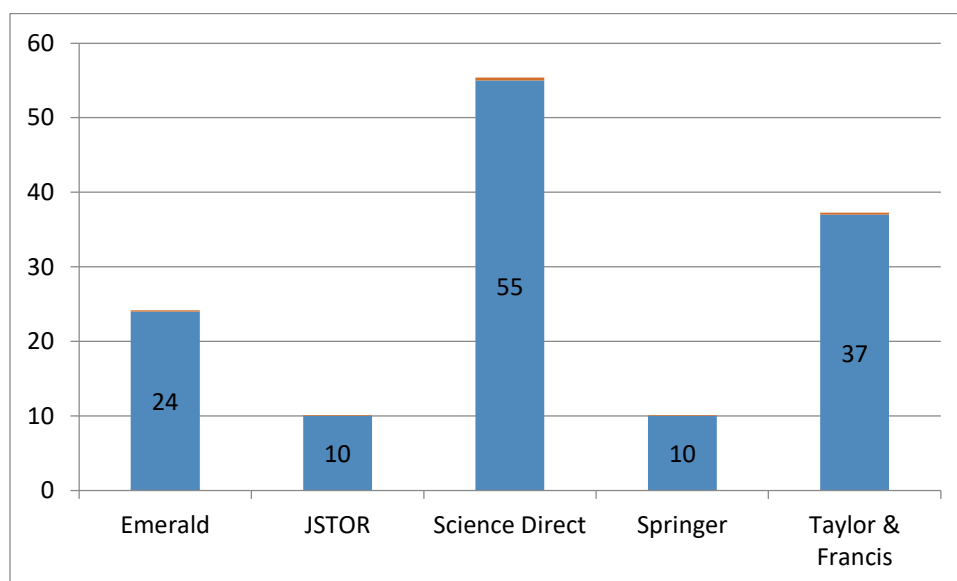


Figure 2. Articles from the journals

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From Figure 3, majority of the documents at 77.8% were published between 2012 and 2020. 17.8% of the articles were surveys, 35.6% were case studies, 16.3% were literature reviews and 30.4% were conceptual studies. 58.3 % of the articles were small research samples (0 -100 units), 20.8% were based on 101-200 units, 8.3% were based on 201-300 units & 401-500 units while 4.2% were based on 501 units. Further, 33.3% of the articles were studied only one case firm while the rest of the documents were multi-case studies in a number of firms. Lastly, majority of the literature reviewed documents (68.2%) studied less than 101 articles, as shown in the figure. The following contexts were further revealed electrical/electronics, plastics and rubber, automotive, furniture and fixtures, paper and paper products, machinery, chemicals, fabricated metal products, textiles and apparel, chemicals & Food-processing plants, equipment, machinery. The organizations participating in the articles were drawn in 32 countries. 14.8% were from USA, China had 11.9% and UK had 8.9%.

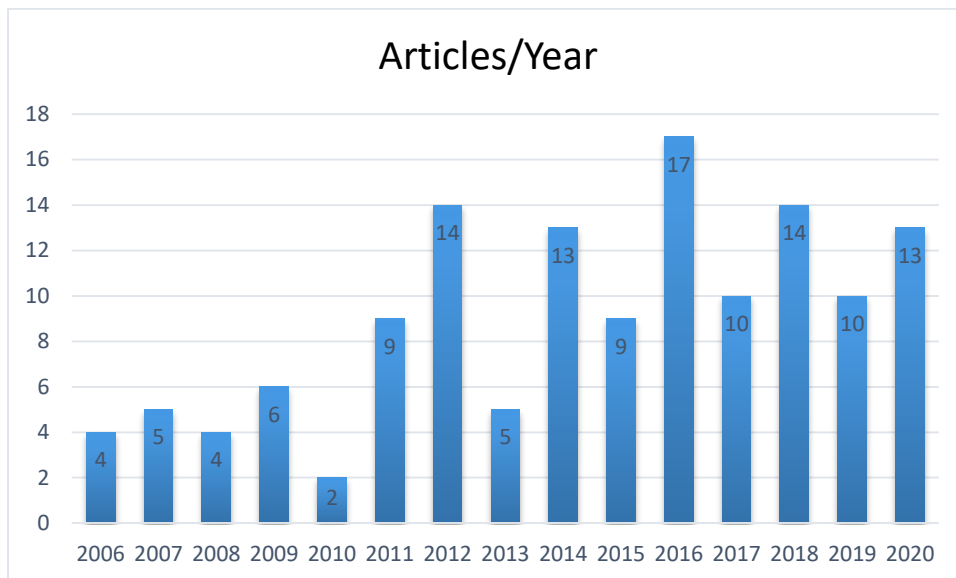


Figure 3. The year of publication

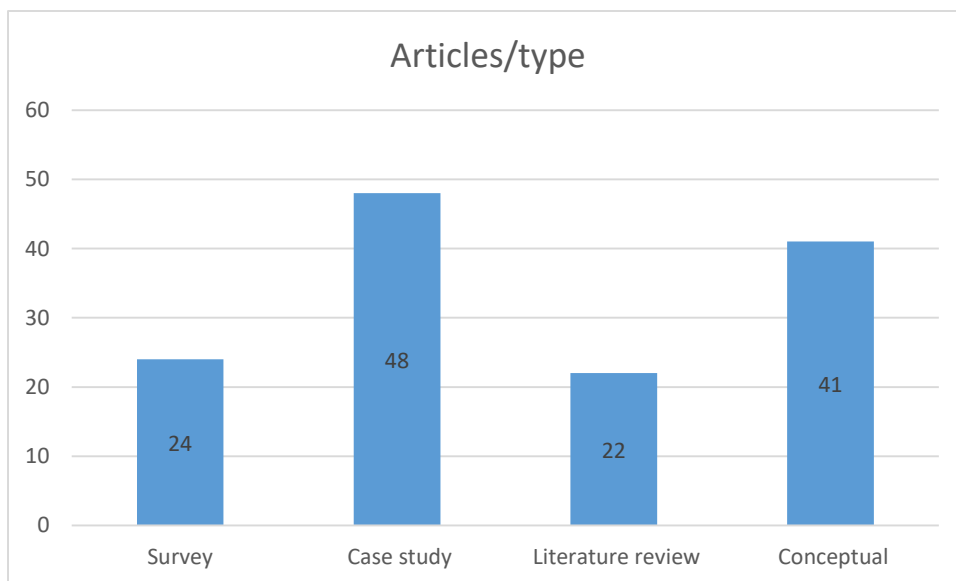


Figure 4: Types of articles

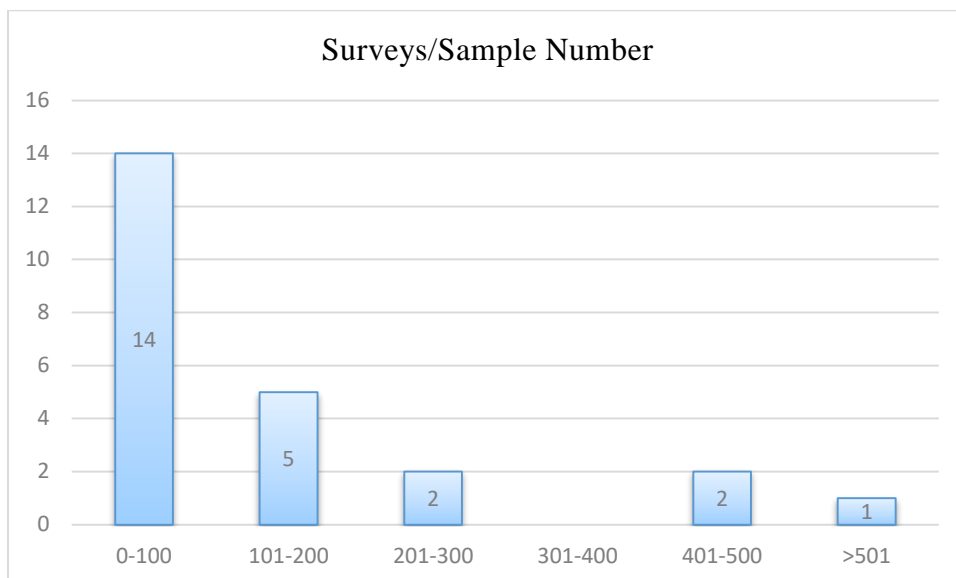


Figure 5. The number of articles examined in surveys

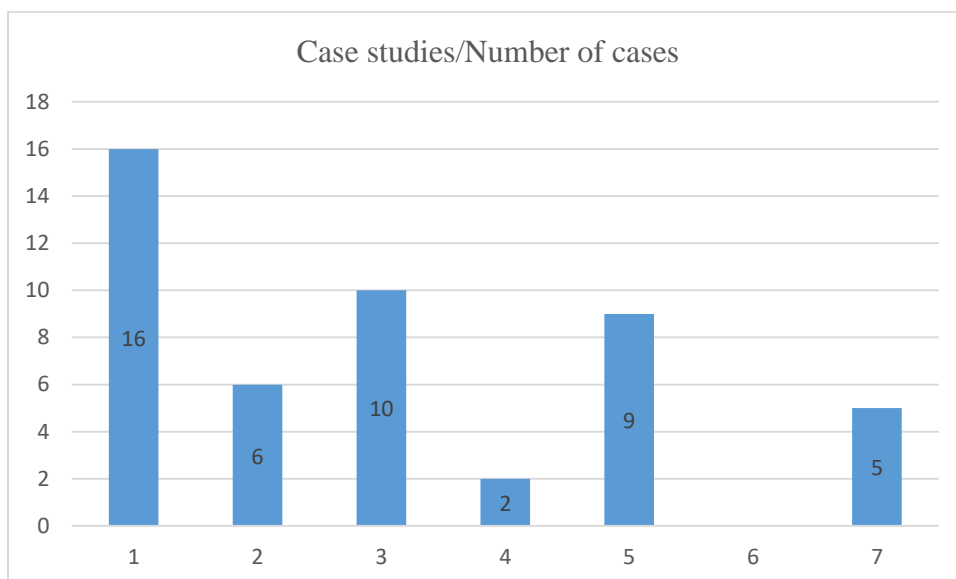


Figure 6. The Case study articles

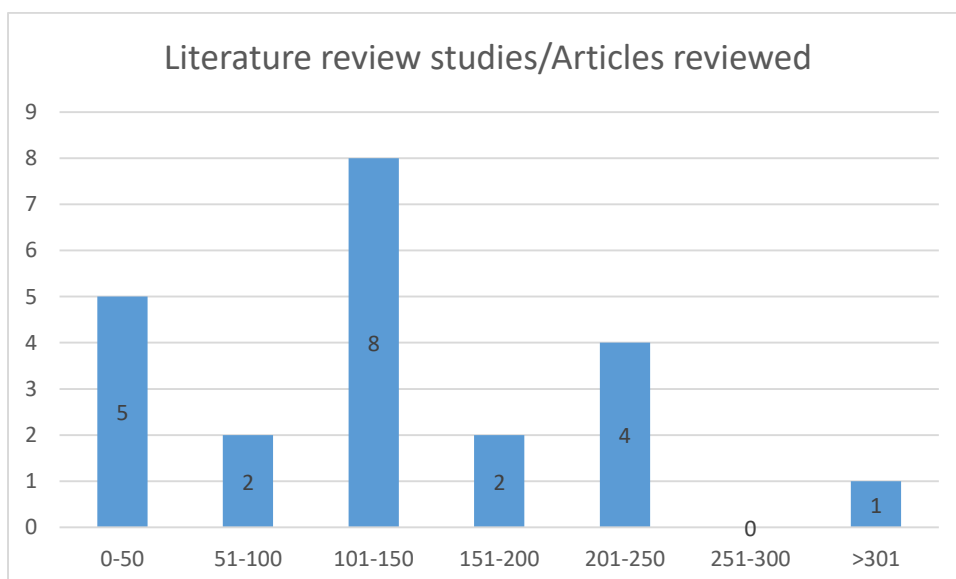


Figure 7. The number of literature review studies

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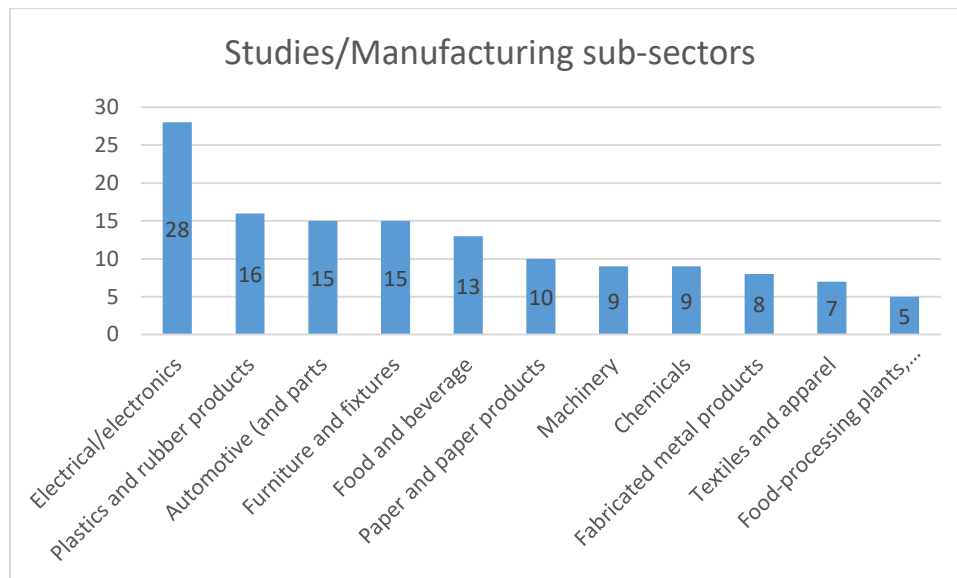


Figure 8. Manufacturing sub-sectors examined

Table 3: Geographic research areas

| S/No. | Countries | Number of Studies |
|-------|-------------|-------------------|
| 1. | Australia | 6 |
| 2. | Bangladesh | 2 |
| 3. | Brazil | 9 |
| 4. | Canada | 6 |
| 5. | China | 16 |
| 6. | Denmark | 1 |
| 7. | Dubai | 1 |
| 8. | Egypt | 1 |
| 9. | Finland | 4 |
| 10. | France | 1 |
| 11. | Germany | 10 |
| 12. | India | 8 |
| 13. | Iran | 6 |
| 14. | Israel | 1 |
| 15. | Italy | 6 |
| 16. | Japan | 3 |
| 17. | Korea | 3 |
| 18. | Mexico | 1 |
| 19. | Netherlands | 1 |
| 20. | Norway | 1 |
| 21. | Spain | 1 |
| 22. | Serbia | 2 |
| 23. | Slovenia | 1 |
| 24. | South Korea | 2 |
| 25. | Sweden | 3 |
| 26. | Switzerland | 1 |
| 27. | Taiwan | 1 |
| 28. | Tunisia | 2 |
| 29. | Turkey | 2 |
| 30. | UK | 12 |

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| | | |
|-----|----------------------|------------|
| 31. | United Arab Emirates | 1 |
| 32. | USA | 20 |
| | Total | 135 |

3.2 The Identified research gaps

Table 4 presents the research gap identified alongside their themes as revealed by the affinity diagram. By considering the themes, it is shown that majority of the articles studied SCRM in the manufacturing sector, more specifically about SCRM theories, challenges, benefits, implementation and the implication in practice. Majority of the themes were in the field of SCM

It is also clear that the gaps were drawn from articles from 2014. In virtually almost all the themes, the gaps were drawn in articles between 2016 and 2020, apart from the themes concerned with assessment of SCRM implementation, countries and SCRM learning, where gaps were identified in articles drawn between 2009 and 2015.

The figure 10.1 indicates references for the gaps. Themes by majority of the references were from the manufacturing industry where supply chain risk management was implemented and SCRM implementation guideline/ framework, the second were the subjects as according to the countries involved in SCRM, factors influencing supply chain execution and the type of study and its methodology in supply chain risk management.

Table 4. Themes and research gaps with supporting references

| Research Themes | Research gaps identified |
|------------------------|--|
| The study methodology | The supply chain risk management through empirical studies ((Thun & Hoenig, 2011;Ahram et al., 2020 and Pfohl et al., 2010); longitudinal studies ((Irène Kilubi 2016); addressing the strategies of supply chain risk management – a synthesis and classification (perspective of developments and extent of adopting supply chain risk management instruments over time, (Thun, Driike, and Hoenig 2011); case studies (Avelar-Sosa, García-Alcaraz, and Castrellón-Torres 2014); more than one source of evidence ((Avelar-Sosa et al. 2014); the ANP technique and studies based on grounded theory ((Fazli, Kiani Mavi, and Vosooghidizaji 2015); both the studies with qualitative and quantitative data (Wu et al. 2017); small segment of people (Blos et al. 2009), literature review studies (Bak 2018); large research samples (Wang-Mlynek and Foerstl 2020) |
| Countries | Carrying out research in developing countries (Cunha, Ceryno, and Leiras 2019; Elleuch, Hachicha, and Chabchoub 2014; Jiang, Baker, and Frazier 2009); undeveloped countries (Chowdhury et al. 2019), India (Kumar Sharma and Bhat 2014; Shenoj et al. 2018), China (Jiang et al. 2009; Wu et al. 2017; Xiao and Yang 2008), USA (Narasimhan and Talluri 2009; Tang 2006; Windelberg 2016), Korea (Kang and Kim 2012), Australia (Vilko and Hallikas 2012), (Elzarka 2013), Brazil (Cunha et al. 2019), Finland (Vilko and Hallikas 2012), UK (B Ritchie and Brindley 2007), Canada (Bandaly et al. 2012) |
| Manufacturing industry | Studied supply chain risk management in manufacturing (Elangovan et al. 2011; Ellinger et al. 2015; Shenoj et al. 2018), crude oil (Fazli et al. 2015), automotive (Blos et al. 2009; Salehi Heidari, Khanbabaei, and Sabzehparvar 2018; Thun and Hoenig 2011, 2011; Vanalle et al. 2020), process (Bandaly et al. 2012; Conklin, Shoemaker, and Kohnke 2017; Fan et al. 2017; Neiger, Rotaru, and Churilov 2009; Schoenherr, Rao Tummala, and Harrison 2008), food (Diabat, Govindan, and Panicker 2012; Mithun Ali et al. 2019; Nakandala, Lau, and Zhao 2017), mobiles (Avinadav, Chernonog, and Perlman 2015), automobile (Kumar Sharma and Bhat 2014), service (Choi, Wallace, and Wang 2016; Chowdhury et al. 2019; Xiao and Yang 2008), healthcare (Elleuch et al. 2014; Silva, Araujo, and Marques 2020), cargo (Ekwall and Lantz 2016), and e fast-moving consumer goods industry (Diehl and Spinler 2013). Strategies of supply chain risk management (Elangovan et al. 2011; Irène Kilubi 2016) and current paradigms in supply chain risk management (Kilubi, 2016). Examining supply chain risk |

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| Research Themes | Research gaps identified |
|---|---|
| | management at the enterprise level (Xiaohui <i>et al.</i> 2006). An integrated approach to supply chain risk analysis (Cagliano <i>et al.</i> 2012) |
| Supply chain risk mitigation | Focusing on all various risk mitigation approaches (Ambulkar, Blackhurst, and Cantor 2016; Diabat <i>et al.</i> 2012; Lee and Ulferts 2011; Yu, Xiong, and Cao 2015) moderating role of SC tractability in risk mitigation (Sreedevi & Saranga, 2017) |
| Human factors in SCRM | Studying in the supply chain risk management context, importance of the human factor evolution over time (Cheng & Chen, 2016; Choi <i>et al.</i> , 2016), |
| Supply chain risk management definition | Defining the supply chain risk management construct (Bak 2018; Bandaly <i>et al.</i> 2012; Diehl and Spinler 2013; Ho <i>et al.</i> 2015; Rogers <i>et al.</i> 2016) |
| Supply chain risk management strategy | Studying Supply chain risk management strategy in recessionary times (Elangovan <i>et al.</i> 2011; Khan, Akhtar, and Merali 2018; Irène Kilubi 2016; Lee and Ulferts 2011) ; the significance of implementation strategy (Tang & Nurmayana, 2011); managing supply chain risks and risk mitigation strategies (Lee and Ulferts 2011); the strategic changes needed (Kilubi and Rogers 2018) |
| Supply chain risk management challenges | Carried out a study on change resistance that obstructs the implementation of Supply chain risk management (Wang-Mlynek & Foerstl, 2020); why companies fail in sustainable risk management implementation (Silvestre <i>et al.</i> 2018); uncertainty in supply chain risk management (Sreedevi and Saranga 2017; Vilko, Ritala, and Edelman 2014); Managing uncertainty in supply chain risk management (Thun <i>et al.</i> 2011); interrelations and importance of supply chain risk management barriers (Yu <i>et al.</i> , 2018); reconciling supply chain barriers, risk and supply chain management (Peck 2006); the nature and classification scheme in supply chain risk management (Blos <i>et al.</i> 2016) how causal ambiguity can be a barrier in supply chain risk management (Hamrol, Kujawińska, and Barraza 2019) |
| Supply chain risk management theory | Specification of the “theory of supply chain management” (Fan and Stevenson 2018; Grötsch, Blome, and Schleper 2013) |
| SCRM: The Critical Success Factors (CSFs) | Carried out SCRM success (Wiengarten <i>et al.</i> 2016); why companies succeed with supply chain risk management (Avelar-Sosa <i>et al.</i> 2014); the supply chain risk management successes in SMEs (Thun <i>et al.</i> 2011), the actual preconditions in supply chain risk management of present and future scope (Ghadge, Dani, and Kalawsky 2012), (Rogers <i>et al.</i> , 2016)(Rogers <i>et al.</i> , 2016)the success in applying supply chain risk management overtime (Norrman and Wieland 2020)(Mund <i>et al.</i> , 2015). |
| SCRM learning | Studying roadmap for the implementation of supply chain risk management (Pfohl <i>et al.</i> 2010)(Browning and Heath, 2009); Optimization of a supply portfolio in the context of supply chain risk management (Hamdi <i>et al.</i> 2018); viewpoints on risks in supply chains (Narasimhan and Talluri 2009); building control into the supply chain risk management process (Conklin <i>et al.</i> 2017) |
| Supply chain risk management benefits | Studying how to sustain supply chain risk management gains over time (Norrman and Wieland 2020) (Zhu, Krikke, and Caniels 2017) |
| Inter-relationships of supply chain risk management elements | Examining the supplier relationships and techniques used on Supply Chain Risk Management (Lavastre 2014); effects of some risk factors in the supply chains performance (Avelar-Sosa <i>et al.</i> 2014); Inter-organizational relationships in supply risk management adopted to protect relationship of partners (Cheng and Chen 2016); the interdependent links of supply chain risk management as a whole (Chowdhury <i>et al.</i> 2019) |
| Supply chain risk management implementation guideline/framework | Guideline of supply chain risk management (Bandaly <i>et al.</i> 2012; Cunha <i>et al.</i> 2019; O’Connor 2016; Bob Ritchie and Brindley 2007; Shoemaker, Rainey, and Wilson 2012); generalizable sSTRUCTURED implementation |

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| Research Themes | Research gaps identified |
|--------------------------------------|---|
| | steps of supply chain risk management (Salehi Heidari et al., 2018) (Pfohl et al., 2010) (Bandaly et al. 2012; Dong and Cooper 2016); supply chain risk management implementation from idea to the product development and manufacturing (Cheng and Chen 2016); the holistic, broad supply chain risk management principles (Ghadge et al. 2012); Implementing SCRM; Almomani et al., 2014: supply chain risk management models for an organization level (Nakandala et al. 2017); the whole supply chain implementation (Conklin et al. 2017); the core essentials that make up supply chain risk management (Dong and Cooper 2016); the presentation of the whole SCM framework ((Bob Ritchie and Brindley 2007); Guideline to overcoming challenges of implementation of supply chain risk management (Silvestre et al. 2018); actually implementing supply chain risk management tools (Mostafaiepour, Qolipour, and Eslami 2017); the process through which supply chain risk management is put into place(Conklin et al. 2017). |
| Factors affecting SCRM adoption | Impact of internal integration, information sharing, and training on supply chain risk management capabilities (Riley et al. 2016), effects of some risk factors in the supply chains performance (Avelar et al. 2014), organizational contexts (Yu et al. 2015), environmental uncertainty (Oliveira, Leiras, and Ceryno 2019), Aspects of the firm or the environmental conditions (Riley et al. 2016), complexities (Gao, 2015; Yang & Yang, 2010), various control forms (Conklin et al. 2017), insurance issues (Lodree Jr and Taskin 2008), cyber risks and disruptions (Hodgson, Brauner, and Chan 2020; Windelberg 2016) supply chain risk transfer (Kim and Park 2014), environmental dynamism (Singh 2020), supply chain integration and organizational risk propensity (Yu et al., 2015). |
| Supply chain risk management effects | Examining the impact of supply chain risk management (multiple components of supply chain risk management or lone SCRM strategies on organizational performance in changing set ups, process industries, SMEs) (Avelar-Sosa et al. 2014; Avinadav et al. 2015; Kang and Kim 2012; Kumar Sharma and Bhat 2014; Lavastre 2014; Salehi Heidari et al. 2018, 2018; Thun et al. 2011), manufacturing performance (Elangovan et al. 2011), ISO 31000 standard in supply chain risk management (U. R. Oliveira et al. 2017), organizational risk prosperity (Yu et al. 2015) business context (Cheng, Yip, and Yeung 2012), the measures of operational performance (Munir et al. 2020; B Ritchie and Brindley 2007), social performance (O'Connor 2016), sustainability outcomes (Azevedo 2013; Wu et al. 2017). |
| Analysis of SCRM implementation | Analyzing the level of overall risks in multimodal supply chains (Vilko & Hallikas, 2012) in basics (Saurin et al., 2011) in SMEs (Forno et al., 2016). The influence of internal integration, information sharing, training on SCRM capabilities (Riley et al. 2016); toward sustainability using big data to explore the decisive attributes of supply chain risks and uncertainties (Wu et al. 2017); supply chain risk management for the implementation in practice(Pfohl et al. 2010) (Bhasin, 2011)Development of futuristic supply chain risk management (Elangovan et al. 2011); assessing supply chain risk management (Ekwall and Lantz 2016); simulation analysis of supply chain risk management system (Gao et al., 2020) |

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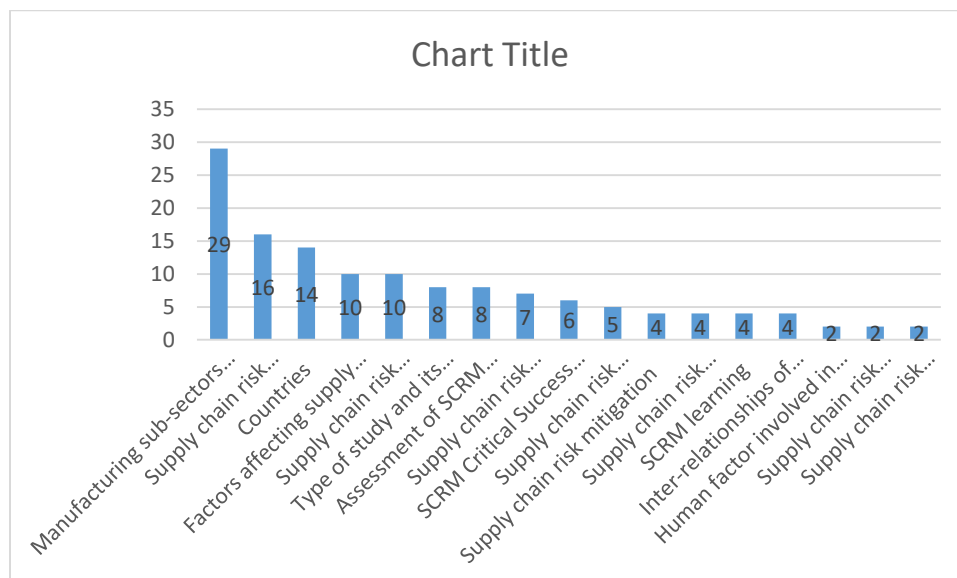


Figure 10.1 Number of references in gaps

3.3 Discussions

The journals Science Direct and Emerald published academic articles the most in SCRM articles. Also, Science Direct and Taylor & Francis were the main academic resources for SCRM. Few of the journals published many of SCRM documents and many journals published a small number of the SCRM articles. This confirmed the Pareto principle of 80/20.

Journal of Production Economics had the highest number of the SCRM articles. The International Journal of Production Research had the second highest number of articles. The present literature review shows that there is a gradual growth in literature on SCRM documents. This indicates that research on SCRM is on upward trend. Also, surveys and case studies as well as literature review studies had the highest number of articles (Zhu et al. 2017). However, case studies were fewer than the surveys. So, this review confirms the growth of the SCRM studies as surveys or case studies. Manufacturing industry was examined the most either as surveys or case studies (Fan and Stevenson 2018; Prakash, Soni, and Rathore 2017). Further, USA, China and the UK were top publishing countries, affirming that the countries' research in the field on SCR is growing.

3.4 Research gaps in SCRM

Given that the gaps in literature in SCRM have been identified in top publishing journals between 2016 and 2020, this is an affirmation of diachronic growth in the number of published SCRM studies. This also implies that writers are keen on recognizing that there exist gaps in literature and thus information on this is paramount for the growth of the field.

Also, the themes different from SCRM are concerned with company, country of operation, management systems, methodologies and design. It is shown that the research gaps were about SCRM implementation as evidenced by the reference literature. This implies that more studies need to be carried out in SCRM so as to build more knowledge and solve problems in organizations.

Gaps in literature research in SCRM have been identified in previous literature (Bak 2018; Hamdi et al. 2018; Ho et al. 2015; Prakash et al. 2017). Even though, previous works do not exclusively present the SCRM gaps not group them logically according to themes. The current study has attempted to fill this. Moreover, gaps studied in preceding works are concerned with the internal SCRM approach (Bak 2018 and Ho et al. 2015) or the external nature of SCRM (Hamdi et al. 2018) did a study from 2003 to 2014 and (Prakash, Soni, and Rathore 2017) who reviewed articles published from (2004-2014), studied, in consonance with the current study, both external and internal views of SCRM.

3.5 Conclusion

The current study was motivated by the fact that there exists lean studies and literature in SCRM. The study focused on reviewing the literature systematically in the field of SCRM. This study makes a contribution to the growing body of knowledge in SCM by defining a surfeit of SCRM research gaps and offering them logically in order of preference.

The study presents the following themes: the pre-implementation, implementation and the post-implementation stages of SCRM. The company, country of operation, management structures and the methodological research approach have also been identified. The main themes as according to the study were from manufacturing industry which implemented SCRM effects, factors affecting SCRM, factors affecting SCRM and framework for SCRM.

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The findings of this study are important SCM practitioners and the academia. Scholars can base their works with this review as the ground. Managers and policy makers can further base their decisions on the findings of this study. The limitations of the study was the exclusion criteria which narrowed the scope.

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Annotated bibliography

Qazi, A., Quigley, J., & Dickson, A. (2015, March). Supply Chain Risk Management: Systematic literature review and a conceptual framework for capturing interdependencies between risks. In *2015 International Conference on Industrial Engineering and Operations Management (IEOM)* (pp. 1-13). IEEE

The authors present an investigation of a comprehensive and systematic review of the literature in the field of 'Supply Chain Risk Management' and identify important research gaps for potential research. This journal is structural with a reliable conceptual risk management framework which is historic in nature. Beside that the study cover 2000 – 2014 which is between the brackets of the researcher's period of interest hence will facilitate with data mining.

Gurtu, A., & Johny, J. (2021). Supply chain risk management: Literature review. *Risks*. MDPI AG. <https://doi.org/10.3390/risks9010016>

The authors of the study tend to explore uncertainties in the supply chain management, which pose threats to the entire network flow and economy. Guided with the aspect of an uncertain and competitive business climate, the goal of this research is to examine the available literature on risk variables in supply chain management. It portrays Supply chain risk management a key function of the supply network and showcases the unpredictable challenges faced as a result of a county's economic policies and globalization, which have raised uncertainty and challenges for supply chain organizations. Hence will have a significant impact the researchers study.

Munir, M., SadiqJajja, M. S., Chatha, K. A., & Farooq, S. (2020). *Supply Chain Risk Management and Operational Performance: The Enabling Role of Supply Chain Integration*. *International Journal of Production Economics*, 107667. doi:10.1016/j.ijpe.2020.107667

The authors present an investigation of supply chain risk management based on managing of risk, handle unexpected disruptions and improve performance Their data covers a wide range of supply chain risk management. This paper creates a network of information processing view of risk management and brings out the link between supply chain integration and supply chain risk management to improve operational performance. Subsequently, it portrays the mediating role played by SCRM between SCI and firms' operational performance is examined. Based on this, the article will be a game changer in developing a systematic write up.