

A Content Analysis of Current Issues in Supply Chain Management

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Abstract - This paper presents a content analysis to review and offer the latest study of literature in supply chain management (SCM). The SCM literature seems to require a review study on a regular basis to keep updated on the changes of its dynamic and complex characteristics. Drawing from the 58 articles from Emerald Insight and Science Direct databases, this study provides an appropriate analysis from the four pre-identified keywords to explore the recent articles published in the years 2016 and 2017, as well as the issues that have been revisited for further analysis. The results revealed five prime issues and four major scopes that have become the focus of the recent study, which suggests the future research propositions in SCM.

Keywords – Supply Chain Management, Content Analysis, Review, Article

1. Introduction

The development of the business environment today has seen a major change in the demand from customers. In this competitive business scenario today, the whole idea is not about a product anymore but the value. This is due to the fact that there are a great number of product offerings to cater to the different needs for the distinct customers. As a consequence, the focus of the business organizations has shifted to increasing the value of products and services, which should be higher than their competitors' value. Successful products with more value may enjoy higher sales

volume due to the customer's satisfaction and retention.

Supply chain management plays an important role by generating the value of products and achieving competitiveness in the market. Supply chain management practices are unique and inimitable. Good supply chain management practices always improve companies' profitability by responding well to the customers' needs, besides improving the relationships and dependency among firms for better delivery of value to the customers [1]. As the market expansion is growing from the domestic to the international level, the customer requirements are getting higher especially concerning the demand for cheaper products, faster delivery, superior quality and the number of product assortments. This requires the support for effective supply chain management, which can increase the value, efficiencies and customer satisfaction [2]. Hence, the success of products in the marketplace is determined by the firm's performance in supply chain management practices.

In the current market situation, the supply chain management field is getting the major concern and interest by the industry players, policy makers, academicians, and researchers. This is due to the fact that the field covers a wide range of activities from suppliers to manufacturers and customers, and has become the prime tool by the business organizations to achieve a competitive advantage

in the market. It is becoming the core factor to survive in the current business environments, due to its major role of 'place' in the '4Ps' marketing mix concept [3]. In comparison with other concepts, supply chain management is the only factor that is extremely difficult to imitate by the competitors in the market. Supply chain management requires firms to extend their relationship with the suppliers as well as customers in a long term beyond the arm's length relationships [4]. Besides that, firms need to monitor the changes in the supply chain environment and take appropriate measures to align the supply chain strategies on the right track. Due to the nature of its dynamic characteristics, the supply chain management field demands that the firms, as well as the researchers around the world, determine the suitable solution from time to time to increase the supply chain performance. In this way, firms can devise appropriate strategies that are relevant to the market context to increase the firm's performance and survival in the market.

For instance, over the past few decades, there have been important advances of supply chain management towards the environmental concerns through the adoption of practices such as recycling, remanufacturing, reuse, reverse logistics and end-of-life (EOL) product management [5]; [6]. This has happened consequent to the pressures to improve the environmental performance in order for firms to stay competitive in the market, which was never anticipated by the traditional firms in the past. Although there is no justification on the basis of economics to implement such measures in the supply chain, firms have typically discovered that such practices are inevitable in view of the changes in regulations, growing customer expectations and as a source of competitive advantage in the adoption of environmental practices [7]; [8], which may affect their profitability in the long run. Hence, the involvement of firms in environmental practices is seen as mandatory in the near future especially for those firms which have yet to embark on the green initiatives in their operations [9].

In order to meet the environmental objectives, many firms are developing relationships with the key suppliers by leveraging the capabilities of members across the supply chain. Such cooperation may be formed by outsourcing and

collaborative partnerships. For this reason, techniques and technical capabilities can be effectively realized from a well performed logistics operation [10], which is derived from the support of the supply chain members. In fact, there are quite a number of firms working together with suppliers who may find themselves in a better position than their competitors, as such collaboration not only provides them with an environmental advantage, but also helps to reduce cost and increase competitiveness in the market [11]. This highlights the importance of supply chain relationships as not only necessitating improving the manufacturing practices, such as producing green products, but also contributing in solving environmental problems [10].

This study argues that the dynamic characteristic nature of SCM necessitates a high alert of the variations of study from diverse geographical locations, mainly to enhance the understanding and knowledge that may contribute to the sustainable SCM practices in the future. In view of this circumstance, it is essential to monitor the progress of SCM studies on a regular basis to keep updated on the changing adoption of processes and practices as well as to be aware of the latest topics that have become the major concern of the researchers around the world. Thus, the purpose of the paper is to conduct a systematic review of the current literature on SCM to explore the research issues and scopes of study to assist the scholars in identifying the future research opportunities in SCM.

The review has summarized the latest studies in the field and shared the valuable insights and information about the emergence of the critical studies as well as suggestions for the future research based on the classifications derived in this study. The paper is structured with the introduction in the beginning section, followed by the literature review, methodology, findings, and discussions of the review. In the subsequent section, opportunities for future research are presented and it ends with the conclusion of the study.

2. Literature Review

Supply chain management can be defined as the management of the supplier, manufacturer and customer relationships with the aim to increase the

value to the customer at the lowest cost of the flow of products through the pipeline. SCM involves many activities from the supplier to the manufacturer and customer, therefore, it entails a broad concept with diverse definitions [12] delineated by the researchers over a period of time. For instance, the SCM concept is wider than logistics management as it covers the integration between internal and external organizations [13]. On the same note, [14]; [15] argued on the importance of internal and external integration that spans over several firms. It involves a connection with a network of firms [16]; [17], which requires the proper management of the relationships of parties in the downstream and upstream of the supply chain by practicing integrated business processes to increase the value among them [14].

In relation to this, supply chain management consists of three inter-connected elements: 1) the management of activities and flow of materials from a supplier to a manufacturer and, subsequently, to a consumer through the transformation process of the raw materials into finished products, 2) the management of the information across the supplier-manufacturer and manufacturer-consumer chains and 3) the management of the chain relationships [18]. It involves the integrated production process where the final products are produced from the raw materials and then supplied to customers via a channel of distribution, retail or both [19]. Therefore, each and every organization is at least a part of any supply chain or network, which the derivation of the operations and marketing decisions affects the supply chains including the implications towards the natural environment [20].

In terms of measuring the supply chain management, many authors in the past have also developed various dimensions towards supply chain practices in their studies. There were inconsistencies in measuring the specific processes of supply chain activities as compared to the vast number of past studies in the general measurement towards the impact to the firm's business performance. Supply chain management practices have become a multi-dimensional construct which covers both the upper and downstream of the chain [21]. For instance, [22] has put forward flexible sourcing, risk management, flexible transportation, ISO 14001

certification, reverse logistics, waste elimination, total quality management, just-in-time and cleaner production as practices related to supply chain management. On the other hand, in a study by [23], they recognized seven SCM practices in their study, which consisted of customer focus, management leadership, supplier management, human resource management, quality data and reporting, design management and process management quality, procurement and customer relationship as part of the supply chain management.

As for [24], in their study, they highlighted the importance of product returns in the adoption of a closed-loop supply chain as part of the environmental supply chain management practices to achieve sustainability in the manufacturing operations. In another study by [25], the major aspects in creating responsiveness in the supply chain came from five key practices which are outsourcing, strategic supplier partnerships, customer relationship, information sharing and product modularity. A number of recent studies, such as [26]; [27] and [28], have utilized five dimensions of practice of strategic supplier partnership, customer relationship, information technology, logistic integration and delivery practices as key elements in supply chain practices.

The above review clearly indicates that the SCM field is subject to changes over a period of time and is not static. The dynamic nature of the field demands continuous study to keep updated on the latest changes and trends to increase the supply chain performance and competitiveness in the market.

3. Methodology

This study argues the importance of reviewing the SCM studies to identify the latest study conducted for further expansion of the specific area in the future research. For this reason, the literature has suggested that the area can be examined through the content analysis method [29]; [30]. The study has followed the suggested methods in carrying out the content analysis in the supply chain research by [31]; [32]; [33] and [34].

On the basis of this, four main steps as illustrated in Figure 1 have been adopted in the study: 1)

selection of the database, (2) collection of articles, 3) elimination of the overlapping articles and 4) sorting of articles based on the defined categories and classifications. The last process flow involved the extraction of information from the articles for further investigation.

Specifically, as depicted in Figure 1, the first step involved the selection of the sources of the articles which were limited to two renowned databases - Emerald Insight and Science Direct, using the search engines from the Universiti Teknologi MARA website. The selection was made based on the reason that many top journals in SCM are currently hosted by these two large databases. In the next step, the articles were collected within the time horizon between the years 2016 and 2017. The keywords were limited to explore the latest articles as well as the issues that have been revisited for the purpose of suggesting the future research propositions. This was undertaken by keying-in the keywords of Literature Review, New Paradigm, Research Agenda and Review of SCM into the search engines.

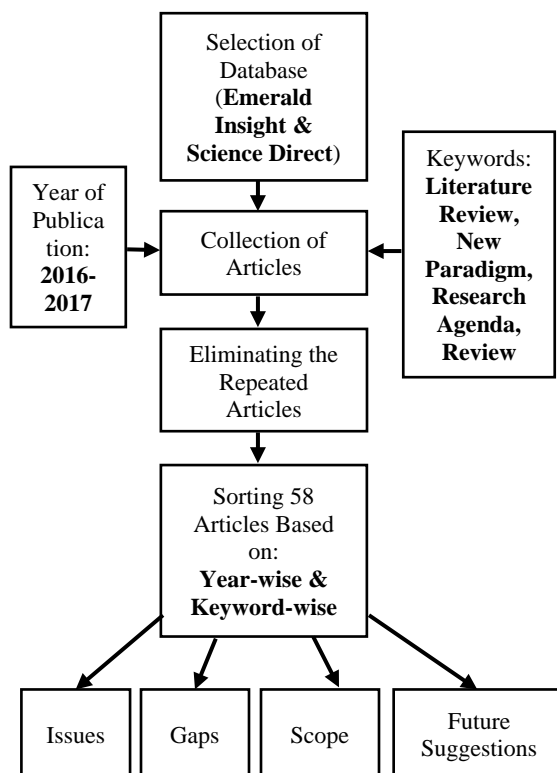


Figure 1. Steps in the Content Analysis

At this stage, articles that did not belong to the respective mentioned established journal articles, including forewords, editorial words, book evaluations, conference-proceeding papers, general reports, master's theses, PhD dissertations and academic textbooks, were disregarded from the search. In the subsequent stage, repeated articles were removed from the list by comparing the title, authors and the date of publication.

Lastly, all the articles were sorted based on year-wise and keyword-wise, and stored in separate folders of the softcopies. The articles were explored on several dimensions, such as 1) year of publication, 2) journal published, 3) issues, 4) scope of study, 5) industry and 6) future research suggestions. Based on the steps mentioned earlier, a total of 55 articles were identified for further analysis. This included the evaluations of the research issues, gaps, scopes and the suggestions of the potential future research.

4. Findings

In this section, the results of the content analysis are presented, with the first illustration depicting the summary of the four keywords defined in the study. First, the distribution of the reviewed articles for the four defined keywords is provided. This is followed by a discussion highlighting some key findings discovered from the articles compiled. Finally, the literature gaps from the scope and issues are identified and presented based on the results of the findings.

Table 1. Summary of Article's Title by Keywords

Keywords	No. of Articles		Total	Percentage
	2016	2017		
Literature Review	11	17	28	48.3
New Paradigm		2	2	3.4
Research Agenda	2	3	5	8.6
Review	11	12	23	39.7
Total	24	34	58	100

As we can see in Table 1, a total of 58 articles have been reviewed from the year 2016 to 2017, with the number of articles in 2017 (58.6 percent)

being greater than the articles in the year 2016 (41.4 percent). The majority of the articles reviewed were titled 'Literature Review' of SCM with 28 articles (48.3 percent), followed by 'Review' of SCM with 23 articles (39.7 percent), 'Research Agenda' of SCM with 3 articles (8.6 percent) and, lastly, 'New Paradigm' of SCM with 2 articles (3.4 percent). This signified the popular title of 'Literature Review' and 'Review' among authors as compared to 'Research Agenda' and 'New Paradigm', despite the similar objective of the articles to review the current research in SCM and the proposal for the future research. The summary of the articles' reference details for the classification category is listed in Table 2.

Table 3 lists the reviewed journals, and it was noticeable that the Journal of Cleaner published the highest number of articles with 7 articles (12.1

percent), followed by The International Journal of Logistics Management with 6 articles (10.3 percent), and the International Journal of Production Economics with 5 articles (8.7 percent). These journals collectively made up more than 30 percent of the total number of articles, thus confirming that they were the primary publication outlets of the pre-identified categories in the present study. Subsequently, two journals were published with the fourth highest number of articles- Computers & Industrial Engineering and Supply Chain Management: An International Journal with 4 articles (7 percent) each. The Journal of Advances in Management Research and IFAC published the fifth highest number of articles with 3 articles (5.2 percent) each. The remaining journals reviewed were recorded with only one article (1.7 percent) each.

Table 2. Summary of References under the Content Classification Scheme of the Literature

Classification Category	Year	References
Literature Review	2016	Addo-Tenkorang and Helo (2016) [35]; Balcik et al. (2016) [36]; Elleuch et al. (2016) [37]; Formentini and Romano (2016) [38]; Gelsomino et al. (2016) [39]; Kamalahmadi and Parast (2016) [40]; Li and Found (2016) [41]; Liu and Mckinnon (2016) [42]; Martinez-Neri (2016) [43]; Oliveira, Lima and Montevechi (2016) [44]; Zimmermann, Ferreira and Moreira (2016) [45].
	2017	Ali, Mahfouz and Mahfouz (2017) [46]; Ansari and Kant (2017) [47]; Chen, et al. (2017) [48]; Feng, Zhu and Lai (2017) [49]; Gao et al. (2017) [50]; Gharehgozli et al. (2017) [51]; Glock (2017) [52]; Lim et al. (2017) [53]; Lima-junior, Cesar and Carpinetti (2017) [54]; Mahajan, Garg and Sharma (2017) [55]; Manders, Caniëls and Ghijssen (2017) [56]; Nguyen et al. (2017) [57]; Prakash, Soni and Rathore (2017) [58]; Rajeev et al. (2017) [59]; Routroy and Behera (2017) [60]; Siddh et al. (2017) [61]; Vural (2017) [87].
New Paradigm	2017	Bohtan, Vrat and Vij (2017) [62]; Durach, Kembro and Wieland (2017) [63].
Research Agenda	2016	Hazen et al. (2016) [64]; Jede and Teuteberg (2016) [65].
	2017	Christ and Burritt (2017) [67]; Maestrini et al. (2017) [68]; Nakamba, Chan and Sharmina (2017) [69].
Review	2016	Balfaqih et al. (2016) [31]; Cerchione and Esposito (2016) [70]; Ghaderi, Pishvae and Moini (2016) [71]; Ivanov et al. (2016) [72]; Lemmens et al. (2016) [73]; Lima, Relvas and Barbosa-póvoa (2016) [74]; Atashbar, Labadie and Prins (2016) [75]; Shi et al. (2016) [76]; Steur et al. (2016) [77]; Wan Ahmad, de Brito and Tavasszy (2016) [78]; Wu et al. (2016) [79].
	2017	Behzadi et al. (2017) [80]; Derwik and Hellström (2017) [81]; Dubey et al. (2017) [82]; Govindan, Fattahi and Keyvanshokoo (2017) [83]; Govindan and Soleimani (2017) [84]; Gunasekaran, Subramanian and Papadopoulos (2017) [85]; Guo et al. (2017) [86]; Mirkouei et al. (2017) [88]; Mishra et al. (2017) [89]; Rajagopal, Venkatesan and Goh (2017) [90]; Zhu, Krikke and Caniëls (2017) [91]; Sharma et al. (2017) [92].

Table 3. List of Journals Reviewed

No.	Journal	No. of Articles	Percentage
1	Automation in Construction	1	1.7
2	Benchmarking: An International Journal	1	1.7
3	Chemical Engineering Research and Design	1	1.7
4	Computers & Industrial Engineering	4	7.0
5	Computers and Chemical Engineering	1	1.7
6	Computers and Operations Research	1	1.7
7	Computers in Industry	1	1.7
8	Energy	1	1.7
9	European Journal of Operational Research	1	1.7
10	IFAC	3	5.2
11	Industrial Crops and Products	1	1.7
12	Industrial Management & Data Systems	1	1.7
13	International Journal of Production Economics	5	8.7
14	International Journal of Energy Sector Management	1	1.7
15	International Journal of Operations & Production Management	1	1.7
16	International Journal of Physical Distribution & Logistics Management	1	1.7
17	Journal of Advances in Management Research	3	5.2
18	Journal of Agribusiness in Developing and Emerging Economies	1	1.7
19	Journal of Business & Industrial Marketing	1	1.7
20	Journal of Cleaner Production	7	12.1
21	Journal of Supply Chain Management	1	1.7
22	Omega	1	1.7
23	Procedia CIRP	1	1.7
24	Renewable and Sustainable Energy Reviews	1	1.7
25	Research in Transportation Business & Management	1	1.7
26	Simulation Modelling Practice and Theory	1	1.7
27	Supply Chain Management: An International Journal	4	7.0
28	Surveys in Operations Research and Management Science	1	1.7
29	Sustainability Accounting, Management, and Policy Journal	1	1.7
30	Sustainable Production and Consumption	1	1.7
31	The International Journal of Logistics Management	6	10.3
32	Transportation Research Part E	1	1.7
33	Waste Management	1	1.7
Total		58	100.0

Notably, the review signified that most of the articles (38 articles, 65.5 percent) did not specify the industry, due to the majority of the articles reviewing the literature and being inclined towards a specific scope of study regardless of the industry. Nevertheless, as depicted in Table 4, most of the sectors studied were agriculture with 7 articles (12.1 percent), followed by manufacturing with 6 articles (10.3 percent) and oil and gas with

2 articles (3.4 percent). Furthermore, the issues highlighted in the reviewed articles were thoroughly assessed. As illustrated in Figure 3, the study found that among 47 issues highlighted in the reviewed articles, performance indicators predominated the highest issues with 5 articles (10.6 percent), followed by those related to agriculture business and process, bio mass supply chain and supply chain integration with 3 articles

(6.4 percent) each. The next major issues highlighted in the reviewed articles pertained to the predictive analysis of big data with 2 articles (4.3 percent). Moreover, the study has identified 34 types of scope of study, as shown in Figure 4.

Table 4. Industry

Industry	Total	Percentage
Agriculture	7	12.1
Construction	1	1.7
General Firms	1	1.7
Government	1	1.7
Information Technology	1	1.7
Manufacturing	6	10.3
Offshore Wind	1	1.7
Oil and Gas	2	3.4
Not Specified	38	65.5
Total	58	100.0

In this context, sustainability in supply chain management was the highest focus of the studies with 7 articles (20.6 percent), followed by risk management with 5 articles (14.7 percent).

In addition, big data and performance measurement were equal as the third highest number of articles with 3 articles (8.8 percent) each. The next scope of study with 2 articles (5.9 percent) each were closed-loop supply chains, food supply chain management, green supply chain management, information technology, reverse logistics, general supply chain management and supply chain resilience. The remaining 22 types of scope of study were the least with 1 article (2.9 percent) each.

5. Discussions

The study has carried out a content analysis on 58 selected articles published in renowned journals from the two top databases in the field of SCM. By conducting a review of the past literature, the foundation of research can be formed due to the proper identification of the study gaps [66]. As such, the review of the articles uncovered that there was a great number of studies in SCM with variations of study gaps that were revisited as well

as the newly emerging areas that have become the major concern of the researchers in the recent years of 2016 and 2017. Although most of the articles did not specify the industry, the articles have highlighted the significant issues that may affect the general sectors. Further research needs to be conducted on each individual sector to ascertain the consequences from the theory and practice on the real SCM of the particular industry.

In relation to this, the study has discovered five main issues from the 47 issues brought up by the authors from 2016 to 2017. The issues of the SCM performance indicators were the most that have drawn the attention of [31]; [54]; [68]; [89] and [92]. The second highest of the issues was shared by three issues each: agriculture business and process [80]; [60] and [61], bio-mass supply chain [53]; [88] and supply chain integration [48]; [43] and [44]. The third highest of the issues was related to the predictive analysis of big data in SCM, as highlighted in the studies by [35]; [64].

Furthermore, the diversity of the SCM field was evidenced from the 34 types of the specific scope of study from the reviewed articles, confirming the field characteristics as being dynamic and complex [75]. In fact, the new SCM has been transformed to a new level of relationship through the connection between suppliers and customers in producing the value for each other [93]. It was discovered that the highest focus of study was in the scope of sustainability in supply chain management, as carried out by [47]; [48]; [82]; [50]; [69]; [59] and [78].

Apart from the sustainability in the supply chain, other studies related to the environmental concern in SCM have also gained the attention of researchers, such as closed-loop supply chains [52]; [84], green supply chain management [89]; [92], and reverse logistics [83]; [86]. In sum, these studies are expected to grow in the future, especially on the broad issues in SSCM [33], along with the studies in closed-loop supply chains [59] and green supply chain management that support the SSCM accomplishments [92].

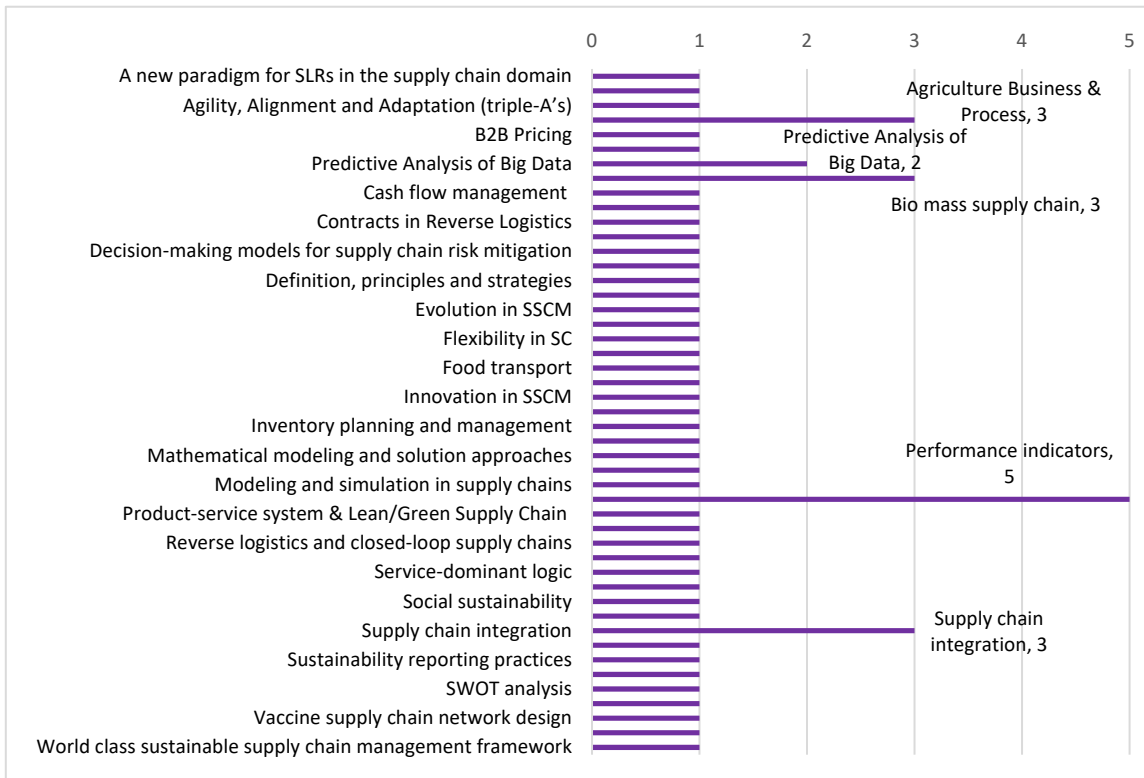


Figure 3. Issues of the Study

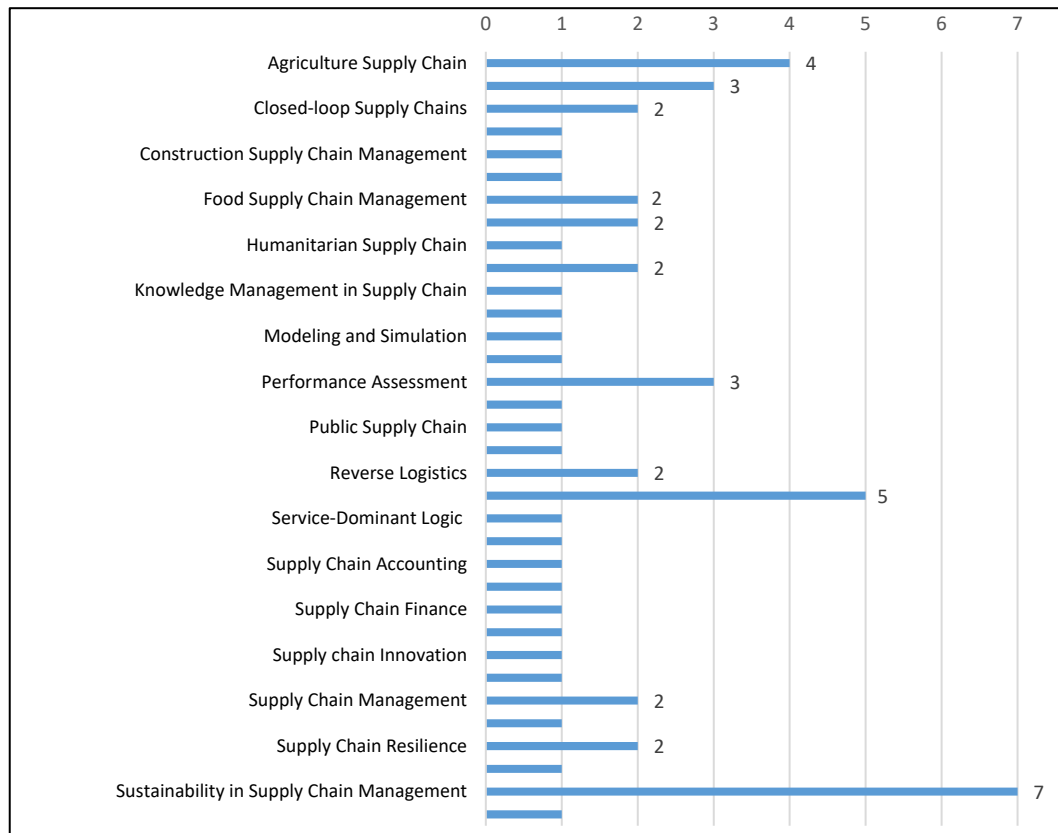


Figure 4. Scope of the Study

In the next second highest scope of the study, risk management in SCM, studies were conducted by [80]; [90]; [91]; [72] and [58]. Risk management has received increasing attention consequent to the extended pipeline intervals and complicated global supply chain, countless lean practices' output which have created insecurity and vulnerability over the uncertain supply chain performance and the numerous trouble in the supply chain due to uncontrollable natural disasters [80]. Despite the importance of risk management, the current literature is still lacking in the quantitative models for agriculture supply chains, which include the reputation, credit and exchange, rate as well as information related risk management [80]. In addition, several supply chain environmental risks [91], different control objectives and strategies in quantitative analysis [72], IT implementation at firm level, collaboration in managing risk, as well as the dyadic relationship studies are also scarce in the current body of SCM literature [58].

The third highest scope of the study was related to big data and performance assessment. The big data related study and its application in SCM were discussed by [57]; [35] and [64]. Big data allows for new innovative ways of managing the process of SCM strategically and cost-effectively [94] with vast and complex analyses that require the separation into small and manageable practices [35]. Nevertheless, the literature is limited in discussing the big data of the broad SCM [95] and confined to a specific process in the SCM process [57].

On the performance assessment, studies by [31]; [54] and [68] have highlighted the vital role of measuring the performance as a basis for efficiency in SCM. In this case, there are a lot of opportunities to study the performance measurement in SCM due to the lack of consistencies in the previous research [31]. Performance measurement should take into account a wider scope [54]; as, the assessments carried out in the existing studies are inclined towards only one fraction of the supply chain, which is confined to measuring a specific scope of the subject. Thus, they have failed to demonstrate a complete view of the research area [68]. Besides that, a performance measurement that caters to specific firms in the current literature is still absent [31]. Future study is suggested to

concentrate on building research models that could quantitatively assess the distinct performance measurement techniques of the firm's competitive strategies scope [54].

6. Conclusion

The study has made significant contributions by unveiling the prime issues and scopes that have become the focus of the recent study in SCM. This is to support the existing SCM literature that requires frequent reviews to monitor the variations of its dynamic and complex attributes. The study has conducted a review of the literature from the year 2016 to 2017 through the content analysis method. From the pre-defined four keywords in the Emerald Insight and Science Direct databases, the study has discovered 58 articles with the title termed as "Supply Chain" for further analysis. In general, the study has offered the latest trend of study in SCM, which can help the academicians as well as the practitioners to keep updated on the field that is diverse and has dynamic characteristics.

Nonetheless, the industry players can learn about the latest issues in SCM in order to prepare for the challenges ahead for future survival in the market. From the analysis, the study found five prime issues that have become the focus in the recent study; they were SCM performance indicators, agriculture business and process, bio-mass supply chain, supply chain integration and predictive analysis of big data in SCM. In addition, the review of the literature revealed four of the highest scopes of study with the main interest being in the scope of sustainability in supply chain management, trailed by risk management, big data and performance assessment in SCM. It is suggested that these results can be used as the guide to conduct future studies in SCM. The outcome of the study can also be used to explore other emerging domains in SCM to meet the near future challenges of the Industrial Revolution 4.0.

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