

Application of Critical Success Factors in Supply Chain Management

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Abstract— This study is the first attempt that assembled published academic work on critical success factors (CSFs) in supply chain management (SCM) fields. The objectives of this study are to review the CSFs in SCM and to uncover the major CSFs that are apparent in SCM literatures. This study applies literature survey techniques from published CSFs studies in SCM. A collection of 42 CSFs studies in various SCM fields is obtained from major databases. The search uses keywords such as supply chain management, critical success factors, logistics management and supply chain drivers and barriers. From the literature survey, four major CSFs are proposed. The factors are collaborative partnership, information technology, top management support and human resource. It is hoped that this review will serve as a platform for future research in SCM and CSFs studies. Plus, this study contributes to existing SCM knowledge and will further appraise the concept of CSFs.

Keywords— *Supply chain management, logistics management, critical success factors, collaborative partnership, information technology, top management support, human resource*

1. Introduction

The term supply chain management (SCM) was first proposed in 1982 [1] and is described as the systematic and strategic integration of business functions, from end user through original supplier, that add value to products, services and information for customers and other stakeholders [1], [2], [3]. The Council of Supply Chain Management Professionals (CSCMP), a worldwide association of supply chain development for researchers and practitioners, define SCM as the integration of demand and supply, encompasses suppliers, intermediaries, third-party service providers (3PL) and customers. The collaboration and coordination of

suppliers, manufacturers and customers in supply chain involves eight business processes namely customer relationship, customer service, demand management, order fulfilment, manufacturing flow, supplier relationship, product development and commercialization, and reverse logistics [1], [2], [4]. Although the term SCM is use in many ways [5], the pool of SCM literatures are derived from three overlapping main components namely purchasing and supply activities of manufacturers, transportation and logistics functions, and value-adding services.

According to [6], SCM is the basis for a firm's competitive advantage and supply chain strategy is the source of revenue. Furthermore, the application of SCM in firms will enable them to achieve lower operation costs, better service reliability, decrease inventory level, reduce order cycle time, lower the number of back orders, improve customer satisfaction and improve overall competitive advantage [4], [7], [8], [9], [10]. Ultimately, SCM is the aim of increasing efficiency and to eliminate waste [5]. Hence, the drivers for these benefits come from either external or internal factors [11]. Contribution to supply chain success are because of transportation management, organizational factors, greater competition, good chain relationship and communication, new information technology, economic globalization, product innovation, government support and many more [11], [12], [13], [14], [15], [16], [17], [18]. However, these drivers can somehow become the barrier for supply chain management, as well. For instance, [11] depict government regulation and support can either be the driver and barrier of green supply chain management. Ref. [14] described how human factor is the key to supply chain collaboration but due to organizational culture, lack of managerial commitment, functional conflict and the issue of trust, human factor is also a major barrier.

Therefore, although there are various studies dedicated on the benefits of SCM and its drivers, there are also studies been done to discover the hindering factors to SCM success [11], [13], [14], [19]. Hence, this study helps to address the gap between drivers and barriers of SCM by proposing the major critical success factors for SCM through reviewing literatures on critical success factors in SCM.

2. Critical Success Factors (CSFs)

There are few key areas in business that must go right, and if the areas are satisfactory, it will ensure successful competitive performance for an organization [20]. These key areas are the critical success factors (CSFs) and was first introduced by Rockart [20] as a tool for defining top level managers' information needs [21], [22]. According to [20], CSFs are 'areas or activities that should receive constant and careful attention from management'. Plus, due to solving and correcting problems at hand, executives tried to determine the most critical pieces of information from the sheer number of reports that are vital to the organization's current operating activities and for its future success [20], [22]. Besides, CSFs can be applied to develop strategic planning, environmental analysis and strategy evaluation [23], [24]. Not only that, CSFs are known to be useful for identifying critical issues in planning implementation, help to achieve higher organizational performance, assisting manager for better resource allocation as well as use to established guidelines to monitor an organization's activities [22]. However, [22] and [25] argues that CSFs are difficult to use, allow biasness and may not completely reflect the actual situation. Although CSFs is not a precise instrument, it is free from any biasness [26] and [27] stressed that CSFs is a reliable tool as managers are able to identify CSFs and by having more manager participation, it will assist in better CSFs and strategic goals.

Although CSFs was initially for management information system (MIS) planning [21], [23], various studies have applied CSFs outside it's traditional field. Studies and applications of CSFs can be found in human resource outsource operation [28], knowledge management [29], [30], internet marketing [31], tourism business [32], new product development [33], environmental management [34], public sector [35] and even in higher education [36]. These studies are the reflection from [24] that CSFs are applied at three levels of analysis namely firm specific, industry specific and economic socio-political environment.

3. Research Objectives and Methodology

There are two objectives for this literature survey. Firstly, it is aim to uncover the many CSFs from various SCM fields by reviewing academic works in SCM that relates with CSFs. Secondly, from the many articles reviewed, the author aims to determine the major CSFs that are

evident in SCM fields. This is important as stressed by [20], [22], [37], CSFs are critical areas or activities (in SCM) that must receive constant and careful attention by managers as they will be the difference between success and failure.

In order to find the major CSFs in SCM, this study applies literature survey technique as it enables important variables from previous studies to be swotted and that none important variables are ignored [38]. In addition, the literature survey uses major library databases [39] such as Emerald, ScienceDirect, ProQuest, Taylor and Francis and Wiley Online Library. Google Scholar was also used as the scholarly work coverage in Google Scholar is impressively broad and includes the most important scholarly publishers' archive [40]. A total of 42 academic literatures consisting of journal articles, conference proceedings and doctoral theses are gathered, generated from keywords such as supply chain management, critical success factors, logistics management, key success factors, and supply chain drivers and barriers. Content analysis is used to analyse the articles and to retrieve the CSFs, the summary, research designs, research methods and the major CSFs are drawn.

4. Summary of Review

4.1 Critical Success Factors in SCM

The early application of success factors in SCM studies can be traced from studies by [41], [42], [43]. Chiu [41] tries to discover the integrated logistics system by stressing the keys to success are good planning, well-designed distribution system, top management commitment and close relationship with trading partners. Meanwhile, from the interviews conducted by [42], the element of a successful logistics partnership are operational, culture and value compatibility, understanding business needs, effective communication, mutual commitment, flexibility, fairness and trust. The trust factor can also be found in another study of supply chain partnership by [16] that depict mutual trust is central for successful partnership in supply chain. Trust is also the CSFs for green supply chain management (GSCM), enterprise resource planning (ERP), logistics outsourcing, e-commerce in SCM, and small-medium enterprise [17], [44], [45], [46], [47], [48]. Furthermore, [16] conclude that trust among partners in supply chain can be enhanced through constant communication among the partners. This is in accordance with [44], [48], [49], [50], [51] that list communication as one of the CSFs in SCM.

CSFs studies in electronic-based supply chain (e-SCM) appears to be prevalent from the work done by [46], [47],

[50], [52], [53], [54], [55], [56], [57]. These works agreed that one of the CSFs of e-SCM is the information technology (IT) factor. Technology infrastructures such as web-based information system, EDI, XML and ERP, and reliability of both hardware and software, are critical to e-SCM formation and effective communication among supply chain members [46], [47], [50], [53]. IT is also apparent in other SCM CSFs studies such as in supply chain partnership [16], GSCM [45], reverse logistics [58], humanitarian supply chain [59], and agile SCM [60].

Although IT is a major factor in SCM CSFs studies, it will not achieve the desired target if there is no support from the organization. The IT and organizational support must be parallel as proposed by [50], [54], [56]. Organizational commitment and support will positively influence firms' performance and productivity, enhance customer satisfaction and better resource allocation [50], [58], [60]. Besides that, organizational involvement can improve the firm-supplier relationship and better evaluation on supplier [61]. However, top management support is irrelevant in supply chain if the corporate culture of an organization is weak [18].

Studies on SCM CSFs are also performed in reverse supply chain (RSC) [58], aid supply chain [59], food supply chain [62], 3PLs [63], book supply chain [64] and many more. Based on the earlier mention factors, it is apparent that studies of CSFs in SCM fields exist, and the recurrence of various CSFs in many SCM studies signifies that the success factors are based on the different fields of functions in SCM. The summary of CSFs studies in SCM is shown in Table 1.

Table 1. Summary of CSFs studies in SCM

SCM Field	Critical Success Factors
Supply Chain Management Critical Success Factors [10]	Top management commitment; consultant skills; schedule reliability; budget reliability; implementation team skills; compatibility with legacy system
Transport and Logistics Services ICT Adoption [15]	Market competence; skilled employees; inter-firm collaboration (information sharing)
Supply Chain Partnership in Construction [16]	Decentralized task management; application of information technology (IT); mutual trust

ERP II Implementation in Supply Chain [17]	Operational efficiency; efficient legacy enterprise system; common partner goals; similar partner priority; collaboration partner support; partner trust; partner culture similarity; relationship change management; data standard consistency
Supply Chain Performance [18]	customer-supplier relationship; information and communication technology (ICT); material flow management; corporate culture (management support); performance management
Integrated Logistics Management System [41]	Good logistics system planning; well-designed distribution system; prudent selection of allied companies; close relationship with trading partners; good logistics investment analysis; logistics management barriers elimination; top management support; continuous improvement in logistics
Logistics Partnership [42]	Operational/culture/value compatibility; understanding business needs; effective communication; mutual commitment; flexibility; fairness; trust
Benchmarking Logistics Performance [43]	Reliability; flexibility; lead time; cost effectiveness value added
Outsourcing Logistics Functions [44]	External and internal communication; relationship; customer focus; setting standard and monitoring; knowing payback period; human factors
Green Supply Chain (GSC) [45]	Collaboration with partners; mutual trust; green business understanding; planning and implementation; standardizing and integration; activation of supporting for GSC; strategic use of IT
E-commerce in Supply Chain [46]	System quality; information quality; management and use; world wide web – assurance and empathy; trust

E-Supply Chain Requirements [47]	Replacement of, or integration with legacy system; streamlining and standardizing internal processes; implementation, adoption or updating ERP system; streamlining external processes; strategic business alliance; basic technologies; security and trust
Supply Chain Management in SME [48]	Effective partnership; improve communication; logistics integration; supply chain business strategy; buyer-supplier relationship; effective planning and control; trust among supply chain partners; availability of performance management tools
Information Logistics Strategy [49]	Comprehensiveness; flexibility; top management support; communication; IT strategy orientation; business it partnership; project collaboration
Web-based Supply Chain Management [50]	Communication; top management commitment; training and education; data security; reliability of hardware and software
Supply Base Reduction [51]	Top management support; cross-functional teams; standardize part numbers and descriptions; supplier performance evaluation system; good communication during projects; win-win relationship; good information system; hiring right people
Supply Chain Software Implementation [52]	Commitment of senior management; business focus; project business goal alignment; software capabilities; partner selection; apply proven; implementation methodology; incremental value gain approach; prepare for business changes; keep end users informed; measure success with KPI
Virtual Supply Chain [53]	Strategic alliance; web-based information system; automation for business process and re-engineering; supply chain visibility; performance management system

E-supply chain management implementation [54]	Top management commitment; clear goals, objectives and business requirements; key business process re-engineering; project implementation strategy; policies and regulation; process to ensure interdependent cooperation; integrate process into system; data quality and information transparency in SCM; change management; formation of a project team; direct cross-organizational communication; joint agreement of performance and value evaluation; underlining infrastructure and application readiness; process and data exchange standardization; supply chain partnership selection
E-procurement in supply chain [55]	Preparation of catalogue; embracement of supplier at an early stage; automation of authorization workflow; creation of a central instance for supplier management; strategy for physical hosting of catalogue; integration of e-procurement system with other relevant system; redesign of the procurement process
E-procurement in Supply Chain [56]	Introduction project; organization support; content and catalogue management; supply chain process; operation efficiency
E-Supply Chain [57]	System quality; information quality; service quality; work performance quality
Reverse Supply Chain (RSC) [58]	Costs; technology capacity; government policy; organizational commitment; channel relationship; service quality; ease of use; perceived usefulness; RSC performance
Humanitarian Supply Chain [59]	Strategic planning; resource management; transport planning; capacity planning; information management; technology utilization; human resource management; continuous improvement; supplier relationship; supply chain strategy

Agile Supply Chain [60]	Participative management style; computer-based technology; resource management; continuous improvement enablers; supplier relation; Just-in-Time (JIT) methodology; technology utilization
Green Supply Chain (GSC) [61]	Supplier management; product recycling; organizational involvement; life cycle management
Fresh Produce Supply Chain [62]	Good quality employee; continuous investment; cost control; innovation; improvement of measurement
3PL Performance [63]	Breadth of services; industry focus; relationship with 3PLs; investment in information system; skilled professionals; supply chain integration
Supply Chain Network Electronic Trade [64]	Good ideas; impressive and efficient value proposition; involvement of credible partners stable logistics and supply chain background
Small Logistics Companies [65]	Strategic planning; inventory management; transportation planning; capacity planning; information management
3PL Selection [66]	Quality improvement; cost reduction; service quality; reputation; primary customer loyalty; complaint
3PL Customer Relationship [67]	Service relationship elements; role of organization; organization hierarchy; operational elements; performance elements
Supply Chain Management in High-tech Companies [68]	On-time delivery; partnership with suppliers; effective use of ERP and MRP system; outsourcing non-core activities; teamwork; superior product quality; top management commitment; customer complaint management
Operational Issues in Supply Chain Management Implementation [69]	Customer-supplier relationship; information and communication technology (ICT); re-engineering material flow; creating corporate culture; performance management

Supply Chain Theory Advancement [70]	Environment uncertainty; customer focus; top management support; supply strategy; information technology; supply network structure; managing buyer-supplier relationship; logistics integration
Supply Chain Management Implementation [71]	Selection process of supply chain members; chain members performance assessment; commitment; coordination; integration of business process; sharing risk and reward; information sharing; information quality; top management commitment; employees' attitude towards changes
ERP Implementation [72]	Top management support; business plan and vision; re-engineering business process; effective project management; teamwork and composition; ERP system selection; user involvement; education and training
Collaboration in Integrated Circuit (IC) Supply Chain [73]	Authorization and security; CAD and EDA tools; co-design of equipment and tools; communication technology; database management; data format, transformation and interface; design for manufacturing; design optimization and technique; information sharing mechanism; IP reuse; knowledge-based system; strategic alliance, community and coalition
Supply Chain Quality Management [74]	Customer focus; quality of it system; supplier relationship; externally focused processed integration; supply chain quality leadership
Supply Chain Quality Management [75]	Supplier relationship; information technology; process management; top management support; human resource management; quality management; strategic planning; knowledge management

Supplier Development in Manufacturing Supply Chain Management [76]	Long-term strategic goal; top management commitment; incentives; supplier's supplier condition; proximity to manufacturing base; supplier certification; innovation capability; information sharing; environmental readiness; external environment; project completion experience; supplier status; direct involvement
Supplier Selection in Supply Chain Management [77]	Price response capability; quality management capability; technological capability; delivery capability; flexible capability; management capability; commercial image; financial capability

4.2 Research Design in SCM CSFs

In this section, the literatures are reviewed based on their research design whether it is based on empirical work or desk research, an adaptation from [78] that classify the research design into five categories namely empirical qualitative, empirical quantitative, desk qualitative, desk quantitative and empirical triangulation. The purpose of this review is to showcase which research design is evident in SCM CSFs studies. Based on Table 2, from the 42 papers reviewed, empirical quantitative has the highest percentage with 16 papers. This indicate that researchers are more inclined to use quantitative research methods such as questionnaire or mail survey. This shows that the majority of the CSFs has already been tested which further strengthen the significant and relevancy. Empirical qualitative and triangulation have the same percentage with 8 papers reviewed. Triangulation research design involved multi-method studies while focus group, interviews or observation are examples of empirical qualitative research design. There are only 10 papers that applied desk qualitative that mainly performed literature survey or conceptual development. However, there are no study solely done using desk quantitative (mathematical or fuzzy logic). Table 2 shows the research design distribution from the 42 papers.

Table 2. Research Design Distribution

Research Design (N=42)	Papers
Empirical Qualitative (n=8)	[16], [41], [42], [48], [51], [62], [64], [65]

Empirical Quantitative (n=16)	[15], [18], [46], [48], [49], [50], [57], [58], [60], [61], [63], [66], [67], [68], [69], [77]
Desk Qualitative (n=10)	[44], [47], [52], [53], [56], [59], [70], [71], [72], [73]
Empirical Triangulation (n=8)	[10], [17], [43], [54], [55], [74], [75], [76]

4.3 Research Methods in SCM CSFs

The research methods derived from the 42 papers are survey, interviews, literature review, conceptual model, mathematical modelling and case study. In Table 3, the survey technique is popular among studies in SCM CSFs with 19 papers opted to use the likes of self-administered questionnaire or mail-survey. This is consistent with research done by [78] and [79] that survey methods is common in logistics research. Archival study (literature review) and interview techniques are also frequently practiced with 12 and 11 papers respectively. The comparable number of papers that apply literature and interview techniques is understandable as these techniques will further determine if the factors are apparent in both academic work and actual practice. Furthermore, there are four papers use mathematical modelling technique, and in SCM CSFs studies, only Analytical Hierarchy Process (AHP) technique is used. Case study is also preferred in SCM CSFs studies as the factors can be studied in their natural settings and theories generated directly from the data [78]. Conceptual study consists only two papers and these two mainly aims to generate new CSFs from literature surveys in its respective SCM fields. However, it must be stressed that although the total paper (N=42) does not add up, this is because eight studies applied multi-method approach.

Table 3. Research Methods in SCM CSFs

Research Method	Papers
Survey (n=19)	[10], [15], [18], [41], [45], [46], [49], [50], [55], [57], [58], [60], [61], [63], [66], [67], [68], [69], [77]
Interviews (n=11)	[16], [17], [41], [42], [43], [52], [54], [55], [62], [65], [75]

Literature Review (n=12)	[10], [17], [44], [47], [54], [56], [59], [70], [72], [73], [74], [76]
Conceptual Models (n=2)	[53], [71]
Mathematical Modelling (n=4)	[43], [54], [74], [76]
Case Study (n=8)	[42], [48], [51], [55], [64], [65], [75], [76]

5. Major CSFs in SCM

Based on the 42 paper reviewed, there are four prominent CSFs in SCM studies, and they are top management support, human resource management, information technology (IT) and collaborative partnership. Furthermore, by referring to Table 4, from the 42 papers only three studies, [43], [55] and [66] does not contain any of the four CSFs. From the four CSFs, collaborative partnership is the most common CSFs with 30 papers, followed by information technology (n=24), top management support (n=23) and human resource (n=14). Each of the factors is discussed accordingly.

Table 4. Major CSFs in SCM Studies

Major CSFs in SCM	Papers
Collaborative Partnership (n=30)	[15], [16], [17], [18], [41], [42], [44], [45], [46], [47], [48], [49], [51], [52], [53], [56], [59], [60], [63], [64], [67], [68], [69], [70], [71], [73], [74], [75], [76], [77]
Information Technology (n=24)	[16], [18], [45], [46], [47], [49], [50], [51], [52], [53], [54], [57], [58], [59], [60], [63], [65], [67], [68], [69], [70], [74], [75], [77]
Top Management Support (n=23)	[10], [18], [41], [46], [49], [50], [51], [52], [54], [56], [58], [60], [61], [65], [67], [68], [69], [71], [72], [74], [75], [76], [77]

Human Resource (n=14)	[10], [15], [44], [49], [50], [51], [54], [59], [63], [68], [70], [71], [72], [75]
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5.1 Collaborative Partnership

According to [80], the goal of collaboration in supply chain is to have a common, transparent and visible demand pattern that comes in a wide range of forms. Besides, collaborative partnership in supply chain is a key activity and firms must incorporate their customers and suppliers [3]. This is in line with [81] and [82] that stated collaboration must involve both vertical (supplier-customer) and horizontal (competitor) collaboration. Additionally, successful collaborative partnership in supply chain offers many positive outcome such as minimizing costs, improve service efficiency and effectiveness, improve revenue and allow greater operational flexibility [83], [84], [85], [86], [87].

However, collaboration in supply chain is not guaranteed as it is difficult to implement as the lack of knowledge on when or with whom to collaborate and trust issues between partners can be the barrier to the success [81], [88], [89]. The elements of supply chain collaboration and partnership, according to [81] and [89] are trust (visibility), mutuality, information sharing and openness and communication. These elements are supported by [15], [17], [45], [46], [48], [51], [71].

5.2 Information Technology

The importance of IT in SCM cannot be undermined as [90] described 'information has always been central to the efficient management of logistics but now, enabled by technology, it is providing the driving force for competitive logistics strategy'. Hence, firms cannot operate without the use of IT [91]. Studies of IT as CSFs in SCM is documented in supply chain performance [18], GSCM [45], e-SCM [50], [53], humanitarian SCM [59], logistics SMEs [65], supply chain quality management [74], [75]. The application of IT in SCM offer firms abundant benefits. According to [53] and [65], the use of web-based information system in SCM will reduce communication barriers and customer or supplier profiling can be done accurately. Thoo *et al.* [18] adds that information and communication technology (ICT) have a positive relationship and will improve supply chain performance.

Other evidence that display IT as CSFs include improving supply chain performance, support supply chain efficiency, and enables greater supply chain

integration [91]. Study by [92] support this by concluding, use of IT will help logistics service provider to improve their productivity and not only that, [93] claimed IT in SCM plays a bigger role as it will help to position a nation as a logistics hub. Despite the fact that IT offers substantial benefit in logistics and SCM, it can also become the barrier to SCM success. Fawcett *et al.* [17] sees IT as the main barrier in supply chain collaboration. This is due to inconsistent information or incompatible IT application among suppliers or customers. Plus, technology advancement and difficult or complex data analysing from IT are another reason to address IT as a barrier in SCM. Accordingly, the trust issue in IT remain an obstacle in SCM as the unwillingness and fear to share information online remains pertinent [47], [94].

5.3 Top Management Support

Management support is critical in SCM [95]. Dinter [49] shared the same view that top management support is vital for information logistics strategy success. Besides, [60] argues that for firms to be more agile in their supply chain operation, a participative management style is essential. Furthermore, a good communication, employee involvement and recognition, cross-functional interaction and committed managers are indications of participative management in SCM [69]. Moreover, the top management support comes in the form of allocating resources, reward and time, supporting strategic purchasing, develop strategic supplier relationship and striving for information technology adoption [69], [70]. In addition, [75] proposed communication, motivation, commitment and continuous implementation are the elements of top management support in supply chain quality management (SCQM).

The magnitude of top management support in supply chain fields is vast as it is also CSFs for e-SCM [50], [56], reverse SCM [58] and GSCM [61]. Ref. [50] for instance suggest that apart from being financially supportive and setting up priorities, support from top management can come from psychological and behavioural support for employees who are resistance to change. However, [14] describe managerial complexity and poor vision from top management are barriers to successful supply chain integration. In a different study, [96] conclude that SCM is among top management agendas, but the inability to comprehend the need to support SCM is lacking. Ref. [18] support this finding as corporate culture supports enhances firms' performance but a weak corporate culture is not.

5.4 Human Resource

Even though organizational support is important, [97] suggest that supply chain managers who have the right

skills, will have a better chance to be successful. On one hand, [62] finds that firms addresses the importance of good quality staff but, on the other, it is difficult to attract and hold on to them. Ref. [15] discover that firms who hires employees with a university degree will positively influence ICT adoption in logistics and transport services as they are more likely to conduct ICT-enabled innovations. This claim can be supported by [95] that supply chain objectives can be achieved through skilled professionals and [63] list skilled professionals as the CSFs for 3PL performance. Ref. [16] discovers that investing in skilled logistics professionals is more important than investment in information system and supply chain integration. Plus, the presence of skilled professionals in 3PL service providers will contribute to profit growth, on-time delivery and enhance customer satisfaction [63], [98].

The importance of human factor is also expressed by [44] as the logistics and supply chain experts will better facilitate outsourcing logistics functions. Although employees (hiring the right one) are key factors in supply chain [14], [15], [50], [51], [59], [68], the need for training must not be ignored. Lin *et al.* [75] list one of the components of human resource management (HRM) is training, as equipping the best employees with proper training will benefit the supply chain processes [14]. Not only that, training is essential and [72] perceived sufficient educating and training will avoid ERP implementation failure. Furthermore, the critical impact of HRM in SCM is well explained by [99] that through managerial support and employee commitment and strengthen by effective training, it will lessen the supply chain implementation barriers and enhances supply chain performance.

6. Conclusion

This study aims to uncover the major CSFs in SCM fields from reviewing CSFs related articles, and proposed collaborative partnership, information technology, top management support and human resource as the major CSFs. These CSFs are well supported from relevant SCM articles and are obvious in the definition and component of logistics and SCM presented at the beginning. Accordingly, through this literature survey, many studies performed reliability and validity test thus fortify the consistency and soundness of the four major CSFs. Furthermore, the research design and methodology are also showcased to further prove that CSFs is a relevant tool and approach in SCM studies. Plus, by reviewing the research design and methods, it is hope that future SCM studies try to use CSFs and continue to apply quantitative research design and methodology (surveys). Moreover, future research can try to use mathematical modelling

techniques in SCM CSFs studies as it is lacking. In addition, it is recommended for future studies to further quantify and test the reliability and relevancy of the proposed CSFs. Finally, the limitation of this study is that it is only limited to English publications and ignore other languages. Plus, the articles are retrieved from major databases and did not include studies from minor or less popular databases. A comprehensive collection of articles from any database should be in the agenda for the next research.

References

- [1] Cooper, M. C., Lambert, D. M., Pagh, J. D., "Supply Chain Management: More than a New Name for Logistics", International Journal of Logistics Management, The, Vol. 8, No. 1, pp. 1-14, 1997.
- [2] Lambert, D. M., Cooper, M. C., Pagh, J. D. "Supply Chain Management: Implementation Issues and Research Opportunities", The International Journal of Logistics Management, Vol. 9, No. 2, pp. 1-20, 1998.
- [3] Mentzer, J. T., DeWitt, W., Keebler, J. S., Min, S., Nix, N. W., Smith, C. D., Zacharia, Z. G. "Defining Supply Chain Management", Journal of Business logistics, Vol. 22, No. 2, pp. 1-25, 2001.
- [4] Bowersox, D. J., Closs, D. J., Cooper, M. B. *Supply Chain Management*, McGraw-Hill International Edition. 2010.
- [5] Tan, K. C. "A framework of supply chain management literature", European Journal of Purchasing & Supply Management, Vol. 7, No. 1, pp. 39-48, 2001.
- [6] Ballou, R. H. "The Evolution and Future of Logistics and Supply Chain Management", European Business Review, Vol. 19, No. 4, pp. 332-348, 2007.
- [7] Ellram, L. M. "Supply-chain Management: The Industrial Organisation Perspective", International Journal of Physical Distribution & Logistics Management, Vol. 21, No. 1, pp. 13-22, 1991.
- [8] Cooper, M. C., Ellram, L. M. "Characteristics of Supply Chain Management and the Implications for Purchasing and Logistics Strategy", The International Journal of Logistics Management, Vol. 4, No. 2, pp. 13-24, 1993.
- [9] Beamon, B. M. "Measuring Supply Chain Performance", International Journal of Operations & Production Management, Vol. 19, No. 3, pp. 275-292, 1999.
- [10] Chuang, M. L., Shaw, W. H. "Distinguishing the Critical Success Factors Between E-Commerce, Enterprise Resource Planning, and Supply Chain Management" Proceedings of the 2000 IEEE Engineering Management Society, IEEE, Albuquerque, pp. 596-601, 2000.
- [11] Walker, H., Di Sisto, L., McBain, D. "Drivers and Barriers to Environmental Supply Chain Management Practices: Lessons from the Public and Private Sectors", Journal of Purchasing and Supply Management, Vol. 14, No. 1, pp. 69-85, 2008.
- [12] Lippmann, S. "Supply Chain Environmental Management: Elements for Success", Corporate Environmental Strategy, Vol. 6, No. 2, pp. 175-182, 1999.
- [13] Lee, S. Y. "Drivers for the Participation of Small and Medium-sized Suppliers in Green Supply Chain Initiatives", Supply Chain Management: An International Journal, Vol. 13, No. 3, pp. 185-198, 2008.
- [14] Fawcett, S. E., Magnan, G. M., McCarter, M. W. "Benefits, Barriers, and Bridges to Effective Supply Chain Management", Supply Chain Management: An International Journal, Vol. 13, No. 1, pp. 35-48, 2008.
- [15] Hidalgo, A., López, V. "Drivers and Impacts of ICT Adoption on Transport and Logistics Services", Asian Journal of Technology Innovation, Vol. 17, No. 2, pp. 27-47, 2009.
- [16] Lönngren, H-M., Rosenkranz, C., Kolbe, H. "Aggregated Construction Supply Chains: Success Factors in Implementation of Strategic Partnerships", Supply Chain Management: An International Journal, Vol. 15, No. 5, pp. 404-411, 2010.
- [17] Koh, S. L., Gunasekaran, A., Goodman, T. "Drivers, Barriers and Critical Success Factors for ERP/II Implementation in Supply Chains: A Critical Analysis", The Journal of Strategic Information Systems, Vol. 20, No. 4, pp. 385-402, 2011.
- [18] Thoo, A. C., Huam, H. T., Yusoff, R. M., Rasli, A. M., Hamid, A. B. A. "Supply Chain Management: Success Factors from the Malaysian Manufacturer's Perspective" African Journal of Business Management, Vol. 5, No. 17, pp. 7240-7247, 2011.
- [19] Archer, N., Wang, S., Kang, C. "Barriers to the Adoption of Online Supply Chain Solutions in Small and Medium Enterprises", Supply Chain Management: An International Journal, Vol. 13, No. 1, pp. 73-82, 2008.
- [20] Rockart, J. F. "Chief Executive Define Their Own Data Needs" Harvard Business Review, Vol. March-April, pp. 81-93, 1979.

- [21] Martin, E. W. "Critical Success Factors of Chief MIS/DP Executives", MIS Quarterly, Vol. 6, No. 2, pp. 1-9, 1982.
- [22] Boynton, A. C., Zmud, R. W. "An Assessment of Critical Success Factors", Sloan Management Review, Vol. 25, No. 4, pp. 17-27, 1984.
- [23] Munro, M. C., Wheeler, B. R. "Planning, Critical Success Factors, and Management's Information Requirements", MIS Quarterly, Vol. 4, No. 4, pp. 27-38, 1980.
- [24] Leidecker, J. K., Bruno, A. V. "Identifying and Using Critical Success Factors", Long Range Planning, Vol. 17, No. 1, pp. 23-32, 1984.
- [25] Davis, G. B. *Comments on the critical success factors method for obtaining management information requirements in article by John F. Rockart, "Chief Executives define their own data needs"*, Harvard Business Review, March-April, MIS Quarterly, Vol. 3, No. 3, pp. 57-58, 1979.
- [26] Munro, M. C. "An opinion... Comment on Critical Success Factors Work", MIS Quarterly, Vol. 7, No. 3, pp. 67-68, 1983.
- [27] Quesada, H., Gazo, R. "Methodology for Determining Key Internal Business Processes Based on Critical Success Factors: A Case Study in Furniture Industry", Business Process Management Journal, Vol. 13, No. 1, pp. 5-20, 2007.
- [28] Hindle, J. "HR Outsourcing in Operation: Critical Success Factors", Human Resource Management International Digest, Vol. 13, No. 3, pp. 39-42, 2005.
- [29] Wong, K. Y. "Critical Success Factors for Implementing Knowledge Management in Small and Medium Enterprises", Industrial Management & Data Systems, Vol. 105, No. 3, pp. 261-279, 2005.
- [30] Alazmi, M. and Zairi, M. "Knowledge Management Critical Success Factors", Total Quality Management and Business Excellence, Vol. 14, No. 2, pp. 199-204, 2003.
- [31] Lin, T. M., Luarn, P., Lo, P. K. "Internet Market Segmentation—An Exploratory Study of Critical Success Factors", Marketing Intelligence & Planning, Vol. 22, No. 6, pp. 601-622, 2004.
- [32] Getz, D., Brown, G. "Critical Success Factors for Wine Tourism Regions: A Demand Analysis", Tourism Management, Vol. 27, No. 1, pp. 146-158, 2006.
- [33] Cheng, C. C. J., Shiu, E. C. "Critical Success Factors Of New Product Development in Taiwan's Electronics Industry", Asia Pacific Journal of Marketing and Logistics, Vol. 20, No. 2, pp. 174-189, 2008.
- [34] Zutshi, A., Sohal, A. S. "Adoption and Maintenance of Environmental Management Systems: Critical Success Factors", Management of Environmental Quality: An International Journal, Vol. 15, No. 4, pp. 399-419, 2004.
- [35] Rosacker, K. M. and Olson, D. L. "Public Sector Information System Critical Success Factors", Transforming Government: People, Process and Policy, Vol. 2, No. 1, pp. 60-70, 2008.
- [36] Ahmad, H., Francis, A., Zairi, M. "Business Process Reengineering: Critical Success Factors in Higher Education", Business Process Management Journal, Vol. 13, No. 3, pp. 451-469, 2007.
- [37] Bullen, C. V., Rockart, J. F. *A Primer on Critical Success Factors*. Working Paper No. 1220-81. Massachusetts Institute of Technology, 1981.
- [38] Sekaran, U. *Research Methods for Business: A Skill Building Approach*, John Wiley & Sons, 2003.
- [39] Cooper, D. R., Schindler, P. S. *Business Research Methods*, McGraw Hill, 2011.
- [40] Jacsó, P. "Google Scholar: The Pros and the Cons", Online Information Review, Vol. 29, No. 2, pp. 208-214, 2005.
- [41] Chiu, H. N. "The Integrated Logistics Management System: A Framework and Case Study", International Journal of Physical Distribution & Logistics Management, Vol. 25, No. 6, pp. 4-22, 1995.
- [42] Tate, K. "The Elements of a Successful Logistics Partnership", International Journal of Physical Distribution & Logistics Management, Vol. 26, No. 3, pp. 7-13, 1996.
- [43] Korpela, J., Tuominen, M. "Benchmarking Logistics Performance with an Application of the Analytic Hierarchy Process", IEEE Transactions on Engineering Management, Vol. 43, No. 3, pp. 323-333, 1996.
- [44] Razzaque, M. A., Sheng, C. C. "Outsourcing of Logistics Functions: A Literature Survey", International Journal of Physical Distribution & Logistics Management, Vol. 28, No. 2, pp. 89-107, 1998.
- [45] Kim, J., Rhee, J. "An Empirical Study on the Impact of Critical Success Factors on the Balanced Scorecard Performance in Korean Green Supply Chain Management Enterprises", International Journal of Production Research, Vol. 50, No. 9, pp. 2465-2483, 2012.
- [46] Cullen, A. J., Taylor, M. "Critical Success Factors for B2B E-Commerce Use Within the UK NHS Pharmaceutical Supply Chain", International Journal of Operations & Production Management, Vol. 29, No. 11, pp. 1156-1185, 2009.

- [47] Akyuz, G. A., Rehan, M. "Requirements for Forming an 'E-Supply Chain'", International Journal of Production Research, Vol. 47, No. 12, pp. 3265-3287, 2009.
- [48] Thakkar, J., Kanda, A., Deshmukh, S. G. "Supply Chain Issues in SMEs: Select Insights from Cases of Indian Origin", Production Planning & Control, Vol. 24, No. 1, pp. 47-71, 2013.
- [49] Dinter, B. "Success Factors for Information Logistics Strategy – An Empirical Investigation", Decision Support Systems, Vol. 54, pp. 1207-1218, 2012.
- [50] Ngai, E. W. T., Cheng, T. C. E., Ho, S. S. M. "Critical Success Factors of Web-based Supply-Chain Management Systems: An Exploratory Study", Production Planning & Control, Vol. 15, No. 6, pp. 622-630, 2004.
- [51] Ogden, J. A. "Supply Base Reduction: An Empirical Study of Critical Success Factors", Journal of Supply Chain Management, Vol. 42, No. 14, pp. 29-39, 2006.
- [52] Favilla, J., Fearne, A. "Supply Chain Software Implementations: Getting It Right", Supply Chain Management: An International Journal, Vol. 10, No. 4, pp. 241-243, 2005.
- [53] Gunasekaran, A., Ngai, E. W. "Virtual Supply-Chain Management", Production Planning & Control, Vol. 15, No. 6, pp. 584-595, 2004.
- [54] Hwang, B. N., Lu, T. P. "Key Success Factor Analysis for e-SCM Project Implementation and a Case Study in Semiconductor Manufacturers", International Journal of Physical Distribution & Logistics Management, Vol. 43, No. 8, pp. 657-683, 2013.
- [55] Puschmann, T., Alt, R. "Successful Use of E-Procurement in Supply Chains", Supply Chain Management: An International Journal, Vol. 10, No. 2, pp. 122-133, 2005.
- [56] Farzin, S., Nezhad, H. T. "E-Procurement, the Golden Key to Optimizing the Supply Chains System", World Academy of Science, Engineering and Technology, Vol. 42, pp. 518-524, 2010.
- [57] Chow, W. S. "An Exploratory Study of the Success Factors for Extranet Adoption In E-Supply Chain", Journal of Global Information Management, Vol. 12, No. 1, pp. 60-67, 2004.
- [58] Hong, J. Y., Suh, E. H., Hou, L. Y. "Identifying the Factors Influencing the Performance of Reverse Supply Chains (RSC)", International Journal of Sustainable Engineering, Vol. 1, No. 3, pp. 173-187, 2008.
- [59] Pettit, S., Beresford, A. "Critical Success Factors in the Context of Humanitarian Aid Supply Chains" International Journal of Physical Distribution & Logistics Management, Vol. 39, No. 6, pp. 450-468, 2009.
- [60] Power, D. J., Sohal, A. S., Rahman, S. U. "Critical Success Factors in Agile Supply Chain Management: An Empirical Study", International Journal of Physical Distribution & Logistics Management, Vol. 31, No. 4, pp. 247-265, 2001.
- [61] Hu, A. H., Hsu, C. W. "Critical Factors for Implementing Green Supply Chain Management Practice: An Empirical Study of Electrical and Electronics Industries in Taiwan" Management Research Review, Vol. 33, No. 6, pp. 586-608, 2010.
- [62] Fearne, A., Hughes, D. "Success Factors in the Fresh Produce Supply Chain: Insights From the UK", Supply Chain Management: An International Journal, Vol. 4, No. 3, pp. 120-131, 2000.
- [63] Mothilal, S., Gunasekaran, A., Nachiappan, S. P., Jayaram, J. "Key Success Factors and Their Performance Implications in the Indian Third-Party Logistics (3PL) Industry", International Journal of Production Research, Vol. 50, No. 9, pp. 2407-2422, 2012.
- [64] Drótos, G., Móricz, P. "Critical Factors of Attracting Supply Chain Network Members to Electronic Marketplaces: The Case of Sunbooks Ltd. and the Hungarian Book Trade" Society and Economy, Vol. 28, No. 2, pp. 147-164, 2006.
- [65] Gunasekaran, A., Ngai, E. W. T. "The Successful Management of a Small Logistics Company", International Journal of Physical Distribution & Logistics Management, Vol. 33, No. 9, pp. 825-842, 2003.
- [66] Lao, S. I., Choy, K. L., Ho, G. T. S., Tsim, Y. C., Chung, N. S. H. "Determination of the Success Factors in Supply Chain Networks: A Hong Kong-based Manufacturer's Perspective", Measuring Business Excellence, Vol. 15, No. 1, pp. 34-48, 2011.
- [67] Rajesh, R., Pugazhendhi, S., Ganesh, K., Yves, D., Lenny Koh, S. C., Muralidharan, C. "Perceptions of Service Providers and Customers of Key Success Factors of Third-Party Logistics Relationships: An Empirical Study", International Journal of Logistics Research and Applications, Vol. 14, No. 4, pp. 221-250, 2011.
- [68] Soın, S. S. "Critical Success Factors in Supply Chain Management at High Technology Companies" DBA thesis, University of Southern Queensland, 2004.

- [69] Tummala, V. R., Phillips, C. L. and Johnson, M. "Assessing Supply Chain Management Success Factors: A Case Study", *Supply Chain Management: An International Journal*, Vol. 11, No. 2, pp. 179-192, 2006.
- [70] Chen, I. J., Paulraj, A. "Towards a Theory of Supply Chain Management: The Constructs and Measurements", *Journal of Operations Management*, Vol. 22, No. 2, pp. 119-150, 2004.
- [71] Cai, S. Jun, M., Kim, D. "Critical Success Factors in Implementing Supply Chain Management: A Conceptual Model" Proceeding - Annual Meeting of the Decision Sciences Institute, Washington, pp. 1951-1956, 2003.
- [72] Al-Fawaz, K., Al-Salti, Z., Eldabi, T. "Critical Success Factors in ERP Implementation: A Review" European and Mediterranean Conference on Information Systems 2008 (EMCIS2008), Dubai, pp. 1-9, 2008.
- [73] Wu, J. Z., Hsu, C. Y. "Critical Success Factors for Improving Decision Quality on Collaborative Design in the IC Supply Chain", *Journal of Quality*, Vol. 16, No. 2, pp. 95-108, 2009.
- [74] Kuei, C. H., Madu, C. N., Lin, C. "Implementing Supply Chain Quality Management", *Total Quality Management*, Vol. 19, No. 11, pp. 1127-1141, 2008.
- [75] Lin, C., Kuei, C. H., Chai, K. W. "Identifying Critical Enablers and Pathways to High Performance Supply Chain Quality Management", *International Journal of Operations & Production Management*, Vol. 33, No. 3, pp. 347-370, 2013.
- [76] Routroy, S., Pradhan, S. K. "Evaluating the Critical Success Factors of Supplier Development: A Case Study", *Benchmarking: An International Journal*, Vol. 20, No. 3, pp. 322-341, 2013.
- [77] Wu, M. Y., Weng, Y. C. "A Study of Supplier Selection Factors for High-tech Industries in the Supply Chain", *Total Quality Management*, Vol. 21, No. 4, pp. 391-413, 2010.
- [78] Sachan, A., Datta, S. "Review of Supply Chain Management and Logistics Research", *International Journal of Physical Distribution & Logistics Management*, Vol. 35, No. 9, pp. 664-705, 2005.
- [79] Mentzer, J. T., Kahn, K. B. "A Framework of Logistics Research", *Journal of Business Logistics*, Vol. 16, No. 1, pp. 231-232, 1995.
- [80] Holweg, M., Disney, S., Holmström, J., Småros, J. "Supply Chain Collaboration: Making Sense of the Strategy Continuum", *European Management Journal*, Vol. 23, No. 2, pp. 170-181, 2005.
- [81] Barratt, M. "Understanding the Meaning of Collaboration in the Supply Chain", *Supply Chain Management: An International Journal*, Vol. 9, No. 1, pp. 30-42, 2004.
- [82] Flynn, B. B., Huo, B., Zhao, X. "The Impact of Supply Chain Integration on Performance: A Contingency and Configuration Approach", *Journal of Operations Management*, Vol. 28, No. 1, pp. 58-71, 2010.
- [83] Gimenez, C., Ventura, E. "Logistics-production, Logistics-marketing and External Integration: Their Impact on Performance", *International Journal of Operations & Production Management*, Vol. 25, No. 1, pp. 20-38, 2005.
- [84] Narasimhan, R., Kim, S. W. "Information System Utilization Strategy for Supply Chain Integration", *Journal of Business Logistics*, Vol. 22, No. 2, pp. 51-75, 2001.
- [85] Duffy, R., Fearn, A. "The Impact of Supply Chain Partnerships on Supplier Performance", *The International Journal of Logistics Management*, Vol. 15, No. 1, pp. 57-72, 2004.
- [86] Richey, R. G., Roath, A. S., Whipple, J. M., Fawcett, S. E. "Exploring a Governance Theory of Supply Chain Management: Barriers and Facilitators to Integration" *Journal of Business Logistics*, Vol. 31, No. 1, pp. 237-256, 2010.
- [87] Chapman, R. L., Soosay, C. and Kandampully, J. "Innovation in Logistic Services and the New Business Model: A Conceptual Framework", *International Journal of Physical Distribution & Logistics Management*, Vol. 33, No. 7, pp. 630-650, 2003.
- [88] Ha, B. C., Park, Y. K., Cho, S. "Suppliers' Affective Trust and Trust in Competency in Buyers: Its Effect on Collaboration and Logistics Efficiency", *International Journal of Operations & Production Management*, Vol. 31, No. 1, pp. 56-77, 2011.
- [89] Näslund, D., Hulthen, H. "Supply Chain Management Integration: A Critical Analysis", *Benchmarking: An International Journal*, Vol. 19, No. 4/5, pp. 481-501, 2012.
- [90] Christopher, M. *Logistics and Supply Chain Management*, FT Press, 2011.
- [91] Hammant, J. "Information Technology Trends in Logistics", *Logistics Information Management*, Vol. 8, No. 6, pp. 32-37, 1995.
- [92] Hazen, B. T., Byrd, T. A. "Toward Creating Competitive Advantage with Logistics Information Technology", *International Journal of Physical Distribution & Logistics Management*, Vol. 42, No. 1, pp. 8-35, 2012.
- [93] Iplani, R., Pokharel, S., Tan, A. "Perspectives on the Use of Information Technology at Third Party Logistics Service Providers in Singapore", *Asia Pacific Journal of Marketing and Logistics*, Vol. 16, No. 1, pp. 27-41, 2004.

-
- [94] Matopoulos, A., Vlachopoulou, M., Manthou, V. "Understanding the Factors Affecting E-Business Adoption and Impact on Logistics Processes", Journal of Manufacturing Technology Management, Vol. 20, No. 6, pp. 853-865, 2009.
- [95] van Hoek, R. I., Chatham, R., Wilding, R. "Managers in Supply Chain Management, the Critical Dimension", Supply Chain Management: An International Journal, Vol. 7, No. 3, pp. 119-125, 2002.
- [96] Fawcett, S. E., Ogden, J. A., Magnan, G. M., Cooper, M. B. "Organizational Commitment and Governance for Supply Chain Success", International Journal of Physical Distribution & Logistics Management, Vol. 36, No. 1, pp. 22-35, 2006.
- [97] Myers, M. B., Griffith, D. A., Daugherty, P. J., Lusch, R. F. "Maximizing the Human Capital Equation in Logistics: Education, Experience, and Skills", Journal of Business Logistics, Vol. 25, No. 1, pp. 211-232, 2004.
- [98] Wu, Y. C. J., Chou, Y. H. "A New Look at Logistics Business Performance: Intellectual Capital Perspective", The International Journal of Logistics Management, Vol. 18, No. 1, pp. 41-63, 2007.
- [99] Gowen III, C. R., Tallon, W. J. "Enhancing Supply Chain Practices Through Human Resource Management", Journal of Management Development, Vol. 22, No. 1, pp. 32-44, 2003.