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OUTSOURCING SUPPLY CHAIN: SYSTEMATIC LITERATURE REVIEW ON INNOVATION DRIVER FACTORS TOWARDS COLLABORATIVE NETWORK

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ABSTRACT
Innovation and collaboration are essential to every organization in order to compete with its competitors. Outsourcing is done to distribute part of the responsibility of the parent organization so that it can be focused on its core business. The purpose of this literature review study is to determine innovation in collaborative networks related to the outsourcing supply chain. The SLR methodology was used in this study, while the database was taken from 6 sources, i.e., Emerald, Sage Journal, SpringerLink, IEEE, ScienceDirect, Wiley Online Library, and obtained 50 appropriate articles relevant to the topic. The literature review resulted that there are six trend innovations as collaboration network drivers. The future trends of innovation will be the dominance of research leading on three innovation trends, namely collaborative innovation, Innovation ecosystem, and open innovation in line with the development of technology and information disclosure.

Keywords: Outsourcing, supply chain, Driving factor, Innovation, Collaborative network

RANTAI PASOK OUTSOURCING: TINJAUAN LITERATUR SISTEMATIS PADA FAKTOR PENGGERAK INOVASI DALAM JARINGAN KOLABORASI

ABSTRAK
Inovasi dan kolaborasi merupakan suatu hal yang harus dilakukan oleh setiap organisasi untuk dapat bersaing dengan kompetitornya. Outsourcing dilakukan untuk membagikan sebagian tanggung jawab organisasi induk untuk dapat fokus pada bisnis intinya. Studi literatur ini dilakukan untuk mengetahui Inovasi dalam jaringan kolaborasi pada outsourcing supply chain. Metodologi yang dilakukan menggunakan SLR dari 6 sumber database, yaitu Emerald, Sage Journal, SpringerLink, IEEE, ScienceDirect, Wiley Online Library, dan diperoleh 50 artikel yang relevan dengan topik ini. Hasil literatur review ini ditemukan bahwa, terdapat 6 trend inovasi sebagai penggerak jaringan kolaborasi, yaitu: innovation capability, open innovation, collaborative innovation, collaborative green innovation, environmental innovation dan innovation ecosystem.

Kata-kata Kunci: *Outsourcing, Rantai pasok, Faktor penggerak, Inovasi, Jaringan Kolaborasi*

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INTRODUCTION

Literature review studies with topics of the supply chain, outsourcing, and innovation have been carried out by researchers in the past five years. By using the application "Publish or Perish 7", a search on the Scopus indexed database (scopus.com) has found 97 papers with a total of 2,176 citations regarding such topics. Meanwhile, the topic of supply chain and innovation from the year 2009 up to 2014 with the same index, there is only one paper with 33 citations. It indicates that the topic of Supply Chain, Innovation, and Outsourcing are widely researched in the past few years.

Diverting some business processes utilizing outsourcing in the industrial business sectors has been widely done since the 2000s, which then developed into the collaboration between industry and outsourcing companies. It includes producing product and service innovations to support the industry's core business. Technological developments make it easier to carry out collaboration so as to produce a collaborative network among the supply chains. This paper discusses the drivers of innovation in the outsourcing supply chain in a collaborative network.

Systematic Literature Review is a systematic review and meta-analysis designed to summarize all research related to a certain subject. It is structured based on empirical evidence with specific eligibility criteria with the purpose of identifying all studies that address a specific question and minimizing bias, thus providing reliable findings (Liberati et al., 2009). It also focuses on the driving factors for innovation in a collaborative network in supply chain outsourcing.

The supply chain life cycle can be affected by technology and innovation factors (MacCarthy et al., 2016). Innovation is a continuous process for every organization in meeting market needs and demand. Various strategies are used to produce innovative products, such as the strategy taken by many organizations by collaborating with suppliers. Those are connected in the organization's supply chain network, as well as having flexibility and agility in global collaboration networks (Ricciotti, 2020). Innovation management, as one of the important aspect, encourages innovative thinking to develop new innovations. Meanwhile, sustainable supply chain management also must be supported by research and innovation (Gurzawska, 2020).

The ability of parent organizations to achieve strategic innovation capabilities is also determined by the presence of outsourcing involvement in the client-supplier relationship (Oshri et al., 2015). Collaboration done by outsourcing non-core supply chain activities is currently being carried out, such as conducting research collaborations in creating new products according to market demand. The demand variability increases the necessity of outsourcing in increasing investment (Kouvelis & Milner,

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2002), as well investment in innovation has a positive effect on the efficiency and effectiveness of the supply chain (Kalyar et al., 2019).

Dynamic and complex supply chain business network requires responsible and sustainable supply chain management, i.e., 1) research and innovation; 2) industry stakeholders, government and non-governmental organizations; and 3) individual responsibility of the organization, its employees, and the organization (supra-agency) (Gurzawska, 2020). Innovation as one of these dimensions must be carried out by every organization in the supply chain network.

Based on the literature review of the research that has been undertaken, it is necessary to carry out further research related to elements that are related and drive innovation in the supply chain. It should cover various partners involved in the supply chain network, developing technology, uncertain global environment, high levels of competition, and the diversity of market demands.

METHODS

The research methodology used in this paper is the Systematic Literature Review (SLR) using the PRISMA approach (Preferred Reporting Items for Systematic Reviews and Meta-analyses), while the stages are: 1) Identifying by database searches, 2) Screening, 3) Selection of eligibility literature, 4) Qualitative synthesis studies, and 5) Selection of data items, a quantitative synthesis (Liberati et al., 2009). The research findings to be achieved in this study are: what factors drive innovation in collaborative networks for supply chain outsourcing. The flow of process in explaining the research objectives was done using SLR as described below.

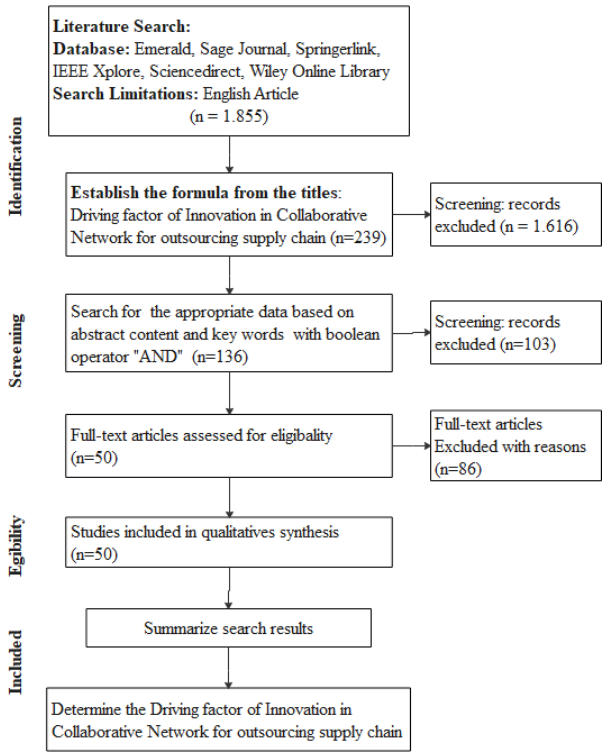

Figure 1. The Stages used in SLR

Referring to Figure 1, the first step is to identify the source of the database, i.e.: Emerald, Sage Journal, SpringerLink, IEEE, ScienceDirect, and Wiley Online Library. The articles used were only obtain from appropriate International Journals and Proceedings resulted from international conferences between the year 2015 to 2020, as shown in Table 1.

The database selection was based on a long-established and trusted one with the number of contributors to emerald database publications (500K in 130 countries with 30M

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downloads/year); ScienceDirect (> 3,065 open access publications with>1.4M open access articles); IEEE (>200 journals and >3M conference papers); Sage journals (>1,000 journals); SpringerLink (>7.5M articles and >1.2M conferences papers); Wiley Online Library (>1.6M journals).

Based on the research objectives, screening was assessed based on compatibility keywords, using "Boolean" “AND”, while the keywords are “driving factor“ and “innovation “ and “collaborative network” and “outsourcing” and “supply chain”, then the articles were selected according to keywords, abstract and full-text. If they were eligible, then summarize for each of them. Currently, in the industrial era 4.0, these keywords are a word that is echoed by both industry and researchers in various parts of the world. The aim of this literature review is to determine the driving factors on innovation in collaborative networks for supply chain outsourcing. Table 1 describes the stages that are divided into:

- Stage 1: Identification of database sources based on criteria
- Stage 2: Identification based on relevant topics
- Stage 3: Selection of articles based on abstracts and keywords
- Stage 4: Final screening, the final review of selected articles.

All articles are analysed based on the findings of each empirical study in the 7 databases, resulting in the grouping of the articles that can be trusted.

Table 1. Number of publications by the database of sources

Source of Database	Stage 1 (#of paper)	Stage 2 (#of titles)	Stage 3 (of abstract and keywords)	Stage 4 (selected for final review)
Emerald Insight	500	103	66	26
Sage journals	256	14	5	4
SpringerLink	261	33	15	4
IEEE	102	12	2	1
ScienceDirect	258	34	20	8
Wiley Online Library	478	43	28	7
Total	1.855	239	136	50

RESULTS AND DISCUSSION

Publications Year of Innovation Studies in Collaboration Network

The number of studies related to innovation in collaborative networks from the year 2015 to 2020, based on literature studies.

Table 2. Number of Studies by Years

Year	2015	2016	2017	2018	2019	2020
Number	6	4	13	12	9	6
Percentage	12%	8%	26%	24%	18%	12%

Based on literature studies from the year 2015 to 2020, countries and types of industry that make innovations in collaborative networks have been categorized as:

- 42%, electronic/IT/high-tech, various types of manufacturing industries, and various types of manufacturing and service industries,
- 10%, automotive industry;

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- 20%, logistics industry, energy, food industries, pharmaceuticals and various types of service industries,
- 28%, unknown industries/services.

The research had been taken place in Asia (i.e., China/PRC, Taiwan/ROC, Iran, India, and Vietnam); Europe (i.e., Germany, Spain, UK, Hungary, Italy, and The Netherland), America (USA), Africa and some other countries, as described in Table 3.

Table 3. Number of Studies by Industry and Country of Research

Country	Industry									
	Energy	Pharma-Ceutical	Elec./IT/ High-Tech	Lgc.	Autom.	Food	VaR. Srvs.	VaR. Mfg.	VaR. Mfg & Srvs	None
China	1			1		1		1		1
ROC			3							
Germany			1							
USA							1	2		
Spain					1			1		
UK				1						
Africa								1	1	
Hungary									1	
Iran					1					
Italy		1								
India			1		1					
Vietnam				1						
Netherland										1
VaR. Countries			1		1	1		2	5	3
None	1		1		1		1			9
TOTAL	2	1	7	3	5	2	2	7	7	14

*none: not determined country nor type of industry

Why Should Industries Collaborate on Innovation?

Innovations for supply chain management significantly affect the sustainability performance of the organization and the orientation of suppliers regarding sustainability performance (Lintukangas et al., 2019). In order to achieve a sustainable supply chain, an organization should have collaborated with various stakeholders by utilizing resources, information, and funds optimally (Panigrahi et al., 2019). The collaborative process involving both internal and external actors of the organization is requisite to produce innovation (Zimmermann et al., 2016).

The main objectives of innovation which are not limited to products, processes, business models, but also for improving quality, reducing costs, increasing customer satisfaction, and improving organizational competitiveness (Schmuck & Benke, 2020). Whenever an organization applies open innovation, the flow of knowledge increases from external to internal. It will encourage the development of new products, services, and markets (Bigliardi et al., 2020). Innovation design and implementation activities depend on knowledge resources, skills and

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production facilities (Loukis et al., 2017). Therefore, the parent organization and its collaborative network will have joint innovations in the form of:

1. Improving employee and organizational performance, as well as a competitive advantage
2. Increasing capabilities and accelerating the process of new product innovation effectively and efficiently
3. Reducing high external technology volatility and uncertainty
4. Increasing supply chain network flexibility and logistics service performance
5. Improving performance and market absorption
6. Improving supplier-consumer relationships
7. Improving supply chain management efficiency
8. Improving the efficiency of resource utilization
9. Reducing costs and increasing the capabilities and flexibility of Information and communication technology.
10. Improving environmental sustainability
11. Enhanced capabilities and communications in the global supply base.

State-of-the-Art for Drivers of Innovation in Collaborative Networks for Supply Chain Outsourcing

Referring to Table 4, the article searches identified 50 appropriate articles related to the factors driving innovation in collaborative networks for supply chain outsourcing. The results of the analysis based on the state-of-the-art, including the researchers and the findings of the articles, are shown in Table 4 as follows:

Table 4. The Results of State-of-the-Art Analysis

Finding	Author
Information competence and coordination competence have an impact on exploitative service innovation and explorative service innovation.	(Liu & Huang, 2018)
The innovation process impacted on outsourcing innovation. Information systems and Human Resource specialization which in turn have impacts on innovation activities.	(Materia et al., 2017)
Cloud computing supports the inter-organizational design and implementation of open innovation	(Loukis et al., 2017)
Bricolage Collaborative encourages organizations to share resources with partners and actively contribute to the emergence of desired new products	(Gurca & Ravishankar, 2016)
Networking capability in product innovation has an impact on supplier relationships, as well as overall organizational performance	(Mitrega et al., 2017)
Supply chain intelligence (technological knowledge, sourced and integrated from suppliers, customers and competitors) plays an important role in the successful launch of new products	(Schoenherr & Swink, 2015)
Internal collaboration (exploitative learning) and external competencies, which include supply network flexibility and supplier operational capabilities (exploratory learning), increase the contribution to innovation capability.	(Liao & Li, 2019)
Knowledge sharing helps increase supply chain innovation	(Rajabion et al., 2019)
The involvement of external consultants helps the organization to be able to utilize the acquired technology knowledge to achieve the highest innovation performance at the lower levels of R&D outsourcing	(Bianchi et al., 2016)
Effective cross-cultural interaction is one of the essential requirements for the development of innovative business strategies and the achievement of competitive advantage in modern global markets.	(Milovanovic, 2015)
Big Data Analytics is able to manage data security and impact supply chain innovation service capabilities and supply chain service performance.	(Fernando et al., 2018)

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Cloud computing supports the inter-organizational design and implementation of open innovation	(Loukis et al., 2017)
Big data plays an important role in helping organizations to acquire external knowledge and import ideas across borders to accelerate the product innovation process.	(Zhan et al., 2017)
Confirmation of trust (which exceeds expectations) plays an important role in shaping an organization's intention to continue the open innovation with its supply network.	(Roldán Bravo et al., 2017)
Long-term contractual relationships and trust between organizations result in the exchange of processes, knowledge and technology, so as to achieve open innovation and exchange of knowledge of science and technology across continents,	(Barrell & Hsu, 2019)
The wider level of openness of the business model, the more capable of the organization to create shared value into the ecosystem.	(Abdulkader et al., 2020)
Open innovation increases the flow of knowledge and can be seen as a means of generating new patents and driving new product development	(Bigliardi et al., 2020)
Supplier collaboration effects on innovation, which in turn increases purchase absorption.	(Patrucco et al., 2017)
Intense commercial relationships with stronger business partners impact on collaborative innovation compared to non-business partners in conditions of low dynamic capabilities	(Jiao et al., 2019)
The ability in integrating knowledge affects the results of synergistic innovation to improve logistics service performance and market performance	(Wang et al., 2020)
Collaboration with outsourcing partners offers benefits in creating added value	(Enderwick & Buckley, 2019)
Different supplier relationships play important role in enabling competitors from developed and developing countries to adopt different innovation processes;	(Hertenstein & Williamson, 2018)
The strategic alignment of buyers and suppliers related to innovation leads to product innovation results.	(Jajja et al., 2017)
Sectoral-organizational closeness to innovative R&D and production collaborations supports assess to the appropriate impact of R&D policies on innovative outputs	(Amoroso, 2017)
Facilitating innovation processes and innovation strategies in the supply chain drives the innovation process	(Zimmermann et al., 2016)
High quality relationships between clients and suppliers ease to achieve strategic innovation through outsourcing	(Oshri et al., 2015)\
Collaboration between suppliers and strategic sources leads to innovation	(Luzzini et al., 2015)
Supplier performance within the supplier network has a positive effect on continuous innovation.	(Bag, 2018)
The availability of advisors improves innovation outcomes whether the level of relational closeness is high, supplier understanding to client's business, systems and methodologies, and also the relational alignment between the parties.	(Oshri et al., 2018)
Collaboration reduces R&D resources, time to market and opens up opportunities for innovative solutions; it amplifies the indication of demand for producers to invest in new technology.	(Becker & Tickner, 2020)
3PL is a collaborative partner that supports the value co-creation strategy (resource commitment, innovation and collaboration).	(Sinkovics et al., 2018);
Products, services, data and information in the supply network are potential vectors of innovation.	(Kumar et al., 2020)
Technological hubs or knowledge intermediaries assist organizations in creating successful partnerships to foster innovation	(Cantù et al., 2015)
The new product development activities and suppliers play effective key role connecting the relationship between the IT-based supply chain and the performance of the new product.	(Kou et al., 2018)
Product modularity/multi-skilled employees increase new product development outcomes, when the level of supplier involvement is high	(Ye et al., 2018)
The role of entrepreneurial orientation is a determinant of customer value co-creation behavior	(Tuan, 2017)
Alliance relationships, strategic objectives, service actualization, and intrapreneurship drive the value co-creation.	(Murthy et al., 2016)
The strict mandatory of offshore environmental policy regulations in host countries encourages multinational organizations to localize their inventive activities, thus opening up new technological opportunities and creating new demand for green innovation.	(Marin & Zanfei, 2019)
Horizontal collaboration and the network between suppliers and customers in the industrial sector whose using digitalization, connectivity and big data, shared green innovation knowledge across industries to improve environmental sustainability	(Melander & Pazirandeh, 2019)
The ability to absorb new knowledge leads to encourage the performance of green innovation	(Albort-Morant et al., 2018)

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Finding	Author
Information competence and coordination competence have an impact on exploitative service innovation and explorative service innovation.	(Liu & Huang, 2018)
The innovation process impacted on outsourcing innovation. Information systems and Human Resource specialization which in turn have impacts on innovation activities.	(Materia et al., 2017)
Cloud computing supports the inter-organizational design and implementation of open innovation	(Loukis et al., 2017)
Green supply chain integration ((internal, supplier, and customer) has a positive impact on developing incremental environmental innovation	(Dai et al., 2015)
the level of inter-organizational fit is positively related to the environmental innovation of the organization	(Shou et al., 2018)
Horizontal, vertical, and spatial complexity in supply networks affected on organizational innovation performance	(Sharma et al., 2020)
Institutional pressure (regulators, market, and competitors) and organizational culture (top management support in utilizing all resources) results in green procurement with a network of suppliers, which in turn leads to continuous innovation.	(Bag, 2017)
The economic crisis reduces the intensity of supplier relationships, which results in reduced innovation	(Mandják et al., 2017)
The constitutive elements (interdependence, dynamic relationships according to changing market needs) of the innovation ecosystem with external organizations accelerate the creation of innovative products	(Ferasso et al., 2018)
Customer-supplier orientation, international customer control, and technological uncertainty among parties increase supplier innovation in international customer-supplier relationships.	(Bryan Jean et al., 2017)
High intensity of service innovation, both in the form of partnerships (suppliers and customers) as well as ecosystem stakeholders (local government, communities, legislators) increase innovation highly	(Lütjen et al., 2019)
The importance of understanding social capital (structural, relational, and cognitive) among buyers and suppliers when evaluating supplier value innovations to the buyer organizations.	(Chae et al., 2020)
Government support plays a key role in logistics innovation	(Amling & Daugherty, 2018)
University research plays a key role in collaboration, knowledge transfer, and product innovation.	(Ciliberti et al., 2016)

The "connect & develop" strategy applies innovation, produces innovation with external technology (Huston & Sakkab, 2007), so that the application of an open innovation strategy allows organizations to have the ability to innovate.

Innovation capability as a driving force for the internal environment has positive impacts on the green innovation strategy and innovation and is getting stronger when the top management's environmental awareness is higher (Cao & Chen, 2019). Therefore, innovations will grow in conditions of the ability to drive innovation, the openness of information to produce innovation, the collaboration of each stakeholder to produce innovation, innovation must be sustainable, the internal environment of the organization (people, technology, and processes) that support its occurrence, and external environment as well, that encourages innovation.

According to Table 4, the factors driving innovation in collaborative networks in the outsourcing supply chain are categorized into 6 innovation trends related to collaborative networks. The trend is then mapped based on the driving factors for innovation as shown in Table 5, as follows:

1. Innovation Capability (IC), the company's ability to produce new products by identifying processes, creating new value and reassimilating them effectively and efficiently in response to changing business environments. Innovation capability comprises of 2 ways, i.e.: internal collaboration and when the organization

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obtains complementary sources of knowledge from flexible and capable ones (Liao & Li, 2019; Zhang et al., 2010).

2. Open Innovation (OI), are external and internal ideas as well as internal and external channels generated from the formulation of relationships among organizations and interest groups (universities, research centers, suppliers or customers), because of the organization needs to improve its technology (Segers, 2015)(Roldán Bravo et al., 2017). Open Innovation comprises of 3 processes, i.e.: external technology acquisition (inbound innovation, if external knowledge enters to organization); exploitation of external technology (outbound innovation, if knowledge leaves away from the organization); and combined innovation (Bigliardi et al., 2020).
3. Collaborative Innovation (CI), partner organization alliance (Enderwick & Buckley, 2019) in a supply chain dealing with technological challenges (Becker & Tickner, 2020), which encourages the formation and achievement of synergy and benefits in collaboration networks (Jiao et al., 2019).
4. Collaborative Green Innovation (CGI), organizational collaboration with suppliers, consumers and the community for the development of innovations influence behavior change, and educate them about environmental-friendly awareness and sustainable values. In collaborative green innovation uses network strategies (types of partners, relationships and activities of sharing and coordination); and sustainability (resource utilization and level of innovation) (Melander & Pazirandeh, 2019).
5. Environmental Innovation (EI), a specific type of technical innovation comprising of developing new products, processes and practices are used to avoid or reduce environmental burdens. EI consists of Incremental Innovation, namely continuous changes that exploit existing competencies, leading to better environmental performance; and Radical Innovation, that is, involves major changes from the current knowledge base. It is necessary to make the transition for better sustainability in the future (Shou et al., 2018) (Dai et al., 2015).
6. Innovation Ecosystem (IE), an interdependent multilevel organizational structure from different industries, managing various resources through mutually beneficial, and dynamic relationships in finding innovations for sustainable business (Ferasso et al., 2018).

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Table 5. Driving Factor & Impact Innovation for Collaboration Network Outsourcing Supply Chain

Driving Factor	Impact	References
Innovation Capability		
Information competence and coordination	Innovation services	(Liu & Huang, 2018);
Outsourcing innovation, information systems, and HR specialties	Innovation activities	(Materia et al., 2017);
Cloud computing	Design and implementation of inter-organizational open innovation	(Loukis et al., 2017)
Sharing resources	New product	(Gurca & Ravishankar, 2016)
Supply chain intelligence	New product launching	(Schoenherr & Swink, 2015);
Internal collaboration and external competence	Innovation capabilities	(Liao & Li, 2019)
Open Innovation		
Knowledge sharing	Supply chain innovation	(Rajabion et al., 2019);
External consultant involvement	Innovation performance	(Bianchi et al., 2016)
Cross cultural interactions	Business strategy development	(Milovanovic, 2015);
Big Data analytics	Innovation service capabilities	(Fernando et al., 2018)
External knowledge and ideas cross borders	Innovation process	(Zhan et al., 2017)
Confirm trust	The organization's intention for open innovation	(Roldán Bravo et al., 2017)
Exchange of processes, knowledge and technology	Open innovation and exchange of science and technology knowledge	(Barrell & Hsu, 2019)
The level of openness of the business model	Creating shared value	(Abdulkader et al., 2020);
Networking capability	Supplier relationships, as well as organizational performance	(Mitrega et al., 2017)
Open innovation	New patents and new product development	(Bigliardi et al., 2020)
Collaborative Innovation		
Supplier collaboration	Innovation	(Patrucco et al., 2017);
Intensive commercial relationships with business partners	Collaborative innovation	(Jiao et al., 2019);
Knowledge integration	Synergistic innovation results	(Wang et al., 2020)
Collaborative with outsourcing partners	Added value creation	(Enderwick & Buckley, 2019)
Different supplier relationships	Adopting different innovation process	(Hertenstein & Williamson, 2018)
Buyer-supplier strategic alignment	Product innovation results	(Jajja et al., 2017)
Sectoral-organizational closeness	Assessing impacts of R&D policies on innovative outputs	(Amoroso, 2017)
Facilitator	Innovation process	(Zimmermann et al., 2016)
Outsourcing	Strategic innovation	(Oshri et al., 2015)
Strategic sourcing and supplier collaboration	Innovation	(Luzzini et al., 2015);
Supplier performance in the supplier network	Sustainable innovation	(Bag, 2018);
The degree of relational closeness, understanding of the client's business, systems and methodologies	The result of innovation	(Oshri et al., 2018)
Collaboration	R&D resources, time to market and innovative solutions, signal investing	(Becker & Tickner, 2020);
3PL	Value co-creation strategy	(Sinkovics et al., 2018);
Environmental Innovation		
Products, services, data and information in the supply network	Innovation	(Kumar et al., 2020)
Technological hubs	Partnership	(Cantù et al., 2015)
New product development activities	New product performance	(Kou et al., 2018);
Product modularity/multi-skilled employees	New product development results	(Ye et al., 2018)
Entrepreneurial orientation	Customer value co-creation behavior	(Tuan, 2017);
Alliances, strategic objectives, service actualization, and intrapreneurship	value co-creation	(Murthy et al., 2016)

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Driving Factor	Impact	References
Innovation Capability		
Information competence and coordination Outsourcing innovation, information systems, and HR specialties	Innovation services Innovation activities	(Liu & Huang, 2018); (Materia et al., 2017);
Collaborative Green Innovation		
Local inventive activity	New technological opportunities and new requests for green innovation	(Marin & Zanfei, 2019)
Horizontal collaboration and network of suppliers and customers in other industries, using digitization, connectivity and big data	Sharing knowledge of green innovation	(Melander & Pazirandeh, 2019);
New knowledge Green supply chain integration	Green innovation performance Developing incremental environmental innovation	(Albort-Morant et al., 2018); (Dai et al., 2015)
Innovation Ecosystems		
Level of inter-organizational fit	The results of the environmental innovation organization	(Shou et al., 2018)
Horizontal, vertical, and spatial complexity in the supply network	Organizational innovation performance	(Sharma et al., 2020)
Green procurement	Sustainable innovation	(Bag, 2017)
Intensive supplier relationship	Innovation	(Mandják et al., 2017)
Constitutive elements with external organization	Accelerating the manufacture of innovative products	(Ferasso et al., 2018)
Customer-supplier orientation, international customer control, and technological uncertainty	Supplier innovation	(Bryan Jean et al., 2017);
Intensity of service innovation	High innovation	(Lütjen et al., 2019);
Social capital	Evaluate supplier value innovations to buyer's organizations.	(Chae et al., 2020);
Government support University research	Logistic innovation Collaborative, knowledge transfer, and product innovation.	(Amling & Daugherty, 2018); (Ciliberti et al., 2016)

Referring to Table 5, the driving factors on innovation supply chain outsourcing collaboration networks categorized by trend scope of innovation, namely: 1) Innovation Capability (7 articles-14%); 2) Open Innovation (9 articles-18%); 3) Collaborative Innovation (13 articles-26%); 4) Collaborative Green Innovation (4 articles-8%); 5) Environmental Innovation (7 articles-14%); and 6) Innovation Ecosystem (10 articles-20%).

Based on Figure 2, the driving factor for innovation is dominated by Collaborative Innovation, related to partner organizations which the main drivers for the formation and achievement of synergy and benefits in the supply chain outsourcing collaboration network.

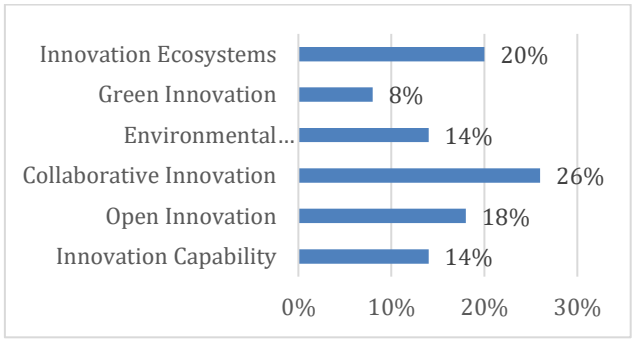

Figure 2. Trend of Innovation Scope based on Driving Factor Innovation

Another factor which also important is the innovation ecosystems factor, it encourages collaboration and open innovation which provides information disclosure between the

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outsourcing supply chain networks to create innovation in the collaboration network.

Challenges Innovation on Outsourcing Supply Chain Collaborative Networks in Future

Discussions regarding current innovation are opportunities to increase development related to sustainable and green innovations which include products, technology and services, together with the development of cloud computing and big data technologies. Meanwhile, there are opportunities to study innovations related to other relevant collaboration networks, e.g., the halal supply chain. It will be involved also such 6 trends of innovations (innovation capability, open innovation, collaborative innovation, collaborative green innovation, environmental innovation, and innovation ecosystem).

Discussions related to current innovation are opportunities to increase development related to sustainable and environmentally friendly innovations. It includes products, technology, and services, along with the development of IoT technology, cloud computing, big data, and blockchain. There are also opportunities to discuss innovations related to other relevant collaboration networks, for example, "the halal" supply chain or supply chain traceability, and will also involve 6 trend innovation (innovation capability, open innovation, collaborative innovation, collaborative green innovation, environmental innovation and innovation ecosystem). The innovation trend can be applied in technology and human and process management to achieve innovation in the collaboration network.

CONCLUSION

Based on the literature review, innovation driving factors in outsourcing supply chain from 2015 to 2020 are innovation capability, open innovation, collaborative innovation, collaborative green innovation, environmental innovation, and innovation ecosystem that interrelated one to another to achieve sustainable performance. The future trends of innovation will be the dominance of research leading on three innovation trends, namely collaborative innovation, Innovation ecosystem, and open innovation in line with the development of technology and information disclosure. The SLR was limited to various components related to supply chain outsourcing, innovation, and collaboration networks among the year 2015 to 2020 towards seven databases.

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