

Bahaaeddin Alareeni  
Allam Hamdan *Editors*

# Impact of Artificial Intelligence, and the Fourth Industrial Revolution on Business Success

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# Role of Supply Chain Collaboration and Organizational Agility on Promoting Relational Rents: A Literature Review



Bisma Jatmika Tisnasasmita , Muafi Muafi , Dessy Isfianadewi , and Wisnu Prajogo 

**Abstract** Nowadays, valuable, rare, imperfectly imitable, and non-substitutable (VRIN) resource that is essential for a firm to survive in a turbulent environment might reside inside an alliance. A collaboration that benefits all alliance members is an alternative strategy, where alliance members will be able to use a relational resource, without any need to invest or acquire it. Utilization of relational resource by alliance members can create a relational rent, a supernormal profit that can be enjoyed by alliance members and will not be achieved by a firm individually. Supply chain collaboration ensures a stable supply for a firm as well as lower transaction cost. Supply chain collaboration also increases the ability of the firm to sense and respond rapidly, properly, and efficiently to environmental change, which means that supply chain collaboration promotes organizational agility. An agile firm will be able to reconfigure owned resources and combined them with a relational resource that potentially results on the ability to develop products that fit the market and increase revenue and at the end may increase relational rent. Our literature review finds that supply chain collaboration has a positive effect on relational rent, both directly and through the development of organizational agility.

**Keywords** Relational view · Supply chain collaboration · Organizational agility

## 1 Introduction

Organizational agility (OA) has been a very popular topic in the last 5 years. In 2016—early 2021, there were 241 scientific articles published by reputable journals (Elsevier, Emerald, Springer, Taylor and Francis, and Wiley) with total 5.952 citations.

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B. J. Tisnasasmita · M. Muafi (✉) · D. Isfianadewi  
Department of Management, Universitas Islam Indonesia, Yogyakarta, Indonesia  
e-mail: [muafi@uii.ac.id](mailto:muafi@uii.ac.id)

W. Prajogo  
Department of Management, YKPN School of Business, Yogyakarta, Indonesia

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Most of the articles put supply chain agility on surface (53 articles), followed by information technology (34 articles), human resource (28 articles), and strategic agility (16 articles). Many researchers tried to reveal the effect of supply chain management on Organizational Agility, but little is known about the role of supply chain collaboration on Organization Agility. The majority units of analysis are a single firm that tries to ensure the security of supplies or to create a relationship where suppliers will be able to fill the raw materials needed to support the production of goods and new product development process. None of these studies try to reveal the reality that distinctive resources may reside in a relationship, and can be utilized only by alliance members or cooperation partners. This field needs attention in the future.

Dynamic Capability (DC) is widely used as a theoretical lens in OA research. DC is developed based on RBV which focuses on the ability of a company to sense environmental dynamics and respond appropriately. Several authors use dynamic capability to explain the relationships among variables in terms of OA. For example (Mandal and Saravanan 2019) examined several antecedents of supply chain agility in tourism sector. Supply chain agility is positively affected by entrepreneur orientation, supply chain orientation, technological orientation, DAN market orientation. Dubey et al. (2019) found that Big Data Analytics Capability has a positive influence on supply chain agility, and therefore increases competitive advantage. Another research conducted by Queiroz et al. (2018) describes that IT application orchestration capability has positive influence on OA. Resource based view (RBV) is another theoretical lens that is used in OA research. For example (Tallon et al. 2019) explained that IT promotes OA by increasing the company's ability to sense and react. Another research conducted by Mandal and Saravanan (2019) describes that relations development, shared vision, companies integration, and perception of technology have a positive effect on supply chain agility.

Dynamic capability mostly focuses on the ability that is developed using internal factors, while RBV mostly focuses on resources that are fully controlled by the company. Both dynamic capability and RBV can not clearly give explanation about distinctive resources that are created by alliance partners, which will become a relational resource. The most appropriate theory to figure this topic is Relational View. Dyer and Singh (1998) introduced the Relational View (RV) as an extension from RBV. This theory argues that valuable, rare, imperfectly imitable, and non-substitutable (VRIN) resources can be developed in a network of partnership or strategic alliance. This resource is very specific and can be utilized only by partners inside an alliance or partnership. Companies outside this alliance have no access to this resource. Therefore this resource is distinct and able to increase competitive advantage of an alliance. Since OA is an extension of Dynamic Capability, we can argue that relational resources can also promote OA. The alliance between a company with its suppliers can create a VRIN resources. Each party in the alliance has complementary resource and exchangeable knowledge, which comply with the main assumption of Relational View. Therefore we can explore a new constellation between supply chain collaboration and organizational agility.

This article is a literature review and is motivated by three research gaps. First, in the last 5 years, only (Liu and Yang 2020) explored network structure as a mediating

variable between enterprise agility and firm performance. There is an opportunity to explore this topic deeper. Second, we use RV as a theoretical lens that will reveal the role of supply chain collaboration in creating relational resource and knowledge exchange. Third, we need to explore how relational resource and knowledge exchange are facilitated by supply chain collaboration so that it will promote Organizational Agility.

## **2 Objective and Structure of Research**

The main purpose of this study is to reveal the effect of supply chain collaboration on organizational agility through the lens of Relational View. This study is divided into four sections, those are: (1) Introduction, which consists of research objective, theoretical issue, and research gap, (2) Literature Review, which consists of a description of the theory and the relationship between supply chain collaboration and organizational agility, (3) Discussion, and (4) Conclusion.

## **3 Literature Review**

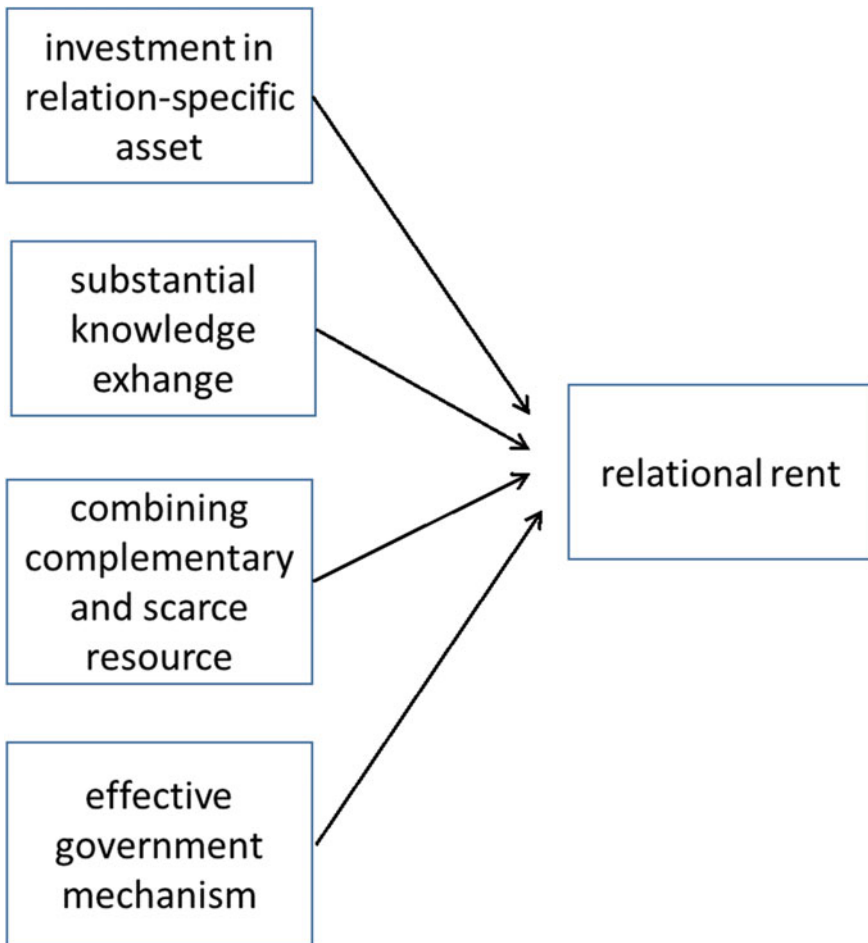
### ***3.1 Relational View***

Relational View (RV) is an extension of Resource Based View (RBV) that assumes VRIN resources might reside inside an alliance or strategic partnership. Interaction among companies in the alliance can create a distinct resource that is specific and can only be used and accessed by members. Outside companies can not utilize this resource. Unit of analysis of RV is a network of companies that commits to collaborate on attaining the same goal. Dyer and Singh (1998) discover four factors that can create relational rent for alliance members, those are: investment in relation specific asset, substantial knowledge exchange, combining complementary and scarce resource, and effective government mechanism. An alliance that performs those four factors will enjoy a relational rent a supernormal profit that can be generated together by alliance members, which can not be achieved individually.

Alliance members will develop a relation specific asset that is unique and can not be imitated by others. To be successful, there are two subprocesses needed, namely: period of safeguards and scale and scope of exchange among alliance members. A relation specific asset will be able to reduce transaction cost, larger product differentiation, minimize defect product, and accelerate product development cycle, and finally will be able to create relational rent. Interaction between alliance members also will facilitate substantial knowledge exchange regularly and continuously. Knowledge exchange results transfer, recombination, or creation of specific knowledge that resides in the network. Two subprocesses of substantial knowledge exchange are:

absorptive capacity of alliance members and incentives to stimulate transparency and prevent opportunistic behavior.

Complementary and scarce resources are owned by alliance members. The combination of these resources will create a VRIN relational resource that is not available in the secondary market and inseparable from the alliance. Only companies in the alliance will have access to utilize this resource. Two subprocesses of combining complementary and scarce resources are: the ability of alliance members to recognize and evaluate potential complementary resources of other members and also the role of alliance members to obtain benefit from the complimentary resource. The knowledge exchange and creation of VRIN relational resources will be able to minimize the cost of product development and in the end will produce relational rent (Fig. 1).



**Fig. 1** Relational view (Dyer and Singh 1998)

Effective government mechanism that carried out by alliance member has a potential to reduce supervisory cost. The mechanism can also be modified in line with alliance dynamics. Alliance members commit to implementing safeguards so that they can prevent opportunistic behaviors such as free-riding. Two subprocesses of effective governance are efficient self-management and the ability to carry out informal and formal governance. The effective government mechanism will have consequences on lowering the cost of supervision and control, compared to a third party government mechanisms. This mechanism is also flexible, avoiding the cost of developing and implementing new government mechanism. Efficient governance ends on relational rent.

Dyer et al. (2018) di an improvement on RV, by considering dynamic lense on RV. They found that alliance will experience changes over time and there must be some considerations on variables that protect it from diminishing. They looked deeper into the complimentary resource and relations between alliance members and argue that interdependency among complementary resource and the value of an investment on a relational resource may complete the theory. Replacement of complementary resource and low interdependency will reduce relational rents. A focal company's investment in a relational resource can also have a positive impact on relational rents if there is no significant difference in investment among alliance members. This focal company potentially acquires a large resource portfolio that creates bigger value creation in the alliance. And finally, in terms of complementarity among resources is declining, then the role of informal safeguards is also decreasing.

### ***3.2 Supply Chain Collaboration***

Supply chain collaboration (SCC) is different from vertical integration. Collaboration means the utilization of suppliers' resources by a company without any intention to acquire it. Suppliers have complementary resources which could potentially create a competitive advantage if combined with resources owned by the company. The main point is that benefit of collaboration is enjoyed by every collaborative partner. Liao et al. (2021) defines SCC as the level of information sharing, decision synchronization, and incentives alignment between supply chain partners. Shou et al. (2018) defines SCC as close and long term cooperation between supply chain partners, that is build upon the willingness of all partners to share information and resources, and shared understanding to attain the same goal. Jimenez-Jimenez et al. (2019) defines SCC as a process of long term cooperation between supply chain partners who share the same goals, and working closely together to achieve mutual benefit that can not be attained individually.

SCC emerges when there are interactions between seven components, those are: information sharing, goal congruence, decision synchronization, incentive alignment, resources sharing, collaborative communication, and joint knowledge creation (Zhang and Cao 2018). Alliance members share several relevant and important information so that in this cooperation, a company knows the capacity and capability of

suppliers, and suppliers know what the company needs and will prepare appropriate resources. In this way, suppliers will minimize the cost of unsold materials, and a company can optimize just-in-time inventory management. Goal congruence is a perception of a company that its goals can be fulfilled by achieving the collaboration goals. Goal congruence motivates alliance members to work collaboratively to achieve mutual objectives. A company should coordinate and integrate decision making, especially in the planning and operation process, so that synchronized decision will benefit alliance members. Decision synchronization facilitates joint effort and co-utilization of resource and ability.

Incentive alignment is a process where alliance members share cost, risk, and benefit. The most important part is that incentive alignment will lead to maximizing benefit to all members as well as minimizing loss and risk, and also preventing members from undertaking opportunistic behavior. Resource sharing encompasses all efforts that are carried out together by alliance members to leverage and invest in capabilities and assets. Resource sharing also enables alliance members to create competitive products in efficient and effective manners. Collaborative communication is a process of transmitting information to alliance members. The process is two way and implemented regularly. All members will share the same information that will direct all efforts to achieve the same objective. Joint knowledge creation is a process where alliance partners develop a new and better conception that respond to environmental demand, where they will deliver the product. This relational knowledge has the potential to create VRIN resources, and increase the competitive advantage of the alliance.

SCC is an important element to create efficient and productive operations, to achieve collaborative benefit and competitive advantage, through coordination of resource and information sharing among suppliers (Uvet et al. 2020). SCC leverage a company's ability to enhance the transactional relationship into strategic partnership, based on mutual trust. A company can gain information about customer needs and access for a permanent solution based on supplier's ability (Haus-Reve et al. 2019). SCC involves the process and integration of cooperation among collaborative companies in the planning process and supply chain operation, which leads to gain shared goals and profit (Chi et al. 2020). Therefore, SCC will give benefit to all alliance partners in the long term perspective, and be able to create marginal profit that can be enjoyed by firms in the alliance.

### **3.3 Organizational Agility**

Organizational agility (OA) is an ability within a company that allows it to move flexibly in a dynamic environment, and use available resources to exploit opportunities and gain its objectives. Walter (2021) defines Organizational Agility (OA) as a firm's dynamic capability that is obtained by learning, and permanently available, and can be used rapidly and efficiently as needed by the firm to increase business

performance in a volatile market. Žitkienė and Deksnys (2018) defines OA as an organizational ability to realize unexpected changes in the surrounding environment, and respond in a quick, accurate, and efficient manner, by utilizing and reconfiguring internal resources, as well as gaining competitive advantage from those processes. Singh et al. (2013) defines OA as an ability or a firm to sense and respond to the environmental change by altering the amount of product and services variation and frequency of product and services variation at a time.

As a firm capability, OA is formed by five abilities which are: sensing, searching, seizing, shifting, and shaping (Baškarada and Koronios 2018). Sensing is the ability to detect opportunities and threats from the external environment. Searching is the ability to seek opportunities from the internal environment. Seizing is the ability to make an unusual decision about strategy, business model, and transformation. Shifting is the ability to implement a new strategy business model, and capacity, and direct the firm to a new expected condition in the future. Shaping is the ability to implement new capability to fill requirements from the external environment, and attain operational efficiency and effectivity, as well as develop that new capability.

Walter (2021) describe four main categories of OA, those are: agility drivers, agility enablers, agility capabilities, and agility dimensions. Agility drivers are all factors from the organizational environment that require changes in the organization to survive and thrive, for example: changes in customer needs, competitive environment, social and legal factors, technology, and business network. Agility enablers are the potential owned by the company that can lead to the organization's ability to flexibly respond to environmental changes, for example: supple human resources, flexible operational policies, and databank that is accessible everywhere. Agility capability is the specific ability of a company to be able to flexibly deal with environmental changes shaped by agility enablers, which consists of: responsiveness, speed, flexibility, and competency. Agility dimensions are organizational components where flexibility exists, namely supply chains, human resources, business processes, strategies, information systems, and facilities. Interaction of those four categories above potentially increases OA and in the end will leverage the organizational performance in the volatile environment.

### **3.4 Propositions**

#### **3.4.1 Effect of Supply Chain Collaboration on Relational Rents**

In this study, we define supply chain collaboration as cooperation with suppliers in terms of research, design, and production of goods or services, to be able to continuously utilize resources and knowledge owned by suppliers, as well as sharing risk, in order to achieve benefits that would not be possible to attain by the company alone. Supply chain collaboration consists of seven components that interact with each other (information sharing, joint knowledge creation, resource sharing, goal congruence, decision synchronization, incentive alignment, and collaborative communication)



which potentially resulting in efficiency. Those components of SCC have similarities with factors that leverage relational rents in Relational View, namely: substantial knowledge exchange, combining complementary and scarce resources, and effective government mechanism. Information sharing and joint knowledge creation can be clustered to substantial knowledge exchange, that according to Relational View, promotes relational rents. Resource sharing is a process that align with combining complementary and scarce resource. Goal congruence, decision synchronization, incentive alignment, and collaborative communication are components of an effective government mechanism.

Grekova et al. (2016) studied the influence of collaboration with suppliers and customers on firm performance in Ducst Food and Beverage Processing Companies. After testing her hypotheses using 139 returned and valid questionnaires, she found that SCC has a positive impact on cost saving, leading the firms to gain better profit. Um and Kim (2019) studied the effect of SCC on firm performance and transaction cost advantage. They run hypothesis testing using 304 returned and valid questionnaires and found that SCC has a positive effect on firm performance as well as reducing transaction cost. Cost saving and lower transaction costs are created inside an alliance and equals to relational rents in RV. Therefore we can conclude that from the RV point of view, supply chain collaboration may increase the relational rents of alliance partners.

*Proposition 1: Supply chain collaboration has a positive effect on relational rent.*

### 3.4.2 Effect of Supply Chain Collaboration on Organizational Agility

In this study we define organizational agility as the ability of a firm to respond rapidly, systematically, and efficiently through sensing, searching, seizing, shifting, and shaping, so that it can produce goods and services that match market demand, by using available resources inside the firm or by collaborative action. Supply chain collaboration increase OA through collaborative knowledge creation, as information sharing and joint knowledge creation, are part of SCC. In responding to environmental demand change as a consequence of Covid-19 pandemic, (Al-Omouh et al. 2020) found that collaborative knowledge creation positively affects OA. A firm can have a better sensing ability due to the flow of information obtained by alliance members. With clear information and insight about complementary resources owned by the alliance members, a firm can reevaluate internal conditions and find potentials to grab an opportunity, by creating a combination of internal resources and relational resource in the alliance. With decision synchronization between a firm and suppliers, a firm can also make a proper decision that considers changes in the business environment and also a combination of resources, and implement a new strategy and deliver a market-driven product. Firm and suppliers also create a goal congruency, which motivates all party to direct their effort to achieve shared goals, which will benefit every member in the alliance.

With decision synchronization, incentive alignment, and collaborative communication, a firm will increase its shifting ability and will be able to implement a

new strategy, a new business model, and strategic changes in work methods and processes. Ivanov (2020) carried out a systematic literature review about the viable supply chain in the hotel industry during Covid-19 Pandemic. He found that a viable supply chain increases firm’s ability to react flexibly in the changing environment and firm’s resiliency to face disruption. Therefore we can conclude that from the RV point of view, supply chain collaboration may increase the organizational agility of alliance partners.

*Proposition 2: Supply chain collaboration has a positive effect on organizational agility.*

### 3.4.3 Effect of Organizational Agility on Relational Rents

A firm that has an ability to sense and respond efficiently, properly, and rapidly to the changing environment will enjoy business continuity as well as cost reduction, compared to other firms that do not have such ability. An agile organization has an extraordinary abilities, namely: sensing, searching, seizing, shifting, and shaping. This might be seen in improved work process and methods, a combination of internal and relational resources, increase in product differentiation, lower downtime and defect product, and faster time to produce goods and services. Yang and Liu (2012) found that organizational agility has a positive impact on firm performance, which is measured by cost efficiency and quality improvement. The agile capability will result in lower production costs. Ashrafi et al. (2019) also found that organizational agility increase firm performance which is measured by profitability and return on investment. Both researches conclude that agile firms can deal with the volatile business environment, and therefore able to lower the cost or even open a new market and increase sales revenue. Both achievements gives a maginal profit higher than other companies, so it can be said that agile company in an alliance or partnership will enjoy relational rents (Fig. 2).

*Proposition 3: Organizational agility has a positive effect on relational rents.*

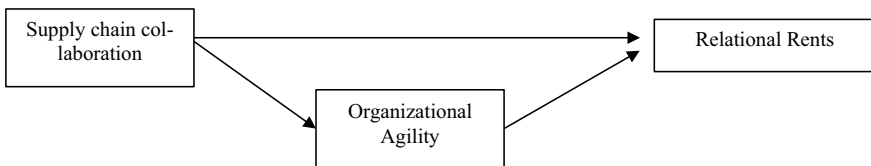


Fig. 2 Proposed research model

## 4 Discussion

Turbulence in a business environment is regularly faced by a company, for example: the Asian financial crisis in 1998, the subprime mortgage crisis in 2008, and the current economic crisis caused by Pandemic Covid-19. To be able to survive, a firm must adapt rapidly, efficiently, and properly. This is not easy, because, in terms of crisis, firms will only have limited resources and be unable to acquire resources freely from the secondary market. Therefore, engagement in a collaboration to utilize relational resources is a logical behavior. Naidoo (2010) examined factors that lead the textile industry in China to survive from crisis. After he tested hypotheses using 184 returned and usable questionnaires, he found that marketing innovation that is developed based on differentiation and cost leadership is an essential point. A firm must add a new production lines, and deliver some new products to the market, while still maintaining low production and transaction costs. This is not easy since an increase in product differentiation is usually followed by higher production costs. Based on longitudinal data from 97 top European service companies, (Martin-Rios and Pasamar 2018) found three clusters of strategi as a response to an economic crisis. The first cluster is companies that implement the commitment to expansion, which is shown by higher research and development expenditure, commitment to mergers and acquisition, and high employment growth. In terms of economic crisis, some companies acquire other companies to utilize their resources. These companies will enlarge their market network, implement new production processes, and broaden their product range so that they will be able to exploit a new opportunity.

The second cluster is companies that implement a cost-oriented strategy, which is shown by reduction in investment expenditure, layoffs, decrease in research and development budget, and no involvement in merger and acquisition. The third cluster is companies that implement resource balancing strategy. These companies have the ambidextrous ability that allows them to carry out business expansions as well as cost efficiency. They are able to manage the tension that appears between cost-control and new opportunity exploitation. The tension that is felt by executives in the company caused by choosing a contradictory solution is counterproductive (Gnyawali et al. 2016; Putnam et al. 2016), and (Hargrave and Ven 2017). To lower the tension, usually company will be motivated to collaborate with suppliers. This collaboration able a company to combine resources and utilize other resources outside firm's boundary to achieve some goals. Unlike resource acquisition, collaboration share benefit with alliance partners.

Supply chain collaboration will improve firm performance, especially financial performance. Supply chain collaboration potentially reduces the cost of inputs, purchasing cost, waste of unused material, and raw materials availability (Grekova et al. 2016). The firm can also improve a process that leads to better utilization of production facility, and also liability cost. In the end supply chain collaboration increases marginal profit of a firm, which in alliance, is equal to relational rents. Um and Kim (2019) found that supply chain collaboration can lower transaction costs. Suppliers can potentially engage in opportunistic behavior that causes higher

transaction cost. In terms of environmental changes, maladaptation also cause higher transaction cost because there might be less efficient material distribution methods and cost of supplies monitoring. By mitigating opportunistic behavior and maladaptation, supplier collaboration can reduce transaction cost, and increase marginal profit. From a collaborative lens, this increase marginal profit that is equal to relational rent. Ashrafi et al. (2019) found that form agility positively affects performance in a volatile environment. A firm with a fast and appropriate responses to environmental change enjoy a higher performance, which is indicated by Return on Investment, overall profitability, sales growth, and market share. Higher profitability that is achieved collaboratively with suppliers is equal to relational rents, from RV lens.

Supply chain collaboration also potentially improves relational rents through promoting organizational agility. Tarafdar and Qrunfleh (2017) introduces supply chain practices that consist of strategic supplier partnership, customer relationship, and postponement. Strategic supplier partnership is a firm activity of building a long term relationship with suppliers, which from our point of view is similar to collaboration, because not only the firm enjoys benefit but also suppliers in cooperation. Supply chain practices have a positive impact on organizational agility. Supply chain visibility, which is defined as the ability of a firm to get access and information about supply chain from partners, also has a positive impact on organizational agility (Dubey et al. 2018). Ivanov (2020) found that supply chain resilience, which is defined as ability to overcome disruption and achieve the desired performance, has a positive impact on organizational agility. Collaborative supply chain provides information that help firm to sense changes in the environment, and also the capacity of suppliers. The firm will be able to create relational knowledge and make a combination of resources, which enable the firm to respond rapidly, efficiently, and properly to changes. For example, a firm can be more proactive to environmental change (Al-Omouh et al. 2020) and create preventive strategies. Another example was (Zhou et al. 2018) who found that product performance is better if the firm could reconfigure resources and utilize it to develop goods or services. Therefore, many literatures have already concluded that supply chain collaboration can increase organizational agility.

When a firm can properly react to changes in business demand, then it will enjoy a superior sales quantity as well as better profit that is caused by cost reduction. The ability to sense and respond rapidly, properly, and efficiently is one of an agile organization's character (Singh et al. 2013). Superior sales quantity and increase on profitability are enjoyed by an alliance and can be considered as relational rent, because it will not be achieved by the firm individually. From our description above, it is clear that theoretically supply chain collaboration can improve relational rent directly, or through the development of organizational agility.

## 5 Conclusion

Organizational agility is one of many topics that interested researchers in the last 5 years. Most of the research are revealing the supply chain as an agility driver.

In this research, we studied several scientific articles and found that supply chain collaboration is an agility driver. Using relational view as a theoretical lens, we found that supply chain collaboration potentially increases relational rent. Besides that, utilization of relational resource in a collaboration with suppliers will also increase the firm's ability to sense and respond rapidly, properly, and efficiently to environmental changes. Nowadays it is relevant to carry out research in a turbulent environment. Firms faced economic crisis almost every 10 years since 1998, and today we are battling an economic crisis that is caused by pandemic Covid-19. That is why in this article we include organizational agility as one of the factors that potentially increase relational rent.

This article has two limitations. First, this research methodology used is literature review, and we proposed three propositions. These propositions are still needs to be clarified using quantitative methods. Second, we did not explore the effect of investment in relation to specific asset, because it does not intersect with dimensions of supply chain collaborations. It is necessary to improve our proposed model by including investment in relation to specific assets as one of the variable.

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