

# Uncertain Supply Chain Management

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## The partnerships and logistics leadership in the SMEs: The impact of digital supply chain implementation

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### ABSTRACT

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Digital supply chains play an important role in improving the performance of small and medium enterprises (SMEs) in this digital era. There has been no research that analyzes the relationship between digital leadership, leadership, and partnerships. The aim of this research is to analyze the defect of digital supply chain implementation on logistics leadership and the impact of digital supply chain implementation on partnerships and logistics leadership partnerships. The method of this research is quantitative and data analysis uses structural equation modeling (SEM) partial least squares (PLS) using tools. SmartPLS 3.0 software data is used for processing the data. Research data is obtained by distributing online questionnaires to 589 SME owners in Indonesia determined using a simple random sampling method. The online questionnaire is designed using a Likert scale from 1 to 7 and distributed via social media. The stages of data analysis are validity testing, reliability testing and hypothetical testing. Based on the results of data analysis, it is concluded that digital supply chain implementation has a positive and significant effect on logistics leadership, digital supply chain implementation has a positive and significant effect on partnerships and logistics leadership had a positive and significant effect on partnerships. The novelty of this research is the creation of a correlation model for variable partnerships, logistics leadership and digital supply chain implementation. The managerial implication of this research is to encourage increased partnerships and logistics leadership and we conclude that SMES managers must implement digital supply chain implementation. The theoretical implication of this research is that a new correlation model of partnerships, logistics leadership and digital supply chain implementation in SMEs is created.

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## 1. Introduction

Logistics managers at small and medium enterprises (SMEs) will also have a lot of contact with parties outside the SMEs to manage contracts, such as producers, distributors, and transportation drivers. To ensure smooth contract approval, this skill needs to be mastered and it is important for a logistics manager to have (Annosi et al., 2021). They need good communication skills, both verbal and nonverbal, so that there are no misunderstandings when they wish to convey plans or make agreements (Van Nguyen et al., 2022). The logistics and supply chain industry require the workers to move quickly. Every step taken, no

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matter how small, can have a big effect on subsequent steps if something goes wrong. This causes quite a lot of pressure when working as a logistics manager. Therefore, it is important to be able to keep calm when they face a problem. With the large responsibility held by a logistics manager, there will be times when they feel burdened by their work. Even though it is considered trivial by many, the ability to manage stress is very important so that they can maintain their mental health while maintaining their performance (Awawdeh et al., 2022).

The challenges of supply chains are increasingly complex with many businesses struggling to meet increasingly demanding supply chain challenges. Companies are required to sense fluctuations in demand well in advance and take agile and decisive action to respond. This lack of transparency, complex processes and poor partner relationships will affect the company's business supply chain (Büyüközkan & Göçer, 2018). To maximize the benefit of the supply chain, one can implement a digital supply chain. Digital supply chain is a comprehensive service that integrates master data in the supply chain with planning, execution and insight based on a proven comprehensive framework. Supply chain operations that can be maximized are demand plans. Addressing this customer demand becomes critical in the supply chain. This digital supply chain will give rise to new, innovative business models and result in increased revenue, profitability as well as working capital and customer satisfaction. According to Dubey et al. (2021, 2023), businesses are at risk of drowning in a vast ocean of data. By using this digital supply chain, it is possible to get a solution in the form of master data management. The management will combine key supply chain entities such as raw materials and packaging, promotional assets, finished goods, manufacturing, and also engineering shops. This allows companies to provide the control needed to automate and stabilize the collection, storage and use of company data to speed up customer and supplier onboarding. The digital supply chain will also improve inventory management, increase arbitrage and also procurement efficiency (Van Nguyen et al., 2022). The last one is being able to provide global consistency for businesses. The digital supply chain will help with supply chain analysis. Most companies seek to understand their supply chain end-to-end, from start to finish. Companies know that identifying stock holdings, determining safe stock levels and the ability to predict market dynamics will bring a competitive advantage. To achieve and analyze this, the company knows that this is not an easy thing (Kasonde & Steele, 2017). Digital supply chain solutions will facilitate the efficiency and effectiveness of business operations to be able to make decisions according to strategic, tactical, and operational level data throughout sourcing, manufacturing, logistics and distribution. When an order is placed until the order is fulfilled it will involve complex processes and dependencies (Tsolakis et al., 2021). To manage these orders, of course, it requires more attention and automation. By implementing a digital-based supply chain, it is easy for businesses to fulfill orders, catalog management, order entry, provide superior customer experience, increase profits, and even increase customer loyalty (Shcherbakov & Silkina, 2021).

One of the government's efforts to foster the business climate is through the partnership aspect (Ekici et al., 2019). Partnership is cooperation in business relationships, both direct and indirect, based on the principles of mutual need, trust, strengthening and benefit between micro, small and medium businesses (MSMEs) and large businesses (Risambessy & Wairisal, 2023). The partnership includes the process of transferring skills in the fields of production and processing, marketing, capital, human resources, and technology in accordance with the partnership pattern (Wynarczyk & Watson, 2005). Developing long-term "partnership" relationships with a few suppliers is a strategy that has few suppliers to establish long-term relationships with a few loyal suppliers. The use of only a few suppliers can create value by allowing suppliers to have economies of scale and learning curves that result in lower transaction costs and production costs. Few suppliers with a commitment to the buyer are expected to be able to participate more in the just in time (JIT) system (Gosling et al., 2016). Many companies include suppliers in their inventory systems but in many cases eliminate traditional supplier offerings, placing additional emphasis on reliability and quality (Ivanov et al., 2021). Developing long-term "partnership" relationships with a few suppliers is a strategy that has few suppliers to establish long-term relationships with a few loyal suppliers (Benhayoun et al., 2021). The use of only a few suppliers can create value by allowing suppliers to have economies of scale and learning curves that result in lower transaction costs and production costs. Few suppliers, each of whom has a commitment to the buyer, are expected to be able to participate more in the JIT system. Many companies are starting to include suppliers in their inventory systems but on many occasions eliminate traditional supplier offerings, placing additional emphasis on reliability and quality (Terziowski, 2010).

## **2. Literature Review**

### *2.1 Logistic Leadership*

In directing and coordinating the performance of a team, the manager must have leadership. Improving leadership effectiveness requires several abilities such as communication to build relationships with employees and be able to make decisions (Lee et al., 2022). With this approach, it will be easier for managers to coordinate with teams because an effective work environment has been created for employees (Gosling et al., 2016). There are two types of leaders, namely person-oriented leaders and task-oriented leaders (Ivanov et al., 2021). Person-oriented leaders will focus on employee welfare by creating a positive environment. This will certainly increase employee productivity, increase job satisfaction, and reduce work conflict. However, if the leader prioritizes closeness with employees, it could be difficult for both parties to determine the authority of each role in the company (Kasonde & Steele, 2017). Different from task-oriented leaders focus on predetermined tasks to achieve their goals and targets. This type of leader will exercise full control over the work process and determine the procedures that must be carried out by employees so that targets are successfully met. However, these two types have their

respective advantages and disadvantages. A leader must understand the times when he can use people oriented and task oriented. These two types cannot be used either for a long period of time because at one time the leader must use an approach to the team to find problems with their performance. On the other hand, leaders need to be task-oriented so that targets can be achieved in accordance with the initial goals. As a leader, managers need to have planning skills that involve setting goals and deciding what actions need to be taken. Especially when an organization launches a new project which requires a lot of planning to successfully meet targets. So, it can be concluded that good leadership is when a manager can not only find a balance between establishing good relationships with employees, but also prioritizing professionalism to create a win-win solution for all parties in the company (Kunkel et al., 2022). To achieve this goal, managers need to be open to new things, especially when many new innovations are born and require us to be adaptive to change. The main driver of the supply chain is leadership in the supply chain. Leadership behavior plays a role in optimizing the use of resources and abilities within the competencies and capabilities possessed by the organization which ultimately can increase competitive advantage sustainably. Leadership also plays a strategic role in improving organizational capabilities if leaders can dynamically integrate resources to develop new products and services by encouraging the behavior of organizational members to be actively involved in innovation activities both internally and externally so that this can ultimately improve the output performance of innovation. Leadership is always described as behavior and personal traits that are subconsciously needed to influence the process of relationships in an organization. Leadership style is an important factor in supporting the successful implementation of supply chain leadership because supply chain leadership not only affects the organization but also the entire supply chain including suppliers. Supply chain leadership is generally differentiated into transactional leadership styles and transformational leadership styles. In the organizational behavior literature transformational leadership has been positively associated with innovation and creativity. Previous research shows that supply chain transformational leadership encourages organizational leaders and members to think about organizational supply chain innovation solutions.

## *2.2 Digital supply chain*

Digital-based supply chain is a term that defines a supply chain whose foundation is built on web-enabled capabilities (Liu et al., 2021). Currently, many systems are hybrid in nature (Lee et al., 2022). Supply chains typically use a mix of document and IT-based processes. In its definition, digital supply chain management utilizes connectivity, system integration, and the ability to produce information from the main components (Mahlamäki et al., 2020). The essence of this digital supply chain is to minimize waste and bring greater profits so that it becomes a truly efficient system. Working on the supply chain manually will only waste time and energy. Industry 4.0 requires companies to rethink the way they design and organize supply chains. Several technologies have emerged and changed the traditional way of working. Additionally big trends and customer expectations are changing the game. Apart from companies being obliged to adapt, this supply chain also can reach the next horizon of operational effectiveness. To capitalize on emerging supply chain business models transforming companies into digital supply chains. Some of these big trends have a big impact on supply chain management (Gosling et al., 2016). There is a continued growth in rural areas around the world with wealth shifting to previously underserved areas. At the same time, these customer expectations are growing, online trends in recent years have led to increased service expectations combined with order granularity becoming stronger. There are several steps companies can carry out digital supply chain management. Digital-based supply chain tips can be carried out using a long-term approach. SMEs can take proactive steps which are used to ensure system scalability over time in various business and financial conditions (Nagy et al., 2018). It is important to realize that cost saving can encourage individuals and organizations to introduce actions that carry significant risk while focusing on short-term benefits (Pourmorshed & Durst, 2022). A good supply chain will be resilient and provide the desired and expected results. It is therefore very important to invest time in supplier analysis.

The benefits of digital supply chains for companies are that supply chain networks become more connected, scalable and faster. Companies that change their traditional supply chain strategy to digital can improve relationships with customers and also have better financial performance. Digital supply chain improves decision making for each party in the supply chain network through previously stored data. It improves the company's ability to meet customer needs with the ability to access demand data in real time, timely delivery times with minimal costs, and a controlled procurement process. The use of digital media allows companies to utilize stored data into useful information and assist in decision making. For example, a company can look at the performance of its partners such as suppliers or distributors to determine whether to continue working with that party or not. Another example is that companies can combine real-time purchasing data and previous purchasing data to predict the amount of inventory that must be purchased, so that they can be sure the product will always be available.

## *2.3 Partnership*

Partnership is a business strategy carried out by two or more parties within a certain period to achieve mutual benefits with the principle of mutual need and mutual growth and since it is a business strategy, the success of a partnership is largely determined by compliance between partners in carrying out business ethics (Rahadjeng et al., 2022). Partnership is business cooperation between MSMEs or with large enterprises, considering the principles of mutual need, mutual strengthening and mutual benefit (Vanags et al., 2018). Partnership is cooperation in business relationships, both direct and indirect, based on the principles of mutual need, trust, strengthening and benefit involving MSMEs with large enterprises (Haudi et al., 2022).

Aguy et al. (2014) stated that companies must decide on a supply chain strategy to obtain goods and services from outside. According to Rezaei et al. (2015, 2018) and Saguy et al. (2014), one strategy is the approach of negotiating with many suppliers and pitting one supplier against another. The second strategy is to develop long-term “partnership” relationships with a few suppliers to satisfy customers. The third strategy is vertical integration, where the company can decide to use reverse vertical integration by purchasing the supplier. A fourth variation is the combination of a few suppliers with vertical integration known as keiretsu. In keiretsu, suppliers become part of a unified company (Terziowski, 2010). The fifth or final strategy is to develop a virtual company that uses suppliers according to needs. Negotiating with many suppliers is a general strategy for commodity products, namely by matching one supplier with another supplier and burdening the supplier to be able to meet the buyer's demand. Suppliers compete aggressively while many negotiation approaches can be used with this strategy, a long-term “partnership” relationship is not the goal. This approach prioritizes the supplier's responsibility to be able to maintain expertise, technology, ability to predict and calculate costs, quality and ability to deliver on time (Shcherbakov & Silkina, 2021).

Partnership with the supply chain pattern is cooperation between micro, small, medium and large businesses that are dependent on the flow of goods and services that convert raw materials into products in an efficient and economical effort covering various processes from production, product and service development, systems information, as well as product packaging or service delivery to consumers. In this process, the aim of the supply chain is to ensure that stock taking of products in the warehouse runs smoothly, communication with distributors is well established, and there are enough agents available for the distribution process to all target markets.

## 2. Hypothesis Development

### 2.1 *The relationship between digital supply chain implementation and logistics leadership*

According to Bordonaba-Juste and Cambra-Fierro (2009), digital supply chain facilitates the efficiency and effectiveness of business operations to be able to make decisions based on strategic, tactical and operational level data throughout sourcing, manufacturing, logistics and distribution. Digital supply chain implementation has a positive and significant relationship towards logistics leadership, several previous studies explain that digital supply chain implementation has a positive and significant relationship to logistics leadership. Bordonaba-Juste and Cambra-Fierro (2009) also stated that digital supply chain implementation has a positive and significant relationship to logistics leadership. According to Awawdeh et al. (2022) also stated that digital supply chain implementation has a positive and significant relationship with logistics leadership. Based on this study, the following hypothesis can be formulated:

**H<sub>1</sub>:** *Digital supply chain implementation has a positive and significant relationship to logistics leadership.*

### 2.2 *Relationship of Digital supply chain Implementation to Partnerships*

Digital supply chain implementation has a positive and significant relationship with partnerships. Several previous studies have explained that digital supply chain implementation has a positive and significant relationship with partnerships (Büyüközkan & Göçer, 2018). Based on this study, the following hypothesis can be formulated:

**H<sub>2</sub>:** *Digital supply chain implementation has a positive and significant relationship with partnerships.*

### 2.3 *The relationship of logistics leadership to Partnerships*

According to Bordonaba-Juste and Cambra-Fierro (2009), good supply chain leadership is critical to achieving this goal and this makes it possible to attract the best talent, integrate every functional aspect of the supply chain, find ways to save costs, increase efficiency and quality, and create real value. Logistics leadership has a positive and significant relationship with partnerships. Several previous studies have explained that logistics leadership has a positive and significant towards Partnerships, Bordonaba-Juste and Cambra-Fierro (2009), Fontoura and Coelho (2020) and Cefis et al. (2009) also stated that logistics leadership has a positive and significant relationship to Partnerships. Based on this study, the following hypothesis can be formulated:

**H<sub>3</sub>:** *Logistics leadership has a positive and significant relationship with Partnerships.*

## 3. Method

This research method is quantitative and data analysis implements partial least squares (PLS) structural equation modeling (SEM) using SmartPLS 3.0 software data processing tools. Research data has been obtained by distributing online questionnaires to 589 SMEs owners in Indonesia determined using a simple random sampling method. The online questionnaire was designed using a Likert scale of 1 to 7 and distributed via social media. The stages of data analysis are validity testing, reliability testing and hypothetical testing. Fig. 1 shows the structure of the proposed study.

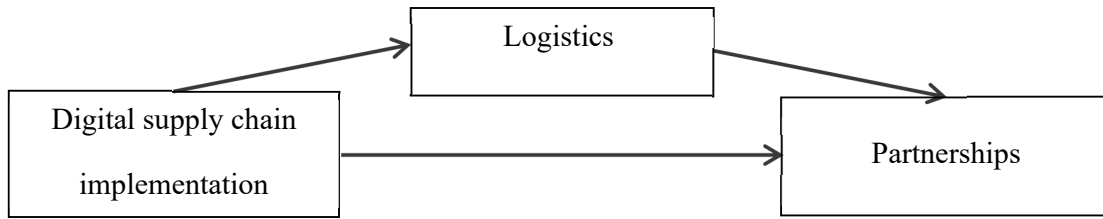


Fig. 1. Research Model

4. Result and discussion

4.1 Respondent description

The respondents of this research were 589 SMEs owners in Indonesia. The results of processing the questionnaire data obtained the following respondent description data.

Table 1 Respondent description

Attribute		Total	%
Gender	Male	321	54.50%
	Female	268	45.50%
Age	< 21	139	23.60%
	21-24	134	22.75%
	25-40	132	22.41%
	41-56	134	22.75%
	> 56	50	8.49%
Education	Junior High school	13	2.21%
	Senior High School	289	49.07%
	Diploma	123	20.88%
	Undergraduate	109	18.51%
	Post Graduate	55	9.34%
Work Experiences	< 5	139	23.60%
	5-10	178	30.22%
	10-20	134	22.75%
	20-30	74	12.56%
	> 30	64	10.87%

Regarding the gender attribute, respondents were male at 54.50% and female at 45.50%. In the age attribute, most people are less than 23.60% old. The highest education attribute is Senior High School with 49.07% and the work experience attribute has the highest number of 6 to 10, namely 30.22%.

4.2 Convergent Validity

The first stage of structural equation modeling analysis is analyzing the validity and reliability of the model. The model is declared valid if it has a factor loading greater than 0.70 and a factor loading of less than 0.70 will be removed from the model. The reliability value is if the composite reliability value is greater than 0.70 and the Cronbach alpha value has a value greater than 0.60.

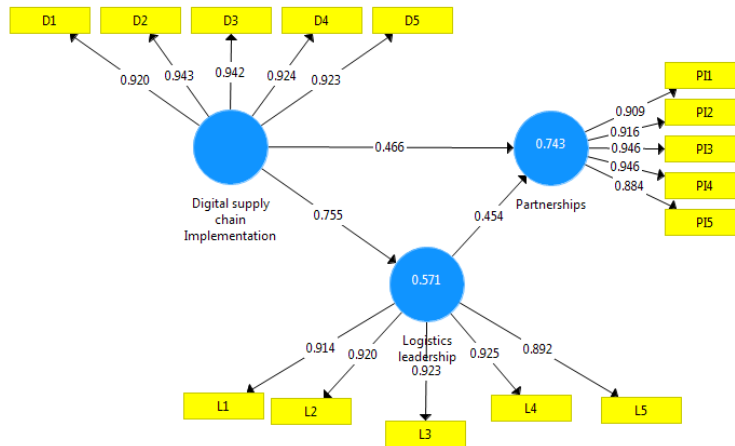


Fig. 2. Validity testing

Based on the picture above, it can be stated that the factor loading value of all indicators is greater than 0.70 so that it meets the requirements for convergent validity

**Table 2**

## Reliability testing

	Cronbach's Alpha	rho A	Composite Reliability	Average Variance Extracted (AVE)
Digital supply chain implementation	0.909	0.901	0.923	0.701
Logistics leadership	0.912	0.932	0.932	0.772
Partnerships	0.923	0.919	0.910	0.601

Table 1 shows that the composite reliability value for all variables is greater than 0.70 and the Cronbach alpha value for all variables is greater than 0.60, so it is concluded that all variables are fit or reliable.

**Table 3**

## Discriminant Validity

Variable	Digital supply chain implementation	Logistics leadership	Partnerships
Digital supply chain implementation	0.903		
Logistics leadership	0.832	0.915	
Partnerships	0.70	0.807	0.983

Based on Table 2 above, the correlation value of each variable with the variable itself has the greatest value when compared to the correlation value with other variables. So based on the results of Table 2 it can be concluded that this study has fulfilled the discriminant validity test.

**Table 4**

## Collinearity (VIF)

Variable	P
Digital supply chain implementation	2.254
Logistics leadership	2.067

Multicollinearity in a regression model can be determined by calculating the Variance Inflation Factor (VIF) value. VIF is a factor that measures how much the variance of the regression estimators increases compared to the independent variables which are orthogonal if connected linearly. If VIF is greater than 5, then the variable has a multicollinearity problem with other independent variables. Multicollinearity test results for research respondents obtained that the VIF value is less than 5 so that it can be stated that the model does not experience symptoms of multicollinearity.

*f<sup>2</sup> Effect Sizes Evaluation*

According to Hair (2017) explains that the guidelines for assessing  $f^2$  are those values of 0.02 (= small), 0.15 (= moderate), and 0.35 (= large), respectively, represent small, medium, and low effects. large (Hair et al. 2020).

**Table 5** $f^2$  Effect Sizes Evaluation

	Partnerships
Logistic Leadership	0.38
Digital supply chain implementation	0.32

For the logistic leadership variable, the  $f^2$  value of 0.41 represents a big effect, for the digital supply chain implementation variable, the  $f^2$  value of 0.39 represents a large effect,

*Q<sup>2</sup> Evaluation*

$Q^2$  value is greater than 0 indicates that the model has predictive relevance for certain endogenous constructs. Conversely, values of 0 and below indicate a lack of predictive relevance (Hair et al. 2017).

**Table 6** $Q^2$  Evaluation

Construct	$Q^2$
Partnerships	0.403

The value of  $Q^2$  for the partnership variable is  $0.403 > 0.000$ , meaning that this variable has predictive relevance. The inner model test contains an explanation of the R-Square, while the R-square value in this study is as follows:

**Table 7**

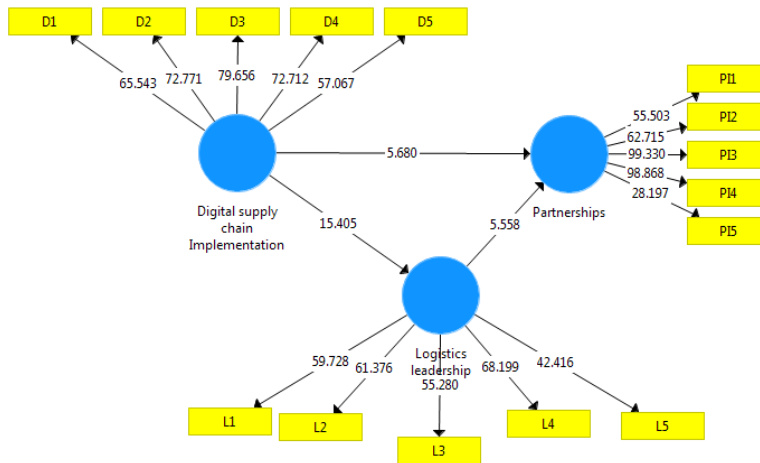
R Square

Variable	R-Square	Adjusted R-Square
Partnership	0.743	0.723

From the R square table, it can be concluded that 74.3% of partnerships is influenced by digital supply chain, logistic leadership while the remaining 25.7 % is influenced by other variables outside the study.

*Hypothesis testing*

Hypothesis testing in partial least squares is based on the level of significance of the statistical t value and p value, The limit value for hypothesis testing is the calculated t value greater than 1.96 or the p value less than 0.050.



**Fig. 3.** Hypothesis Testing

**Table 8**

Direct Hypothesis Testing

Correlation	T Statistics	P Values	Conclusion
Digital supply chain →logistic leadership→ partnerships	8.98	0.000	Supported

Based on the results of indirect hypothesis testing, the p value was  $0.000 < 0.50$  and the t value was  $8.98 > 1.96$ , so it was concluded that logistic leadership mediates the digital supply chain relationship with partnerships, logistic leadership has the characteristic of being fully mediated.

*The first hypothesis: The relationship between digital supply chain implementation and logistics leadership*

Based on the results of data analysis, a value of  $0.000 < 0.50$  was obtained, so it was concluded that digital supply chain implementation has a positive and significant relationship to logistics leadership. With this digital supply chain, it will facilitate the efficiency and effectiveness of business operations so that digital supply chain implementation can have a positive and significant effect on logistics leadership. Several previous studies have explained that digital supply chain implementation has a positive and significant relationship with logistics leadership. Other research by Zhang et al. (2022) also stated that digital supply chain implementation has a positive and significant relationship to logistics leadership. Bordonaba-Juste and Cambra-Fierro (2009) also stated that digital supply chain implementation has a positive and significant relationship to logistics leadership.

*The relationship between digital supply chain implementation and partnerships*

Based on the results of data analysis, a value of  $0.000 < 0.50$  was obtained, so it was concluded that digital supply chain implementation had a positive and significant relationship with partnerships. Several previous studies explained that digital supply chain implementation had a positive and significant relationship with partnerships. Other research by Bordonaba-Juste and Cambra-Fierro (2009), Annosi et al. (2021) and Shcherbakov and Silkina (2021) also stated that digital supply chain implementation has a positive and significant relationship with partnerships.

*The third hypothesis: The relationship of logistics leadership to Partnerships*

Based on the results of data analysis, it was concluded that logistics leadership had a positive and significant relationship with partnerships. Several previous studies explained that logistics leadership had a positive and significant relationship with partnerships (Büyüközkan & Göçer, 2018). Table 9 summarizes the results of testing the hypotheses.

**Table 9**

The summary of the results of testing the hypotheses

Correlation	T Statistics	P Values	Conclusion
Digital supply chain and partnerships	5.60	0.000	Supported
Digital supply chain and logistic leadership	15.405	0.000	Supported
logistic leadership and partnerships	5.558	0.000	Supported

## 5. Conclusion

Based on the results of data analysis, it is concluded that digital supply chain implementation has a positive and significant relationship with logistics leadership, digital supply chain implementation has a positive and significant relationship with partnerships and logistics leadership has a positive and significant relationship with partnerships. SME business actors themselves must play a more active role in obtaining information about partnerships, not only from the government but also from large state-owned or private companies. Digital supply chains are now quite necessary for companies. Traditional companies store their assets in conventional form, such as storing documents that will later become paper waste. The digital supply chain is not only needed to minimize waste but also it helps facilitate the supply chain operations. Using a conventional supply chain will require a long process. Meanwhile, if we use the digital version, we will be able to be closer to consumers so that products can be accessed more easily. Currently, the world is faced with challenges in the supply chain. This challenge requires all supply chain flows to be implemented in the shortest possible time. The government should pay more attention to SMEs, because SMEs are currently still constrained in financial and legal aspects. This is different from large businesses which have more capabilities in financial and legal aspects (Farajpour et al., 2022). However, the main key to obtaining benefits is to encourage SMEs and large businesses to form partnerships that mutually need, trust, strengthen and benefit without causing dependence on SME business actors. There are several advantages in implementing a digital supply chain. In a digital supply chain, the entire supply chain process is processed automatically by the system, thereby reducing the time required for each process and increasing operational efficiency. Digital supply chain helps improve product quality and service, minimize human error, and increase consistency in the production process. With higher operational efficiency, digital supply chains can help companies reduce costs related to the supply chain, such as transportation costs, inventory costs, storage costs, and production costs. Digital supply chains provide greater flexibility in dealing with varying demand and accommodating changes in customer needs. Before developing a digital supply chain, we must evaluate the risks first. Every system has risks, but it is better to choose a new system than to continue using a conventional system.

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