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The Effect of Absorptive Capacity on Supply Chain Innovation Performance through Supply Chain Resilience in Manufacturing Companies: Empirical Study From Bogor Region, Indonesia

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Abstract: This study examines the impact of digital capabilities on supply chain innovation performance through digital innovation in manufacturing companies in Bogor. In the advancing digital era, an organization's ability to leverage digital technology is crucial for achieving a competitive advantage. The research adopts a quantitative approach using a questionnaire survey. Convenience sampling and snowball sampling methods were employed to gather a sample size of 133 respondents. The data were analyzed using Structural Equation Modeling (SEM) to test the relationships between absorptive capacity, supply chain resilience, and supply chain innovation performance. The results indicate that absorptive capacity positively influences supply chain innovation performance ($P\text{-value } 0.0245 < 0.05$) with a positive estimated value of 0.134. However, absorptive capacity does not significantly affect supply chain resilience ($P\text{-value } 0.310 > 0.05$). Additionally, supply chain resilience does not positively impact supply chain innovation performance, as shown by a $P\text{-value of } 0.032 < 0.05$ but with a negative estimated value of -0.134, indicating a negative effect. The hypothesis that absorptive capacity influences supply chain innovation performance through supply chain resilience is not supported. In conclusion, while absorptive capacity can directly enhance innovation performance, other factors such as risk management and supply source diversification need to be addressed to improve supply chain resilience. This study suggests that strengthening employee training and development will enhance absorptive capacity and recommends exploring additional factors that may facilitate the integration of absorptive capacity and innovation in the supply chain. Further qualitative research is needed to explore other factors that influence these relationships.

Keywords: Supply Chain, Absorptive Capacity, Supply Chain Innovation Performance, Supply Chain Resilience.

1. INTRODUCTION

In an increasingly advanced digital era, companies must adapt quickly to remain competitive in the global market. Digital capability, defined as the ability of an organization to leverage digital technology across all aspects of its operations, is a key factor in achieving a competitive advantage. The pandemic has exposed numerous weaknesses in global supply chain infrastructure, highlighting the importance of anticipating and preparing for supply disruptions. This challenge underscores the need for logistics and supply chain systems that align with the National Industrial Development and Logistics Programs (NIDL), which promote the adoption of Industry 4.0 technologies to ensure that supply chain disruptions do not impact production.

Downstreaming industry is one of the steps taken by developing countries to achieve economic progress, as stated by the Minister of Trade of the Republic of Indonesia, Zulkifli Hasan. Downstreaming helps create added value and drives the decentralization and diversification of global supply chains. Decentralization and diversification are essential for resilience, requiring the participation of more countries and stakeholders. By developing absorptive capacity, organizations



can seize existing opportunities and exchange information more rapidly, enabling them to survive in the market. Absorptive capacity, defined as a company's ability to recognize, absorb, and integrate new knowledge into its business processes, is especially relevant in the context of supply chain innovation. Companies with high absorptive capacity can continuously adapt to technological developments and changing market demands. In the new digital era, many traditional businesses, particularly manufacturing companies, are still exploring the application of digital technologies. Adapting businesses and supply chains with digital technology has become a crucial way for companies to enhance the resilience of their supply chains. According to previous research, scholars have divided supply chain resilience into two dimensions: resilience and recovery. Resilience refers to the ability to minimize the impact of supply chain disruptions, while recovery pertains to the ability to resume normal operations after a disruption.

This research is expected to be highly relevant to the modern business world, where companies across various industries must continually adapt to the evolving business environment. The ability to maintain competitiveness while ensuring resilience is an ongoing effort that must be pursued. Therefore, this research aims to analyze the impact of digital capabilities on supply chain innovation performance through digital innovation in manufacturing companies in Bogor. It is anticipated that the findings of this study will help businesses in various sectors optimize operations management and enhance supply chain innovation. Furthermore, the results of this research are expected to contribute to the advancement of management theory and the practice of operations management and innovation within the context of a dynamic and uncertain supply chain.

2. LITERATURE REVIEW

2.1. Supply Chain Operations Management

Salah et al (2023) define operations management as the process of planning, organizing, directing, and controlling resources to create and deliver products or services that provide value to customers. This definition highlights the importance of operations management in creating products or services that meet customer needs and add value to the organization. According to Reger G. Schroeder, as cited in Picciotto (2020), operations strategy is a vision for the operations function that sets the overall direction and guides decision-making. From a theoretical perspective, operations management aims to achieve organizational goals effectively and efficiently through four key functions: planning, organizing, directing, and controlling. Effectiveness refers to the ability to achieve desired goals, while efficiency focuses on the optimal use of resources. Oliveira-Dias et al (2022) emphasize that operations management is responsible for creating and managing systems that produce goods and services that meet customer needs. This underscores that operations management is not just concerned with the production process but also with continuously understanding and addressing customer needs.

2.2. Absorptive Capacity

Absorptive capacity is a crucial concept in management science that refers to an organization's ability to acquire, integrate, and apply new knowledge or innovations. It plays a key role in helping organizations navigate changes and challenges in an ever-evolving business environment. Absorptive capacity was first introduced by Cohen and Levinthal (1990) as the ability of an organization to integrate new knowledge with existing knowledge (Ávila, 2021). This concept was later expanded by Zhao et al. (2019), who defined absorptive capacity as the ability of an organization to identify, understand, integrate, and utilize new knowledge to enhance performance.

Absorptive capacity often involves the development of human resources. Operations management can contribute to this development by equipping employees with the knowledge and skills needed to adopt and integrate new knowledge. Research shows that strong absorptive capacity can positively

impact organizational performance (Bazrkar et al., 2022). The ability to adopt and integrate new knowledge can improve operational efficiency and competitiveness (Id & Liu, 2023). This is further supported by findings indicating that organizations with high absorptive capacity are better equipped to adapt to change and capitalize on emerging opportunities in the market (Dwivedi et al., 2021).

Absorptive capacity consists of two main dimensions: passive absorption and active absorption (Ávila, 2021). Passive absorption refers to an organization's ability to acquire new knowledge from its environment, while active absorption refers to the ability to integrate this new knowledge into existing knowledge. Several factors, including employee skills and knowledge, organizational structure, culture, technology, and procedural policies, can influence absorptive capacity. Ávila (2021) identifies three key components of absorptive capacity: the ability to identify relevant new knowledge, the ability to assimilate or absorb this knowledge, and the ability to apply this knowledge in the form of useful actions or innovations.

Research indicates that the primary goal of absorptive capacity is to improve organizational performance and provide a competitive advantage. According to Bazrkar et al. (2022), absorptive capacity can enhance innovation and productivity. Dwivedi et al. (2021) further emphasize that it can also improve financial performance and sustainability. Prakasa et al. (2022) highlight the importance of absorptive capacity in boosting organizational competitiveness, while Pu & Liu (2023) and Khan & Tao (2022) demonstrate that absorptive capacity can offer a competitive advantage in highly competitive industries.

2.3. Supply Chain Innovation Performance

Supply chain innovation is directly correlated with operational performance, which can be measured through the efficiency and effectiveness of production processes, as well as product quality and sales. Quality management practices within the supply chain also influence the effectiveness of innovation activities, which are reflected in product quality, production processes, and strong relationships with suppliers and customers. Supply chain innovation performance refers to an organization's ability to generate and implement innovations throughout its supply chain. This performance can be measured through various aspects such as the innovation rate, innovation profits, innovation speed, and innovation efficiency. The concept was first introduced by Gunasekaran et al. (2004) as an organization's ability to develop and implement new innovations effectively and efficiently. Later, Lazuardy et al. (2022) expanded on this concept, stating that supply chain innovation performance is the ability of an organization to produce and implement innovations that benefit both the organization and its stakeholders. Supply chain innovation performance can be influenced by various factors, both internal and external. Internal factors include employee skills and knowledge, organizational structure, culture, technology, and policies and procedures. External factors, on the other hand, include the competitive environment, technological advancements, and changes in customer needs. According to Christopher et al. (2011), as cited in Putranto & Nursyamsiah (2023), there are four main dimensions of supply chain innovation: product, process, organization, and technology.

2.4. Supply Chain Resilience

Supply chain resilience is defined as the ability of a supply chain to survive and recover quickly after experiencing disruptions or unexpected changes (Siagian et al., 2021). In the face of risks and uncertainties, companies need to develop an effective supply chain resilience strategy to minimize negative impacts and maximize available opportunities. Several factors that influence supply chain resilience include collaboration with suppliers, supplier diversification, use of information technology, risk management, operational flexibility, collaboration with business partners, efficient inventory management, talent development, sound financial management, and innovation development.

According to Heizer and Render (2009), one strategy implemented in supply chain management is the development of long-term partnerships with a few selected suppliers (Leppe & Karuntu, 2019). This strategy aims to satisfy customers by maintaining stable and trusted relationships with key suppliers. Putri (2020) found that supply chain management practices significantly influence the overall effectiveness of supply chain performance. Effective integration of suppliers into the supply chain is a key factor for companies seeking to gain a competitive advantage. Strong integration with suppliers can increase operational efficiency, improve product quality, and accelerate responses to market changes, thereby providing companies with a competitive edge in the market. According to Heizer and Render (2004), as cited in Putranto & Nursyamsiah (2023), there are ten strategies that companies can adopt to enhance the resilience of their supply chains. These include farmer assistance, technology implementation, risk management, sustainable practices, standards and system control, strategy development, process control, transparency and visibility, and system development. By leveraging artificial intelligence (AI) technology to improve supply chain efficiency and speed, companies can address challenges such as supply chain communication, fluctuating demand, and difficulties in collaborating with business partners.

2.5. Conceptual Framework

This research is based on a study conducted by Haryanto & Lunarindiah (2023), which examines the influence of Supply Chain Management (SCM) strategies on company operational performance. In an effort to enhance company performance and competitiveness in an increasingly competitive market, companies are focusing on improving the effectiveness of their supply chain management strategies. This is because effective supply chain management helps minimize the costs incurred by companies in fulfilling and delivering services to consumers (Haryanto & Lunarindiah, 2023). Research by Maddeppungeng (2017) found that implementing sound supply chain management practices can improve company performance by up to 67%. Therefore, adopting supply chain management is highly recommended, as it is one of the key ways for companies to grow and succeed in competition. Regular innovation and the introduction of new products are crucial to success, both of which can be achieved through the implementation of effective and appropriate supply chain management strategies (Silva et al., 2019). By increasing absorptive capacity, organizations can enhance their resilience. Supply chain resilience refers to an organization's ability to overcome disruptions, risks, or changes in its supply chain. In this context, supply chain resilience can serve as a mediator between absorptive capacity and supply chain innovation performance. Therefore, improving absorptive capacity can lead to greater supply chain resilience, which in turn supports enhanced innovation performance in the supply chain. In other words, the better an organization's absorptive capacity, the more effectively it can overcome challenges and changes in its supply chain by strengthening its resilience, ultimately fostering improved innovation performance.

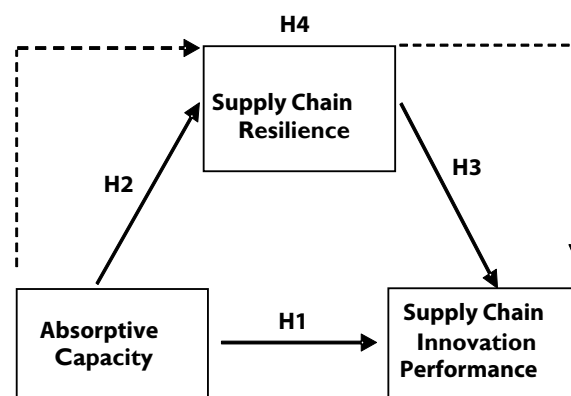


Figure 1. Conceptual Framework

H1. Absorptive Capacity has a positive influence on Supply Chain Innovation Performance

Absorptive capacity refers to an organization's ability to collect, assimilate, and apply new knowledge to enhance innovation. Innovation performance in the supply chain is defined as an organization's ability to create and implement new ideas that lead to improvements in processes and products. Research by Riana et al. (2019) indicates that organizations with high absorptive capacity tend to achieve better innovation performance. Similarly, Müller et al. (2021) found that strong absorptive capacity positively contributes to innovation performance. The correlation between absorptive capacity and innovation performance can be explained by an organization's ability to effectively integrate external knowledge into the innovation process, thus generating new ideas that improve supply chain performance. Organizations with high absorptive capacity are better at identifying opportunities, developing innovative ideas, and implementing changes, enabling them to create new products or services that offer a competitive advantage. Therefore, this research aims to measure the extent to which absorptive capacity influences innovation performance in the supply chain, while controlling for other factors such as economic conditions, technology, and internal organizational factors.

H2. Absorptive Capacity has a positive influence on Supply Chain Resilience

Supply chain resilience refers to an organization's ability to survive and adapt to changes in the external environment, such as market demands, regulations, or technology. Research by Goail & Mohammed (2021) supports this hypothesis, showing that organizations with high absorptive capacity tend to exhibit better resilience in the face of supply chain changes. High absorptive capacity enables organizations to effectively accumulate and apply new knowledge, making them better prepared and more responsive to external changes. This enhances their resilience to challenges and risks. Additionally, organizations with high absorptive capacity are better at identifying and managing risks, quickly adapting strategies, and adjusting operational processes to address emerging risks, thereby improving overall supply chain resilience. Absorptive capacity can be viewed as an input that influences supply chain resilience as an output. The higher the absorptive capacity of an organization, the greater its resilience in the face of change and risk.

H3. Supply Chain Resilience has a positive influence on Supply Chain Innovation Performance

Research by Sabahi & Parast (2019) found that supply chain resilience positively influences supply chain innovation performance, increasing supply chain flexibility and adaptability, which in turn contributes to enhanced innovation performance. The "Resource-Based View" (RBV) theory supports this hypothesis by suggesting that supply chain resilience can be considered a valuable and rare resource, providing a competitive advantage in fostering supply chain innovation (Aisyah et al., 2022). Additionally, the "Dynamic Capabilities" theory posits that organizations with strong supply chain resilience are better equipped to face changes and uncertainty in the business environment, enabling them to identify innovation opportunities and take appropriate actions to improve innovation performance (Jutidharabongse et al., 2024). In research by Pu & Liu (2023), the use of statistical analysis methods, such as linear regression, showed a positive and significant influence between supply chain resilience and supply chain innovation performance. Their research also found that supply chain resilience increases flexibility and adaptability, which contributes to improved supply chain innovation performance. Similarly, Jiang et al. (2023) found that supply chain resilience positively influences innovation performance, with supply chain integration moderating this relationship and further enhancing the positive impact of supply chain resilience on innovation performance.

H4. Absorptive Capacity has a positive influence on Supply Chain Innovation Performance through Supply Chain Resilience

Absorptive capacity, supply chain innovation performance, and supply chain resilience are critical concepts in supply chain management. Absorptive capacity refers to an organization's ability to acquire, assimilate, and apply new knowledge, which fosters innovation. Supply chain innovation performance reflects the organization's ability to create and implement innovations within business processes, while supply chain resilience describes its ability to survive and adapt to disruptions. Research indicates that high absorptive capacity positively contributes to both supply chain resilience and supply chain innovation performance (Heizer and Render, 2019; Mardhiyah & Santosa, 2022; Siagian et al., 2021). By enhancing absorptive capacity, organizations can better manage knowledge, identify opportunities, foster innovation, and address risks, ultimately improving their performance and competitiveness in response to changes and challenges in the business environment.

3. RESEARCH DESIGN AND METHOD

This research employs a quantitative approach, with data collected through a questionnaire survey conducted among manufacturing companies in Bogor via Google Forms at the link <https://forms.gle/B9kDtFiMby7JC8zZ8>. The data is then analyzed using statistical methods to test the proposed hypotheses. The goal of this research is to examine how absorptive capacity influences supply chain innovation performance through supply chain resilience. A 5-point Likert scale was used to measure the variables, with respondents from various managerial levels in manufacturing companies in Bogor. Convenience and snowball sampling methods were employed, resulting in a sample size of 133 respondents. The collected data were analyzed using Structural Equation Modeling (SEM) to explore the relationships between absorptive capacity, supply chain resilience, and supply chain innovation performance. Absorptive capacity is defined as an organization's ability to recognize, absorb, and apply new information, while supply chain innovation performance refers to an organization's ability to generate and implement valuable innovations. Supply chain resilience, acting as a mediating variable, refers to the ability of a supply chain to withstand and recover from disruptions.

4. RESULT AND DISCUSSION

4.1. Respondent Characteristics

This research uses primary data collected through a questionnaire distributed to executives, managers, supervisors, and employees/staff at manufacturing companies in Bogor. Of the 133 respondents, 56.4% were male and 43.6% were female, indicating slightly higher participation from men. In terms of age, the majority of respondents (39.8%) were in the 31-40 age range, followed by those aged 20-30 years (35.3%), 41-50 years (13.5%), over 50 years (9.8%), and under 20 years (1.5%). This age distribution reflects a wide variation in working age, providing diverse perspectives on supply chain innovation performance and supply chain resilience.

Regarding length of service, the majority of respondents (33.8%) had 1-5 years or 6-10 years of work experience, followed by 11-15 years (19.5%), more than 15 years (10.5%), and less than 1 year (2.3%). This indicates that most respondents have sufficient experience in manufacturing companies, which may offer valuable insights into practices and challenges related to the supply chain. As for educational background, most respondents held a Bachelor's degree (49.6%), followed by a Master's degree (18.0%), high school/vocational school (21.2%), Diploma (9.8%), and other qualifications (1.5%). These findings suggest that respondents have a strong educational background, which enhances the quality of the data and analysis. In terms of position, the majority of respondents were employees/staff (40.6%), followed by supervisors (32.3%), managers (20.3%), and executives (6.8%).

This participation across various organizational levels provides a comprehensive view of different perspectives within the organization regarding absorptive capacity, supply chain innovation performance, and supply chain resilience. These findings indicate that the majority of respondents in this study were men aged 31-40 years, with 1-10 years of service, holding a Bachelor's degree, and working as employees/staff at manufacturing companies in Bogor.

4.2. Descriptive Statistics

Descriptive statistical analysis of the absorptive capacity variable shows an average value of 3.73, with a standard deviation of 0.70. This indicates that, overall, the company's absorptive capacity is considered quite good by the respondents. The statement with the highest average value is "management support for implementing marketing strategies based on consumer knowledge" (3.9173), while "internal communication between departments" has the lowest average value (3.5564). This suggests that, despite strong management support, internal communication still needs improvement. Furthermore, analysis of the supply chain innovation performance variable reveals an average value of 4.27, with a standard deviation of 0.60, indicating that supply chain innovation performance is viewed positively by the respondents. Timeliness in the supply chain is the strongest aspect (4.5414), while logistics cost management is an area that requires improvement (4.0451). This shows that the company excels in maintaining timeliness and process effectiveness but still needs to focus on managing logistics costs to enhance overall performance.

Analysis of the supply chain resilience variable shows an average value of 4.13, with a standard deviation of 0.73, indicating that supply chain resilience is considered quite good by the respondents. The supply chain's ability to respond quickly to disruptions is the strongest aspect (4.1504), while the ability to maintain control during disruptions is the weakest aspect (4.0902). This suggests that, while companies are able to respond quickly to disruptions, they need to improve their ability to maintain operational control during such events.

4.3. Instrument Test and Goodness of Fit

This research employs the Structural Equation Model (SEM) method, a multivariate statistical technique that combines factor analysis and is used to examine structural relationships between constructs and variables (Hair et al., 2019). SEM involves two main steps: validating and assessing the reliability of the instrument through confirmatory factor analysis and testing the relationship model between variables using path analysis. Data were collected through a survey questionnaire, whose validity was tested and found to have high factor loading values for each variable, indicating strong validity. These factor loading values represent the relationship between latent variables, which cannot be directly measured, and measurable indicators (Sugiyono, 2019).

In this study, the sample size comprised 133 respondents, with the minimum required factor loading value for item validity set at 0.5. The validity test results indicated that all items were valid, with variables such as Absorptive Capacity, Supply Chain Innovation Performance, and Supply Chain Resilience exhibiting high factor loading values. Additionally, reliability testing using Cronbach's Alpha showed that all variables were reliable, with a Cronbach's Alpha value of 0.808 for Absorptive Capacity, 0.899 for Supply Chain Innovation Performance, and 0.959 for Supply Chain Resilience. The results of the Goodness of Fit test are presented in Table 1 below.

Table 1. Goodness of Fit Test Results

Type Measurement	Measurement	Value	Recommended acceptance limits	Conclusion
	P-value	0.000	≥ 0.05	Poor fit

Type Measurement	Measurement	Value	Recommended acceptance limits	Conclusion
Absolut fit measures	ECVI	2.998	Closer to the Saturated value than independent	Goodness Fit
	RMSEA	0.092	≤ 0.1	Goodness Fit
Incremental fit Measures	IFI	0.912	≥ 0.90	Goodness Fit
	NFI	0.845	≥ 0.90	Poor fit
	TLI	0.898	≥ 0.90	Poor fit
	CFI	0.911	≥ 0.90	Good fit
	RFI	0.823	≥ 0.90	Poor fit
Parsimonious fit measures	CMIN/DF	2,105	Lower limit 1, upper limit 5	Goodness Fit
	AIC	395.709	Closer to Saturate value than independent	Goodness Fit

Source: Processed data (2024)

The results of the model fit test (Goodness of Fit) indicate that five measurements ECVI, RMSEA, IFI, CMIN/DF, and AIC—confirm that this research model demonstrates a good fit. According to Hair et al. (2019), if even one measurement indicates a good fit, the model can be considered acceptable, and hypothesis testing can proceed. Therefore, this research model is deemed feasible and can advance to the hypothesis testing stage. The analysis in the subsequent sub-chapter will focus on testing the hypotheses and interpreting the results.

4.4. Hypothesis Testing

The influence of absorptive capacity on supply chain innovation performance has been a key focus of research in recent years. The first hypothesis in this study examines whether absorptive capacity positively affects supply chain innovation performance. Based on data analysis using AMOS, the P-value is 0.0365, which is less than 0.05, with a positive estimate value of 0.134. These results indicate that the hypothesis is supported. Therefore, it can be concluded that companies capable of absorbing new knowledge and preparing it for further application can enhance innovation performance in their supply chain.

Previous research by Cohen and Levinthal (2019) supports this finding, asserting that companies with high absorptive capacity are better equipped to identify, assimilate, and apply external knowledge, positively impacting supply chain innovation performance. Similarly, Zahra and George (2020) found that absorptive capacity improves a company's ability to innovate by integrating new knowledge into business processes, ultimately enhancing efficiency and effectiveness in the supply chain. However, research by Lane et al. (2019) highlights that, in certain cases, high absorptive capacity may encounter challenges, such as organizational cultures that do not support change or internal resistance to new initiatives.

The second hypothesis examines the influence of absorptive capacity on supply chain resilience. The analysis results indicate that this hypothesis is not supported, with a P-value of 0.310, which is greater than 0.05. Lichtenthaler (2019) notes that while absorptive capacity is critical for fostering innovation, its impact on supply chain resilience is not always significant. In contrast, research by Flatten et al. (2011) suggests that absorptive capacity can enhance supply chain resilience by enabling companies to quickly identify and respond to disruptions. Companies with high absorptive capacity are better equipped to adapt to market changes and address challenges in their supply chains. Similarly, Mikalef et al. (2021) argue that absorptive capacity strengthens supply chain resilience by improving organizational adaptability and flexibility, although this positive effect may vary depending on the industry and organizational context. On the other hand, Habib et al. (2021) assert that increasing absorptive capacity without strong management support can weaken supply chain resilience. Sakhawat-ur-Rehman et al. (2023) found that integrating new knowledge often necessitates substantial changes in organizational processes and structures, which can temporarily reduce

resilience. Additionally, Karimi and Walter (2015) highlight that an excessive focus on absorptive capacity can divert attention from essential risk management and supply chain coordination, which are key drivers of resilience.

The third hypothesis in this research examines the influence of supply chain resilience on supply chain innovation performance. The analysis results indicate that this hypothesis is not supported, with a P-value of 0.032 and a negative estimate value of 134. Novak and Dooley (2021) state that while supply chain resilience is critical for maintaining operational stability, its effect on innovation performance is not always significant. In contrast, research by Scholten and Schilder (2015) suggests that supply chain resilience can enhance supply chain innovation performance by enabling companies to adapt more quickly and overcome disruptions. Resilient supply chains allow companies to innovate effectively by managing disruptions and leveraging opportunities arising from market changes. Similarly, Satyaputra et al. (2024) highlight that supply chain resilience plays a vital role in ensuring operational stability and reliability, although its effects may vary depending on the industry and organizational context. However, Naïmi et al. (2022) argue that increasing supply chain resilience without strong support for innovation may negatively impact innovation performance. Patrucco and Kähkönen (2021) found that integrating resilience often requires significant changes in organizational processes and structures, which can temporarily reduce innovation capabilities. Additionally, Dubey et al. (2023) note that an overemphasis on supply chain resilience can divert resources and focus away from fostering innovation, which is essential for improving long-term performance.

Furthermore, the fourth hypothesis in this research examines whether absorptive capacity positively affects supply chain innovation performance through supply chain resilience. The analysis of this relationship was conducted using two models: the direct framework and the indirect framework, as illustrated in Figures 2 and 3 below.

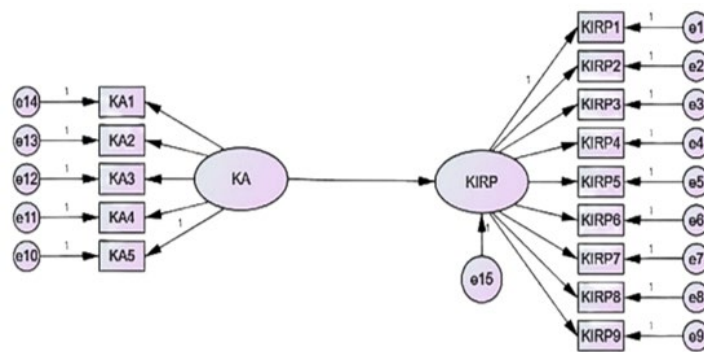


Figure 2. Path Analysis Graph for Hypothesis Testing (Direct)

Source: AMOS Output (2024)

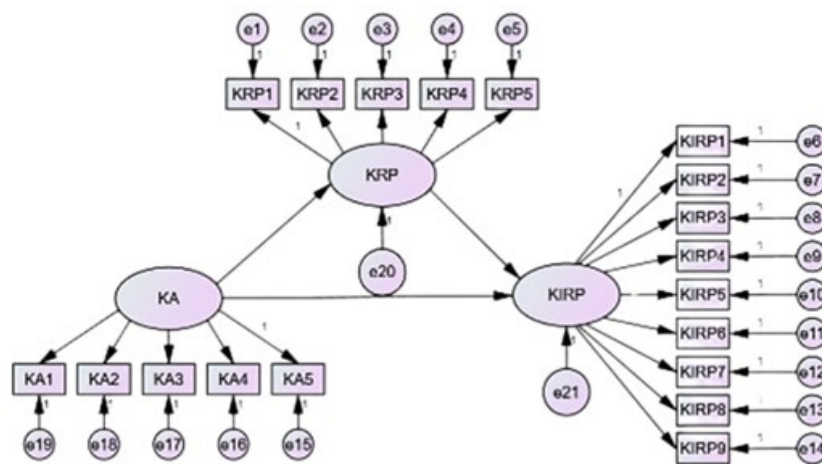


Figure 3. Path Analysis Graph for Hypothesis Testing (Indirect)

(Source: AMOS Output, 2024)

The interpretation of the research results testing Hypothesis 4 (mediation) reveals several important findings. Hypothesis 4 aims to test whether absorptive capacity positively affects supply chain innovation performance through supply chain resilience. In Model 1 (Direct Framework), the results show that absorptive capacity influences supply chain innovation performance with a p-value of 0.0365, which is less than 0.05. This indicates a significant direct effect of absorptive capacity on supply chain innovation performance.

However, Model 2 (Indirect Framework), which considers mediation, shows different results. First, condition (a), testing the influence of absorptive capacity on supply chain resilience, is not met, with a p-value of 0.310, which is greater than 0.05. Second, condition (b), testing the influence of supply chain resilience on supply chain innovation performance, is partially met, with a p-value of 0.032 (less than 0.05) but a negative estimated value of -0.134. Third, condition (c), which tests the effect of absorptive capacity on supply chain innovation performance in the mediation model, is not significant, with a p-value of 0.049 (less than 0.05), but it does not fully support mediation.

Based on this analysis, it can be concluded that the hypothesis suggesting that absorptive capacity positively affects supply chain innovation performance through the mediation of supply chain resilience is not supported. Although absorptive capacity has a direct influence on supply chain innovation performance, this effect is not mediated by supply chain resilience. These findings highlight the importance of considering other factors that may influence the relationship between absorptive capacity and supply chain innovation performance.

5. CONCLUSION

This research concludes that absorptive capacity has a positive influence on supply chain innovation performance, with a p-value of 0.0365, which is less than 0.05, and a positive estimated value of 0.125. However, absorptive capacity does not have a significant effect on supply chain resilience, as indicated by the p-value of 0.310, which is greater than 0.05. Additionally, supply chain resilience does not show a positive influence on supply chain innovation performance. Although the p-value of 0.032 is less than 0.05, the negative estimate value of -0.134 suggests a non-positive impact. Furthermore, absorptive capacity does not affect supply chain innovation performance through supply chain resilience, as the mediation conditions are not met, with the p-values for each path tested being insignificant. This suggests that while absorptive capacity can directly improve innovation performance, other factors may require different approaches to have a significant impact.

The results of this research provide several important implications for manufacturing companies in Bogor. Absorptive capacity has been proven to positively influence supply chain innovation performance, so companies should focus on enhancing absorptive capacity through employee training and development. However, since absorptive capacity does not significantly affect supply chain resilience, companies should assess and strengthen other aspects, such as risk management and diversification of supply sources, to improve supply chain resilience. Additionally, since supply chain resilience does not positively influence supply chain innovation performance, companies should aim to balance efforts to enhance resilience while simultaneously optimizing innovation strategies.

This research concludes that absorptive capacity has a positive influence on supply chain innovation performance, with a p-value of 0.0365, which is less than 0.05, and a positive estimated value of 0.125. However, absorptive capacity does not have a significant effect on supply chain resilience, as indicated by the p-value of 0.310, which is greater than 0.05. Additionally, supply chain resilience does not show a positive influence on supply chain innovation performance. Although the p-value of 0.032 is less than 0.05, the negative estimate value of -0.134 suggests a non-positive impact. Furthermore, absorptive capacity does not affect supply chain innovation performance through supply chain resilience, as the mediation conditions are not met, with the p-values for each path tested being insignificant. This suggests that while absorptive capacity can directly improve innovation performance, other factors may require different approaches to have a significant impact.

The results of this research provide several important implications for manufacturing companies in Bogor. Absorptive capacity has been proven to positively influence supply chain innovation performance, so companies should focus on enhancing absorptive capacity through employee training and development. However, since absorptive capacity does not significantly affect supply chain resilience, companies should assess and strengthen other aspects, such as risk management and diversification of supply sources, to improve supply chain resilience. Additionally, since supply chain resilience does not positively influence supply chain innovation performance, companies should aim to balance efforts to enhance resilience while simultaneously optimizing innovation strategies.

Further research is recommended to explore specific mechanisms that can enhance the integration between absorptive capacity and innovation processes in supply chains, identify strategies to reduce resistance to change, and develop more flexible organizational structures. Future studies could also focus on developing systems that actively support innovation within the context of complex supply chains.

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