

## Supplier selection decision-making and firm performance: The effects of supply chain integration, green supply chain practice, and supply chain quality

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### ABSTRACT

Companies strive to improve performance by adopting a green supply chain, integrating suppliers and customers to maintain product quality through supplier selection decisions. The purpose of this study is to examine the relationship between supplier selection decision-making and firm performance, with supply chain integration, green supply chain practice, and supply chain quality as intervening variables. Data collection was conducted at manufacturing companies by distributing questionnaires directly to practitioners and providing online links for respondents to complete. The results of data collection for this study amounted to 174 questionnaires ready for further processing using SmartPLS. The results of data processing show that supplier selection decision-making directly influences supply chain integration and green supply chain practice but does not directly impact supply chain quality. Supply chain integration plays a direct role in improving green supply chain practice, supply chain quality, and company performance. The green supply chain practice established within the company can improve supply chain quality and company performance. The company's ability to implement supply chain quality standards in its product production can improve its performance. The practical contribution of the research provides enlightenment for managers in designing appropriate policies and procedures in supplier selection that not only consider costs, but also encourage integration, implementation of green practices, improvement of supply chain quality, and ultimately strengthen company performance.

## 1. Introduction

Companies have built competitive strength by developing robust supply chain systems to produce new products aligned with customer needs quickly (Shahzad et al., 2024). Many companies have adopted supply chain as a business strategy to address the increasing pressure to be customer-oriented (Fernández, 2022). Companies continuously engage external partners to support adequate business processes in producing these new products (Sègbotangni et al., 2025). Companies drive product innovation by aligning with market demand and adapting the technologies they use (Chen et al., 2023). Companies strive to understand customer needs for future new products (Fernández, 2022). Companies have strived to innovate products without ignoring applicable regulations. The company's products meet the criteria set by customers through requested orders (Hosseini et al., 2019). Companies can even determine the quality standards required by the market (Sharma & Joshi, 2023; Baghirov & Zhang, 2024). The involvement of external partners in maintaining product quality is necessary to support the company's process activities (Tan et al., 2023). The company's ability to involve the upstream and downstream supply chains in continuously maintaining product quality is a form of supply chain quality (Lim et al., 2024). Internal company departments can build strong communication with external customer partners in determining quality products that meet needs (Mokhtar et al., 2019; Machado et al., 2020). The company's ability to maintain product quality that meets market demand and customer expectations by making the right decisions in material procurement (Esmaeili-Najafabadi et al., 2021; Mota et al., 2025). Intensive communication that the company builds with customers can lead to certainty about expected product quality criteria (Ye et al., 2024; Goswami et al., 2024). The certainty of customer demand for products serves as a reference for the production process in ensuring product quality (Mota et al., 2025; Yadavalli et al., 2019).

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Companies need to develop appropriate purchasing strategies to maintain material availability and support the production of quality products (Sharma & Joshi, 2023). The company's internal ability to build good communication with customers can result in consistent material quality (Straková & Kostiuk, 2023; Mokhtar et al., 2019). Companies can continuously carry out processes once the materials produced meet the established specifications (Alikhani et al., 2019). Supplier selection determined by the company can fully support sustainable business processes (Ma et al., 2022). Companies can build collaborative relationships with selected suppliers to meet raw material needs promptly with high-quality materials (Vahidi et al., 2018; Sarvestani et al., 2019). Supplier selection decision-making is a strategic step that companies take when developing a purchasing strategy (Gupta et al., 2025). The procurement process involves meeting material requirements for the production process with precise specifications, ensuring a smooth production process within adequate timeframes (Kaur & Prakash Singh, 2021). Companies are aware of suppliers' limitations in providing the required materials (Hasan et al., 2020), but they must focus on their core business to generate added value for the environment through low carbon emissions (Singh et al., 2018; Lo et al., 2018). Supplier selection and decision-making are crucial for managing the supply network and optimizing procurement to align with customer needs (Hosseini et al., 2019).

Companies build close relationships with suppliers to secure business needs in a changing business environment (Tarigan et al. 2025). A well-formed procurement strategy can communicate and share updated information with suppliers on operational lines (Hasan et al., 2020). Companies can also actively involve suppliers to understand planning by providing real-time access to information (Lo et al., 2018). Supplier involvement in determining the company's raw material forecasting can foster close, long-term collaboration (Ye et al., 2024). The company's manager can communicate with suppliers or integrate with external parties, especially the company's supplier division, through integration (Fernández, 2022; Basana et al., 2024). The integration the company builds with its suppliers aligns the company's goals with fulfilling order needs (Vahidi et al., 2018; Yu et al., 2021). Companies can build effective supplier integration to control and manage material availability promptly (Dobos & Vörösmarty, 2019). Integration with suppliers forms a strong alliance, which facilitates supplier selection decision-making (Kaur & Prakash Singh, 2021). These decisions can help build a purchasing strategy that collaboratively controls and manages inventory with multiple suppliers (Mokhtar et al., 2019). Good cooperation between the company and its suppliers on an ongoing basis can enable efficient, effective material flow processes (Gao et al., 2020). This strong relationship plays a strategic role in the company's supplier selection decisions (Sharma & Joshi, 2023; Basana et al., 2025).

Supplier selection decision-making that results in knowledge sharing with suppliers will enable them to build long-term advantages (Cho et al., 2021; Kellner et al., 2019). Integration with suppliers can strengthen the company's integration with customers, thereby implementing supply chain integration (Sègbotangni et al., 2025). Customer integration that is formed results in proper synchronization between the company and customers (Pham et al., 2023). Companies can easily provide customers with timely information, thereby enhancing competitiveness (Lim et al., 2024; Tan et al., 2023). Customers can actively monitor the continuity of the production process regarding the progress of ordered products (Vahidi et al., 2018). Sharing information with customers can improve strong communication between both parties (Kaur & Prakash Singh, 2021). Strong communication between customers and companies through customer integration can quickly identify market conditions for the products they produce (Huo et al., 2019).

Current market conditions require companies to create environmentally friendly products (Ma et al., 2022). Market demands for quality products that maintain a safe environment (Shao et al., 2025). Companies receive extensive information about changes in customer demand so that the new products they produce do not harm the environment (Lo et al., 2018). This condition requires companies to pay attention to the procurement of environmentally friendly materials supported by green production and green distribution (Gao et al., 2020). The company's ability to maintain environmentally friendly products by implementing green supply chain practices (Mohsin et al., 2024; Huang et al., 2021). Companies strive to develop products quickly and with high quality, make them environmentally friendly, gain market share, and avoid being eliminated by competitors (Straková & Kostiuk, 2023; Chen et al., 2023). Green supply chain practices implemented by companies can enable programs to reduce environmental damage (Sahoo & Vijayvargy, 2021; Karmaker et al., 2023). Businesses can sustain the business cycle by using green supply chain strategies to develop new, better, and more appealing products (Sègbotangni et al., 2025). Companies can also modify existing products to provide value that meets needs and is environmentally friendly, thereby improving company performance. A company's ability to develop new, environmentally friendly products affects its performance (Shahzad et al., 2024). Green supply chain practices developed within a company are supported by strong supply chain integration, which is designed to improve company performance (Karmaker et al., 2023). The integration the company builds with external parties can provide greater flexibility (Sundram et al., 2020; Hartono et al., 2023). The integration that forms can support green supply chain practices and supply chain quality, thereby enhancing company performance (Xi et al., 2023). Developing new products and modifying existing products while still meeting customer demand criteria can impact a company's competitiveness (Zhang et al., 2019). Supply chain quality builds the company by integrating with suppliers and customers to provide strong support for the production of high-quality green products, thereby enhancing company performance (Lim et al., 2024; Huo et al., 2019). Based on the explanation above, the research objectives are: first, to determine the influence of supplier selection decision-making on supply chain integration, green supply chain practices, and supply chain quality. Second, to determine the influence of supply chain integration on green supply chain practices, supply chain quality, and company performance. Third, to determine the influence of green supply chain practices on supply chain quality and company performance. Fourth, to determine the influence of supply chain quality on company performance.

## 2. Literature review

### 2.1. Supplier selection decision-making

Supplier selection decision-making is crucial for companies in building close partnerships with partners to provide timely and adequate material needs (Sharma & Joshi, 2023; Goswami et al., 2024). Companies can meet business process needs by giving full responsibility for purchasing, thereby maintaining the continuity of the production process for material orders (Gupta et al., 2025; Vahidi et al., 2018). Supplier selection decision-making is crucial for management in addressing external uncertainties (Hosseini et al., 2019). Supplier selection decision-making plays a key role in producing low-cost production while maintaining quality (Esmaeili-Najafabadi et al., 2021; Alikhani et al., 2019; Mokhtar et al., 2019). The purchasing function in a company can select suppliers that support sustainable business processes (Cho et al., 2021). The purchasing department can determine and select the primary suppliers of materials and components based on specified criteria (Vahidi et al., 2018; Yadavalli et al., 2019). Companies can choose suppliers that provide reliable services to maintain the resilience of material availability (Esmaeili-Najafabadi et al., 2019; Kellner et al., 2019).

Supplier selection decision-making can determine which suppliers are competent for a company through long-term collaborations (Kaur & Prakash Singh, 2021). Companies have sought to maintain close, strong cooperative relationships with key suppliers (Hasan et al., 2020). Decisions in selecting the right supplier can help companies ensure supply continuity, thereby influencing supply stability and supporting company performance (Ye et al., 2024). Supplier selection decision-making can reduce uncertainty, enabling timely deliveries and consistent fulfillment of market demand (Dobos & Vörösmarty, 2019; Sarvestani et al., 2019). Supplier selection decisions are strategic decisions that contribute to a company's competitiveness (Ma et al., 2022). Thus, supplier selection decisions are a key function that must be carried out seriously to maintain supplier selection resilience criteria (Vahidi et al., 2018).

### 2.2. Supply chain integration

Supply chain integration is a company's ability to align its interests closely with external partners, suppliers, and customers (Setiawan et al., 2023; Siagian et al., 2022). Established supply chain integration can leverage a shared management information system to ensure unbiased information across supply chain members (Qiao & Zhao, 2023; Tan et al., 2023). Companies build integration with suppliers, engaging in material requirements planning to meet customer needs (Shahzad et al., 2024). Supplier partners can contribute to product manufacturing based on their expertise to produce quality products (Huo et al., 2019). Integration between companies and suppliers is formed through the provision of specific inputs to the company and the development of agreements to deliver a certain amount of material (Pham et al., 2023). Suppliers can ensure the company has the materials needed to produce the expected output within a specific period (Yu et al., 2021). Raw material suppliers may develop separate systems with companies to ensure the sustainability of raw materials (Sègbotangni et al., 2025; Tarigan et al. 2025). Integration between companies and suppliers allows for the sharing of information and equipment (Sundram et al., 2020). A company's suppliers understand its raw material needs and can therefore procure them as needed to meet sales demand (Fernández, 2022). Vertical integration between companies and suppliers can occur when a company procures raw materials in sufficient quantities to ensure they meet customer demand in terms of quantity and quality (Chen et al., 2023).

### 2.3. Green supply chain practice

Green supply chain practices involve implementing environmentally friendly programs throughout the supply chain (Xi et al., 2023). They are based on the concept of green supply chain management practices, which emphasize internal integration and external connectivity with suppliers and customers in providing environmentally friendly products (Xi et al., 2023). Green supply chain practices aim to reduce waste and emissions generated by the company and its external partners (Shao et al., 2025). Companies can apply the principle of reducing the use of materials that produce waste for the environment (Abdallah & Al-Ghwayeen, 2019). Additionally, businesses can repurpose materials that are not suitable for the primary product to make other goods. A company's ability to produce recycled materials can reduce waste production (Sahoo & Vijayvargy, 2021). Green supply chain practices are defined as a company's selection of environmentally friendly materials and its involvement with key suppliers (Dobos & Vörösmarty, 2019; Wungkana et al., 2023). Companies can design environmentally safer products (Huang et al., 2021). Green supply chain practices are a systematic process within a company's supply chain to improve environmental performance (Karmaker et al., 2023). Green supply chain practices are proactive practices implemented by companies in green purchasing, eco-design, green production, green distribution, and reverse logistics (Abdallah et al., 2024; Wungkana et al., 2023). Green supply chain practices implemented by companies can support existing regulations and deliver low-carbon outcomes by selecting the right suppliers (Singh et al., 2018). Sustainably implemented green supply chain practices can reduce environmental damage while increasing the company's economic value (Mohsin et al., 2024).

## 2.4. Supply Chain Quality

Supply chain quality is a company's overall approach that encompasses all supply chain components to ensure they fulfill their roles in producing products that meet customer needs (Goswami et al., 2024). Companies can collaborate with suppliers to maintain raw material quality in accordance with established specifications (Mota et al., 2025). Active communication between companies and suppliers ensures that raw materials meet production needs and that high-quality products are produced (Lim et al., 2024). The resulting supply chain quality is inseparable from the role of customer partners in providing precise, detailed information about the products ordered to the company (Huo et al., 2019). An explicit order confirmation from customer partners enables the company to communicate product specifications to meet customer requests (Baghirov & Zhang, 2024; Siagian et al., 2022).

Supply chain quality helps prevent unwanted deviations, ensuring material use is in accordance with requirements (Sahoo et al., 2025). Companies can optimize resource use to produce high-quality products (Zhang et al., 2019). Companies collaborate with external partners to ensure accountability and build a competent supply network to deliver products that meet market needs. Supply chain quality in a company is related to the ability to design quality products to meet customer criteria (Machado et al., 2020). A well-established supply chain quality can connect and manage the tactical and strategic activities of the supply chain network to focus on product quality. Companies can coordinate and integrate business processes that involve all stakeholders in the supply chain to produce quality processes and products (Straková & Kostiuk, 2023). Supply chain quality within a company becomes crucial when all functions are accountable for carrying out processes in accordance with standards to produce high-quality products (Lim et al., 2024).

## 2.5. Firm Performance

Firm performance refers to a company's capacity to carry out its business activities in accordance with established targets (Sundram et al., 2020; Basana et al., 2024). Achieving a high level of company performance will result in greater competitiveness (Sahoo & Vijayvargy, 2021; Zhang et al., 2019). Adequate and strong company performance can improve internal control while maintaining strong growth (Tan et al., 2023). Achieving a company's organizational goals provides concrete evidence of management's performance over a given period (Yu et al., 2021). A company's performance is shaped by its operations and reflects the overall achievement of its operational processes and financial performance (Fernández, 2022). Company performance is related to the quality of products produced, aligned with customer needs and market interests (Huo et al., 2019). Company performance is measured by its ability to deliver, cost, and quality to generate high competitiveness (Chen et al., 2023; Abdallah & Al-Ghwayeen, 2019; Hartono et al., 2023). The company's ability to produce a given quantity while maintaining high productivity levels with consistent resources increases competitiveness (Setiawan et al., 2023; Lim et al., 2024).

## 2.6. Relationship of research concepts

### 2.6.1. The relationship between supplier selection decision-making and supply chain integration, green supply chain practice

Supplier selection decision-making is a strategic step for companies to determine the right external partners to provide materials according to company needs (Esmaeili-Najafabadi et al., 2019). Supplier selection decision-making is closely related to supply chain integration because it focuses on identifying partners to align the flow of information, ensuring effective communication and coordination (Cho et al., 2021). The integrated supply chain can streamline the material procurement process, and cross-organizational working relationships are increasingly robust with the use of technology (Kaur & Prakash Singh, 2021; Sundram et al., 2020). Supplier selection decision-making focuses on quality, delivery accuracy, and appropriate prices for both parties (Gupta et al., 2025; Mokhtar et al., 2019; Sarvestani et al., 2019), but is supported by accurate and complete information as a form of supply chain integration (Hasan et al., 2020). Supplier selection decision-making impacts supply chain integration by maintaining process synchronization through accurate lead times and compliance with established criteria (Ye et al., 2024; Kaur & Prakash Singh, 2021). Suppliers who collaborate transactionally lack well-coordinated capabilities, thus weakening supply chain integration due to frequent mismatches in information sharing (Li, 2021). Supplier selection decision-making plays a key role in building supply chain integration because it facilitates companies to build common interests with suppliers that support long-term strategies (Alikhani et al., 2019). Supplier selection decision-making is an appropriate way for companies to communicate policies to strengthen information integration (Vahidi et al., 2018). Supplier selection decision-making impacts supply chain integration in operational processes by involving external partners to provide rapid responses and build company resilience (Hosseini et al., 2019; Siagian et al., 2022).

Supplier selection decisions influence green supply chain practices by favoring suppliers that have implemented environmentally friendly programs (Ma et al., 2022). Companies can establish green-material criteria for suppliers during the selection process, thereby improving green supply chain practices (Lo et al., 2018). Companies can set high standards for suppliers by complying with environmental regulations in the production and delivery of products, as part of green supply chain practices (Gao et al., 2020). Suppliers can offer programs and activities focused on the use of environmentally friendly materials and on emission and waste control (Mohsin et al., 2024; Gupta et al., 2025). Supplier selection decision-making can

result in selecting suppliers that have adopted green supply chain practices (Dobos & Vörösmarty, 2019). Supplier selection decision-making enables companies to consistently control and direct the implementation of green supply chain practices to achieve low carbon emissions (Singh et al., 2018; Shao et al., 2025). Supplier selection decision-making is a tool for companies to communicate appropriate strategies to meet customer needs (Hasan et al., 2020) and market changes regarding green products (Gao et al., 2020). Based on the explanation of the relationships between concepts, the first hypothesis (H1) and the second hypothesis (H2) can be established.

**H1:** *Supplier selection decision-making has an impact on supply chain integration.*

**H2:** *Supplier selection decision-making has an impact on green supply chain practices.*

### 2.6.3. *The relationship between supplier selection decision-making and supply chain quality*

Supplier selection decision-making directly impacts supply chain quality because companies can maintain consistent material input quality (Ye et al., 2024; Mota et al., 2025). Supplier selection decision-making is a strategic step for companies in maintaining process stability throughout the supply chain (Hosseini et al., 2019; Alikhani et al., 2019). Companies choose suppliers who can produce high-quality materials (Esmacili-Najafabadi et al., 2021) and a sustainable supply (Yadavalli et al., 2019). Supplier selection decision-making can monitor stable supplier process capabilities, resulting in supply chain quality with low defect rates (Vahidi et al., 2018). Accurate delivery and continuous improvement carried out by companies are appropriate indicators for companies when conducting supplier selection decision-making to maintain stable final product quality (Sharma & Joshi, 2023; Cho et al., 2021). Supplier selection decision-making is a driving force for companies in building supply chain quality through quality control from downstream to upstream (Sahoo et al., 2025; Mokhtar et al., 2019). This explanation supports the third hypothesis (H3).

**H3:** *Supplier selection decision-making has an impact on supply chain quality.*

### 2.6.4. *The relationship between supply chain integration, green supply chain practices, and supply chain quality*

Supply chain integration impacts green supply chain practices by enabling rapid coordination between company functions, making them more transparent and environmentally friendly (Basana et al., 2025; Sègbotangni et al., 2025). Supply chain integration that maintains alignment among functions can support green supply chain practices, a program that companies implement to advance green products (Fernández, 2022). A company's ability to build supplier integration can enable the production of environmentally friendly materials that support a green supply chain (Xi et al., 2023; Abdallah & Al-Ghwayeen, 2019). Internal integration within a company, when well-functioning, can lead to green production that reduces waste and emissions (Shao et al., 2025; Mohsin et al., 2024). Internal integration also impacts green supply chain practices by enabling collaborative eco-design and energy efficiency in the production process (Abdallah et al., 2024). Supply chain integration impacts green supply chain practices by strengthening monitoring of environmentally conscious supply chain processes (Setiawan et al., 2023). Supply chain integration enhances the effectiveness of green supply chain practices (Shahzad et al., 2024; Karmaker et al., 2023).

Supply chain integration is closely related to supply chain quality because companies easily convey information about product quality characteristics to supplier partners (Huo et al., 2019). Supply chain integration with customers enables companies to obtain clear information on the quantity and quality of product orders, thereby improving supply chain performance (Gao et al., 2020). Information about the company's production process is obtained quickly because supply chain integration enables rapid coordination with external partners on quality decisions (Machado et al., 2020). Supply chain integration enables consistent quality control (Sahoo et al., 2025). The information technology used by companies to implement supply chain integration synchronizes customer demand with production scheduling control (Yu et al., 2021), thereby facilitating communication about product quality. Supplier partner participation in company activities due to integration can provide input on work procedures and maintain material accuracy (Tan et al., 2023), thereby impacting supply chain quality by reducing defect rates (Mota et al., 2025). Suppliers can share information with internal parties in the company. If supply chain integration has been established, material inspection activities can be delegated to suppliers, thereby improving company performance by increasing supply chain quality (Lim et al., 2024).

**H4:** *Supply chain integration has an impact on green supply chain practice*

**H5:** *Supply chain integration has an impact on supply chain quality.*

### 2.6.6. *The relationship between green supply chain practices and supply chain quality*

Green supply chain practices impact supply chain quality because a company program focused on green practices enables greater control over the product manufacturing process through high supervision (Huo et al., 2019). The company consistently uses environmentally friendly materials to adopt green supply chain practices (Mohsin et al., 2024), thereby improving supply chain quality (Mota et al., 2025). Company activities related to process control in the supply chain flow can ensure that material procurement and the production process for finished products reduce the number of defects (Karmaker et al., 2023).

The company's green supply chain practices provide detailed information to suppliers on environmental requirements to determine the quality of materials that meet needs (Sahoo & Vijayvargy, 2021).

**H6:** *Green supply chain practices have an impact on supply chain quality.*

### 2.6.7. The relationship between supply chain integration, green supply chain practice, supply chain quality, and firm performance

Supply chain integration impacts firm performance through internal and external integration, fostering harmonious coordination between the two (Tan et al., 2023; Basana et al., 2024). Well-functioning information integration can enable companies to make informed decisions, reducing uncertainty and ensuring smooth production processes (Yu et al., 2021; Basana et al., 2025). Supply chain integration improves product availability accuracy, thereby enhancing company performance (Sundram et al., 2020). A company's ability to maintain inventory optimization impacts firm performance, enabling it to meet unexpected demand. Process integration within a company synchronizes supply chain activities, reducing lead times and thereby improving company performance (Chen et al., 2023). Supply chain integration ensures timely product delivery, thus impacting firm performance (Setiawan et al., 2023). Supply chain integration improves operational efficiency through accurate information. Supply chain integration, as a form of joint problem-solving, can accelerate innovation and enable rapid adaptation to market changes (Li, 2021). Supply chain integration impacts company performance by enabling rapid customer response (Fernández, 2022).

Green supply chain practices impact firm performance by improving process efficiency (Abdallah & Al-Ghwayeen, 2019). Green supply chain practices implemented by companies, by reducing waste and emissions, positively impact company performance (Mohsin et al., 2024). A company's consistency in maintaining product quality to reduce product defects, as a form of green practice in operations, can reduce operational costs (Huang et al., 2021; Wungkana et al., 2023). A company's ability to design environmentally friendly products can impact company performance (Sahoo & Vijayvargy, 2021). Green supply chain practices improve the smoothness of business processes, thereby enhancing company performance by increasing delivery accuracy (Karmaker et al., 2023).

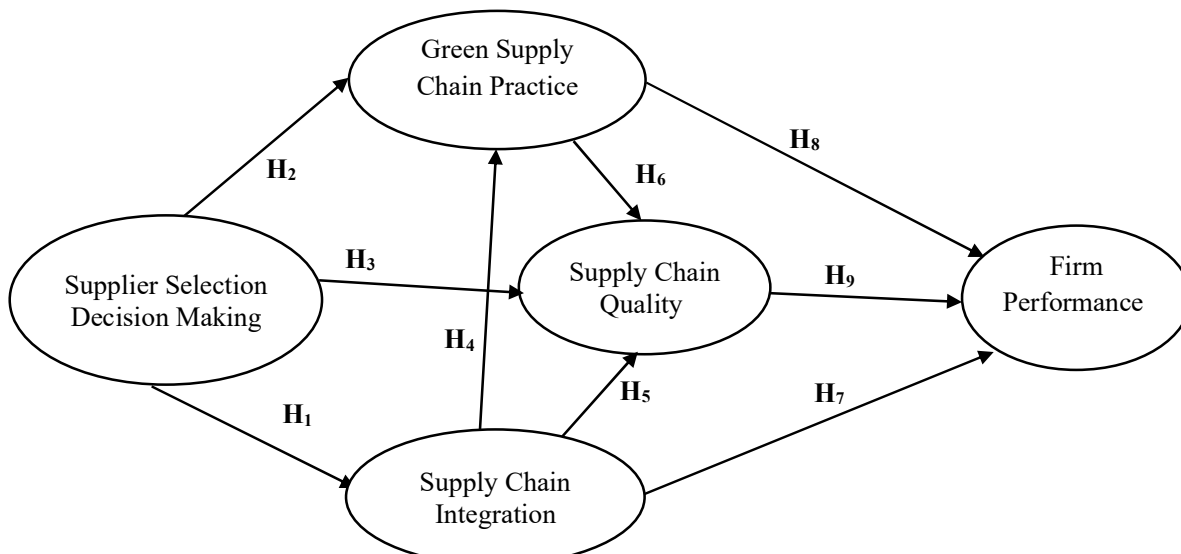
Supply chain quality in a company, involving external partners to maintain the quality of products and services provided to customers, impacts firm performance (Sharma & Joshi, 2023; Goswami et al., 2024). Companies can consistently maintain product quality aligned with customer needs by delivering products on time (Sahoo et al., 2025; Machado et al., 2020). Customers can provide feedback on product quality, enabling the company to respond quickly to customer complaints (Lim et al., 2024). This condition enables the company to properly handle all customer claims (Baghirov & Zhang, 2024). The company's commitment to maintaining product quality and strong support from external partners can improve company performance by reducing product defects (Huo et al., 2019). The company always strives to optimize service reliability, machine condition, and stable product quality, thereby strengthening company performance through operational efficiency (Mota et al., 2025).

**H7:** *Supply chain integration has an impact on firm performance.*

**H8:** *Green supply chain practices have an impact on firm performance.*

**H9:** *Supply chain quality has an impact on firm performance.*

Based on the relationships among research concepts, a research conceptual framework can be developed.



**Fig. 1.** Research model

### 3. Research Methods

The research focused on manufacturing companies that consistently maintain product quality by engaging with supplier partners and customers. Primary data were obtained using a predetermined questionnaire with a Likert scale of 1-5 (1 representing a value of strongly disagree to 5 indicating a value of strongly agree). The questionnaire was designed to provide respondents with closed-ended options. The data collection technique used was judgmental sampling, with criteria set according to research needs. Respondents are permanent employees of the company and have worked for at least 2 years. Respondents who can complete the research questionnaire are employees who have held a minimum position of senior staff or supervisor in a manufacturing company. The questionnaire was distributed in two ways: online (using Google Form) and directly distributed by researchers and predetermined enumerators.

The questionnaire was determined based on the operational research variables and predetermined measurement items. Supplier selection decision-making is a management process used to build relationships with suppliers, which are evaluated periodically. The measurement items established for supplier selection decision-making were determined based on previous research Ye et al. (2024), Cho et al. (2021), Kaur & Prakash Singh (2021), and Yadavalli et al. (2019), namely the level of accuracy in filling orders (SSDM1), the ability to provide quality materials (SSDM2), the ability to provide on time delivery (SSDM3), willingness to coordinate with customer (SSDM4), and with competitive prices (SSDM5). Second, Supply chain management integration is a company's ability to align closely coordinated company interests with external partners, suppliers, and customers. The measurement items used for supply chain management integration, adopting research from Sègbotangni et al. (2025), Tan et al. (2023), and Shahzad et al. (2024), are information sharing with external partners (SCM Int.1), involving external partners in determining planning (SCM Int.2), involving external partners in problem solving (SCM Int.3), the company involves external partners in product development (SCM Int.4) and involve external partners in forecasting (SCM Int.5). Green supply chain practice is the implementation of supply chain management practices that have implemented environmental programs. The measurement items used for green supply chain practice, adopting research from Abdallah et al. (2024), Sahoo & Vijayvargy (2021), Huang et al. (2021), and Wungkana et al. (2023), there are use of environmentally friendly raw materials (GSCP1), production process with pollution prevention (GSCP2), low energy consumption (GSCP3), the use of cleaner technology (GSCP4), firm use eco labeling (GSCP5) and environmentally friendly product packaging (GSCP6).

Supply chain quality is a company's overall approach, encompassing all supply chain components to ensure they fulfill their roles in producing products that meet customer needs. Measurement items used for supply chain quality, adopted from research Sahoo et al. (2025), Huo et al. (2019), Lim et al. (2024), Baghirov & Zhang (2024) and Zhang et al. (2019) are that the company has standard procedures for procurement (SCMQ1), the company has regular communication with suppliers regarding product development (SCMQ2), product specifications have met standards (SCMQ3), handling of customer complaints can be resolved well (SCMQ3), and the product volume is in accordance with the customer's order (SCMQ5). Firm performance refers to a company's capacity to carry out its business activities in accordance with established targets. Measurement items used for firm performance, adopted by Sundram et al. (2020), Pham et al. (2023), Yu et al. (2021), Karmaker et al. (2023), and Sahoo et al. (2025), there are the number of company customers experiencing an increase (FPe.1), operational costs decreased (FPe.2), the company can fulfill customer requests promptly (FPe.3), customer satisfaction has increased (FPe.4) and flexibility in order changes (FPe.5). Data analysis was used to answer all research hypotheses using Smart PLS. PLS uses two testing stages: an outer-loading stage to assess validity and reliability, and an inner-model stage to develop a predictive model and test the research hypotheses.

### 4. Research Data Analysis

Data was collected by distributing questionnaires directly to 48 respondents and via Google Forms to 126, for a total of 174. The demographic profile of respondents is represented in Table 1. Table 1 shows that there are more males than females, as operational work tends to prioritize males over females, as many operational jobs are technical and production oriented. A review of educational levels shows that the majority have undergraduate education, and only 15% are at the postgraduate level, generally at the top management level. Respondents' work experience related to the ability to carry out work activities is the largest among those who have worked for more than 15 years, amounting to 71 (41%). Respondents have expertise in completing work effectively, collaborating with external partners, and understanding the qualities of high-quality products that meet customer needs. The company size, determined by the number of employees, shows that the majority are medium-sized companies with 20-100 employees, totaling 107 companies (61%). Table 1 shows that the current position of the largest respondents is at the middle management level (manager and assistant manager), with 96 respondents (55%) stating that this position has full operational responsibility for supply chain integration with external partners and supply chain quality. Meanwhile, the largest industrial sector is the consumer goods industry at 74 (43%), followed by wood and furniture at 41 (24%). Further data processing, including descriptive mean analysis and PLS analysis for the outer model test, is shown in Table 2.

**Table 1**  
Profile respondents

Description	No of respondents	Percentage
Gender	174	100 %
• Male	104	60 %
• Female	70	40 %
Education Level	174	100 %
• Undergraduate	159	91 %
• Postgraduate	15	9 %
Work experience	174	100 %
• 2-5 years	37	21 %
• 6-10 years	34	20 %
• 10-15 years	32	18 %
• > 15 years	71	41 %
Number of company employees	174	100 %
• 20-50 employees	63	36 %
• 50-80 employees	23	13 %
• 80-100 employees	21	12 %
• 100-200 employees	27	16 %
• > 200 employees	40	23 %
Current position of respondents	174	100 %
• Top management level (Owner/ Director/General Manager)	29	17 %
• Middle management (Manager/ Assistant manager)	96	55 %
• Lower management (Supervisor/ Senior Staff)	49	28 %
Manufacture industry sector	174	100 %
• Consumer goods	74	43 %
• Textile	6	3 %
• Paper and Pulp	9	5 %
• Plastic	13	7 %
• Packaging	11	6 %
• Wood and Furniture	41	24 %
• Chemical Industry	7	4 %
• Electronics	4	2 %
• Cigarette	4	2 %
• Automotive	5	3 %

**Table 2**  
Mean value and outer model test

Variable/Item Measurement	Mean	Loading Factor	AVE	Cronbach Alpha	Composite Reliability
Supplier selection decision making	<b>3.9989</b>		0.556	0.806	0.859
SSDM1	4.2457	0.875			
SSDM2	4.1314	0.786			
SSDM3	3.7029	0.520			
SSDM4	3.6571	0.724			
SSDM5	4.2571	0.777			
Supply chain management integration	<b>4.1349</b>		0.569	0.810	0.868
SCM Int.1	4.2057	0.758			
SCM Int.2	4.2400	0.791			
SCM Int.3	4.0800	0.712			
SCM Int.4	4.0286	0.691			
SCM Int.5	4.1200	0.812			
Green supply chain practice	<b>4.0362</b>		0.534	0.821	0.870
GSCPr1	4.2171	0.692			
GSCPr2	4.1029	0.824			
GSCPr3	4.2171	0.531			
GSCPr4	3.9200	0.889			
GSCPr5	4.1086	0.754			
GSCPr6	3.6514	0.635			
Supply chain management quality	<b>4.2549</b>		0.657	0.868	0.905
SCMQ1	4.2171	0.747			
SCMQ2	4.3657	0.771			
SCMQ3	4.2000	0.881			
SCMQ4	4.1886	0.822			
SCMQ5	4.3029	0.825			
Firm performance	<b>4.0789</b>		0.570	0.806	0.867
FPe.1	4.3086	0.773			
FPe.2	3.6343	0.616			
FPe.3	4.3143	0.885			
FPe.4	4.0857	0.800			
FPe.5	4.0514	0.671			

Based on Table 2, the mean for supplier selection decision-making was 3.9989, and the measurement item means ranged from 3.6571 to 4.2571, indicating a high level. The company has conducted supplier selection effectively, enabling it to identify



customers are criteria in supplier selection decision-making and have an impact on green supply chain practices, as illustrated by the increased use of environmentally friendly raw materials. The results of this study are consistent with previous studies that stated that supplier selection decision-making has an impact on green supply chain practices (Ma et al., 2022; Lo et al., 2018; Gao et al., 2020; Mohsin et al., 2024; Gupta et al., 2025; Dobos & Vörösmarty, 2019; Singh et al., 2018; Shao et al., 2025; Gao et al., 2020). The hypothesis of supplier selection decision-making on supply chain management quality is 0.106, with a t-statistic of 1.217 and a p-value of 0.224; thus, the hypothesis is rejected. Supplier selection decision-making does not directly affect the quality of supply chain management in manufacturing companies in Indonesia.

The hypothesis stated that supply chain management integration towards green supply chain practice is 0.478, with a statistical value of 5.318 and a p-value of 0.000; thus, the hypothesis was accepted. Supply chain management integration has a significant effect on green supply chain practices. Supply chain management integration, which involves external partners in planning and forecasting, can improve green supply chain practices by enabling pollution prevention and the use of cleaner technology in production. The results of this study are consistent with previous studies that stated that supply chain management integration affects green supply chain practices (Sègbotangni et al., 2025; Fernández, 2022; Xi et al., 2023; Abdallah & Al-Ghwayeen, 2019; Shao et al., 2025; Mohsin et al., 2024; Abdallah et al., 2024; Setiawan et al., 2023; Shahzad et al., 2024; Karmaker et al., 2023). The hypothesis testing for supply chain management integration on supply chain management quality yields 0.455, with a statistical value of 5.603 and a p-value of 0.000, so the hypothesis accepted. Supply chain management integration significantly impacts supply chain management quality. Supply chain management integration, defined by a company's ability to involve external partners in product development and problem-solving, impacts supply chain management quality, resulting in product specifications that meet standards and effective customer complaint handling. The study's findings align with previous research, which suggests that supply chain management integration significantly improves supply chain management quality (Huo et al., 2019; Gao et al., 2020; Machado et al., 2020; Sahoo et al., 2025; Yu et al., 2021; Tan et al., 2023; Mota et al., 2025; Lim et al., 2024).

The hypothesis testing for the relationship between green supply chain practice and supply chain management quality is 0.362 with a statistical value of 4.239 and a p-value of 0.000, so the hypothesis is accepted. Green supply chain practices significantly impact supply chain management quality. Green supply chain practices, demonstrated through cleaner technologies and environmentally friendly product packaging, impact supply chain management quality, resulting in product volumes that meet customer orders and efficient handling of customer complaints. The study's findings support previous research that suggests green supply chain practices impact supply chain management quality (Huo et al., 2019; Mohsin et al., 2024; Mota et al., 2025; Karmaker et al., 2023; Sahoo & Vijayvargy, 2021). The hypothesis stated that supply chain management integration and firm performance are positively correlated, with a correlation coefficient of 0.424, a t-statistic of 3.849, and a p-value of 0.000; thus, the hypothesis is accepted. Supply chain management integration significantly impacts firm performance. Supply chain management integration, which occurs within a company through information sharing with external partners and involving external partners in problem-solving, can result in improved firm performance, with the company's ability to meet customer demand promptly. The results of this study support previous research that states that supply chain management integration influences firm performance (Tan et al., 2023; Basana et al., 2024; Yu et al., 2021; Basana et al., 2025; Sundram et al., 2020; Chen et al., 2023; Setiawan et al., 2023; Li, 2021; Fernández, 2022).

The hypothesis stated that green supply chain practices are associated with firm performance, with a coefficient of 0.228, a t-value of 2.332, and a p-value of 0.020; thus, the hypothesis was accepted. Green supply chain practices significantly influence firm performance. Green supply chain practices, such as low energy consumption and the use of cleaner technologies, impact firm performance by reducing operational costs and increasing customer satisfaction. The results support previous research that stated the effect of green supply chain practices on firm performance (Abdallah & Al-Ghwayeen, 2019; Mohsin et al., 2024; Huang et al., 2021; Wungkana et al., 2023; Sahoo & Vijayvargy, 2021; Karmaker et al., 2023). The final hypothesis, supply chain management quality on firm performance, is 0.327, with a statistical value of 4.726 and a p-value of 0.000, so the hypothesis is accepted. Supply chain management quality significantly impacts firm performance. The results support previous research that suggests a positive effect of supply chain management quality on firm performance (Sharma & Joshi, 2023; Goswami et al., 2024; Sahoo et al., 2025; Machado et al., 2020; Lim et al., 2024; Baghirov & Zhang, 2024; Huo et al., 2019; Mota et al., 2025). The research results show that supplier selection decision-making impacts firm performance. Manufacturing companies can integrate supply chain management and implement sustainable green supply chain practices by involving external partners. Companies strive to produce quality products in accordance with customer orders and market trends to increase competitiveness. Practical contributions to the company by providing insight for managers in designing appropriate policies and procedures for supplier selection. Top management needs to consider material costs and ensure internal and external integration through appropriate technology. The theoretical contribution of this research is to enrich green management theory by involving external partners in the development of a green product.

## 5. Conclusion

The role of suppliers in ensuring smooth company processes is crucial for fulfilling customer orders and maintaining a balanced supply chain. Decisions made by company managers in selecting suppliers play a crucial role in maintaining company performance. Supplier selection decision-making plays a role in determining the level of order fulfillment accuracy

and in providing quality materials, with a direct impact on supply chain integration and green supply chain practices, and an indirect impact on supply chain quality. Supply chain integration is the primary driver of internal coordination across processes, the flow of goods, and the flow of information, with a direct impact on green supply chain practices and quality. Green supply chain practices, demonstrated through cleaner technologies and environmentally friendly product packaging, affect supply chain management quality. The company's ability to generate firm performance leads to increased customer satisfaction, a larger customer base, and reduced operational costs through supply chain integration, green supply chain practices, and supply chain quality. Manufacturing companies need to prioritize selecting key suppliers to maintain production continuity and address sudden customer demands, thereby increasing flexibility. Companies need to actively engage supplier partners and customers to collaborate to improve firm performance and overall supply chain competitiveness. Research can be further developed by expanding the industry sector, using objective performance measures derived from the company's primary data.

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