

The impact of configuration management decisions on firm resilience: Integrating resource configuration, operational flexibility, and collaborative supply chain strategies

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ABSTRACT

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Global competition requires the company's appropriate rules and policies. The company is trying to build strong, firm resilience to maintain sustainability. The research aims to analyze the influence of management configuration decisions on company resilience through the integration of resource configuration, operational flexibility, and collaboration in the supply chain. This study was conducted on 462 manufacturing companies in Indonesia that were experiencing changes in operational systems and global competitive pressures. Data was collected through questionnaires and analyzed using the Partial Least Square (PLS) method. The research results show that management configuration decisions influence resource configuration and supply chain collaboration integration but do not directly influence operational flexibility. Resource configuration is proven to increase operational flexibility and supply chain collaboration integration, which in turn strengthens company resilience. Operational flexibility also plays an important role in supporting the integration of supply chain collaboration and company resilience in the face of external disruptions. This research provides a theoretical contribution to the development of a tough and practical supply chain strategy for management in building an organization that is adaptive to disruption.

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1. Introduction

In the Indonesian manufacturing industry, the role of important configuration in company management is becoming increasingly crucial due to the complexity of the company's production processes (Zhao et al., 2023; Basana et al., 2024). Company management also pays attention to increasingly fierce competition globally, requiring high efficiency and increased productivity (Bag et al., 2023). The configuration determined by the company's top management considers appropriate marketing and production strategies to be able to survive (Cao et al., 2021). The company's top management always pays attention to an adequate organizational structure (Tukiran et al., 2025) to produce products that meet the requirements set by the company's customers (Bayon & Aguilera, 2023). Management decisions need to be aligned with organizational culture to be able to support the company's strategic goals (Ivens et al., 2024). The correct configuration in the manufacturing sector can help companies optimize the supply chain (Basana et al., 2023; Vidè et al., 2025). Top management configuration decisions will determine how the system is designed, executed, and adjusted to achieve competitive advantage (Alshehadeh et al., 2025; Li et al., 2017; Putri et al., 2024; Liu et al., 2025). Top management makes configuration decisions in determining the supply chain network structure to build dynamic capabilities to anticipate uncertainty (Munir et al., 2022). Manufacturing companies can determine the number of suppliers of goods and the location of production facilities, distribution centers, and warehouses (Sadha et al., 2024). Selecting a strategic location directly impacts logistics costs, delivery speed, and proximity to markets or suppliers (Dubey et al., 2019). Manufacturing companies implementing configurations become more flexible in responding

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to demand (Yu et al., 2019) and reduce lead times (Fayezi & Zomorodi, 2015). A company's ability to determine location can reduce logistics transportation costs (Ju et al., 2021).

Management decisions in specific organizational configurations can support cross-functional collaboration and contribute to supply chain optimization (Chaudhuri et al., 2018; Setiawan et al., 2023). These conditions enable companies to respond to demand and supply dynamics more quickly and accurately (Chowdhury & Quaddus, 2016). Management decisions are based on the company's ability to estimate the impact of reducing the risk of overstock or stock out. These configuration decisions reflect how roles and responsibilities are delegated (Burghardt & Moeller, 2024) and how information flows between departments and external partners (Christian et al., 2024). Management decisions in determining the use of technology related to the selection and implementation of supply chain information systems determine the company's ability to optimize supply chains in real time (Gu et al., 2021; Chunsheng et al., 2020). Configurations that integrate technology into operational processes enable better visibility into inventory and innovation (Basana et al., 2024). The configuration carried out by the company can respond quickly to market demand and supplier performance (Harianto et al., 2024). Configuration allows decision-making to be done quickly and based on data (Li et al., 2025).

Configuration decisions regarding structure and workforce in an organization determine how quickly and adaptively the company responds to operational changes (Cheng & Lu, 2017; Tukiran et al., 2025). The reconfiguration that has been formed in the company can provide greater autonomy for operational units to make decisions independently and responsively (Ivens et al., 2024). The reconfiguration formed in the company provides increased production flexibility (Dabić et al., 2023). The production floor can quickly adjust to changes in volume and type of product according to market demand in a short time (Christian et al., 2024). This flexibility can be achieved in a company if there is a reconfiguration based on the strong commitment of the company's top management (Vidè et al., 2025). Company management that focuses on company system configuration includes managing relationships with supply chain partners (Liu et al., 2025). Decisions regarding the level of integration with partners directly impact supply chain stability and efficiency (Huo & Gu, 2024). Configurations that prioritize strategic partnerships will create supply chains that are more responsive and resilient to disruption (Shao et al., 2025). Manufacturing businesses' management configuration choices are made to support their strategy (Sbarba, 2024). The right configuration provides direct benefits in increasing productivity, better product quality, and resilience in facing market changes (Song et al., 2022). Configuration management decisions provide a framework that unifies all elements in the supply chain (Song et al., 2018). Configuration can be done in resource planning, raw material procurement, production processes, distribution, and customer service (Rehman et al., 2025).

Configuration decisions from company management focus on organizational structure, especially on human resource configuration (Cantele et al., 2023). The configuration formed supports cross-functional integration of the company's internal and external partners (Tarigan et al., 2024). The integration that is formed creates a smooth flow of information and coordination (Gu et al., 2021; Siagian et al., 2022). The company carried out internal reconfiguration by rearranging internal functions (Yu et al., 2018) so that they do not run partially by reorganizing the roles of the workforce in departments (Putri et al., 2024). Company management reorganized to form a cross-divisional team tasked with bridging communication with external partners (Cao et al., 2021). Management decisions to configure internally (Shao et al., 2025) to create the basis for the formation of strategic collaboration with external partners (Kosmidou & Holt, 2022; Panahifar et al., 2018). Top management configuration decisions that support joint decision-making are important in supply chain collaboration (Matalka et al., 2025). Collaboration practices between companies and partners can collaborate together in planning and forecasting (Dabić et al., 2023). Companies and their partners share planning information, align each other's production, and anticipate and respond to external changes (Munir et al., 2022; Panahifar et al., 2018). Management decisions in the company's internal configuration provide space for data openness and flexibility in collaborative decision-making (Ivens et al., 2024; Fayezi & Zomorodi, 2015). Configuration management also plays a role in building an organizational culture that supports long-term partnerships (Alshehadeh et al., 2025). The configuration built in the company creates a system with operational flexibility (Shukor et al., 2021) and supply chain collaboration to have an impact on firm resilience (Cheng & Lu, 2017; Taha et al., 2024). Adaptive and planned resource configuration (Zhang et al., 2025) allows companies to respond quickly to changes in the business environment (Basana et al., 2023) so that they can maintain operational continuity despite disruptions and increase supply chain resilience (Abeysekara et al., 2019). When disruption occurs, the company's ability to move production resources quickly (Sarkar & Seo, 2021) shows high resilience with flexible resource configurations (Alvarenga et al., 2023; Orlando et al., 2021). The company's ability to build high flexibility can avoid delays (Wegner et al., 2022) and overcome production process problems, impacting supply chain resilience (Adobor & McMullen, 2018; Bag et al., 2023). Companies with a modular production system can easily shift production from one line to another when there is a component shortage (Rehman et al., 2025).

Top management configuration decisions play an important role in determining resource configuration, such as labor allocation, adjusting raw material requirements, and providing adequate equipment (Bayon & Aguilera, 2023). Proper resource configuration increases operational flexibility, allowing companies to adjust production capacity and respond quickly to market changes (Bag et al., 2023; Yuan & Li, 2022). High manufacturing operational flexibility further strengthens integration and supply chain collaboration (Chaudhuri et al., 2018; Shukor et al., 2021). Companies can share information in real-time (Harianto et al., 2024), plan with partners (Sadha et al., 2024), and coordinate responsively (Chowdhury & Quaddus,

2016). Collaboration in the form of relationships has been proven to be the strongest factor that supports supply chain resilience (Carissimi et al., 2023; Huo & Gu, 2024; Setiawan et al., 2023; Zhao et al., 2023). Thus, top management configuration decisions are key in creating a structural basis and organizational culture that is adaptive to disruption. This chain of influence shows that corporate resilience is built through strategic channels: from management decisions to internal strengthening to solid external collaboration with all supply chain partners. Based on the explanation above, the research solves the big problem, namely, determining the magnitude of the influence of the role of configuration decision management on resource configuration, operation flexibility, and supply chain collaboration integration. Second, get the magnitude of the influence of resource configuration on operation flexibility, supply chain collaboration, and firm resilience. Third, get the magnitude of the influence of operation flexibility on supply chain collaboration and firm resilience. Finally, the fourth gets the big influence of supply chain collaboration and firm resilience.

2. Literature Review

2.1 *The role of configuration management decision, resource configuration, operation flexibility, and integration of supply chain collaboration*

Configuration management ensures that all organizational elements are consistently integrated to support achieving the company's strategic goals (Bayon & Aguilera, 2023). The company's top management creates consistency and standardization in operational implementation (Alshehadeh et al., 2025), so that every activity runs according to procedures and quality can be maintained (Chaudhuri et al., 2018; Wegner et al., 2022). Top management determines the company configuration and supports the implementation of company strategy (Ivens et al., 2024). Management aligns the strategies that have been designed with operational practices in the field. The ability of company management to carry out appropriate configurations also helps maintain adequate internal stability of the company (Munir et al., 2022). Company management is at least able to maintain the company's internal stability and control runs well so that it is ready to face changes that occur externally to the company (Burghardt & Moeller, 2024).

The configuration carried out in the process can be controlled systematically and does not cause major disturbances (Ju et al., 2021). A well-managed configuration allows companies to increase flexibility and adaptability to market dynamics (Dubey et al., 2019). The configuration that occurs allows the company to utilize technology that suits the company's needs (Bayon & Aguilera, 2023). Configuration management also facilitates collaboration and integration between functions within the company as well as external partners in the supply chain (Song et al., 2018). This creates stronger synergy and streamlines the flow of information and work processes (Shao et al., 2025). Management decisions in establishing effective configurations encourage innovation and continuous improvement (Kosmidou & Holt, 2022).

The right resource configuration can ensure that each element in the company's system runs well (Burghardt & Moeller, 2024). The configuration of resources in a company can ensure that everything works synergistically within a structured organizational framework (Sbarba, 2024; Tukiran et al., 2025). Configuration management plays a role in managing how resources are arranged in production work units and supply chain networks to run smoothly (Singh & Kumar, 2020). The configuration formed can make operational processes run efficiently and flexibly (Basana et al., 2023; Wang & Yang, 2022). Workforce configuration can include placing employees based on expertise within the company as needed (Cantele et al., 2023). Companies can also organize the workforce in each team so that the formation of cross-functional teams can run adequately (Rehman et al., 2025). Management configuration also provides adequate skills development for the workforce to support production flexibility (Sarkar & Seo, 2021). Configuration management can regulate the use of system integration by employees so that all data flows and process control run in real-time and reliably (Song et al., 2022).

Company management decisions in configuring have an important role in determining the form and effectiveness of supply chain collaboration (Matalaka et al., 2025). Configuration management includes companies structuring business processes so that they can be shared with suppliers, partners, and customers (Cao et al., 2021). Relationships with external partners can create synergistic collaboration with all partners in the supply chain (Basana et al., 2024). This decision is strategic because it influences the company to build the involvement of external partners (Chunsheng et al., 2020). Companies can form cross-departmental teams that are directly involved in management to create better supply chain collaboration (Panahifar et al., 2018; Yu et al., 2019). This configuration decision allows for an open and fast exchange of information between the parties involved (Vidè et al., 2025).

H₁: *The role of configuration management decisions influences operation flexibility.*

H₂: *The role of configuration management decisions influences supply chain collaboration integration.*

H₃: *The role of configuration management decisions influences resource configuration.*

2.2 *Resources configuration, operation flexibility, and supply chain collaboration integration*

Employee resources configuration is an activity carried out by a company to design, manage, and allocate human resources within the company (Cantele et al., 2023). Employee resource configuration is important for companies in adapting new and

sustainable business processes (Zhang et al., 2025) in preparing each employee's roles and task arrangements as a form of dynamic capabilities (Munir et al., 2022). Effective configuration of a company allows the creation of a flexible workforce that is ready to adapt to various operational conditions (Chunsheng et al., 2020). When a company implements an adaptive workforce configuration, it directly increases operation flexibility (Chaudhuri et al., 2018). Employees who can switch between production lines or handle different types of work without requiring lengthy retraining provide a distinct competitive advantage in terms of speed and efficiency. Good employee configuration also supports quick decision-making at all levels (Sbarba, 2024). Employees are empowered and given autonomy in solving problems that occur in operations in order to produce a flexible production process (Wang & Yang, 2022).

Good employee configuration determines a company's success in building collaborative integration partners in the supply chain (Cantele et al., 2023). The employee configuration in the company has good communication skills and adequate cross-departmental understanding to support supply chain collaboration integration (Sadha et al., 2024). Employee competency in using information technology can establish coordination and strong working relationships with supply chain partners (Siagian et al., 2022). Employees with adequate work flexibility within the organization enable quick responses to requests from external partners to build supply chain collaboration integration. The employee's capacity to address quality and service issues in the supply chain flow to complete the product order (Bayon & Aguilera, 2023). An employee configuration that emphasizes partnerships will encourage the creation of communication flows (Song et al., 2022) and workflows that are aligned (Wegner et al., 2022) with the principles of supply chain collaboration. Employees who understand the importance of collaboration can consider the impact on partners and end customers (Shao et al., 2025). Employee resource configuration plays a strategic role in forming an internal foundation that supports the realization of supply chain collaboration integration (Song et al., 2018).

H4: *Resources configuration influences operation flexibility*

H5: *Resource configuration influences supply chain collaboration integration*

2.3. Operation flexibility and supply chain collaboration integration

Operation flexibility is the company's ability to adjust operational processes (Basana et al., 2023). Operational flexibility for companies in producing products according to customer demand and supplier material availability is the key to successfully integrating the supply chain (Basana et al., 2024). The company's ability to have a high level of flexibility means it can more easily adapt to changes in demand from supply chain partners (Chaudhuri et al., 2018). Companies that can quickly change production volumes become more reliable partners for customers in providing products according to orders given (Sarkar & Seo, 2021). Companies that can adjust delivery schedules are able to increase supply chain collaboration integration (Harianto et al., 2024). Supply chain collaboration integration also strengthens the company's operational flexibility (Fayezi & Zomorodi, 2015). With real-time information exchange (Gu et al., 2021) and joint planning, supply chain collaboration integration will provide high flexibility (Singh & Kumar, 2020). Transparency towards market needs and companies being able to anticipate changes early and adapt their operations as a form of operational flexibility can have an impact on supply chain collaboration integration (Panahifar et al., 2018). Data on demand from customers obtained through supply chain collaboration integration influences companies in operating flexibility in planning production capacity more accurately and efficiently (Putri et al., 2024). Supply chain collaboration integration enables the sharing of risks and resources between partners, which in turn provides greater space for each party to organize flexible internal operations (Shukor et al., 2021).

H6: *Operation flexibility influences supply chain collaboration integration.*

2.4. Resources configuration, operation flexibility, supply chain collaboration integration, and firm resilience

Firm resilience is the ability to face and respond to disruptions in the continuity of a company's business processes (Carissimi et al., 2023). Firm resilience always focuses on recovery (Bag et al., 2023) and can adapt to disruptions that occur in the company's supply chain (Abeysekara et al., 2019). The right resource configuration is an important foundation for creating firm resilience (Cheng & Lu, 2017). The company's configuration will enable it to arrange resources with a flexible strategy ready to respond to changes or threats that could disrupt the firm (Chowdhury & Quaddus, 2016). Configurations that include empowering suppliers or providing controlled stock can help companies maintain continuity of operations when disruption occurs (Chunsheng et al., 2020; Liu et al., 2025). Adaptive workforce configuration can speed up the recovery and adjustment process in the supply chain (Ju et al., 2021). Technology and information configurations that support coordination across supply chain partners enable early detection of risks (Munir et al., 2022).

Operational flexibility means companies can quickly adjust production capacity so that they can minimize the impact of disruptions that occur in operations, thereby increasing resilience (Adobor & McMullen, 2018). Operational flexibility in companies can divert resources according to needs to maintain the production process's continuity, change work schedules, and continue business processes with minimal disruption. Companies experiencing a raw material supply crisis adjust product designs and look for available alternative materials if they have high operational flexibility (Tarigan et al., 2024). Operation flexibility also allows companies to switch between production facilities quickly to respond to firm resilience. A company's ability to adapt internal systems can increase firm resilience (Li et al., 2017). Firm resilience can encourage companies to build operational flexibility as part of a risk mitigation strategy (Orlando et al., 2021).

Supply chain collaboration integration creates high transparency throughout the supply network to increase firm resilience (Gu et al., 2021; Taha et al., 2024). Supply chain collaboration integration has access to important information related to market demand or potential raw material disruption so risks can be identified early, thereby increasing the impact on firm resilience (Huang et al., 2023; Siagian et al., 2022; Yuan & Li, 2022). Close supply chain collaboration integration enables fast and structured response coordination when disruption occurs, thereby impacting firm resilience (Huo & Gu, 2024; Tarigan et al., 2024). Partners in the supply chain can share capacity as a form of supply chain collaboration integration, capable of substituting supply sources and responding to surges in demand collectively to maintain firm resilience (Abeysekara et al., 2019; Setiawan et al., 2023). Conditions full of uncertainty in the supply chain flow can be overcome if companies have a solid collaborative system (Christian et al., 2024) and will be better able to survive and recover together (Alvarenga et al., 2023). Supply chain collaboration integration is the main support in building firm resilience (Sadha et al., 2024; Zhao et al., 2023).

H7: Resource configuration influences firm resilience.

H8: Operation flexibility influences firm resilience.

H9: Supply chain collaboration integration influences firm resilience.

Based on the explanation above, a research conceptual framework can be determined in Fig. 1.

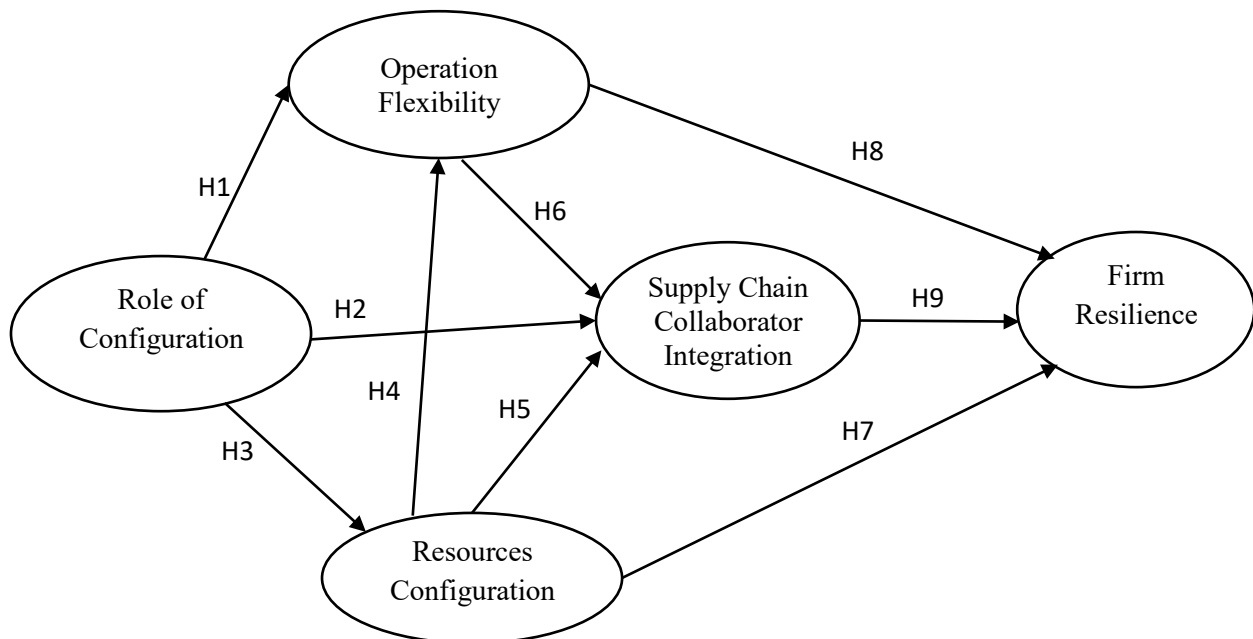


Fig. 1. Research conceptual framework

3. Research methods

The role of configuration management decisions is a decision made by management in managing and ensuring that the organizational system in the company runs well and supports the achievement of goals (Rehman et al., 2025; Sbarba, 2024; Wegner et al., 2022). The role of configuration management decision is determined by the measurement items of providing personal protective equipment during work (RofC1), following government regulations related to work rules (RofC2), having policies for employees related to welfare (RofC3), providing special rules for sick employees (RofC4), establishing policies related to employees' special needs (RofC5), and the company providing business processes that can be understood between departments (RofC6).

The second variable, operation flexibility, is the company's ability to adjust operational processes. Measurement items for operation flexibility by adopting the research of Chaudhuri et al. (2018), Chunsheng et al. (2020), Basana et al. (2023), Putri et al. (2024) are flexibility for the production process to run normally (Op.F11), flexibility for the production process to be adjusted to estimated demand (Op.F12), flexibility to adjust capacity in short time (Op.F13), and flexibility to introduce new products into production in short time (Op.F14). The third variable, resource configuration, is the activities carried out by the company to design, manage, and allocate human resources within the company. The measurement items for resource configuration adopted by Huang et al. (2023), Tukiran et al. (2025), Vidè et al. (2025), Zhang et al. (2025) are determined by adjusting the workforce needed by the company (ReCo1), the company allocates the number of workers according to work centers (ReCo2), the company regulates raw material needs based on the production schedule (ReCo3), the production process is adjusted to needs (ReCo4) and company operations filled with adequate tools (ReCo5).

The fourth variable, supply chain collaboration integration, is the company's effort to unite all partners in the supply chain through coordinated cooperation in making joint decisions. The measurement items used adopted the research of Christian et al. (2024), Chunsheng et al. (2020), Panahifar et al. (2018) for supply chain collaboration integration is Data integration between departments is running well (SCCI1), the company is informing data changes to suppliers well (SCCI2), the company is informing data changes to customers well (SCCI3), data integration can be implemented in a timely manner (SCCI4), access company data in real-time from anywhere (SCCI5).

The fifth variable of firm resilience is the ability to face and respond to disruptions that occur in the continuity of the company's business processes. The measurement items used were adopted from the research of Abeysekara et al. (2019), Alvarenga et al. (2023), Gu et al. (2021), Bag et al. (2023), Cheng & Lu (2017), Chunsheng et al. (2020), Huang et al. (2023), Yuan & Li (2022), Setiawan et al. (2023) for firm resilience is that the company has a system to overcome disruptions (F.Re1), the company is quick in making decisions when external changes occur (F.Re2), the company remains able to serve customer demands in global uncertainty (F.Re3), the company has an early warning system to anticipate risks (F.Re4), and the company is able to adjust business strategies when changes in the external environment occur (F.Re5).

The research collected data by distributing questionnaires to manufacturing companies that have faced intense global competition. Manufacturing companies in Indonesia are experiencing severe conditions due to economic pressure, resulting in layoffs. This condition makes manufacturing companies make changes to their field workforce, so they need to configure company resources. Manufacturing companies need to make rapid changes by paying attention to the labor regulations that apply in Indonesia. The specified company is a company that has configured and adjusted its workforce with changes to the operational area with a minimum workforce of 20 people. Data analysis was used with partial least squares to test the validity of the data using outer loading to ensure that each item in the questionnaire truly measured the construct in question. Reliability testing was carried out using the composite reliability coefficient and Cronbach's Alpha to measure the internal consistency of the questionnaire. The next stage is to test the inner model to get the answer to the research hypothesis by taking into account the t-statistics value ≥ 1.96 or p-value ≤ 0.05 .

4. Analysis and Discussion

Data on manufacturing companies in Indonesia that have more than 20 employees was retrieved. The results of distributing questionnaires that were received by 462 companies in the manufacturing company category were carried out over 4 years between 2021 and 2024. The characteristics of the respondents are shown in Table 1.

Table 1
Profile of research respondents

| Characteristic | Description | Qty | Percentage |
|--------------------------------------|------------------------------------|-----|------------|
| Gender | Male | 319 | 69% |
| | Female | 143 | 31% |
| Department | Operational | 151 | 33% |
| | Planning Production | 74 | 16% |
| | Marketing & Sales | 69 | 15% |
| | Engineering | 42 | 9% |
| | Human Resources Development | 37 | 8% |
| | Warehouse | 42 | 9% |
| | Purchasing | 28 | 6% |
| | Quality Assurance/Control | 14 | 3% |
| | Others | 5 | 1% |
| | Top Management | 60 | 13% |
| Respondent's position in the company | Manager/Assistant Manager | 143 | 31% |
| | Supervisor/Senior Staff | 176 | 38% |
| | Staff | 83 | 18% |
| | | | |
| Work experience at the company | 1-3 Years | 32 | 7% |
| | 3-5 years | 83 | 18% |
| | 5-7 years | 93 | 20% |
| | 7-10 years | 106 | 23% |
| | More than 10 years | 148 | 32% |
| Configuration in the company | Workforce reallocation | 262 | 57% |
| | Increase in the number of machines | 56 | 12% |
| | Reduction of workforce | 62 | 14% |
| | Increase in workforce | 83 | 18% |
| | Change of work vendor | 35 | 8% |
| | Changes to standard procedures | 59 | 13% |
| | Workstation changes | 65 | 14% |
| | Reducing the number of machines | 118 | 26% |

Table 1 shows that manufacturing companies in Indonesia have made changes to operational systems by paying attention to the configuration that occurs in the company. The biggest role of configuration is found in the operational part of the company, which is directly related to the company's production process. The operational section found in operations, production planning, engineering, warehouse, and quality was 323 respondents (70%). The employee positions that are often found in the resource configuration are middle managers, namely manager, assistant manager, supervisor, and senior staff as many as 319 respondents (69%). Data processing was carried out to test the validity and reliability of the research by testing using PLS software (Table 2).

Table 2

Goodness of fit reliability and validity on PLS

| Measurement Items | Loading Factor | Mean |
|--|----------------|--------|
| Role of configuration management decision (Composite Reliability = 0.886; Cronbach Alpha = 0.845; AVE = 0.567) | - | 4.3503 |
| The company provides personal protective equipment during work (RofC1) | 0.644 | 4.3528 |
| The company follows government regulations regarding work rules (RofC2) | 0.762 | 4.4719 |
| The company has policies for employees related to welfare (RofC3) | 0.739 | 4.4264 |
| The company provides special rules for sick employees (RofC4) | 0.804 | 4.3550 |
| The company establishes policies related to the special needs of employees (RofC5) | 0.856 | 4.3225 |
| The company provides business processes that can be understood between departments (RofC6) | 0.692 | 4.1732 |
| Operation flexibility (Composite Reliability = 0.823; Cronbach Alpha = 0.715; AVE = 0.539) | - | 4.1158 |
| Flexibility of production processes running normally (Op.FI1) | 0.652 | 3.7706 |
| Flexibility of production processes adjusted to forecast demand (Op.FI2) | 0.784 | 4.4221 |
| Flexibility to adjust capacity in short time (Op.FI3) | 0.780 | 4.2013 |
| Flexibility to introduce new products into production in short time (Op.FI4) | 0.713 | 4.0696 |
| Resources configuration (Composite Reliability = 0.835; Cronbach Alpha = 0.751; AVE = 0.508) | - | 4.1723 |
| The company adjusts the workforce needed by the company (ReCo1) | 0.587 | 4.2749 |
| The company allocates the number of workers according to work centers (ReCo2) | 0.732 | 4.2706 |
| The company regulates raw material requirements based on the production schedule (ReCo3) | 0.692 | 4.0758 |
| Production process adjusted to needs (ReCo4) | 0.650 | 3.8842 |
| Company operations have been fulfilled with adequate tools (ReCo5) | 0.870 | 4.3961 |
| Supply chain collaboration (Composite Reliability = 0.896; Cronbach Alpha = 0.852; AVE = 0.638) | - | 4.1558 |
| Data integration between departments is going well (SCCI1) | 0.879 | 4.2706 |
| The company properly informs data changes to suppliers (SCCI2) | 0.845 | 4.2641 |
| The company properly informs data changes to customers (SCCI3) | 0.850 | 4.2879 |
| Timely data integration can be implemented (SCCI4) | 0.808 | 4.0909 |
| Can access company data in real-time from anywhere (SCCI5) | 0.573 | 3.8658 |
| Firm resilience (Composite Reliability = 0.846; Cronbach Alpha = 0.773; AVE = 0.527) | - | 4.2286 |
| The company has a system for dealing with disruptions (F.Re1) | 0.764 | 4.2597 |
| Companies are quick in making decisions when external changes occur (F.Re2) | 0.711 | 4.0844 |
| The company can serve customer demands in global uncertainty (F.Re3) | 0.859 | 4.3377 |
| The company has an early warning system to anticipate risks (F.Re4) | 0.618 | 4.2294 |
| Companies can adjust business strategies when changes in the external environment occur (F.Re5) | 0.651 | 4.2316 |

Validity testing in the research shown in Table 1 has been met with loading factor values for all measurement items greater than 0.500. Table 1 shows that the loading factor is the lowest for the variable role of configuration management decision on the item the company provides personal protective equipment during work (RofC1) of 0.644; operation flexibility in the production process flexibility item running normally (Op.FI1) is 0.652; resource configuration on company items adjusts the workforce required by the company (ReCo1) of 0.587, supply chain collaboration with items that can access company data in real-time from anywhere (SCCI5) is 0.573, firm resilience on company items has an early warning system to anticipate risks (F.Re4) of 0.618. The reliability testing in Table 1 has met the Composite Reliability requirements of above 0.700, Cronbach Alpha is above 0.700, and AVE (Average Variance Extracted) is above 0.500. Testing the validity and reliability of the research has met the requirements.

Descriptive analysis in Table 1, which is shown by the average value for the role of configuration management decision of 4.3503, shows that the manufacturing company has implemented rules according to applicable regulations. Operation flexibility with a mean of 4.1158 illustrates that the company has a system of operational flexibility running well. The highest operational flexibility is found in the production process flexibility item adjusted to estimated demand (Op.FI2) with a mean of 4.4221. Resource configuration with a mean value of 4.1273 shows that the company has adequately managed its workforce and work equipment. The value of the resource configuration variable with the highest item in the company's operations has been met with adequate tools (ReCo5) 4.3961, which is high. Variable supply chain collaboration with a mean of 4.1558

illustrates that the company collaborates well with external partners. Companies can coordinate quickly to overcome external uncertainty quickly. The final variable is firm resilience with a mean of 4.2286, which shows that the company has the ability to face and respond to disruptions that occur in the continuity of high business processes. Data processing in testing research hypotheses is shown with the full model in Fig. 1 and hypothesis testing in Table 2.

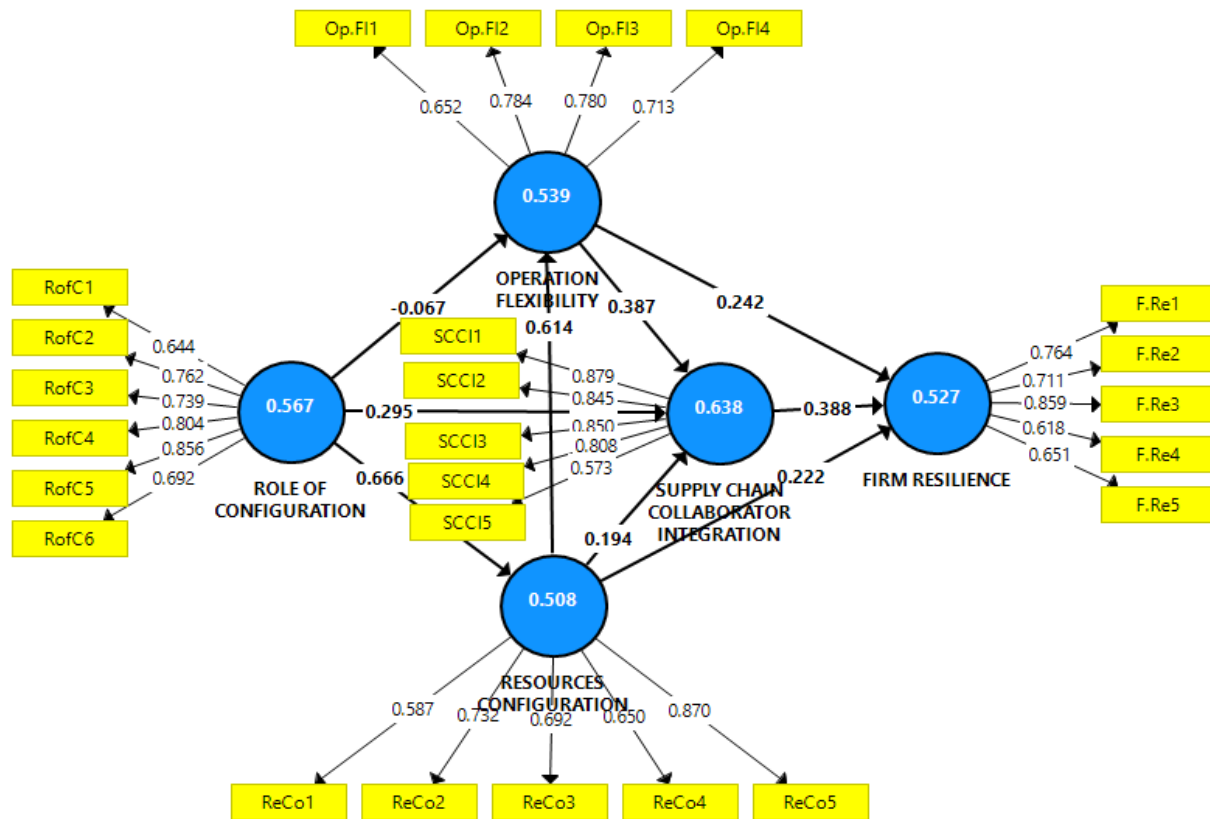


Fig. 2. Results of Path-Coefficient processing in research

Table 3

Results of data processing by testing research hypotheses

| DIRECT EFFECT | Path Coefficient | T Statistics | P Values |
|--|------------------|--------------|----------|
| Role of Configuration → Operation Flexibility (H1) | -0.067 | 1.114 | 0.27 |
| Role of Configuration → Supply Chain Collaborator Integration (H2) | 0.295 | 4.893 | 0.00 |
| Role of Configuration → Resources Configuration (H3) | 0.666 | 20.670 | 0.00 |
| Resources Configuration → Operation Flexibility (H4) | 0.614 | 10.383 | 0.00 |
| Resources Configuration → Supply Chain Collaborator Integration (H5) | 0.194 | 3.180 | 0.00 |
| Operation Flexibility → Supply Chain Collaborator Integration (H6) | 0.387 | 9.078 | 0.00 |
| Resources Configuration → Firm Resilience (H7) | 0.222 | 4.535 | 0.00 |
| Operation Flexibility → Firm Resilience (H8) | 0.242 | 4.849 | 0.00 |
| Supply Chain Collaborator Integration → Firm Resilience (H9) | 0.388 | 7.555 | 0.00 |

Based on the data processing results for the path coefficient and research hypothesis in Figure 2 and Table 3 to answer all research hypotheses (H1-H9). The first hypothesis that the role of configuration management decisions influences operation flexibility was obtained with a t-statistics value of 1.114 (<1.96) so the hypothesis was rejected. The role of configuration set by the company by providing special rules for sick employees and establishing policies related to the special needs of employees does not have a significant impact on increasing the flexibility of the production process according to estimated demand. This condition results in decreased productivity in companies, so the production volume tends to decrease, especially in labor-intensive companies with many employees. The research results differ from previous research, which stated that the role of configuration management decisions influences operation flexibility (Bayon & Aguilera, 2023; Chaudhuri et al., 2018; Dubey et al., 2019; Matalaka et al., 2025; Wegner et al., 2022).

The second hypothesis, that the role of configuration management decisions influences supply chain collaboration integration, was obtained with a t-statistics value of 4.893 (>1.96), so the hypothesis was accepted. The role of configuration determined by the company, along with the company's following the government regulations related to work and providing business processes that can be understood between departments, impacts supply chain collaboration integration. The company's role in

configuration is to make data integration between departments run well and allow timely data integration to be implemented. The research results showed that the role of configuration management decisions had an effect on supply chain collaboration integration by 0.295. The research results support research results which state that the role of configuration management decisions influences supply chain collaboration integration (Cantele et al., 2023; Chunsheng et al., 2020; Rehman et al., 2025; Song et al., 2022; Song et al., 2018).

The third hypothesis, that the role of configuration management decisions influences resource configuration, is obtained with a t-statistics value of 20,670 (>1.96), so the hypothesis is accepted. The role of configuration management decisions is to establish policies related to the special needs of employees, have policies for employees related to welfare, and provide business processes that can be understood between departments, which can impact increasing resource configuration. The research results show that configuration management decisions have an effect of 0.666 on resource configuration. This condition shows that the research supports previous research, which states that configuration management decisions influence resource configuration (Bayon & Aguilera, 2023; Ivens et al., 2024; Shao et al., 2025; Zhang et al., 2025).

The fourth hypothesis that resource configuration influences operation flexibility was obtained with a t-statistics value of 10.383 (>1.96), so the hypothesis was accepted. The resource configuration determined by the company by allocating the number of workers according to work centers and adjusting the workforce needed by the company has an influence on increasing operational flexibility. The company can increase operational flexibility by adjusting capacity and introducing new products in a short time. The research results show that resource configuration has an effect of 0.614 on operation flexibility. The resulting research provides support for previous research, which states that resource configuration influences operation flexibility (Chaudhuri et al., 2018; Munir et al., 2022; Sarkar & Seo, 2021; Wang & Yang, 2022).

The fifth hypothesis that resource configuration influences supply chain collaboration integration was obtained with a t-statistics value of 3.180 (>1.96), so the hypothesis was accepted. Resource configuration in the company by managing raw material requirements based on production schedules and production processes adjusted to needs is able to produce good supply chain collaboration integration by properly informing data changes to external partners, suppliers, and customers. The research results show that resource configuration influences supply chain collaboration integration by 0.194. The resulting research supports previous research that states that resource configuration influences supply chain collaboration integration (Cantele et al., 2023; Sbarba, 2024; Liu et al., 2025).

The sixth hypothesis that operation flexibility influences supply chain collaboration integration was obtained with a t-statistics value of 9.078 (>1.96), so the hypothesis was accepted. Operation flexibility occurs in manufacturing companies, with the flexibility of the production process to run normally and the flexibility of the production process to be adjusted to demand estimates, which can increase supply chain collaboration integration in the flexibility to adjust capacity and introduce new products quickly. The research results show that operation flexibility influences supply chain collaboration integration by 0.387. The resulting research provides support for previous research, which states that operation flexibility influences supply chain collaboration integration (Basana et al., 2023; Chaudhuri et al., 2018; Fayezi & Zomorodi, 2015; Harianto et al., 2024; Putri et al., 2024; Shukor et al., 2021).

The seventh hypothesis that resource configuration influences firm resilience is obtained with a t-statistics value of 4.535 (>1.96), so the hypothesis is accepted. The company's resource configuration by adjusting the workforce needed by the company and allocating the number of workers according to work centers has an influence on increasing firm resilience in the form of the ability to serve customer demands in global uncertainty and being able to adjust business strategies when changes in the external environment occur. Resource configuration influences firm resilience by 0.222. The results confirm previous research stating that resource configuration influences firm resilience (Bag et al., 2023; Cantele et al., 2023; Huang et al., 2023).

The eighth hypothesis that operation flexibility influences firm resilience was obtained with a t-statistics value of 4,849 (>1.96), so the hypothesis was accepted. Operation flexibility in the manufacturing industry, namely increasing the flexibility of the production process to run normally and be adjusted to demand estimates, can produce high firm resilience to be able to serve customer demand in global uncertainty and quickly make decisions when external changes occur. The research results show that operation flexibility influences firm resilience by 0.242. The research results confirm research results which state that operation flexibility influences firm resilience (Abeysekara et al., 2019; Adobor & McMullen, 2018; Alvarenga et al., 2023; Cheng & Lu, 2017; Chowdhury & Quaddus, 2016; Munir et al., 2022; Tarigan et al., 2024). The ninth hypothesis that supply chain collaboration integration influences firm resilience is obtained with a t-statistics value of 7.555 (>1.96), so the hypothesis is accepted. Data integration between departments runs well in a timely manner and can be accessed from anywhere. Supply chain collaboration integration improves systems for dealing with disruptions and early warning systems to anticipate risks and adjust business strategies when changes in the external environment occur. The research results show that supply chain collaboration integration has an effect on firm resilience of 0.388, and supports research that states that supply chain collaboration integration has an effect on firm resilience (Abeysekara et al., 2019; Carissimi et al., 2023; Christian et al., 2024; Gu et al., 2021; Huang et al., 2023; Huo & Gu, 2024; Sadha et al., 2024; Siagian et al., 2022; Zhao et al., 2023; Taha et al., 2024).

The practical contribution of the research is for company managers to always update rules and policies in accordance with external changes to be able to manage the continuity of the process well. Top management must empower external partners and involve them in company processes to increase firm resilience. The company's information technology department needs to update software and hardware and adjust its investment according to the company's needs and financial capabilities. The theoretical contribution of the research can enrich supply chain theory and flexible operational management theory by adding evidence that operational flexibility is not only related to production efficiency but also has a direct impact on collaboration and company resilience in facing disruption. Research contributions to the Indonesian manufacturing context can provide an evidence-based framework that is relevant to the business environment in developing countries, where regulatory pressures, workforce dynamics, and technological limitations are the main challenges.

5. Conclusion

The company's ability to adapt its internal conditions to external conditions can increase its competitiveness. Configuration management decisions have a strategic role in strengthening the resilience of manufacturing companies in Indonesia. Configuration management decisions affect resource configuration and supply chain collaboration integration but not directly on operation flexibility. Configuration management decisions are important for companies in adapting changes to regulations and rules to comply with established policies. Resource configuration is proven to be a key element that influences operation flexibility, supply chain collaboration integration, and firm resilience. This shows that the right arrangement of human and material resources can increase flexibility and strengthen collaboration across the supply chain. Operation flexibility plays an important role in supporting supply chain collaboration integration and directly impacts increasing firm resilience. The company's ability to adjust volume, type of production, and work schedule is a key strength in responding to market dynamics and supply chain disruption. Supply chain collaboration integration is the strongest determinant of firm resilience, emphasizing the importance of information integration, coordination, and openness between supply chain partners in creating an adaptive and resilient system to uncertainty. The integration of the three main elements of resource configuration, operation flexibility, and supply chain collaboration integration can increase the company's ability to deal with external disturbances and maintain operational continuity. These findings provide an important contribution to supply chain management theory and managerial practice in building adaptive and highly resilient organizations amidst global challenges.

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Data availability

Zeplin Jiwa Husada Tarigan; Sahnaz Ubud; Zefanya Valentino Bastanta Tarigan; Ferry Jie, 2025, "Dataset of The Impact of Configuration Management Decisions on Firm Resilience: Integrating Resource Configuration, Operational Flexibility, and Collaborative Supply Chain Strategies", <https://doi.org/10.7910/DVN/F2XMOH>, Harvard Dataverse, V1

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