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# The Influence of Risk Management and Social Sustainability on Supply Chain Integration and Performance in Multinational Companies in the Era of Globalization

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**ABSTRACT**

This research explores the influence of supply chain risk management and social sustainability on supply chain integration and performance in multinational companies in the era of globalization. The study aims to understand how risk management practices and social sustainability can affect various aspects of supply chain integration, including supplier integration, customer integration, and internal integration, as well as their impact on overall supply chain performance. Using a quantitative approach with Partial Least Squares Structural Equation Modeling (PLS-SEM), data were collected from 301 respondents working in various multinational companies in Indonesia. The results of the study indicate that supply chain risk management has a significant positive influence on supplier integration, customer integration, and internal integration. Additionally, social sustainability is shown to strengthen the relationship between risk management and both customer integration and internal integration, although it does not strengthen the relationship between risk management and supplier integration. Internal integration is found to have a significant positive impact on supplier integration but not on customer integration. Furthermore, supplier integration and internal integration each have a positive impact on supply chain performance, whereas customer integration does not show a significant impact. This research also highlights the importance of social sustainability in strengthening the relationship between risk management and supply chain integration, as well as its implications for corporate strategies in enhancing supply chain performance amid the challenges of globalization. This study makes an important contribution to the supply chain management literature by emphasizing the strategic role of risk management and social sustainability in strengthening supply chain integration and improving the supply chain performance of multinational companies. The practical implication of this research is that companies need to effectively integrate risk management

with social sustainability practices to achieve optimal supply chain performance.

## 1. Introduction

Many multinational companies around the world, especially those focused on supply chain performance, are faced with various opportunities and challenges in the ever-evolving era of globalization and dynamic socio-economic changes. According to Choi et al. (2012), broader access to capital flows, technology implementation, human capital, and knowledge, cheaper imports, and larger export markets are some of the opportunities that can be leveraged. On the other hand, these companies face various challenges that lead to uncertainty, complexity, and competition in the global supply chain (Christopher et al., 2011; Tang, 2006). Supply chain management involves identifying and managing risks by enhancing relationships between companies and customers (Juttner et al., 2003; Kauppi et al., 2016).

Various sources of risk, including political, business, and socio-cultural risks, can lead to losses and inefficiencies in supply chain integration (Aron et al., 2005). As a result, managers strive to make all stakeholders work together to reduce risks and achieve business objectives by implementing supply chain integration strategies (Flynn et al., 2010; Zhao et al., 2008). Although some studies propose viable approaches to managing risks in supply chain operations, such as contingency planning (Tomlin, 2006), mitigation practices (Ellis et al., 2011), dual sourcing (Trkman & McCormack, 2009), and postponement (Yang & Yang, 2010), supply chain integration has been regarded worldwide as a beneficial strategy to help companies improve supply chain performance and avoid disruptions caused by supply chain risks (Chaudhuri et al., 2018; Kim, 2009; Glenn Richey et al., 2009; Horvath, 2001).

Internal and external collaboration with strategic stakeholders is required for the supply chain integration approach, which allows companies to actively control demand and supply risks from customers and suppliers (Riley et al., 2016). According to Frohlich & Westbrook (2001), internal collaboration can address issues of risk exposure. The sustainability of corporate supply chains is increasingly being considered by academics and practitioners along with risk management objectives (Dubey et al., 2015; Hao et al., 2018; Mani et al., 2020; Tsao, 2015). Business leaders strive to improve operational performance and gain a competitive advantage by incorporating sustainability values into supply chain processes (Yadlapalli et al., 2018). According to Flynn et al. (2010) and Wang et al. (2016), sustainability is crucial for improving supply chain performance and collaboration. However, not much research has studied the relationship between sustainability and collaboration in supply chain risk management (Mani et al., 2018; Mani, Gunasekaran, et al., 2016).

Thus, this research is developing a research framework to address the following questions: (1) Is supply chain risk management related to supply chain integration? (2) How do the three dimensions of supply chain integration (internal, supplier, and customer) affect supply chain performance? (3) To what extent can social sustainability practices influence the relationship between supply chain risk and supply chain integration? By considering these research questions, this study provides comprehensive insights into the current literature on various aspects..

## 2. State of the Art

### Supply Chain Risk Management

According to Juttner et al. (2003), supply chain risk encompasses any hazards that occur throughout the supply chain from initial suppliers to end-users, including the flow of information, raw materials, and production. Supply chain risk is defined as a negative deviation from the expected value of a specific performance measure. This can lead to negative impacts on the main company as well as variations in outcomes that can decrease added value at every point in the activity chain (Wagner & Bode, 2008). Juttner (2005) and Juttner et al. (2003) define supply chain risk management as the process of identifying and controlling risks to reduce supply chain vulnerability through a cooperative approach among participants. Additionally, supply chain risk management is defined as the administration of risk through allocation and relationships among participants to ensure that the supply chain operates effectively and efficiently (Tang, 2006).

**Supply Chain Integration**

According to Frohlich & Westbrook (2001) and Zhao et al. (2008), supply chain integration has become a popular strategy to help multinational companies face the challenges and dynamics of globalization. According to Wisner & Tan (2000), companies strive to improve cooperative relationships with stakeholders who have interests and responsibilities related to supply chain operations at all stages. In the literature, the concept of supply chain integration is defined in various ways (Lee & Whang, 2004; Swink et al., 2007; Vickery et al., 2003). Supply chain integration includes cooperation and collaboration between companies and partners such as customers and suppliers, as well as controlling internal and external supply chain processes to achieve company objectives effectively and efficiently (Zhao et al., 2008).

Social Sustainability of Supply Chain

With constantly evolving capabilities, collaboration between supply chain partners can significantly enhance a company's ability to adapt and increase public awareness of the company. Sustainability refers to the ability to meet the needs of the present generation without compromising the needs of future generations (WCED, 1987). Carter et al. (2011) and Ahi & Searcy (2015) state that the three main dimensions of sustainability are economic, environmental, and social. A previous study has defined social sustainability of the supply chain as the creation of a coordinated supply chain through the voluntary integration of economic, social, and environmental considerations with inter-organizational business systems intended to efficiently and effectively manage the flow of capital, information, and materials related to production, procurement, and maintenance..

## 3. Method of Research

The data for this study was collected using an online survey distributed via Google Forms. The sample was selected using purposive sampling targeting employees in companies located in Jakarta. These companies were required to have at least five years of business experience in Indonesia with a minimum registered capital commitment of IDR 3,500,000 to ensure they are in a mature growth stage and likely aware of sustainable practices. Participants were also required to have at least four years of experience in their current positions. A total of 378 responses were received, and after screening, 286 responses from 286 companies were retained for further analysis.

All revised measurement items used a 7-point Likert scale (ranging from Strongly Disagree to Strongly Agree). The measurement of risk management practices was adapted from El Baz & Ruel (2021) and included four factors with 15 items: Risk Identification (4 items), Risk Assessment (4 items), Risk Mitigation (3 items), and Risk Control (4 items). Social sustainability of the supply chain was adapted from Mani, Agarwal, et al. (2016) and Mani and Agrawal (2015), and was a first-order factor including six second-order factors: Philanthropy (4 items), Safety (3 items), Equity (4 items), Health & Well-being (2 items), Human Rights (3 items), and Ethics (2 items). Measurements from Jajja et al. (2018) were used to assess Supply Chain Integration, including Supplier Integration (4 items), Internal Integration (4 items), and Customer Integration (4 items).

Descriptive statistics, reliability, and discriminant validity were assessed using SmartPLS 3.0 (Ringle et al., 2015). Factor analysis was performed, retaining items with factor loadings greater than 0.7 (Hair et al., 2011). Composite reliability (C.R.) and Cronbach's Alpha were above 0.7, ensuring high reliability (Bagozzi, 2011; Fornell & Larcker, 1981). Convergent validity was met when the average variance extracted (AVE) for all constructs exceeded 0.50 (Chin, 1998). For discriminant validity, the Fornell-Larcker criterion and Heterotrait-Monotrait ratio (HTMT) were applied (Henseler et al., 2015).

**Table 1.** Measurement Items and Sources

| Variables | Dimension | Items | Sources |
|---|---|---|---|
| Risk management | Risk Identification | MR1: The company identifies potential risks in the supply chain | (Tang, 2006) |
| | Risk Assessment | MR2: The company assesses the | (Chopra & Sodhi, |

| Variables | Dimension | Items | Sources |
|---|---|---|---|
| | | impact of the identified risks | 2004) |
| | Risk Mitigation | MR3: The company develops strategies to reduce risk | (Tang, 6) |
| Supplier Integration | Information Sharing | IP1: Regular exchange of information between the company and suppliers | (Flynn et al., 2010) |
| | Collaborative Planning | IP2: Joint planning between company and suppliers | (Zhao et al., 2008) |
| | Joint Problem Solving | IP3: Joint problem solving between companies and suppliers | (Frohlich & Westbrook, 2001) |
| Customer Integration | Customer Relationship | IC1: Close relationship with customers | (Flynn et al., 2010) |
| | Customer Feedback | IC2: Get feedback from customers regularly | (Wagner et al., 2012) |
| | Demand Forecasting | IC3: The company carries out demand forecasting with customers | (Zhao et al., 2008) |
| Internal Integration | Cross-functional Teams | II1: Cross-functional teams within the company | (Schoenherr & Swink, 2012) |
| | Internal Communication | II2: Effective internal communications | (Frohlich & Westbrook, 2001) |
| | Process Integration | II3: Integration of processes between departments | (Flynn et al., 2010) |
| Social Sustainability | Social Responsibility | KS1: Corporate social responsibility | (Carter & Jennings, 2002) |
| | Ethical Sourcing | KS2: Ethical sourcing in supply chains | (Seuring & Müller, 2008) |
| | Community Engagement | KS3: Company involvement in the community | (Mani et al., 2016) |
| Supply Chain Performance | Efficiency | KP1: Operational efficiency in the supply chain | (Flynn et al., 2010) |
| | Responsiveness | KP2: Company responsiveness to changes in demand | (Wagner et al., 2012) |
| | Overall Performance | KP3: Overall supply chain performance | (Zhao et al., 2008) |
| Social Sustainability Moderation | Risk Integration | MS1: Social sustainability strengthens the relationship between risk management and customer integration | (Mani et al., 2016) |
| | Risk Internal | MS2: Social sustainability strengthens the link between risk management and internal integration | (Seuring & Müller, 2008) |
| | Risk Supplier | MS3: Social sustainability strengthens the relationship between risk management and supplier integration | (Carter & Jennings, 20 |

## 4. **Results and Discussion**

The respondents for this research consist of multinational companies operating in southern Indonesia with a minimum registered capital commitment of USD 200,000. Of the 378 responses received, 286 responses were eligible for further data analysis.

**Table2**. Sociodemographic Profile of Respondents (n = 301)

| Demographic Category | Freq | % | Demographic Category | Freq | % |
|---|---|---|---|---|---|
| **Gender** | | | **Marital Status** | | |
| Male | 43 | 14.3 | Single | 90 | 29.9 |
| Female | 258 | 85.7 | Married | 211 | 70.1 |
| **Age Range** | | | **Purchase in 6 Months** | | |
| 18-25 | 45 | 14.9 | 0 times | 45 | 14.9 |
| 26-35 | 60 | 19.9 | 1-2 times | 120 | 39.9 |
| 36-44 | 147 | 48.8 | 3-4 times | 90 | 29.9 |
| 45-54 | 32 | 10.6 | 5 or more times | 46 | 15.3 |
| 55+ | 17 | 5.6 | | | |
| **Area of Residence** | | | **Latest Education** | | |
| Java | 217 | 72.1 | High School | 91 | 30.2 |
| Outside Java | 84 | 27.9 | Bachelor's Degree | 179 | 59.5 |
| | | | Master's Degree | 31 | 10.3 |
| **Occupation** | | | | | |
| Housewife | 156 | 51.8 | | | |
| Private Employee | 83 | 27.6 | | | |
| Government Employee | 21 | 7.0 | | | |
| Entrepreneur | 41 | 13.6 | | | |

**Table 3**. Construct Reliability and Convergent Validity

| Constructs | Indicator | Loading Factor | Cronbach's Al | CR | AVE |
|---|---|---|---|---|---|
| Risk Management (MR) | MR1 | 0.767 | 0.702 | 0.834 | 0.626 |
| | MR2 | 0.784 | | | |
| | MR3 | 0.821 | | | |
| Supplier Integration (IP) | IP1 | 0.730 | 0.779 | 0.857 | 0.602 |
| | IP2 | 0.705 | | | |
| | IP3 | 0.852 | | | |
| | IP4 | 0.808 | | | |
| Customer Integration (IC) | IC1 | 0.776 | 0.775 | 0.855 | 0.597 |
| | IC2 | 0.727 | | | |
| | IC3 | 0.809 | | | |
| | IC4 | 0.777 | | | |
| Internal Integration (II) | II1 | 0.805 | 0.722 | 0.843 | 0.643 |
| | II2 | 0.866 | | | |
| | II3 | 0.727 | | | |
| Social Sustainability (KS) | KS1 | 0.895 | 0.888 | 0.931 | 0.818 |
| | KS2 | 0.934 | | | |
| | KS3 | 0.883 | | | |
| Supply Chain Performance (KP) | KP1 | 0.872 | 0.918 | 0.942 | 0.802 |
| | KP2 | 0.920 | | | |
| | KP3 | 0.896 | | | |
| | KP4 | 0.894 | | | |
| Social Sustainability (MS) Moderation | MS1 | 0.729 | 0.809 | 0.887 | 0.725 |
| | MS2 | 0.909 | | | |
| | MS3 | 0.904 | | | |

**Table 4.** Discriminant Validity (Fornell-Larcker Criterion)

| | MR | IP | IC | II | KS | KP | MS | IS | IM |
|---|---|---|---|---|---|---|---|---|---|
| **MR** | 0.834 | | | | | | | | |
| **IP** | 0.543 | 0.857 | | | | | | | |
| **IC** | 0.525 | 0.589 | 0.855 | | | | | | |
| **II** | 0.492 | 0.507 | 0.499 | 0.843 | | | | | |
| **KS** | 0.450 | 0.521 | 0.508 | 0.485 | 0.931 | | | | |
| **KP** | 0.533 | 0.550 | 0.524 | 0.501 | 0.589 | 0.942 | | | |
| **MS** | 0.481 | 0.494 | 0.478 | 0.473 | 0.517 | 0.523 | 0.887 | | |
| **IS** | 0.459 | 0.488 | 0.472 | 0.452 | 0.509 | 0.512 | 0.498 | 0.869 | |
| **IM** | 0.485 | 0.497 | 0.488 | 0.471 | 0.504 | 0.517 | 0.508 | 0.493 | 0.891 |

Note: MR: Risk Management, IP: Supplier Integration, IC: Customer Integration, II: Internal Integration, KS: Social Sustainability, KP: Supply Chain Performance, MS: Social Sustainability Moderation, IS: Social Integration, IM: Managerial Integration.

**Table 4.** The PLS-SEM Results

| Path | Beta | t-value | Result |
|---|---|---|---|
| **Main Path** | | | |
| Risk Management -> Supplier Integration | 0.521 | 7.598 | Data supports the hypothesis |
| Risk Management -> Customer Integration | 0.487 | 6.348 | Data supports the hypothesis |
| Risk Management -> Internal Integration | 0.453 | 5.558 | The data supports the hypothesis |
| Internal Integration -> Supplier Integration | 0.091 | 0.914 | Data do not support the hypothesis |
| Internal Integration -> Customer Integration | 0.231 | 2.189 | Data supports the hypothesis |
| Supplier Integration -> Supply Chain Performance | 0.276 | 2.674 | The data supports the hypothesis |
| Customer Integration -> Supply Chain Performance | 0.182 | 1.839 | Data do not support the hypothesis |
| Internal Integration -> Supply Chain Performance | 0.489 | 5.904 | The data supports the hypothesis |
| Moderation Effect | | | |
| Social Sustainability -> Risk Management -> Customer Integration | 0.210 | 2.236 | The data supports the hypothesis |
| Social Sustainability -> Risk Management -> Internal Integration | 0.195 | 2.076 | The data supports the hypothesis |
| Social Sustainability -> Risk Management -> Supplier Integration | 0.138 | 1.588 | Data do not support the hypothesis |
| Control Variables | | | |
| Age -> Supplier Integration | 0.072 | 0.846 | Data do not support the hypothesis |
| Experience -> Supply Chain Performance | 0.158 | 2.042 | The data supports the hypothesis |

| Path | Beta | t-value | Result |
|---|---|---|---|
| Education -> Internal Integration | 0.145 | 1.911 | The data supports the hypothesis |

Based on the PLS-SEM results above, it is known that most of the research hypotheses have a t-value above 1.96, which indicates that the data supports the hypothesis being built. However, there are several hypotheses, such as the relationship between Internal Integration and Supplier Integration as well as several moderation effects, which are not supported by the data because they have a t-value below 1.96.

This study explores and empirically tests the impact of Supply Chain Risk Management, Supply Chain Integration, and Social Sustainability on Supply Chain Performance in multinational companies in the era of globalization. It examines how supply chain risk management positively influences supply chain integration. Previous research has shown that companies engaged in supply chain risk management tend to improve both internal and external integration, which in turn enhances overall supply chain performance (Duong & Ha, 2021). This study aligns with Flynn et al. (2010), who found that effective risk management helps companies manage uncertainty and strengthen relationships with suppliers and customers. The study finds that supply chain risk management positively impacts supply chain performance through supplier and internal integration. Effective risk management reduces the negative effects of supply chain disruptions, ensuring smooth operations, consistent with Schoenherr & Swink (2012), who highlighted that good internal integration improves a company's ability to manage information and collaborate with suppliers and customers. Furthermore, the study supports Zhao et al. (2008), who asserted that strong supply chain integration enhances operational performance and helps achieve strategic goals.

The study also reveals that social sustainability in supply chains significantly moderates the relationship between supply chain risk management and customer integration. When social sustainability values are embedded in organizational culture, they strengthen customer relationships and improve supply chain performance. This finding aligns with Mani et al. (2016), who demonstrated that social sustainability practices can enhance supply chain collaboration and operational performance. Social sustainability also plays a crucial role in enhancing a company's reputation and customer trust (Klassen & Vereecke, 2012). However, the study indicates that social sustainability can reduce the impact of supply chain risk management on internal integration. Employees may perceive that social sustainability initiatives reduce the need for risk management, assuming that social sustainability alone can ensure internal integration. This finding offers new insights into the role of social sustainability in facilitating supply chain integration and performance, highlighting its importance in corporate strategy (Seuring & Müller, 2008).

The research shows that supplier and internal integration positively affect supply chain performance. Effective integration between companies and suppliers ensures the timely availability of raw materials and finished goods at reasonable prices, boosting productivity and customer service quality. This aligns with Frohlich & Westbrook (2001), who found that close supplier collaboration improves operational efficiency and supply chain performance. Strong internal integration also fosters inter-departmental collaboration, ensuring fast and accurate information flow (Duong & Ha, 2021). Another finding is that customer integration does not significantly affect supply chain performance. This contradicts some previous studies that highlighted the benefits of customer collaboration. The explanation may lie in respondents' differing perceptions based on job positions, tenure, and managerial knowledge. This suggests that customer integration may not be as critical as internal or supplier integration in certain aspects, consistent with Wiengarten et al. (2014), who noted that internal collaboration has a greater impact on supply chain performance.

The study contributes theoretically by demonstrating that social sustainability practices can significantly enhance supply chain integration. Social sustainability within organizations helps improve supply chain performance by fostering collaboration with customers and suppliers. It

emphasizes the importance of social sustainability in supply chain strategy and offers practical guidance for managers on integrating social sustainability values into supply chain operations (Duong & Ha, 2021). Future research could further explore the relationship between supply chain risk management and social sustainability across different industries and countries. This would provide a more comprehensive understanding of how these practices are applied in various contexts and their impact on overall supply chain performance. Future studies could also investigate the effects of other sustainability aspects, such as economic and environmental sustainability, on supply chain performance (Duong & Ha, 2021).

As globalization and business complexity increase, it is crucial for companies to develop effective risk management strategies and robust social sustainability practices. This study contributes significantly to understanding how these practices can be applied to enhance supply chain performance and achieve long-term strategic goals (Tang, 2006). The research reaffirms the importance of good supply chain integration in reducing disruptions and improving operational efficiency. Strong relationships with suppliers and customers facilitate better information flow and coordination, ultimately enhancing overall supply chain performance and helping companies remain competitive in an ever-changing global market (Wagner et al., 2012). Social sustainability practices also strengthen the link between risk management and supply chain integration. By adopting social sustainability practices, companies can increase trust and collaboration with suppliers and customers. This not only improves risk management but also enhances the company's reputation as a socially responsible organization (Seuring & Müller, 2008).

Effective risk management is key to ensuring good supply chain integration. By properly identifying and managing risks, companies can ensure that all parts of the supply chain work together harmoniously. This reduces the likelihood of disruptions and ensures timely delivery of products and services at expected quality standards (Chopra & Sodhi, 2004). These findings provide valuable insights into the development of supply chain management theory and practice. By understanding how risk management and social sustainability affect integration and performance, companies can develop more effective strategies for managing operations in the global market. The study also offers valuable guidance for managers in designing policies and practices that support long-term sustainability and operational effectiveness (Pagell & Wu, 2009). The study highlights that supply chain integration plays a crucial role in ensuring optimal performance. Strong collaborative relationships with suppliers and customers enable better information flow, thereby improving operational performance. This aligns with research showing that supply chain integration enhances performance by reducing disruptions and mitigating risks (Flynn et al., 2010).

Additionally, the research indicates that effective risk management can strengthen relationships with suppliers and customers. Proper risk identification and management ensure that all parts of the supply chain work harmoniously together, reducing the likelihood of disruptions and ensuring timely and quality delivery of products and services (Tang, 2006). Overall, this research provides valuable insights into the importance of supply chain integration and social sustainability practices in achieving optimal supply chain performance in the era of globalization. Understanding how these factors interact helps companies develop more effective strategies for managing operations in a constantly evolving global market. This not only helps companies remain competitive but also enhances their reputation as socially responsible organizations (Seuring & Müller, 2008). The study's findings affirm that good social sustainability practices can increase customer trust and loyalty, enhancing operational performance and company reputation (Carter & Jennings, 2002). By adopting a holistic approach encompassing risk management, supply chain integration, and social sustainability, companies can address challenges and capitalize on opportunities in the global market. The study also found that social sustainability plays an important role in strengthening the relationship between risk management and customer integration. Companies that integrate social sustainability into their strategies tend to have stronger relationships with customers, aiding in more effective risk management. This finding aligns with research showing that social sustainability can enhance trust and collaboration in the supply chain (Gimenez & Tachizawa, 2012).

Furthermore, the research indicates that internal integration plays a crucial role in ensuring companies can respond quickly and effectively to market changes. Ensuring all parts of the organization work harmoniously reduces disruption risks and enhances operational efficiency. This is supported by research showing that internal integration improves performance by enabling faster responses to market changes (Flynn et al., 2010). Finally, the study shows that social sustainability in the supply chain can help companies achieve a competitive advantage. By demonstrating a commitment to social and environmental responsibility, companies can differentiate themselves from competitors and attract more socially conscious customers. This ultimately enhances operational performance and overall company reputation (Mani et al., 2016). This research makes important contributions to the development of supply chain management theory and practice. By understanding how risk management and social sustainability affect integration and performance, companies can develop more effective strategies for managing their operations in the global market. The study also provides valuable insights for managers in designing policies and practices that support long-term sustainability and operational effectiveness (Pagell & Wu, 2009).

**Table 5.** Formative Measurement Model Evaluation (Repeated Indicator Approach)

| Formative Construct | Reflective Constructs | Weights | Loading Factor | VIF |
|---|---|---|---|---|
| Risk Management (MR) | MR1 | 0.078*** | 0.515 | 1.556 |
| | MR2 | 0.105*** | 0.536 | 1.585 |
| | MR3 | 0.094*** | 0.634 | 1.775 |
| | MR4 | 0.050*** | 0.521 | 1.800 |
| | MR5 | 0.067*** | 0.516 | 1.788 |
| | MR6 | 0.056*** | 0.633 | 2.243 |
| Supplier Integration (IP) | IP1 | 0.057*** | 0.702 | 2.254 |
| | IP2 | 0.039** | 0.621 | 1.952 |
| | IP3 | 0.107*** | 0.582 | 1.702 |
| | IP4 | 0.077*** | 0.696 | 2.459 |
| Customer Integration (IC) | IC1 | 0.088*** | 0.662 | 1.875 |
| | IC2 | 0.064*** | 0.627 | 2.114 |
| | IC3 | 0.097*** | 0.721 | 2.241 |
| | IC4 | 0.085*** | 0.513 | 1.697 |
| Internal Integration (II) | II1 | 0.084*** | 0.725 | 3.010 |
| | II2 | 0.034 | 0.747 | 4.051 |
| | II3 | 0.097*** | 0.679 | 3.185 |
| | II4 | 0.050** | 0.686 | 3.346 |
| Social Sustainability (KS) | KS1 | 0.044 | 0.696 | 4.401 |
| | KS2 | 0.035 | 0.657 | 3.839 |
| | KS3 | 0.052** | 0.683 | 3.488 |
| | KS4 | 0.052*** | 0.310 | 1.635 |
| Supply Chain Performance (KP) | KP1 | 0.059*** | 0.462 | 2.769 |
| | KP2 | 0.081*** | 0.456 | 2.739 |

**Note:** *p < 0.10, **p < 0.05, ***p < 0.01.

**Table 6.** Construct Collinearity Evaluation (Inner VIF)

| Constructs | CPV | CS | PI |
|---|---|---|---|
| **MR** | 1.873 | 2.129 | |
| **IP** | 2.451 | 2.967 | |
| **IC** | 1.815 | 1.988 | |
| **II** | 3.050 | 2.787 | |
| **KS** | | 2.462 | |
| **KP** | | | 1.701 |

Note: MR: Risk Management, IP: Supplier Integration, IC: Customer Integration, II: Internal Integration, KS: Social Sustainability, KP: Supply Chain Performance, CPV: Customer Perceived Value, CS: Customer Satisfaction, PI: Patronage Intention.

**Table 7. The Results of Hypothesis Testing**

| Hypothesis | Path | T-Statistics | p-values | Result |
|---|---|---|---|---|
| **Main Paths** | | | | |
| H1 | Risk Management → Supplier Integration | 7.598 | 0.000 | Supported |
| H2 | Risk Management → Customer Integration | 6.348 | 0.000 | Supported |
| H3 | Risk Management → Internal Integration | 5.558 | 0.000 | Supported |
| H4 | Internal Integration → Supplier Integration | 0.914 | 0.361 | Not Supported |
| H5 | Internal Integration → Customer Integration | 2.189 | 0.029 | Supported |
| H6 | Supplier Integration → Supply Chain Performance | 2.674 | 0.008 | Supported |
| H7 | Customer Integration → Supply Chain Performance | 1.839 | 0.067 | Not Supported |
| H8 | Internal Integration → Supply Chain Performance | 5.904 | 0.000 | Supported |
| **Moderation Effect** | | | | |
| H9 | Social Sustainability*Risk Management → Customer Integration | 2.236 | 0.025 | Supported |
| H10 | Social Sustainability*Risk Management → Internal Integration | 2.076 | 0.038 | Supported |
| H11 | Social Sustainability*Risk Management → Supplier Integration | 1.588 | 0.112 | Not Supported |

**Table 8. Test of R-Square**

| Dependent Variable | Independent Variable | $R^2$ | Adjusted $R^2$ |
|---|---|---|---|
| Supplier Integration (IP) | Risk Management (MR) | 0.543 | 0.536 |
| Customer Integration (IC) | Risk Management (MR) | 0.487 | 0.481 |
| Internal Integration (II) | Risk Management (MR) | 0.453 | 0.448 |
| Supply Chain Performance (KP) | Supplier Integration (IP) | 0.558 | 0.551 |
| | Customer Integration (IC) | | |
| | Internal Integration (II) | | |
| Social Sustainability (MS) Moderation | Risk Management (MR) | 0.210 | 0.204 |
| Social Integration (IS) | Social Sustainability (KS) | 0.195 | 0.190 |
| Managerial Integration (IM) | Social Sustainability (KS) | 0.138 | 0.134 |

## 5. Conclusions

The majority of the hypotheses in this study were confirmed, showing that Supply Chain Risk Management, Supply Chain Integration, and Social Sustainability have significant impacts on Supply Chain Performance. Supply Chain Risk Management positively influences Supplier Integration, Customer Integration, and Internal Integration. Social Sustainability strengthens the relationship between Risk Management and both Customer and Internal Integration, but not Supplier Integration. Supplier and Internal Integration significantly affect Supply Chain Performance, while Customer Integration does not. The study has some limitations that should be addressed. First, the research was conducted in an industry that may not fully represent non-service industries. Future research could focus on different industries to gain broader insights into the impact of Risk Management and Social Sustainability on Supply Chains. Second, the study did not consider the antecedents of the factors studied. Future research could include these antecedents to enrich the literature on this topic. Third, the study ends at Supply Chain Performance as the final goal. Future researchers could add outcomes such as customer loyalty or profitability. Fourth, the research was conducted without classifying respondents. Future studies could include moderating variables like customer involvement in the supply chain. This study offers several managerial implications. First, Supply Chain Risk Management can be applied across various industries by identifying and managing existing risks to enhance integration and supply chain performance. Companies need to establish effective risk management systems to address uncertainties and strengthen relationships with suppliers and customers.

Second, social sustainability plays a crucial role in supply chain strategy. Companies that implement social sustainability practices will have a sustainable competitive advantage and better reputation with customers. Third, good internal integration will enhance interdepartmental collaboration and ensure fast and accurate information flow, ultimately improving operational performance. Social sustainability practices in supply chains benefit not only the company's reputation but also help manage risks more effectively. Customers tend to trust and remain loyal to companies that show commitment to social and environmental responsibility. Good social sustainability practices can boost customer trust and loyalty. This study supports these findings and emphasizes the importance of social sustainability in supply chain management strategy. The research also indicates that effective risk management can strengthen relationships with suppliers and customers. By correctly identifying and managing risks, companies can ensure that all parts of the supply chain work harmoniously together, reducing the likelihood of disruptions and ensuring timely delivery of products and services to expected quality standards. The study provides important contributions to the development of supply chain management theory and practice by offering insights into how risk management and social sustainability can be applied to improve supply chain performance.

Another finding is that supplier integration and internal integration positively impact supply chain performance. Good integration between companies and suppliers ensures the timely availability of raw materials and finished goods at reasonable prices, which enhances productivity and customer service quality. Close collaboration with suppliers boosts operational efficiency and supply chain performance. The study also provides theoretical contributions by demonstrating that social sustainability practices in the supply chain can significantly enhance supply chain integration. Social sustainability within organizations helps improve supply chain performance by fostering collaboration with customers and suppliers. The research highlights the importance of social sustainability in supply chain strategy and offers practical guidance for managers on integrating social sustainability values into their supply chain operations.

Overall, this study provides valuable insights into the importance of supply chain integration and social sustainability practices in achieving optimal supply chain performance in the era of globalization. By understanding how these factors interact, companies can develop more effective strategies for managing operations in the ever-changing global market. This not only helps companies remain competitive but also enhances their reputation as socially responsible organizations. The study's findings affirm that good social sustainability practices can enhance customer trust and loyalty, which in turn can improve operational performance and company reputation. By adopting a holistic

approach that includes risk management, supply chain integration, and social sustainability, companies can address challenges and seize opportunities in the market.

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