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Improving the Supply Chain Performance of Indonesian Javanese Sugar Products Using the Business Model Canvas

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Abstract

Purpose: The evolving concept of supply chains is critical in addressing competition among industrial sectors. For small- and medium-sized enterprises, effective supply chain management is essential for sustainable growth. Javanese sugar, a fundamental ingredient in food and beverages on Java Island, has faced declining production and sales due to the post-COVID-19 economic shifts in Indonesia. This study addresses the urgent need to resolve these issues to prevent disruption in the Javanese sugar supply chain. **Research design, data and methodology:** Using a supply chain perspective, the research examines the applicability of the business model canvas (BMC) as a framework for improvement. The BMC approach has proven effective in enhancing business performance across various sectors, making it a viable solution for this case. The study explores whether the BMC can improve supply chain performance and how its framework can be tailored to the Javanese sugar industry. **Results:** Results reveal a set of actionable recommendations based on BMC analysis to optimize the Javanese sugar supply chain. **Conclusions:** The findings highlight the potential of the BMC approach to enhance operational efficiency and boost sales by restructuring the supply chain and work systems of Javanese sugar factories. This research contributes to the broader application of the BMC in supply chain management.

Keywords : Supply Chain, Business Model Canvas, Indonesian Javanese Sugar

JEL Classification Code : L60, L66, O14

1. Introduction

Micro, small, and medium industries contribute to economic growth. The number of small and medium

enterprises in Indonesia has increased significantly, and financial recovery has continued since the pandemic began to subside. This condition applies not only to Indonesia but also to several Asian countries. This shows that the

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contribution of small and medium industries to a country is substantial (Ayyagari et al., 2014). The growth in the number of jobs has increased with an increase in small and medium industries (Aiello et al., 2016; Subrahmanya, 2005). The direct impact of a rise in the number of jobs is that the community's economic performance improves (Bharadwaj et al., 2018; Mxunyelwa & Vallabh, 2017).

Small industries can significantly improve their operations by implementing supply chain management (SCM) practices. By adopting an SCM strategy, small businesses can streamline their processes, reduce costs, and improve their overall performance (Katon et al., 2024; Siagian et al., 2024). This strategy involves planning and controlling physical and information flows, managing logistics, and fostering relationships with suppliers and customers (Omoruyi & Akuoma, 2020). Through SCM integration, small industries can achieve greater efficiency and competitiveness, which are crucial for their continued growth and success in the market. In addition, implementing green (SCM) activities can benefit small- and medium-sized enterprises more, leading to improved operational and supply chain performance (Siagian et al., 2024).

The supply chain dynamics of traditional industries play a crucial role in sustaining local economies, particularly in regions with a rich cultural heritage. This study focuses on the supply chain of the BNS Javanese Sugar Factory, a traditional enterprise in Yogyakarta, Indonesia. Established as a producer of Javanese sugar, the factory employs traditional methods to create three product variants cherished by local communities.

The production of Javanese sugar at BNS is heavily dependent on the availability of nira, its primary raw material, which fluctuates seasonally. Nira is abundant during the rainy season, and its availability declines significantly during the dry season. The factory's primary consumers (traditional food), including traditional food entrepreneurs, traditional cake producers, seasoning manufacturers, grocery store owners, homemakers, and employees, are located across Central Java, Indonesia.

Before the COVID-19 pandemic, the factory achieved sales volumes of 1.5 to 3 tons per month. However, the pandemic severely disrupted its operations, causing sales to plummet to just 0.5 tons per month. According to the factory owners, it is critical to address this decline in sales. This study aims to identify strategies for improving the factory's work system to achieve a sales increase of one ton per month, thereby contributing to the resilience and sustainability of this traditional industry.

Several frameworks can be used to improve industrial performance. Based on literature studies, there are two frameworks that are often used, namely, the Supply Chain Operation Reference (SCOR) framework and business model canvas (BMC). SCOR is a method used to measure

the performance of a supply chain as a whole, based on supply chain operations (Guillot et al., 2024). This process is holistically assessed and stratified (Srhir et al., 2023). The BMC is a method used to evaluate and structure effective businesses (Pujadi et al., 2020). The evaluation and measurement process is based on the functional pillars of the business operations component (Charatsari et al., 2023). A business scope that is not too complex is more effective when an evaluation based on the BMC approach is used. BMC implementation is predominantly used to evaluate and improve businesses. In some cases, business operations can be improved by using an SCM approach. Based on the relationship between business operations and the concept of SCM, a hypothesis can be made that the BMC model approach can be applied to SCM.

Small- and medium-sized industries play a pivotal role in driving economic growth, particularly in developing countries such as Indonesia. However, traditional industries, such as the Javanese sugar industry, face significant challenges in sustaining operations amidst changing economic dynamics, especially after COVID-19. While numerous studies have explored SCM and the BMC as separate frameworks for improving business performance, there is limited focus on their combined application to traditional industries. Furthermore, the specific context of the Javanese sugar industry, which operates with unique cultural and operational characteristics, remains underexplored.

Small industries can improve their efficiency and competitiveness by integrating sustainable SCM practices. Sustainable SCM considers environmental, social, and economic factors in the supply chain process to minimize negative impacts and promote sustainability (Oelze et al., 2018). By incorporating sustainable practices into their supply chain operations, small industries can not only improve their environmental footprint but also improve their overall performance and reputation in the market. This approach is in line with the growing consumer demand for environmentally responsible products and can give small businesses a competitive advantage in the industry (Bonilla & Guevara, 2021).

This study addresses this gap by investigating how the integration of the BMC framework can enhance supply chain performance in the Javanese sugar industry. Unlike previous studies, this research not only evaluates the BMC's effectiveness in restructuring traditional supply chains but also provides actionable recommendations tailored to the cultural and economic realities of the industry. By doing so, this study contributes to both theoretical advancements in supply chain optimization and practical solutions for sustaining traditional industries in Indonesia.

2. Literature Review

The COVID-19 pandemic has significantly disrupted global supply chains and economic activities, with small industries being among the hardest hit sectors. In Indonesia, the pandemic has exacerbated existing vulnerabilities, leading to a marked decline in sales and operational performance across various small industries. Several studies have reported a significant decline in the sales of Indonesia's small industries during the COVID-19 pandemic.

The reviewed studies cover various industries, including savings and loan cooperatives (Millaningtyas et al., 2023), tourism (Achsa et al., 2023), and multiple Small Medium Enterprises (SMEs) in an Indonesian regency (Jatmiko et al., 2021). Despite their sectoral differences, all studies have identified sales decline as a result of reduced consumer purchasing power and pandemic-induced disruptions. To address these challenges, researchers have applied diverse analytical frameworks, such as the BMC (Achsa et al., 2023) and SWOT analysis (Jatmiko et al., 2021) to formulate strategies for Micro, Small, and Medium Enterprises (MSMEs) to achieve sustainable competitive advantages.

Sales decline in small industries in Indonesia has also been attributed to ineffective marketing strategies, as evidenced by studies conducted by Widjajanti et al. (2022) and Rakhmansyah et al. (2022). Widjajanti et al. (2022) examined the challenges faced by traditional fabrics and identified the application of a canvas business model to develop SMEs in a sustainable manner. Similarly, Rakhmansyah et al. (2022) identified the strengths, weaknesses, opportunities, and threats to SMEs in utilizing social media as a marketing tool and identified the most effective marketing strategies. To address these challenges, Widjajanti et al. (2022) proposed an implementation canvas business model for SMEs focusing on the customer segment, value proposition, key resources, and key partners. Rakhmansyah et al. (2022) found that SMEs utilizing social media for marketing fall into Quadrant I, indicating a growth strategy. Specifically, they implement the strengths–opportunities strategy, which leverages their strengths to maximize available opportunities within the SME sector. These studies demonstrate the critical role of strategic marketing in mitigating sales decline and enhancing business resilience.

One of the key aspects of utilizing SCM in small industries is the use of technology such as Industry 4.0. These technological advancements play a crucial role in changing SCM behavior and processes, offering new opportunities for small businesses to optimize their supply chains (Errico et al., 2022). In addition, the incorporation of digital information and big data analytics into SCM can provide small industries with valuable insights for better decision-making and enhanced innovation in product design

(Song et al., 2021). By embracing these technological advancements in SCM, small businesses can adapt to changing market dynamics and improve their overall competitiveness (Anwar et al., 2024; Soni et al., 2022).

The BMC framework and SCM principles share significant synergies, particularly in addressing the operational challenges in traditional industries. For instance, the "Key Partnerships" component of the BMC aligns with the SCM focus on supplier relationships and network optimization. Similarly, "Value Proposition" directly influences the customer's perception of supply chain effectiveness by ensuring the timely delivery of high-quality products.

Key activities in the BMC emphasize core operational processes, such as production and distribution, which are also central to SCM frameworks such as the SCOR model. This study leverages these alignments to demonstrate how the BMC can serve as a strategic tool for enhancing supply chain performance in traditional industries, particularly when resource constraints and cultural factors play significant roles.

3. Research Methodology

This study employs the BMC framework to analyze and propose strategies for the BNS Javanese Sugar Factory. The BMC is a strategic management tool used to define, visualize, evaluate, and modify business models (Boyer et al., 2008). By mapping the business model into nine building blocks, the BMC facilitates an in-depth understanding of how the factory creates, delivers, and captures value.

The data for this study were collected through a combination of a literature review, semi-structured interviews, and direct observations.

1. Literature review: Relevant literature and business model frameworks were reviewed to understand the components of the BMC and tailor them to the context of a sugar production business.
2. Semi-structured interviews: Interviews were conducted with the owner of the BNS Javanese Sugar Factory to gather in-depth insights into the key components of the business model. Open-ended questions were designed to explore each BMC block, allowing the owner to elaborate on critical aspects such as key resources, partnerships, customer relationships, and revenue streams.
3. Direct observation: On-site observations were conducted to validate the information obtained from the interviews and identify operational practices, resource usage, and infrastructure requirements. Notes and photographs were taken during the observations to capture key details.

This study focused on purposive sampling, targeting the owner and stakeholders directly involved in the business processes of the BNS Javanese sugar factory. This approach ensured that the collected data were specific and relevant and provided a holistic view of the business operations.

1. Participants: The primary respondent was the factory owner, who had comprehensive knowledge of the business model and operations. Additional information was corroborated through informal discussions with the employees.
2. Sample size: The focus was on the primary decision maker (the owner), supplemented by observations of employees' activities and workflow.

3.1. Data Collection

This study uses a BMC approach. The stages carried out in this study were as follows:

- a) Information was gathered on product, process, and consumer profiles. This was achieved through observations and the distribution of questionnaires.
- b) Product evaluation using a value proposition approach: The process involved identifying consumer profiles and analyzing the value and features required for the product.
- c) Supply chain mapping: The supply chain structure for product manufacturing was mapped by outlining the business processes and identifying the members involved in the production chain.
- d) BMC implementation: The BMC framework was utilized as a problem-solving tool by engineering its application to address the identified challenges.
- e) Recommendation development: Context-specific recommendations were proposed to improve the supply chain.

3.2. BMC Framework Implementation

The collected data were structured into the nine components of the BMC:

- a) Key partners: Analysis of the factory's partnerships with raw material suppliers, distributors, and end-users.
- b) Key activities: Identification of core activities, including raw material procurement, production, packaging, marketing, and distribution.
- c) Key resources: Documentation of essential resources such as raw materials, equipment, recipes, and personnel.
- d) Value propositions: Assessment of the unique value delivered to customers, such as distinctive taste, online ordering, and free delivery.

- e) Customer relationships: Evaluation of direct marketing efforts and feedback mechanisms to maintain customer satisfaction.
- f) Channels: Analysis of the sales channels used, including direct sales and online platforms such as WhatsApp, Facebook, and OLX.
- g) Customer segments: Identification of target markets, including distributors, retailers, and end-users.
- h) Cost structure: Examination of operational costs, including raw materials, employee wages, fuel, packaging, and transportation.
- i) Revenue streams: Analysis of revenue sources from direct and online sales.

The data from interviews, observations, and the literature study were analyzed within the BMC framework to identify strengths, weaknesses, and opportunities for improvement. The data were organized and analyzed using the BMC framework, which allowed for a systematic evaluation of the nine building blocks. Insights from the analysis were documented and categorized to highlight the BNS Javanese Sugar Factory. Recommendations were then formulated to optimize the business model and address the factory's challenges, particularly the decline in sales during the COVID-19 pandemic.

Thematic analysis of interview transcripts highlighted recurring themes, such as the need for improved communication between suppliers and the factory and the potential of digital platforms to streamline order management. The participants also emphasized the importance of expanding product variants to meet diverse customer needs, a strategy directly linked to the "Value Proposition" and "Customer Segments" components of the BMC framework.

4. Results and Discussion

4.1. Value Proposition Analysis and Consumer Segmentation

Java sugar products have a unique sweet flavor. The raw materials used are of good quality, giving the product its distinctive color and texture. There are two methods for ordering: online or offline. The proposed improvements include the addition of product variants: 3 and 5 cm diameter sugars and 3 and 4.5 cm sugar thicknesses. Sugar products offer a distinctive sweet taste at a competitive price. They are manufactured with meticulous attention paid to the quality of the raw materials. Sugars are available in a range of sizes and colors. The factory provides both online and offline ordering services. The factory consistently produces adequate product quantities for each distinct sugar variation. The quality and packaging of the products are subject to

rigorous quality control measures, thereby reducing the potential for consumers to experience losses or disappointment.

Evaluating the attributes and value offered by the product is an essential step in increasing product sales. This process relies on the value proposition canvas as a fundamental framework for assessment. Based on customer identification, this study categorizes consumers into two primary categories:

- a) Individual end consumers: These customers purchase products for personal use. This group consists primarily of homemakers, office workers, and students. Typically, the purchase volume from this segment is relatively small as it caters to personal or household needs.
- b) Business-to-business (B2B) end consumers: This category comprises business owners who procure the product as a key ingredient or component to create goods that they sell to their own customers. Common examples of these consumers include restaurant owners, food and beverage entrepreneurs, and stall and canteen operators. Purchases from this segment are generally made in large quantities, reflecting the scale of operations and production requirements.

The evaluation focuses on leveraging the value proposition canvas to assess how current product features align with consumer needs and expectations. This framework helps identify opportunities for improvement to better meet the demands of both consumer segments.

The BMC approach has nine main components: (a) customer segments, (b) value propositions, (c) channels, (d) customer relationships, (e) revenue streams, (f) key resources, (g) key activities, (h) key partnerships, and (i) cost structures (Bonilla & Guevara, 2021; Chumaidiyah et al., 2024; Guillot et al., 2024). The purpose of improving the work system of the Javanese sugar factory is to increase sales. In accordance with the findings of the assessment of the nine elements of the BMC in this study, three elements require improvement. These elements are (a) the value proposition, (b) customer relationship, (c) revenue streams, and (d) key activities.

4.2. Product Development, Customer Engagement, and Operational Strategies

- a) Value proposition: Javanese sugar products are manufactured in a variety of forms, thereby affording consumers greater selection. Two product variants are available: (a) small-sized Javanese sugar with a diameter of 5 cm and thickness of 3 cm, and (b) large-sized Javanese sugar with a diameter of 12 cm and thickness of 4.5 cm. The quality of the taste, texture, and color of every product is guaranteed by a quality assurance

system. The expansion of the product range necessitates the creation of a new Javanese sugar mold design. The molds that must be manufactured are those of smaller and larger sizes, specifically designed for use with Java sugar. In accordance with the methodology employed in the design of the Javanese sugar molds, the outcomes of the small- and large-mold designs are as follows:

- Small Javanese sugar mold: The molding material is jackfruit wood. The print is 60 cm long, 13 cm wide, and 3.5 cm high. The photographic documentation is shown in Figure 1.



Source: Courtesy of the BNS Javanese Sugar Factory.

Figure 1: Small Javanese Sugar Mold

- Large Javanese sugar mold: This mold is constructed from coconut shells. The item is 12 cm in diameter and 6 cm in height. The photographic documentation is shown in Figure 2.



Source: Courtesy of the BNS Javanese Sugar Factory.

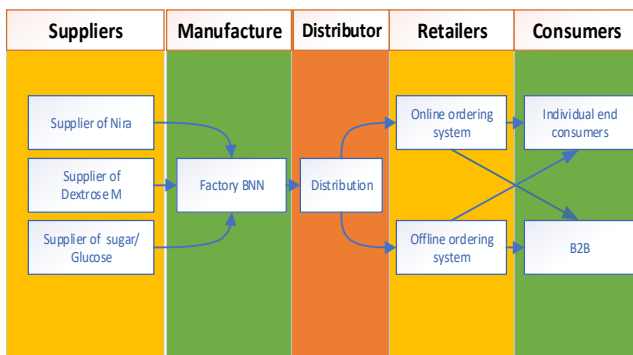
Figure 2: Large Javanese Sugar Mold

- b) Customer relationship: The relationship with consumers is enhanced by the provision of order services in two distinct ways: first, through an online ordering system, and second, through an offline ordering system. Each booking system is staffed by employees who possess the skills required to provide cordial and expedient services. These two sales systems are also utilized to disseminate promotional media designed to boost sales.

- c) Revenue streams: The objective of improving income cash flow is to create sales promotions that increase business owners' end consumers. It is anticipated that the number of end consumers who make large-scale purchases will increase. The quality of both the direct and indirect sales programs is subject to rigorous and regular reviews.
- d) Key activities: The most significant and pressing activity to be considered is the development of Java sugar products that align with newly established quality standards. Additionally, the formulation and implementation of direct and indirect sales programs that can effectively expand the reach of business owners to end consumers must be considered. This has an impact on the increase in sales, which can be achieved in a more expeditious manner. Another activity involves negotiating sales contracts with business owners to secure sustainable short- and long-term contracts.
- e) The introduction of critical activities within a quality assurance system integrated into the production and sales system has direct and indirect impacts on the necessity for a standard operating procedure document. This document is essential to ensure that all employees assigned to a task can perform standard activities and achieve the desired quality outputs.

4.3. Determination of Performance Indicators

This section explains how the BMC framework can be used to structure appropriate supply chain members. The approach for measuring supply chain performance identifies the performance indicators for each repaired component. The rationale for adopting a supply chain approach in the context of the Javanese sugar factory business system is its ability to encompass a network of interconnected stakeholders. The structure of the Javanese sugar supply chain is shown in Figure 3.



Source: Developed by the author based on research findings.

Figure 3: Structure of the Javanese Sugar Supply Chain

The Javanese sugar supply chain comprises five members: suppliers, manufacturers, distributors, retailers, and consumers. Based on its implementation, the distributor and retail functions are managed through factory management. The Javanese sugar factory produces based on the strategy of production and storage. Therefore, distributors and retailers must strive to attract consumers to buy their products. The factory’s purchasing department purchases raw materials and supports them from suppliers based on the factory’s production targets. The factory production employees perform the process of making Java sugar based on the order of the Java sugar production process and implement the production quality assurance process. The resulting Javanese sugar products are then offered to end consumers. Obtaining sales transactions from end consumers requires two systems. The system comprises online and offline ordering systems. The distribution department responds to the data obtained from the two ordering systems to deliver the product to the final consumers.

4.4. Proposal to Set Performance Indicators

The determination of the performance indicators in this section is intended for the operation of activities resulting from proposed improvements to the work system. Therefore, not all supply chain operations are discussed in this section.

Table 1: Determination of Performance Indicators

Unit	Operation	Performance Indicators
R&D Manufacture	Designing or improving new product designs	Frequency of designing or repairing new products at least once every 1 year
Production	Guarantee Process Quality	Number of defective products less than 3%
Sales	Create an update sales promotion	The frequency of sales promotion updates is at least 2 times a year
Sales	Serving online consumers	The level of accuracy of online consumer order data.
Sales	Serving offline consumers	Accuracy of offline consumer order data
Sales	Increase the number of end consumers of business owners	The frequency of visits to potential consumers and provide offers.
Sales	Increase the number of individual end consumers	Frequency of visits to potential consumers and provide offers
Sales	Increase the number of purchase contracts with business owners' end consumers	Frequency of visits to potential consumers and provide offers

The determination of the performance indicators is shown in Table 1. This section presents information on the determination of performance indicators for units subject to the proposed improvements. The column designated "Unit"

contains the business unit responsible for managing a specific operation. The column designated "Operations" contains a list of the activities that are conducted within the business unit. In contrast, the performance indicator column contains the metrics used to evaluate the success of the implemented operations. The performance indicators are determined through discussions with relevant stakeholders and a review of the literature. It is necessary to develop eight new performance indicators for three business units. The three business units in question are (a) R&D manufacturing, (b) production, and (c) sales. The implementation of this proposal necessitates adaptation of the existing work system for all employees in the units concerned to ensure that the new system can have a tangible impact.

4.5. Implications on the Supply Chain of Sugar Factories

Improving the work system in the three business units will impact the work pattern of the supply chain operations. The following is an analysis of the implications for the Javanese sugar supply chain.

- a) It is incumbent upon the factory's R&D unit to devise or enhance the design of new products. The implication that must be considered is the personal relationship between the factory's R&D unit and the personnel of the material supplier unit. It is essential to facilitate a more robust exchange of information to ensure the effective advancement of product improvement and design initiatives.
- b) The production unit must guarantee the quality of the process. It is important to consider the personal relationship between the production unit and the personnel of the supplier unit, as this can have implications for the quality of the final product. Effective communication is essential for the placement of orders and receipt of primary and secondary raw materials, as it minimizes the probability of defective products resulting from the condition of these materials.
- c) The sales unit needs to carry out several operations: (i) keep sales promotions constantly updated, (ii) serve online and offline consumers, (iii) increase the number of end consumers of business owners and individuals, and (iv) increase the number of purchase contracts with end consumers of business owners and individuals. The implications of and need for direct or indirect communication with consumers in this supply chain must be considered. Consumers are divided into three groups: end consumers, business owners, and individuals. The intensity of visits and information exchanges must be increased. The dominant activity that must be correctly designed and managed is the exchange of information between sales units and consumer personnel.

The results of each stage described in this study demonstrate that the BMC framework can be implemented to improve supply chain performance. Each pillar of the BMC can contribute to the performance of the relationships among members in a supply chain. The application of the BMC framework to improve supply chain performance has been successful, one of which is because the size of the supply chain studied is small to medium. If the supply chain is larger, the challenge of implementation will be even greater. The application of this model assumes that every member of the supply chain has good information connectivity and working relationships. This condition can be managed appropriately if the supply chain is not excessively large. Additionally, good connectivity can be achieved using adequate and appropriate internet technology. In small- and medium-sized companies, common applications of available communication can be used to support supply chain performance.

The findings of this study have broader implications for other traditional industries with similar characteristics, such as those relying on seasonal raw materials and those operating within culturally significant contexts. For example, industries such as traditional batik production and spice processing in Southeast Asia can adapt to the BMC framework to enhance their supply chain performance.

By emphasizing the alignment of BMC components with SCM principles, this study provides a replicable model for traditional industries aimed at sustaining operations and improving competitiveness in the post-pandemic era. In addition, the integration of digital tools and sustainable practices within the BMC framework offers opportunities for innovation and scalability in SCM.

5. Conclusion

The BMC approach enhances the Javanese sugar supply chain work system as follows:

- a) One aspect of sales performance is influenced by product features. The current product feature evaluation process is conducted using a value-proposition framework approach. Based on the value proposition analysis, an increase in the number of product variants is recommended. The number of variants of Javanese sugar products has also increased.
- b) Improving customer relationships. Sales can be increased by expanding the number of booking channels to encompass online and offline ordering systems. The sales unit equip serving employees with the ability to provide friendly and fast services.
- c) Revenue stream improvement. Business owners aim to increase their revenue by attracting more end-consumers.

It is hoped that these consumers will make large volumes of purchases each time they make a purchase.

- d) Enhancement of key activities. The production of Javanese sugar consistently meets standards and maintains consistent quality standards. We continue to conduct sales program activities using both direct and indirect sales strategies.
- e) The improvements made have implications for the working system of the Javanese sugar supply chain. The dominant activity that requires more attention is maintaining the flow of information between members of the supply chain and the quality of that information. One of the efforts to improve the performance of information flow is to use the IoT concept in Industry 4.0.

Enhancing the work system of the Javanese sugar factory to boost sales by applying the BMC approach can yield numerous recommendations for improvement. The study's results also show that enhancing the work system of the Java sugar supply chain can be beneficial. This demonstrates that the BMC approach enhances the supply chain performance.

References

- Achsa, A., Verawati, D. M., & Novitaningtyas, I. (2023). Implementation of Marketing Strategy Innovation and Business Model Development: Study of SMEs in Tourism Village. *Airlangga Journal of Innovation Management*, 4(2), 172–184. <https://doi.org/10.20473/ajim.v4i2.49859>
- Aiello, G., Donvito, R., Acuti, D., Mazzoli, V., & Grazzini, L. (2016). *Determinants of SMEs Growth: The Balance Between Innovation and Tradition as Key Factor for Italian Small Business Development* (pp. 347-351). https://doi.org/10.1007/978-3-319-29877-1_70
- Anwar, M. A., Zong, Z., Mendiratta, A., & Yaqub, M. Z. (2024). Antecedents of big data analytics adoption and its impact on decision quality and environmental performance of SMEs in recycling sector. *Technological Forecasting and Social Change*, 205, 123468. <https://doi.org/10.1016/j.techfore.2024.123468>
- Ayyagari, M., Demircuc-Kunt, A., & Maksimovic, V. (2014). Who creates jobs in developing countries? *Small Business Economics*, 43(1), 75-99. <https://doi.org/10.1007/s11187-014-9549-5>
- Bharadwaj, A., Pati, A. K., Srivastava, H., Panda, A., & Tripathy, S. (2018). Basic Problems faced by the Small Scale Industry Sector. *IOP Conference Series: Materials Science and Engineering*, 390, 012093. <https://doi.org/10.1088/1757-899X/390/1/012093>
- Bonilla, D. A. G., & Guevara, E. G. R. (2021). Sustainability Reports and Supply Chain Management in Agroindustry: A Review of the Scientific Literature. *Proceedings of the International Conference on Industrial Engineering and Operations Management*, 95-96. <https://doi.org/10.46254/SA02.20210039>
- Boyer, K. A., Beaupre, G. S., & Andriacchi, T. P. (2008). Gender differences exist in the hip joint moments of healthy older walkers. *Journal of Biomechanics*, 41(16), 3360-3365. <https://doi.org/10.1016/j.jbiomech.2008.09.030>
- Charatsari, C., Lioutas, E. D., Michailidis, A., Aidonis, D., De Rosa, M., Partalidou, M., Achillas, C., Nastis, S., & Camanzi, L. (2023). Facets of value emerging through the operation of short food supply chains. *NJAS: Impact in Agricultural and Life Sciences*, 95(1). <https://doi.org/10.1080/27685241.2023.2236961>
- Chumaidiyah, E., Maulani Fauzi, P., & Abdulbasah Kamil, A. (2024). Enhancement of SME feasibility through the integration of BMC, functional organization, and SCM. *Cogent Business & Management*, 11(1). <https://doi.org/10.1080/23311975.2024.2315678>
- Errico, M., De Noni, I., & Teodori, C. (2022). SMEs' financial risks in supply chain trade with large companies: The case of Italian automotive component industry. *Journal of General Management*, 47(2), 126–137. <https://doi.org/10.1177/03063070211027139>
- Guillot, R., Dubey, R., & Kumari, S. (2024). B2B supply chain risk measurement systems: a SCOR perspective. *Journal of Business & Industrial Marketing*, 39(3), 553-567. <https://doi.org/10.1108/JBIM-06-2023-0361>
- Jatmiko, B., Udin, U., Raharti, R., Laras, T., & Ardhi, K. F. (2021). Strategies for MSMEs to Achieve Sustainable Competitive Advantage: The SWOT Analysis Method. *Journal of Asian Finance, Economics and Business*, 8(3), 505-515. <https://doi.org/10.13106/jafeb.2021.vol8.no3.0505>
- Katon, Y. C., Handani, D. W., Artana, K. B., Lumirang, M. A., & Aprilia, P. W. (2024). System Dynamics Model to Improve Logistics Cost Efficiency in Fertilizer Distribution outside Java (Gresik - Medan). *Engineering Innovations*, 9, 45-56. <https://doi.org/10.4028/p-8VyoJx>
- Millaningtyas, R., Sudarmiati, S., & Agus Hermawan. (2023). Strategic Sustainable Development With Innovation And Business Model Canvas In SMEs. *International Journal Of Humanities Education and Social Sciences (IJHES)*, 2(6). <https://doi.org/10.55227/ijhess.v2i6.490>
- Mxunyelwa, S., & Vallabh, D. (2017). Skills as impediment to small and medium tourism enterprises (SMTEs), Eastern Cape, South Africa. *African Journal of Hospitality, Tourism and Leisure*, 6(4), 1-8.
- Oelze, N., Brandenburg, M., Jansen, C., & Warasthe, R. (2018). Applying Sustainable Supply Chain Management Frameworks to Two German Case Studies. *IFAC-PapersOnLine*, 51(30), 293-296. <https://doi.org/10.1016/j.ifacol.2018.11.304>
- Omoruyi, O., & Akuoma, M. E. (2020). The influence of supply chain management on the performance of small to medium enterprises in Southern Gauteng. *International Journal of Economics and Finance Studies*, 172-188. <https://doi.org/10.34109/ijefs.202012111>
- Pujadi, T., Simamora, B. H., Kumar, V., Hulu, Y., Tumar, & Wihendro. (2020). Modeling of E-Commerce Supply Chains Mobile Application. *2020 2nd International Conference on Cybernetics and Intelligent System (ICORIS)*, 1-5. <https://doi.org/10.1109/ICORIS50180.2020.9320757>

- Rakhmansyah, M., Wahyuningsih, T., Srenggini, A. D., & Gunawan, I. K. (2022). Small and Medium Enterprises (SMEs) with SWOT Analysis Method. *International Journal for Applied Information Management*, 2(3), 47-54. <https://doi.org/10.47738/ijaim.v2i3.37>
- Siagian, H., Ronni Basana, S., Jiwa Husada Tarigan, Z., Novitasari, M., & Jie, F. (2024). Role of supply chain management in improving competitive advantage of Indonesian small and medium enterprises. *Problems and Perspectives in Management*, 22(2), 696-707. [https://doi.org/10.21511/ppm.22\(2\).2024.54](https://doi.org/10.21511/ppm.22(2).2024.54)
- Song, H., Li, M., & Yu, K. (2021). Big data analytics in digital platforms: how do financial service providers customise supply chain finance? *International Journal of Operations & Production Management*, 41(4), 410-435. <https://doi.org/10.1108/IJOPM-07-2020-0485>
- Soni, G., Kumar, S., Mahto, R. V., Mangla, S. K., Mittal, M. L., & Lim, W. M. (2022). A decision-making framework for Industry 4.0 technology implementation: The case of FinTech and sustainable supply chain finance for SMEs. *Technological Forecasting and Social Change*, 180, 121686. <https://doi.org/10.1016/j.techfore.2022.121686>
- Srhir, S., Jaegler, A., & Montoya-Torres, J. R. (2023). Uncovering Industry 4.0 technology attributes in sustainable supply chain 4.0: A systematic literature review. *Business Strategy and the Environment*, 32(7), 4143-4166. <https://doi.org/10.1002/bse.3358>
- Subrahmanya, M. H. B. (2005). Small-scale industries in India in the globalisation era: performance and prospects. *International Journal of Management and Enterprise Development*, 2(1), 122. <https://doi.org/10.1504/IJMED.2005.006034>
- Widjajanti, K., Prihantini, F. N., & Wijayanti, R. (2022). Sustainable Development of Business with Canvas Business Model Approach: Empirical Study on MSMEs Batik Blora, Indonesia. *International Journal of Sustainable Development and Planning*, 17(3), 1025-1032. <https://doi.org/10.18280/ijstdp.170334>