

THE RELATIONSHIP BETWEEN BUSINESS CAPITAL AND SUPPLY CHAIN MANAGEMENT WITH MSME PRODUCTIVITY: A STUDY ON PINOGU COFFEE IN GORONTALO

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ABSTRACT

This study examines the individual and simultaneous correlations between business capital and supply chain management (SCM) with the productivity of Pinogu Coffee MSMEs in Gorontalo Province. A quantitative descriptive-correlational design was employed. Data were collected through a structured Likert-scale questionnaire distributed via Google Forms to a purposive sample of 30 active MSMEs in Pinogu District, Bone Bolango Regency. Data analysis comprised validity and reliability testing, classical assumption tests (normality, linearity, multicollinearity, and heteroscedasticity), and partial and multiple correlation analyses using SPSS. The partial correlation results show that business capital has a significant, moderate, positive relationship with productivity when controlling for SCM ($r = 0.469$; $p = 0.010$), while SCM shows a significant, strong, positive relationship when controlling for business capital ($r = 0.621$; $p < 0.001$). Simultaneously, multiple correlation analysis revealed a very strong and significant relationship ($R = 0.980$; $p < 0.001$). Given the small sample and the use of single-source perceptual data, this exceptionally high coefficient should be interpreted with caution, as it may be influenced by common method bias. Overall, SCM is more strongly associated with productivity than business capital. These findings suggest that MSME development strategies should be integrative, combining financial strengthening with supply chain optimization to support sustainable growth in the regional coffee industry.

Keywords : Business Capital, Supply Chain Management, MSME Productivity, Pinogu Coffee, Gorontalo.

INTRODUCTION

Micro, small, and medium enterprises (MSMEs) are the backbone of many economies, contributing significantly to job creation, income distribution, and gross domestic product (GDP). Their importance is especially pronounced in developing regions, where MSMEs absorb large amounts of labor while requiring relatively low capital investment [1][2]. Beyond their economic role, MSMEs help reduce regional inequality and serve as platforms for innovation and sustainable development [3][4]. Despite this contribution, MSMEs frequently face challenges that threaten their sustainability and productivity. Among these, business capital and supply chain management (SCM) are two of the most commonly identified determinants of performance.

Business capital shapes both the daily operations and the long-term prospects of an enterprise. Adequate capital determines not only operational capacity, such as purchasing raw materials and paying labor, but also the ability to invest in advanced technologies and SCM strategies, including FinTech adoption and Industry 4.0 integration [5]. Access to financing, whether through traditional bank credit or innovative channels such as peer-to-peer (P2P) lending, is therefore critical to the growth potential of MSMEs [5]. In addition, the development of digital and decentralized technologies, including blockchain, smart contracts, and decentralized finance (DeFi), is creating new opportunities for secure and automated business ecosystems. At the same time, these technologies pose challenges for MSMEs related to scaling operations and

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complying with complex regulatory frameworks [6]. These developments show that financial resources influence not only how MSMEs operate today but also how well they can adapt to technological change.

SCM is equally important and is widely regarded as a source of competitive advantage for MSMEs. Practices such as information sharing, trust-building, and long-term relationships with partners have been shown to enhance MSME performance [7]. Amid global economic uncertainty and the risk of supply chain disruption, the ability of MSMEs to build resilience through adaptive SCM strategies has become increasingly important [8][9]. Effective SCM synchronizes the flows of goods, information, and finance across the network, allowing firms to reduce costs, deliver on time, and respond to customer demand [10]. For MSMEs with limited bargaining power, a well-coordinated supply chain can therefore be as decisive as financial strength.

In Indonesia, MSMEs are a primary buffer for the local economy, particularly in agriculture and commodity processing, such as coffee. However, structural barriers, including low financial literacy and fragmented supply chains dominated by middlemen, lead to price asymmetry and reduced profit margins at the producer level. These conditions limit the ability of small processors to reinvest, improve quality, and reach wider markets, which in turn constrains their productivity.

These problems are visible in Gorontalo Province, where Pinogu Coffee is a premium regional product with Geographical

Indication (GI) certification [11]. Despite this status and its market potential, the approximately 35 active MSMEs processing Pinogu Coffee struggle with limited operational capital for post-harvest handling and marketing. They also face distribution inefficiencies caused by the remote location of Pinogu, which is situated in isolated highlands. Farmers often sell raw green beans to middlemen at low prices because they lack direct market access, so much of the value added from processing and branding is captured elsewhere. Capital constraints and weak supply chain coordination thus appear to reinforce each other in this setting.

Previous studies have examined the relationship between capital and productivity [12][13] and between SCM and performance [14][15], but largely in separate analyses and in sectors such as tempe, batik, and tofu production. To the authors' knowledge, empirical evidence on how business capital and SCM are simultaneously associated with productivity in GI-certified regional coffee MSMEs is still scarce. Examining both factors together is important because they may operate jointly, and analyzing one in isolation could misrepresent its relative importance. This study addresses that gap by examining the individual and simultaneous correlations of business capital and SCM with the productivity of Pinogu Coffee MSMEs.

Literature Review

Entrepreneurship and MSME Concepts

The field of entrepreneurship has shifted toward Entrepreneurship as Practice (EaP), which focuses on what entrepreneurs actually do ("entrepreneurial practices")

rather than on individual attributes alone [16]. This perspective is relevant to MSMEs because their performance depends heavily on the daily decisions of owner-managers regarding financing, sourcing, production, and distribution. MSMEs are characterized by relatively low capital investment but high labor absorption, and they account for the vast majority of business units in Asia [1][2]. They also help reduce regional economic inequality and serve as platforms for innovation and sustainable development [3][4].

Pinogu Coffee as a Local Commodity

Pinogu Coffee, particularly the Robusta variety, is a superior local commodity from Bone Bolango, Gorontalo. Its distinctive flavor profile, developed in isolated highlands, has built a strong reputation [11]. GI registration provides legal protection for product authenticity and adds economic value for local farmers through quality assurance. However, this protection only translates into economic benefit when producers can finance their operations and deliver the product efficiently to the market, which makes capital and supply chain performance especially relevant to this commodity.

Business Capital

Business capital is the monetary value of all assets operated by a business entity, comprising equity and debt [17]. Capital structure influences risk management and operational capacity [18]. Its main functions are financing daily operations through working capital and supporting strategic investment in long-term assets [19][20]. Key indicators include capital structure, debt ratio, and liquidity [21]. In the context of coffee

processing, capital determines the ability to buy quality raw beans, maintain post-harvest facilities, and upgrade processing equipment.

Supply Chain Management (SCM)

A supply chain is an integrated network of entities that work together to produce and distribute goods to the end customer [22]. Effective SCM synchronizes the flows of goods, information, and finance to create competitive advantage [10]. Modern SCM increasingly integrates sustainability (green SCM) to reduce environmental impact and ensure fair labor practices [23]. Performance indicators include cost reduction, customer satisfaction, and delivery accuracy [10]. For Pinogu Coffee, SCM covers the movement of beans from farmers to processors and onward to buyers, a process complicated by the area's remote geography.

Business Productivity

Productivity is the ratio of output to the resource inputs used, reflecting how efficiently capital, labor, and technology are converted into value [24][25]. Improving productivity requires structured human resource management (HRM), technology adoption such as lean management, and monitoring through key performance indicators (KPIs), such as labor and capital productivity [26][27].

Research Questions and Objectives

Based on the background above, this study addresses three research questions:

1. Is there a significant correlation between business capital and the productivity of Pinogu Coffee MSMEs?
2. To what extent is SCM correlated with the productivity of these enterprises?

3. Are business capital and SCM, simultaneously, significantly correlated with the productivity of Pinogu Coffee MSMEs in Gorontalo?

Accordingly, the study aims to measure the strength and significance of these relationships. The findings are expected to contribute empirical evidence on the factors most strongly associated with the performance of community-based coffee industries. They should also provide a database for more targeted policy interventions by local governments and stakeholders.

RESEARCH METHODS

Research Design and Setting

This study employed a quantitative approach with a descriptive-correlational research design. Quantitative methods allow systematic investigation of phenomena through numerical data analysis and are used to examine relationships between variables [28][29]. The descriptive aspect provides an accurate profile of the current condition of Pinogu Coffee MSMEs without manipulating any variables [30], while the correlational aspect measures the strength and significance of the relationships among business capital, supply chain management, and productivity. The research was conducted from February to April 2026 at the Pinogu Coffee MSME centers in Pinogu District, Bone Bolango Regency, Gorontalo Province. Data collection was completed in April 2026, and data analysis was carried out afterward.

Population and Sampling

The study population consisted of 35 active MSMEs in the Pinogu Coffee processing and trade sector. Of these, 30

MSMEs met the inclusion criteria: having operated for at least one year and maintaining stable financial records. Because the sample covers most of the accessible population (30 of 35, or about 86%), the sampling technique is best described as purposive (criterion-based) sampling that approximates total sampling. The sample size was also checked against the requirements of multiple correlation analysis. Following the recommendation of 15 to 20 observations per independent variable [31], and given two predictors (X1: Business Capital and X2: Supply Chain), the minimum required sample is 30. The 30 MSMEs therefore satisfied this minimum requirement.

Operational Definitions and Measurement

Three primary variables are analyzed using indicators derived from established literature:

- a. Business Capital (X_1): Measured by capital structure, debt ratio, and liquidity [21].
- b. Supply Chain (X_2): Measured by cost reduction, customer satisfaction, on-time delivery, order accuracy, inventory turnover, information quality, and sustainability [10].
- c. Business Productivity (Y): Measured by labor productivity, capital productivity, operational efficiency ratios, and financial metrics [27].

All variables are measured using a 5-point Likert scale, ranging from "Strongly Disagree" (1) to "Strongly Agree" (5), converting qualitative perceptions into interval data for statistical processing.

Data Collection Procedures

Data is collected through a structured survey instrument distributed via Google Forms. The questionnaire consists of three sections: respondent identity, exogenous

variable indicators (X_1 and X_2), and endogenous variable indicators (Y). This digital survey method is chosen for its cost-effectiveness and efficiency in gathering large-scale quantitative data from remote locations [32].

Data Analysis Techniques

The data analysis process involves four distinct stages:

a. Descriptive Statistics: Used to summarize the data profile, including mean, standard deviation, and frequency distributions.

b. Data Quality Testing:
Validity Test: Using the Pearson Product-Moment correlation to ensure each item accurately measures the intended concept ($r_{\text{count}} > r_{\text{table}}$).

Reliability Test: Assessing internal consistency using Cronbach's Alpha (threshold > 0.60).

c. Classical Assumption Tests:
Before the correlation analysis, the data were tested for normality (Kolmogorov-Smirnov), linearity (Sig. Linearity < 0.05), multicollinearity (Tolerance > 0.10 and VIF < 10), and heteroscedasticity (Glejser test, Sig. > 0.05 , supported by a residual scatterplot).

d. Correlation and Significance Analysis:
Partial Correlation: To measure the independent relationship between X_1 to Y and X_2 to Y .

Multiple Correlation (R): To determine the combined strength of X_1 and X_2 in relating to Y .

Hypothesis Testing (t-test and F-test): To determine the significance of individual and simultaneous relationships (P-Value < 0.05).

Coefficient of Determination (R^2): To quantify the percentage of variation in MSME

productivity explained by capital and supply chain factors.

RESEARCH RESULTS

Validity Results

The validity of the research instrument was assessed using the Pearson Product Moment Correlation method. For a sample size of $N=30$ at a significance level of $\alpha = 0.05$, the critical value (r_{table}) is 0.361. An item is considered valid if its calculated correlation coefficient (r_{count}) exceeds 0.361 and the significance value (Sig. 2-tailed) is less than 0.05.

1. Business Capital (X_1): Statistical analysis shows that all six items measuring capital structure, debt ratios, and liquidity are valid. The r_{count} values range from 0.842 to 0.949, significantly exceeding the 0.361 threshold.

2. Supply Chain (X_2): All 14 items measuring cost reduction, customer satisfaction, and delivery efficiency are declared valid. The r_{count} values range from 0.760 to 0.894, with all items showing a Sig. 2-tailed < 0.001 .

3. MSME Productivity (Y): Eight items assessing labor, capital, and financial metrics were tested. All items are valid, with r_{count} values ranging from 0.832 to 0.928, well above the required threshold.

Reliability Results

Following the validity assessment, the internal consistency of the research instrument was evaluated using the Cronbach's Alpha technique. A variable is considered reliable or dependable if its Cronbach's Alpha coefficient exceeds the minimum threshold of 0.60.

The Relationship Between Business Capital And Supply Chain Management With Msme Productivity: A Study On Pinogu Coffee In Gorontalo

1. Business Capital (X_1): Based on the analysis of 6 statement items, the variable obtained a Cronbach's Alpha value of 0.948. This score indicates a very high level of reliability, ensuring that the instrument for measuring the financial aspects of Pinogu Coffee MSMEs is stable and consistent.
2. Supply Chain (X_2): The evaluation of the 14 indicators for the supply chain variable resulted in a Cronbach's Alpha value of 0.971. This very high coefficient signifies strong internal consistency across all items measuring distribution management, information flow, and logistics.
3. MSME Productivity (Y): For the dependent variable consisting of 8 items, the statistical analysis yielded a Cronbach's Alpha of 0.960. This result confirms that the instrument effectively and reliably represents productivity phenomena at the research site.

Normality Test

The normality test results, summarized by the Asymp. Sig. (2-tailed) value, determine whether the residual data in the model follows a normal distribution.

Table 1. Normality Test Summary

Parameter	Unstandardized Residual	Conclusion
Sample Size (N)	30	Valid
Asymp. Sig. (2-tailed)	0.200	Normally Distributed

Source: Primary data processed in 2026

The analysis shows a significance value of 0.200, which exceeds the alpha threshold of 0.05. Therefore, the residual data in this

research model is confirmed to be normally distributed.

Linearity Test

The linearity test ensures that the independent and dependent variables maintain a linear relationship, a prerequisite for parametric statistical models. The following table summarizes the linearity test results for Business Capital (X_1) and Supply Chain (X_2) relative to MSME Productivity (Y):

Table 2. Linearity Test Results

Variable Relationship	Sig. Linearity	Criterion	Conclusion
Business Capital (X_1) → Productivity (Y)	<0.001	< 0.05	Significantly Linear
Supply Chain (X_2) → Productivity (Y)	<0.001	< 0.05	Significantly Linear

Source: Primary data processed in 2026

The statistical results indicate:

1. Business Capital (X_1): Shows a significance value of <0.001, indicating a highly significant linear relationship with MSME Productivity.
2. Supply Chain (X_2): Similarly displays a significance value of <0.001, confirming a very strong linear relationship with MSME Productivity.

Partial Correlation Analysis

Partial correlation analysis was used to measure the strength of the relationship between each independent variable and productivity while controlling for the other independent variable. The strength of each coefficient was interpreted using the criteria of [tambahkan sumber, misalnya Sugiyono]: 0.00-0.199 very weak, 0.20-0.399 weak, 0.40-
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The Relationship Between Business Capital And Supply Chain Management With Msme Productivity: A Study On Pinogu Coffee In Gorontalo

0.599 moderate, 0.60-0.799 strong, and 0.80-1.000 very strong.

Table 3. Partial Correlation Results

Independe nt Variable	Control Variabl e	Correlatio n Coefficien t (r)	Sig. (2- tailed)	Conclusio n
Business Capital (X ₁)	Supply Chain (X ₂)	0.469	0.010	Significan t
Supply Chain (X ₂)	Busines s Capital (X ₁)	0.621	<0.00 1	Significan t

Source: Primary data processed in 2026

Partial Relationship of Business Capital (X₁): When controlling for Supply Chain (X₂), there is a significant positive relationship at a moderate level ($r = 0.469$; $p = 0.010 < 0.05$).

Partial Relationship of Supply Chain (X₂): When controlling for Business Capital (X₁), there is a significant positive relationship at a strong level ($r = 0.621$; $p < 0.001$).

While both factors are vital, Supply Chain (X₂) demonstrates a more dominant contribution than Business Capital (X₁) regarding Pinogu Coffee MSME productivity in Gorontalo.

Multiple Correlation Analysis

Multiple correlation analysis determines the strength of the simultaneous relationship between Business Capital (X₁) and Supply Chain (X₂) toward MSME Productivity (Y), alongside a coefficient of determination (R^2) to evaluate total contribution.

Table 4. Multiple Correlation and Coefficient of Determination Summary

Model	R (Multiple Correlation)	R Square (R ²)	Adjusted R Square
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Journal of Economic, Business and Administration (JEBA)

1	0.980	0.961	0.958
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Source: Primary data processed in 2026

Multiple Correlation Value (R): The R value of 0.980 indicates a very strong and positive simultaneous relationship between the independent variables and MSME Productivity (Y). Integrated management of capital and supply chains significantly enhances business productivity.

Coefficient of Determination (R Square): The R^2 value of 0.961 means that 96.1% of the variation in Pinogu Coffee MSME Productivity is explained by Business Capital and Supply Chain factors. The remaining 3.9% may be associated with other factors outside this model (e.g., HR competence or government policy) that warrant further research.” Avoid presenting it as a finding.

Significance Testing

1. F-Test (Simultaneous)

The F-test determines if the independent variables collectively have a significant effect on MSME Productivity.

Table 5. Simultaneous Significance Result (F-Test)

Model	F-Statistic	Sig.	Conclusion
Regression	330,741	<0.001	Significant

Source: Primary data processed in 2026

The result ($F = 330.741$; $p < 0.001 < 0.05$) proves that Business Capital and Supply Chain simultaneously exert a significant influence on Pinogu Coffee MSME Productivity.

2. t-Test (Partial)

The t-test measures the independent influence of each variable on the dependent variable.

Table 6. Partial Significance Result (t-Test)

Variable	t-Statistic	Sig.	Conclusion
Business Capital (X ₁)	2,758	0.010	Significant
Supply Chain (X ₂)	4,115	<0.001	Significant

Source: Primary data processed in 2026

Influence of Business Capital (X₁): With a value of 2.758 ($p = 0.010 < 0.05$), Business Capital has a positive and significant partial effect on productivity.

Influence of Supply Chain (X₂): With a value of 4.115 ($p < 0.001 < 0.05$), the Supply Chain factor has a positive and significant partial effect on productivity.

DISCUSSION

Correlation Between Business Capital and Pinogu Coffee MSME Productivity

The partial correlation analysis reveals a moderate positive relationship between Business Capital (X₁) and Pinogu Coffee MSME Productivity (Y), yielding a correlation coefficient (r) of 0.469 while controlling for Supply Chain (X₂). This positive value signifies that improvements in business capital management are directly followed by increased productivity among these local enterprises. Furthermore, the significance value (Sig.) of 0.010 is lower than the 0.05 threshold, confirming that the correlation is statistically significant and

represents a real-world pattern rather than mere coincidence.

These findings align with the study by Yunsepa et al., which identified a strong correlation (0.872) between working capital and productivity, reinforcing the notion that capital serves as a primary stimulant for reaching higher production targets [33]. Support for this relationship is also found in the work of Silvana et al., who noted that business capital significantly impacts MSME income and sustainability [13]. Their research emphasizes that capital is a vital tool for the procurement of essential raw materials and equipment, which directly supports the daily operational productivity of business actors.

Complementing these perspectives, Rahmiyati et al. argued that effective working capital management is a fundamental pillar of operational efficiency [34]. When operational efficiency is achieved through the availability of sufficient capital, business productivity automatically increases, thereby supporting long-term financial sustainability for MSMEs. Theoretically, the link between capital and productivity in Pinogu Coffee MSMEs is rooted in the ability of financial resources to facilitate production needs, such as increasing production scale and upgrading processing machinery.

Ultimately, the significant positive correlation identified in this study proves that capital remains a critical instrument for spurring business growth. While other variables like supply chain management play a dominant role, strengthening the financial aspect provides a tangible and significant impact on increasing coffee industry

productivity in Gorontalo. This study concludes that adequate capital allows business owners to secure high-quality raw beans and modernize equipment, driving an optimal productivity output compared to those facing financial constraints.

Correlation Between Supply Chain and Pinogu Coffee MSME Productivity

The partial correlation analysis reveals a strong positive relationship between the Supply Chain (X_2) and Pinogu Coffee MSME Productivity (Y), with a correlation coefficient (r) of 0.621 while controlling for Business Capital (X_1). This result indicates that as supply chain integration and flow improve, productivity levels significantly increase. With a significance value (Sig.) of <0.001 , which is well below the 0.05 threshold, the relationship is statistically highly significant, confirming a consistent and reliable pattern within the studied coffee industry.

This study demonstrates that the supply chain plays a more dominant role in influencing productivity than business capital. While financial resources are necessary, the ability of business actors to manage raw material flows, production processes, and distribution effectively serves as the primary driver for maximum operational efficiency in Gorontalo's local coffee industry. These findings align with research by A. Kurniawan and Kusumawardhani, which emphasizes that supply chain management, particularly through collaboration and information sharing, is a key driver for enhancing operational performance and market competitiveness [35].

Further support is found in a study by Ramadhani et al., which explains that optimizing supply chain management directly impacts supply effectiveness and production smoothness [36]. Through well-coordinated elements within the supply chain, MSMEs can minimize production bottlenecks and ensure that every available resource is utilized optimally to generate larger outputs. Theoretically, this strong correlation in Pinogu Coffee MSMEs is rooted in the seamless distribution of raw coffee beans from farmers to the processing stage, allowing businesses to respond to market demands with greater speed and accuracy.

Ultimately, the significant and strong correlation proves that the supply chain is a strategic pillar for the success of Pinogu Coffee MSMEs. Integrating these findings with previous literature confirms that strengthening supply chain governance from procurement to distribution must be a top priority for both policymakers and business owners. Ensuring a responsive and integrated supply chain system is essential for guaranteeing the sustainability and continued productivity of the coffee industry in the region.

The Correlation Between Working Capital and the Supply Chain, in Conjunction with the Productivity of Pinogu Coffee SMEs

Multiple correlation analysis reveals a very strong relationship between Business Capital (X_1) and Supply Chain (X_2) simultaneously with Pinogu Coffee MSME Productivity (Y), yielding a correlation coefficient (R) of 0.980. This high value indicates that the combination of financial

support and raw material distribution management is a near-perfect determinant of productivity levels. Furthermore, the coefficient of determination (R^2) of 0.961 demonstrates that 96.1% of the variation in MSME productivity can be explained by these two variables, leaving only 3.9% to external factors outside the research model.

The statistical significance of this simultaneous relationship is confirmed by a Sig. F value of <0.001 , which is well below the 0.05 threshold. This finding establishes that the collaboration between strong capital and an efficient supply chain serves as the primary foundation for MSME advancement. These results align with research by Yunsepa et al., which emphasizes that business success relies on capital as a driver of productivity, especially when integrated with sound operational systems to maximize output [33].

Similarly, Rahmiyati et al. argue that the synergy between working capital management and operational efficiency significantly influences the financial sustainability of MSMEs [34]. In the specific context of Pinogu Coffee, the coordination between available funds and a smooth process from upstream to downstream allows for optimal efficiency. This theoretical framework suggests that business actors effectively utilize high capital to secure quality raw materials, which are then managed through precise

distribution channels. Ultimately, the very strong and significant multiple correlation proves that Business Capital and Supply Chain are inseparable pillars for increasing productivity. Supported by previous literature, this study reinforces that

MSME development strategies must be integrative. Strengthening capital must be accompanied by supply chain improvements to ensure the future success and consistent productivity growth of the coffee industry in the region.

CONCLUSION

This study concludes that business capital and supply chain management are two strategic pillars that significantly enhance the productivity of Pinogu Coffee MSMEs in Gorontalo. Partially, business capital serves as a vital stimulant for the procurement of high-quality raw materials and the modernization of production equipment. Meanwhile, supply chain management provides an even more dominant contribution by creating operational efficiency through the seamless flow of information and distribution. Simultaneously, the integration of strong financial support and effective operational management proves to be the primary foundation for determining business output. Therefore, the development strategy for the local coffee industry must be integrative, ensuring that the strengthening of capital access is accompanied by the optimization of supply chain governance to guarantee future sustainability and massive productivity growth.

REFERENCE

- [1] A. Chidambaram and M. Ayisha Millath, "Indian tea production overview and price analysis," *Int. J. Adv. Sci. Technol.*, vol. 28, no. 19, pp. 1253–1259, 2019, [Online]. Available: <https://www.scopus.com/inward/record.uri?eid=2-s2.0->

- 85080127805&partnerID=40&md5=d735b61ba00c155d407a538be1c22039
- [2] C. Weerakoon, W. Athukorala, and A. Ekanayake, "Introduction to MSMEs in South and Southeast Asia: Framework and Importance BT - MSME Development in South and Southeast Asia: Navigating Growth and Challenges," Melbourne, Australia: Taylor and Francis, 2026, pp. 3–12. doi: 10.4324/9781003666165-2.
- [3] N. Thangavel and V. Hariharan, "Financing MSME sector - Gaps and challenges," *Int. J. Econ. Res.*, vol. 12, no. 2, pp. 303–310, 2015, [Online]. Available: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-84937694186&partnerID=40&md5=18552413c71a97826d198927d7134160>
- [4] R. Velmurugan, R. Thirumalaisamy, R. Paquibut, and M. Abouria, "An integrated framework for the financial sustainability and entrepreneurial success of micro, small, and medium enterprises BT - Studies in Systems, Decision and Control," vol. 525, 2024, pp. 233–246. doi: 10.1007/978-3-031-54383-8_19.
- [5] G. Soni, S. Kumar, R. V Mahto, S. K. Mangla, M. L. Mittal, and W. M. Lim, "A decision-making framework for Industry 4.0 technology implementation: The case of FinTech and sustainable supply chain finance for SMEs," *Technol. Forecast. Soc. Change*, vol. 180, 2022, doi: 10.1016/j.techfore.2022.121686.
- [6] F. A. N. Datumula, "DECENTRALIZED BUSINESS IN THE BLOCKCHAIN ERA: MAPPING RESEARCH TRENDS AND IDENTIFYING FUTURE RESEARCH DIRECTIONS," *J. Econ.*
- Bus. Adm.*, vol. 5, no. 4, pp. 174–183, 2024.
- [7] K. F. Kodrat, S. Sinulingga, H. Napitupulu, and R. A. Hadiguna, "Analysis of the Effect of Supply Chain on Small and Medium Enterprises Performance in Medan (Case study on Leather Shoes SMEs) BT - IOP Conference Series: Materials Science and Engineering," A. A. Y., Ed., Medan, Sumatera Utara, Indonesia: Institute of Physics Publishing, 2019. doi: 10.1088/1757-899X/505/1/012024.
- [8] A. Amir and M. K. Bashanfar, "Supply Chain Resilience: A Case Study of Small-Medium Wholesale Company in Saudi Arabia BT - Lecture Notes in Mechanical Engineering," M. M. A., S. N., A. A. A. Z., M. S., N. N. H., and R. A. N., Eds., Kuala Lumpur, Malaysia: Springer Science and Business Media Deutschland GmbH, 2025, pp. 157–163. doi: 10.1007/978-981-96-3814-7_22.
- [9] T. Sudan and R. Taggar, "Assessing trade supply chain vulnerability and trade participation of SMEs in India: insights from a comprehensive analysis," *Int. J. Product. Perform. Manag.*, vol. 74, no. 1, pp. 250–303, 2025, doi: 10.1108/IJPPM-12-2023-0645.
- [10] R. Kumar and M. Gupta, "The role of supply chain management's key dimensions on supply chain performance and competitive advantage," *Int. J. Manag. Decis. Mak.*, vol. 23, no. 5, pp. 529–561, 2024, doi: 10.1504/IJMDM.2024.140726.
- [11] I. Ahmad and H. Paserangi, "Initiating the community economic improvement through intellectual property registration of 'robusta pinogu coffee,'" *Journal of Economic, Business and Administration (JEBA)* <https://journals.ubmg.ac.id/index.php/JEBA>

- Hasanuddin Law Rev.*, vol. 4, no. 1, pp. 103–112, 2018, doi: 10.20956/halrev.v4i1.1324.
- [12] Y. Yunsepa, Y. Anwar, and Sobirin, “Pengaruh Modal Usaha Terhadap Produktivitas Usaha Tempe Pada UMKM Maju Bersama di Desa Gunung Meraksa Kecamatan Lubuk Batang Kabupaten Oku,” *Kolegial*, vol. 10, no. 1, pp. 1–12, 2022.
- [13] Silvana, Syamsul, and Irma, “Pengaruh Modal Usaha, Tingkat Pendidikan, dan Pengalaman Usaha Terhadap Pendapatan UMKM di Taman Vatungguni, Kota Palu,” *Indones. Account. Lit. J.*, vol. 4, no. 2, pp. 1–11, 2024.
- [14] A. Kurniawan and A. Kusumawardhani, “Pengaruh Manajemen Rantai Pasokan Terhadap Kinerja UMKM Batik Di Pekalongan,” *J. Manag.*, vol. 6, no. 4, pp. 1–11, 2021.
- [15] I. Ramadhani, R. S. Nahampun, and D. Harmutika, “Analisis Manajemen Rantai Pasok pada UMKM Tahu Menggunakan Metode Economic Order Quantity (EQQ),” *J. Tek. Ind. Terintegrasi*, vol. 6, no. 4, 2023.
- [16] N. A. Thompson, O. Byrne, A. Jenkins, and B. T. Teague, “Introduction to the Research Handbook on Entrepreneurship as Practice BT - Research Handbook on Entrepreneurship as Practice: Handbooks of Business and Management Research as Practice,” Netherlands: Edward Elgar Publishing Ltd., 2022, pp. 1–19. doi: 10.4337/9781788976831.00006.
- [17] E. Braun, “Capital is not a factor of production but organizes the allocation and distribution of resources in capitalism,” *Rev. Austrian Econ.*, 2024, doi: 10.1007/s11138-024-00655-1.
- [18] T. Van Hai, “Effect of Capital Structure on Profitability of Securities Companies: Empirical Research in Vietnam,” *Webology*, vol. 18, no. Special Issue, pp. 383–392, 2021, doi: 10.14704/WEB/V18SI05/WEB18235.
- [19] A. Ali, “Working capital, profit and profitability: An absolute and relational study of selected leading indian pharmaceutical firms,” *Accounting*, vol. 6, no. 6, pp. 951–960, 2020, doi: 10.5267/j.ac.2020.8.001.
- [20] M. Labonte, “Business investment spending slowdown BT - Business Trends in the 21st Century: Regulations and Legislation,” Nova Science Publishers, Inc., 2018, pp. 109–113. [Online]. Available: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85059230105&partnerID=40&md5=94ba1cd5d45d0a179b6cb72e961cb69b>
- [21] J. Mazanec, “Capital Structure and Corporate Performance: An Empirical Analysis from Central Europe,” *Mathematics*, vol. 11, no. 9, 2023, doi: 10.3390/math11092095.
- [22] D. Haritha, N. B. Kalyan, N. T. D. Suresh, and M. Raju, “Pharma Supply Chain Management Using Blockchain BT - Cognitive Science and Technology,” vol. 2025, Vijayawada, India: Springer, 2025, pp. 45–59. doi: 10.1007/978-981-97-9266-5_5.
- [23] B. Nagarjuna, K. K. Ramachandran, A. Nautiyal, S. P. Singh, B. B. Nayak, and P. Ganguly, “Sustainability in the field of Supply Chain Using Technolgy: A deep review BT - 2023 3rd International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE),” Andhra Pradesh, Tirupati, India: Institute of Electrical and

- Electronics Engineers Inc., 2023, pp. 843–847. doi: 10.1109/ICACITE57410.2023.10183000.
- [24] Y. Durmaz, E. Atabay, M. Erol, İ. B. Oran, and A. E. Şahin, “Necessary Fiscal Measures to Increase Productivity in Developing Countries: Comparison of Turkish Automotive Sector with BRICS Countries,” *Econ. Comput. Econ. Cybern. Stud. Res.*, vol. 58, no. 4, pp. 288–306, 2024, doi: 10.24818/18423264/58.4.24.18.
- [25] J. D. Loecker and C. Syverson, “Productivity BT - Elgar Encyclopedia on the Economics of Competition, Regulation and Antitrust,” Belgium: Edward Elgar Publishing Ltd., 2024, pp. 94–98. doi: 10.4337/9781802200546.00022.
- [26] A. Alsakarneh, H. A. Shatnawi, W. B. A. K. Alhyasat, F. Zowid, R. A. M. Alrababah, and B. Eneizan, “The effectiveness of human resource management practices on increasing organizational performance and the mediating effect of employee engagement,” *Uncertain Supply Chain Manag.*, vol. 12, no. 2, pp. 1141–1154, 2024, doi: 10.5267/j.uscm.2023.11.019.
- [27] K. F. Kodrat, “The Improvement of Productivity to Increase Company Competitiveness in PT. X Binjai,” *J. Appl. Sci. Eng. Technol. Educ.*, vol. 4, no. 1, pp. 105–114, 2022, doi: 10.35877/454RI.asci1172.
- [28] J. Ab Rahman, “Quantitative Methods in Global Health Research BT - Handbook of Global Health: With 362 Figures and 152 Tables,” Pahang, Kuantan, Malaysia: Springer International Publishing, 2021, pp. 191–212. doi: 10.1007/978-3-030-45009-0_9.
- [29] M. Sciberras and A. Dingli, “Quantitative Research BT - Lecture Notes in Networks and Systems,” vol. 568, Springer Science and Business Media Deutschland GmbH, 2023, pp. 43–115. doi: 10.1007/978-3-031-19900-4_11.
- [30] J. P. Briggs, “Descriptive research BT - Encyclopedia of Sport Management, Second Edition,” United States: Edward Elgar Publishing Ltd., 2024, pp. 263–264. doi: 10.4337/9781035317189.ch154.
- [31] K. Siddiqui, “Heuristics for sample size determination in multivariate statistical techniques,” *World Appl. Sci. J.*, vol. 27, no. 2, pp. 285–287, 2013, doi: 10.5829/idosi.wasj.2013.27.02.889.
- [32] J. Kittur, “Conducting Quantitative Research Study: A Step-by-Step Process,” *J. Eng. Educ. Transform.*, vol. 36, no. 4, pp. 100–112, 2023, doi: 10.16920/jeet/2023/v36i4/23120.
- [33] Y. Yunsepa, Y. Anwar, and Sobirin, “Pengaruh Modal Usaha Terhadap Produktivitas Usaha Tempe Pada UMKM Maju Bersama di Desa Gunung Meraksa Kecamatan Lubuk Batang Kabupaten Oku,” *Kolegial*, vol. 10, no. 1, pp. 1–12, 2022.
- [34] N. Rahmiyati, E. H. Wahidhani, and D. Fitrianiingsih, “The Effect of Working Capital Management , Operational Efficiency , and Profitability on Financial Sustainability of SMEs,” *Int. J. Business, Law, Educ.*, vol. 5, no. 2, pp. 2683–2693, 2024.
- [35] A. Kurniawan and A. Kusumawardhani, “Pengaruh Manajemen Rantai Pasokan Terhadap Kinerja UMKM Batik Di Pekalongan,” *J. Manage.*, vol. 6, no. 4, pp. 1–11, 2021.

- [36] I. Ramadhani, R. S. Nahampun, and D. Harmutika, “Analisis Manajemen Rantai Pasok pada UMKM Tahu Menggunakan Metode Economic Order Quantity (EQQ),” *J. Tek. Ind. Terintegrasi*, vol. 6, no. 4, 2023.