

UNVEILING LABOR AND CAPITAL INVESTMENT POTENTIAL: HOW TO IMPACT PRODUCTIVITY IN INDONESIA'S MSME SECTOR?

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ABSTRACT

This study investigates the impact of labor and capital investments on productivity within the Micro, Small, and Medium Enterprises (MSME) sector in Indonesia, utilizing data from 2016 to 2020. The analysis assesses MSME productivity and the proportion of MSME product exports relative to total exports. The findings reveal that labor and capital investments significantly and positively influence MSME productivity and export ratios. These results suggest that increased labor and capital investments in the MSME sector can enhance its contribution to the national economy. Consequently, policymakers should focus on strategies to boost investment and training in the MSME sector and facilitate access to export markets. This research contributes to the existing literature on MSME economics and economic growth, providing a foundation for further studies on additional factors influencing MSME performance, such as technology and innovation. The insights gained from this study not only guide policymakers but also support inclusive and sustainable economic development in Indonesia. By understanding the dynamics of labor and capital investment in the MSME sector, policymakers can formulate more effective policies to promote growth and resilience in this vital segment of the economy, ultimately fostering broader economic development and prosperity.

Keywords: Labour Investment, Cobb – Douglass, MSME, Export Ratio, OLS, Productivity

ABSTRAK

Penelitian ini bertujuan untuk menganalisis pengaruh tenaga kerja dan investasi modal di sektor Usaha Mikro, Kecil, dan Menengah (UMKM) terhadap produktivitas UMKM di Indonesia. Data dari tahun 2016 hingga 2020 digunakan untuk menilai produktivitas UMKM dan proporsi ekspor produk UMKM terhadap total ekspor. Hasil penelitian menunjukkan bahwa investasi tenaga kerja dan modal di sektor UMKM memiliki pengaruh positif dan signifikan terhadap produktivitas dan rasio ekspor UMKM. Temuan ini menunjukkan bahwa peningkatan alokasi tenaga kerja dan investasi modal ke sektor UMKM dapat memperkuat kontribusi mereka terhadap ekonomi nasional. Oleh karena itu, pembuat kebijakan dapat fokus pada strategi untuk meningkatkan investasi dan pelatihan di sektor UMKM serta memfasilitasi akses ke pasar ekspor. Penelitian ini memberikan kontribusi penting terhadap literatur ekonomi UMKM dan pertumbuhan ekonomi, serta menjadi dasar bagi penelitian lebih lanjut tentang faktor-faktor lain yang memengaruhi kinerja UMKM, seperti teknologi dan inovasi. Dengan demikian, penelitian ini tidak hanya memberikan wawasan bagi pembuat kebijakan, tetapi juga mendukung pembangunan ekonomi inklusif dan berkelanjutan di Indonesia.

Kata Kunci: Investasi Modal Manusia, Cobb – Douglass, UMKM, Rasio Eksor, Produktivitas

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INTRODUCTION

Over the past five years, the Indonesian economy has experienced fluctuations, leading to dynamic changes in its economic structure. A detailed examination of the formal sector, particularly through variables such as Gross Domestic Product (GDP), reveals a noticeable increase in the contribution of the Micro, Small, and Medium Enterprises (MSME) sector, which aligns with population growth. This shift indicates that the formal sector is no longer as effective in absorbing labor forces as it once was (Harahap et al., 2020).

Both the formal and informal sectors have been adversely affected by the pandemic. The informal sector, which comprises nearly 90% of businesses operating without legal permission and facing significant challenges, is at an increasing risk of bankruptcy or closure (Harahap et al., 2020). In light of these empirical findings, the government, business entities, academics, and the community must collaborate to fortify the Indonesian economy's sustainability. This collaborative effort should mainly focus on the informal sector, given its substantial contribution of over 50 percent to the economy in real terms (Wanodyatama Islami et al., 2021a).

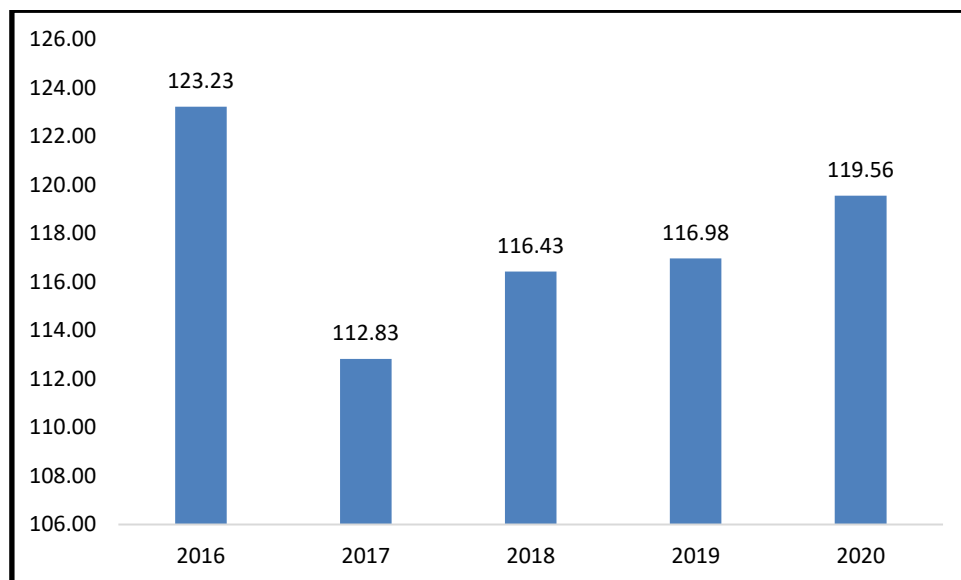


Figure 1: Development of the Number of Workers in Micro and Small-Medium Enterprises Sector during 2016 – 2020 (*amounts in millions*)

Source: Processed data from DJPK Kemenkeu (2021).

Based on Figure 1, the highest number of MSME workers in 2016 was 123.23 million people. From 2017 to 2020, there was a 5% increase in the number of workers in the MSME sector, underscoring the sector's substantial contribution to employment, which amounts to 79%. The decline from 123.23 million MSME workers in 2016 to 112.83 million in 2017 could be attributed to various factors, such as economic fluctuations, changes in the business environment, or policy reforms affecting the MSME sector. During this period, economic downturns or industry-specific challenges might have led to layoffs or closures within the MSME sector. However, the subsequent 5% increase from 2017 to 2020 suggests resilience and growth, possibly driven by economic recovery, supportive policies, and entrepreneurial initiatives within the MSME sector (Putriana et al., 2022).

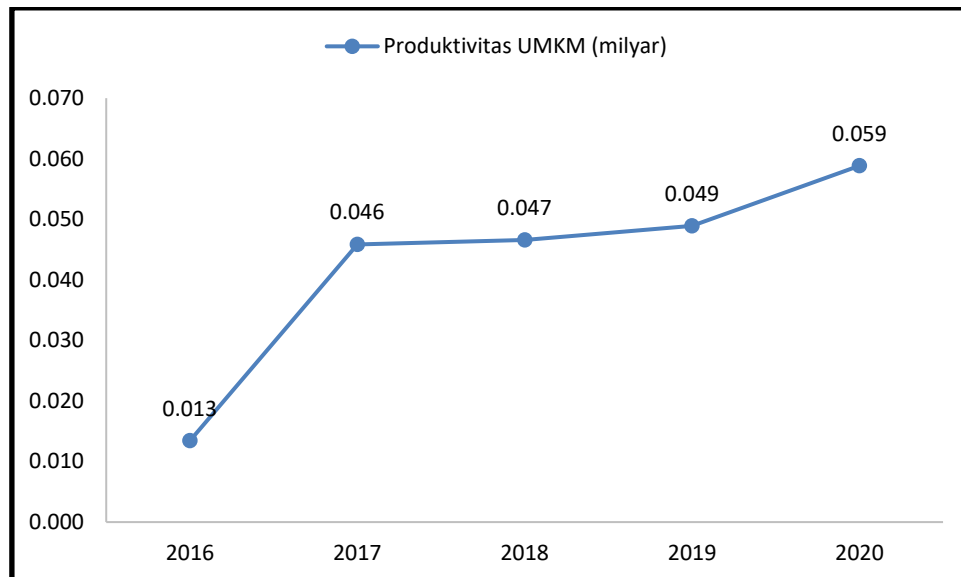


Figure 2: Productivity Development of the MSME Sector During 2016 – 2020 (billion Rupiah)

Source : Data processed from Kementerian Koperasi and UMKM, (2021).

According to the figure above, productivity in the MSME sector increased by an average of 50% from 2016 to 2020, with the most significant rise of 55% between 2016 and 2017. This suggests that an expanding workforce in the MSME sector likely enhances its performance in Indonesia. The growing number of SMEs often reflects a thriving entrepreneurial ecosystem driven by improved access to funding, technological advancements, and supportive government policies promoting small business development. Despite the increase in SMEs, their productivity can also rise due to innovations, new technologies, and improved business practices, enabling them to produce more with the same or fewer resources. This combination of growth in numbers and productivity highlights a dynamic and resilient MSME sector that significantly contributes to economic growth and employment.

The research problem focuses on investigating the significant influence of labor and capital investment on the productivity of MSMEs and their impact on the proportion of MSME exports to total exports. Additionally, the research aims to evaluate the combined effects of manpower, capital investment, and MSME exports on productivity. Specifically, the study seeks to elucidate these relationships and their implications for the Indonesian MSME landscape. This research offers potential benefits, including contributing to broader research initiatives with updated data, particularly in understanding the national-level dynamics of the MSME sector. Furthermore, it provides valuable insights for policymakers and researchers interested in the interplay between the MSME sector and macroeconomic development policies in Indonesia (Arianto, 2020).

While policymakers and researchers may have some awareness of the factors influencing MSME productivity and export performance, the specific relationships and magnitudes can vary based on context and data. The regression models in this study offer a structured and quantifiable analysis, providing more precise insights into the interactions between MSME workers, investment, and export share. This detailed understanding can help policymakers and researchers refine their strategies and studies, ensuring they are better tailored to effectively support and promote MSMEs' growth.

LITERATURE REVIEW

Production involves combining various inputs to create goods and services. According to Todaro (2006), production occurs when different inputs are utilized to generate outputs. The relationship

between these inputs and the resulting outputs is described by a production function. One commonly used model to understand this relationship is the Cobb-Douglas model. Todaro (2006) explains that the Cobb-Douglas model is a mathematical equation that illustrates how inputs affect outputs, specifying the proportions in which inputs are used.

The Cobb-Douglas production function is represented as:

$$Q = A L^\alpha K^\beta$$

Where:

Q = Output Production

L = Labor

K = Capital

The equation’s values of α and β indicate how the input factors (labor and capital) affect the marginal product. These values provide essential insights: if $\alpha+\beta=1$, it signifies constant returns to scale, meaning the marginal product remains unchanged regardless of the production level; if $\alpha+\beta>1$, it indicates increasing returns to scale, where the marginal product increases as production scales up; if $\alpha+\beta<1$, it reflects decreasing returns to scale, where the marginal product decreases as production expands. These insights are crucial for understanding production efficiency and scalability in various economic contexts.

The study proposes several hypotheses: first, that both labor and capital investments in Indonesia’s MSME sector positively influence MSME productivity; second, that investing in labor and capital in the MSME sector enhances the proportion of MSME exports to total exports (Kistanti et al., 2020; Kuku & Biswas, 2014; Simba & Thai, 2019). The study hypothesizes that the combined effect of labor, capital investment in the MSME sector, and the share of MSME exports improves MSME productivity in Indonesia (Gade, 2022). These hypotheses guide the exploration of the intricate relationships between input factors, export dynamics, and productivity within the MSME sector, offering valuable insights into potential drivers of economic growth and development (Melatnebar et al., 2022).

METHODS

This study employs secondary data, utilizing quantitative data from 2016 to 2020, focusing on macroeconomic aggregates. The information for this research is sourced from relevant institutions and agencies, including the Directorate General of Fiscal Balance, the Ministry of Finance, and the Central Statistics Agency (BPS). Data collection involved thoroughly examining books, academic papers, and articles related to the productivity of the MSME sector and regional economic aspects (Nizam et al., 2020).

Table 1: Operationalization of Variables

No.	Variables	Measurement	Unit	Source
1.	MSME’s Productivity	Total income per person from labor in MSMEs.	Rupiah	Ministry of Cooperatives and Small and Medium Enterprises of the Republic of Indonesia.
2.	MSME’s labor	The count of males and females employed in the MSME sector.	Person	Ministry of Cooperatives and Small and Medium Enterprises of the Republic of Indonesia.
3.	MSME’s capital investment	The overall investment or private sector investment in the MSME sector.	Rupiah	Ministry of Cooperatives and Small and Medium Enterprises of the Republic of Indonesia.

The research model presented in this study draws on several prior studies, including those by Aristi & Rahwana (2019), Armiani et al. (2021), Kartini & Gede (2019), Sultoni et al. (2021), and Wanodyatama Islami et al. (2021). The chosen model is the Cobb-Douglas production function equation, which, as noted by Dwiastanti & Mustapa (2020), is a mathematical equation incorporating various types of variables, including dependent and independent variables. This model demonstrates how changes in inputs affect output. The specifications of the econometric model used in this study are as follows:

First Model:

$$\text{Prod_MSME}_{it} = \beta_0 + \beta_1 \text{Taker}_{it} + \beta_2 \text{Inves}_{it} + u_{it} \text{ Equation 1}$$

Second Model:

$$\text{EX_MSME}_{it} = \beta_0 + \beta_1 \text{Taker}_{it} + \beta_2 \text{Inves}_{it} + u_{it} \text{ Equation 2}$$

Third Model:

$$\text{Prod_MSME}_{it} = \beta_0 + \beta_1 \text{Taker}_{it} + \beta_2 \text{Inves}_{it} + \beta_3 \text{SHR_X}_{it} + u_{it} \text{ Equation 3}$$

Variable Descriptions:

- Y = Productivity levels in Micro, Small, and Medium Enterprises (MSMEs) in Indonesia
- SHR_X = Share of MSME exports to total exports
- TK = MSME sector manpower
- INV = Private capital investment in the MSME sector
- i = Indonesia region (1, 2, 3, ..., 33)
- T = Time (2016–2020)

These three models represent regression equations designed to analyze the factors affecting MSMEs' productivity (Prod_MSME_{it}) and export performance (EX_MSME_{it}). In these models, the variable Taker_{it} represents the number of MSME workers.

- Equation 1 focuses on the productivity of MSMEs, where Taker_{it} (MSME workers) and Inves_{it} (investment) are the independent variables. This model aims to understand how the number of workers and investment influence MSME productivity.
- Equation 2 examines the export performance of MSMEs, with Taker_{it} (MSME workers) and Inves_{it} (investment) as the independent variables. This model explores the impact of the number of workers and investment on MSMEs' export capabilities.
- Equation 3 is like Equation 1 but adds the variable SHR_X_{it} (share of exports in total sales). This model assesses how the share of exports affects MSME productivity and the number of workers and investments.

In summary, these models are designed to identify and quantify the effects of MSME workers, investment, and export share on MSMEs' productivity and export performance. They provide insights

into the key determinants of MSME success and growth, offering valuable information for policy formulation and strategic planning.

RESULT AND DISCUSSION

The following are the results of the model estimation using the E-views 9 software, which are as follows:

Table 2: Model Estimation Results

Variable	1 st Equation			2 nd Equation			3 rd Equation		
	Coefficient	t-statistic	Prob.	Coefficient	t-statistic	Prob.	Coefficient	t-statistic	Prob.
C	0.02389	9.6181	0.00	0.0345	8.3232	0.00	0.4534	6.9203	0.00
TK	0.0124	3.2645	0.01	0.4056	6.4567	0.00	0.4534	3.6857	0.00
INV	0.0043	4.3940	0.04	0.2432	3.6545	0.00	0.8123	5.4375	0.06
SHR_X							0.0045	3.1448	0.00
R-Squared	0.7862			0.6154			0.6743		
F-statistic	56.2492		0.00	45.7658		0.00	45.6542		0.00
Prob (F-statistic)	0.00			0.00			0.00		

The Effect of Labor and Capital Investment on MSME Productivity

The model's preliminary findings indicate that labor and capital investments significantly influence MSME productivity in Indonesia, demonstrating a significance level below 5%. The R-squared value is 0.76, signifying that the independent variables examined can account for 76% of the variation in the dependent variable, with the remaining 24% attributed to external factors not included in the model. This study aligns with previous research by Wanodyatama Islami et al. (2021), Prasetyo (2020), Kistanti et al. (2020), Kuku & Biswas (2014), and Simba & Thai (2019), all of which discuss the impact on MSME productivity and performance in Indonesia.

The Effect of Labor and Capital Investment on MSME Export Share

The second model's estimation results reveal that labor and capital investments in the MSME sector significantly impact the MSME export share in Indonesia, with significance levels below 5%. The R-squared value of 0.61 implies that the independent variables account for 61% of the variation in the dependent variable, with the remaining 39% influenced by external factors. These findings are consistent with studies on the growth of the MSME sector's export ratio in Indonesia (Prasetyo, 2020; Sahoo & Ashwani, 2020; Srivastava, 2016; Triharjanto et al., 2022).

Classical Assumption Test

Multicollinearity Tests

The Multicollinearity Test identifies correlations among independent variables that may result in biased estimates. This study employs the Tolerance and Variance Inflating Factor (VIF) tests to measure multicollinearity. A low tolerance value corresponds to a high VIF value. The commonly used cutoff value is Tolerance < 0.10 and VIF < 10 (Ghozali, 2013).

Table 3: Multicollinearity Tests (each equation)

EQUATION 1	TAKER	INVST	
TAKER	1	0.467362	
INVST	0.4673652	1	
EQUATION 2	TAKER	INVST	
TAKER	1	0.200543	
INVST	0.200543	1	
EQUATION 3	TAKER	INVST	SHR_X
TAKER	1	0.19942	0.06932
INVST	0.19942	1	0.71271
SHR_X	0.069932	0.71271	1

The results indicate that all independent variables in each model have VIF values less than 0.8, indicating no multicollinearity among the independent variables.

Heteroscedasticity Tests

Heteroscedasticity occurs when error variances are not constant. The Park method tests heteroscedasticity by regressing the squared logarithm of residuals on each independent variable and comparing the t-statistic and t-table values.

Table 4: Heteroscedasticity Test Results

Variable	Regression in Log (res²)			Conclusion	Significance (0.05)
	t-stat	t-table	Prob		
1st Equation					
TAKER	0.935395	2.09302	0.3509	t-stat < t-table	Not Significant
INVST	-1.352034	2.09302	0.1781	t-stat < t-table	Not Significant
2nd Equation					
TAKER	1.324666	2.09302	0.5048	t-stat < t-table	Not Significant
INVST	-2.888988	2.09302	0.4477	t-stat < t-table	Not Significant
Third Equation					
TAKER	0.949498	2.09302	0.3436	t-stat < t-table	Not Significant
INVST	0.648019	2.09302	0.5177	t-stat < t-table	Not Significant
SHR_X	0.930525	2.09302	0.3532	t-stat < t-table	Not Significant

Based on the above results, all variables have t-statistic values smaller than the t-table value, with probabilities greater than 5%, indicating no heteroscedasticity in the data.

Autocorrelation Test

The study uses general least squares (GLS) to address autocorrelation in the models. Wooldridge (2009) states that GLS can handle heteroscedasticity and autocorrelation issues, ensuring that the resulting estimators are unbiased, consistent, and normally distributed.

In panel data analysis, including fixed or random effects can control autocorrelation, capturing individual-specific or time-specific variations. This reduces the need for separate autocorrelation tests, as these effects account for correlated errors across periods or entities (Prasetyo, 2020; Sahoo & Ashwani, 2020; Srivastava, 2016; Triharjanto et al., 2022).

By leveraging the inherent structure of panel data models, researchers can effectively control autocorrelation and produce reliable estimates of the relationships between variables across both time and entities. This comprehensive framework ensures that autocorrelation concerns are adequately addressed, leading to more robust and accurate findings.

CONCLUSION

The study investigates the effects of manpower and capital investment on MSME productivity and export performance in Indonesia. The hypotheses suggest that manpower and capital investment positively impact MSME productivity. A positive relationship exists between these factors and the proportion of MSME exports to the trade balance. Additionally, the study posits that a combination of manpower, capital investment, and export share collectively enhances MSME productivity in Indonesia. These hypotheses form the foundation for exploring the interplay between input factors, export dynamics, and productivity within the MSME sector. The insights gained from this research are valuable for policymakers and stakeholders aiming to foster economic growth and development. The article presents three regression models to analyze the factors influencing MSME productivity and export performance. By examining the impact of variables such as the number of MSME workers ($Taker_{it}$), investment ($Inves_{it}$), and the share of exports in total sales ($SHR_{X_{it}}$), the study aims to identify the key determinants of MSME success and growth. The findings provide critical information to guide policymakers and stakeholders in formulating effective strategies and policies to enhance MSME productivity and export capabilities, ultimately contributing to Indonesia's economic development and job creation.

REFERENCE

- Anindia Putra, I. N. T., Kartini, K. S., & Dewi, L. G. K. (2019). Sentuhan Digital Bisnis (Teknologi Informasi) pada UMKM Studi Kasus : Pemasaran Produk Adi Upakara. *International Journal of Natural Science and Engineering*, 3(2), 79–84. <https://doi.org/10.23887/ijnse.v3i2.22225>
- Arianto, B. (2020). Pengembangan UMKM Digital di Masa Pandemi Covid-19. In *ATRABIS: Jurnal Administrasi Bisnis* 6(2), 233-247.
- Aristi, G., & Rahwana, K. A. (2019). Upaya Meningkatkan Pemasaran produk UMKM Dengan memanfaatkan katalog produk di Kelurahan Sukahurip Kecamatan Tamansari Kota Tasikmalaya. *Journal of Empowerment Community*, 1(1), 6–11. <https://doi.org/10.36423/jec.v1i1.175>
- Armiani, A., Basuki, B., & Suwarno, N. (2021). Teknologi Digital dalam Mediasi Dampak Strategi Bisnis Terhadap Kinerja UMKM di Nusa Tenggara Barat. *EKUITAS (Jurnal Ekonomi Dan Keuangan)*, 5(3), 300 - 320. <https://doi.org/10.24034/j25485024.y2021.v5.i3.4892>
- Dwiastanti, A., & Mustapa, G. (2020). Pengaruh Karakteristik Wirausaha, Lingkungan Eksternal dan Strategi Bertahan Umkm dalam Menjaga Keberlangsungan Usaha di Musim Pandemi Covid 19. *Business and Accounting Education Journal*, 1(3), 228–240. <https://doi.org/10.15294/baej.v1i3.42740>

- Gade, Surendar. (2018). MSMEs' Role in Economic Growth -a Study on India's Perspective. *International Journal of Pure and Applied Mathematics*, 118(18), 1727-1742.
- Harahap, E. F., Luviana, L., & Huda, N. (2020). Tinjauan Defisit Fiskal, Ekspor, Impor dan Jumlah UMKM terhadap Pertumbuhan Ekonomi Indonesia. *Jurnal Benefita*, 5(2), 151-161. <https://doi.org/10.22216/jbe.v5i2.4907>
- Kistanti, N. R., Prasetyo, P. E., & Setyadharma, A. (2020). Social Capital: The main determinant of MSME entrepreneurship competitiveness. *International Journal of Scientific & Technology Research*, 9(3), 6627-6637.
- Kuku, A., & Biswas, A. (2014). Financing Constraints for MSME Sector. *International Journal of Interdisciplinary and Multidisciplinary Studies (IJIMS)*, 1, 60-68.
- Melatnebar, B., Wicaksono, B. B., & Kurniawan, K. (2022). Menalar Belanja Pemerintah Daerah Terhadap Produk Domestik Bruto Sektor Pertanian Di Kawasan Priangan Timur Jawa Barat. *AKUNTOTEKNOLOGI*, 14(1), 11–20. <https://doi.org/10.31253/aktek.v14i1.1432>
- Nizam, M. F., Mufidah, E., & Fibriyani, V. (2020). Pengaruh Orientasi Kewirausahaan Inovasi Produk dan Keunggulan Bersaing Terhadap Pemasaran UMKM. *Jurnal Ekonomi, Manajemen Dan Akuntansi*, 5(2), 101–109.
- Prasetyo, E. (2020). The Role of Government Expenditure and Investment for MSME Growth: Empirical Study in Indonesia. *Journal of Asian Finance, Economics and Business*, 7(10), 471–480. <https://doi.org/10.13106/jafeb.2020.vol7.no10.471>
- PRASETYO, P. E. (2020). The Role of Government Expenditure and Investment for MSME Growth: Empirical Study in Indonesia. *Journal of Asian Finance, Economics and Business*, 7(10), 471–480. <https://doi.org/10.13106/jafeb.2020.vol7.no10.471>
- Putriana, V. T., Yurniwati, Y., & Simitra, E. (2022). Penggunaan Pendekatan Personal untuk Menghubungkan Usaha Mikro “Wan Alan Padang Panjang” dan Target Pasarnya. *Jurnal Warta Pengabdian Andalas*, 29(4), 417–427. <https://doi.org/10.25077/jwa.29.4.417-427.2022>
- Sahoo, P., & Ashwani. (2020). COVID-19 and Indian Economy: Impact on Growth, Manufacturing, Trade and MSME Sector. *Global Business Review*, 21(5), 1159–1183. <https://doi.org/10.1177/0972150920945687>
- Simba, A., & Thai, M. T. T. (2019). Advancing Entrepreneurial Leadership as a Practice in MSME Management and Development. *Journal of Small Business Management*, 57(2), 397–416. <https://doi.org/10.1111/jsbm.12481>
- Srivastava, R. (2016). The Investment Model of Crowdfunding for MSME (Micro, Small and Medium Enterprises) in India. *International Perspectives on Crowdfunding*, 16(3) 169–184. <https://doi.org/10.1108/978-1-78560-315-020151010>
- Sultoni, M. H., Mujaddidi, A. S., & Priyadi, I. H. (2021). Pelaku UMKM Muslim Madura dalam Menghadapi Era Bisnis Digital: Analisis Peluang dan Ancaman. *Jurnal Manajemen Bisnis Dan Kewirausahaan*, 5(3), 325–329. <https://doi.org/10.24912/jmbk.v5i3.10018>
- Triharjanto, D., Ratnasih, C., & Yolanda, Y. (2022). The Government’s Strategy to Promote the Export of MSME Products during the Covid-19 Pandemic. <https://doi.org/10.4108/eai.30-10-2021.2315822>
- Wanodyatama Islami, N., Supanto, F., Soeroyo, A., Penelitian, B., Daerah, P., Malang, K., Panji, J., & 158 Kepanjen, N. (2021a). Peran Pemerintah Daerah dalam Mengembangkan UMKM yang Terdampak COVID-19. *Karta Rahardja: Jurnal Pembangunan Dan Inovasi*, 3(1), 45-57.
- Werthi, K. T., Nyoman, N., Sari, P., Nyoman, P., Putra, A., Astuti, K. M., & Primakara, S. (2021). Digital Ekonomi Bisnis Untuk UMKM Denpasar pada Masa Resesi Ekonomi. *Jurnal Abdi Masyarakat Saburai (JAMS)*, 2(1), 35-41.