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Causal Threads: SMEs and Macroeconomic Indicators in Indonesia

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Keywords: SMEs, macroeconomic indicators, causality, cointegration

<https://doi.org/10.53703/001c.129670>

Journal of Small Business Strategy

Vol. 35, Issue 2, 2025

The linkages between small and medium enterprises (SMEs) and macroeconomic indicators in developing countries indicate a significant contribution. The contribution is reflected through beneficial impacts of the number of SMEs and SME workers on economic growth. However, investigations into the causality between SMEs and macroeconomic indicators from the 1997 Asian financial crisis to the 2020 global health crisis have yet to be comprehensively examined. This study investigates the causality between SMEs and macroeconomic indicators in Indonesia from 1997 to 2020. The Granger causality test and vector autoregression were applied. The findings revealed that the number of SMEs, the number of SME workers, and total SME exports have a one-way causality with inflation rate, poverty rate, unemployment rate, and money supply. In addition, the number of SMEs has significant implications for economic growth, inflation rate, and money supply. Meanwhile, total SME exports have a significant impact on economic growth, unemployment rates, and money supply. A level of cointegration occurs between SMEs and economic growth, inflation rate, poverty rate, and unemployment rate. Policymakers face the challenge of facilitating the development of SMEs, ensuring economic growth, maintaining stability of inflation rate, in addition to lowering poverty and unemployment rate.

INTRODUCTION

Small and medium enterprises (SMEs) are the economic pillars of society, and they support the developing countries' economies by providing a vast number of business entities and jobs that dominate the industry and labor market. Scholars have studied the development and contribution of SMEs to the domestic economy and the welfare of low-income communities. However, the relationship and contribution of SMEs to Indonesia's macroeconomic indicators have not been fully explored in the literature, starting from the financial crisis of 1997 to the health and economic crisis of 2020. Therefore, this study aims to investigate the causality between SME business indicators and Indonesian macroeconomics from 1997 to 2020.

Mujahid et al. (2019) stated that SMEs play a significant role in achieving macroeconomic goals such as job creation, economic growth, and reducing poverty levels. The study discovered that SME output was significantly correlated with economic growth in Pakistan from 1980 to 2017. Most SMEs were located in rural areas, and therefore they were able to reduce the unemployment rate, especially among women in villages. In the case of Indonesia, Aladin et al. (2021) estimated the influence of the number of SMEs and SME workforce on economic growth in Indonesia during the 1999–2019 period. The contribution of SMEs remains significant, especially for international trade businesses, to encourage long-term economic growth. The study showed that the number of SMEs and economic growth have a one-

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way causality, and the effect of the number of SMEs on economic growth is significant and positive in the short term.

Weaven et al. (2021) investigated the contribution of SMEs to economic growth during crises. The study found that business flexibility provides more significant opportunities for SMEs' capabilities to drive economic growth. Regarding financing, Liu et al. (2022) explored the relationship between business environment, economic growth, and financing sources for SMEs in China using agency theory and binary logistics. The study revealed that banking funds and tax policies determine the credit behavior of SMEs. SMEs with better technological capacity are also capable of supporting economic growth. Therefore, governments may determine business subsidies for SMEs accordingly.

SMEs can also be a driving force for poverty alleviation. Manzoor et al. (2019) evaluated the contribution of SMEs to reducing poverty in the South Asian Association of Regional Cooperation during the 1990-2015 period. The study found that SME output stimulates a reduction in poverty. In addition, Manzoor et al. (2021) argued that modern theory emphasizes SMEs' significant role in the economy, including poverty reduction. SMEs may contribute directly and indirectly to reducing poverty through employment and production capacity increase. Higher contribution of SMEs, namely larger number of SMEs and output value, has implications for reducing poverty and unemployment (Dahliah et al., 2023), indicating that the relationship between SMEs and poverty and unemployment is significant and negative. Specifically, Nursini (2020) estimated the impact of micro, small and medium enterprises (MSMEs) on direct and indirect poverty reduction in Indonesia during the 1997-2018 period. The study findings revealed that Small Medium Enterprises (SMEs) contribute more than Micro Small Enterprises (MSEs) in reducing poverty, signifying that a higher business scale can create greater benefits in alleviating poverty in Indonesia.

Poverty alleviation is linked to the ability of industry to absorb labor. Khaled et al. (2019) noted that Jordan's economy is supported by 98% of total SMEs, 60% of total SME workforce, and 50% of SME output to GDP. The main findings showed that SMEs have become business instruments in absorbing labor or reducing unemployment. In another study, the contribution of SMEs to reducing unemployment rate through sustainable employment in Nigeria during the 1991-2018 period was examined by Ogunjimi (2021). The study findings showed the long-term link between SMEs and unemployment rate, indicating that SME development cannot immediately reduce unemployment rate. Meanwhile, Dahliah et al. (2023) found that SMEs has a significant and negative effect on reducing unemployment rate. The growing development of SMEs has implications for lowering unemployment rate.

Monetary policy also has implications and connections with the development of SMEs. Ajagbe (2012) identified a significant and positive impact between SME output and the inflation rate in Nigeria. In another study in Nigeria, Dike et al. (2020) estimated economic indicators (inflation rate, interest rate, and exchange rate) on SMEs. The study revealed that economic indicators have a significant and

negative impact on SMEs. A monetary policy instrument that is also related to SMEs is money supply. Ogundipe (2022) reported that money supply contributes significantly to developing SMEs in Nigeria. The higher the money supply, the higher the SME output. Money supply is one of instrumental macroeconomic policies to accelerate the development of SMEs (Cebula & Rossi, 2022). In addition, Wehinger (2014) noted that literature searches demonstrated difficulties encountered by SMEs in accessing financing or increasing business liquidity through banks. During a crisis, these conditions make it increasingly difficult for SMEs to replenish their business capital as the banking industry tightens and reduces financing to businesses.

This paper is divided into several sections. The introduction provides an overview of the research issue, study objectives, and contributions. The literature review discusses the relationship between SMEs and macroeconomic indicators. The methodology section describes the data and econometric techniques (Granger causality test and vector autoregression). The subsequent section presents and discusses the study results in line with the study objectives. Lastly, the conclusion, the managerial implications and policy implications section summarize the findings and the implications.

LITERATURE REVIEW

Definition of SMEs

Small and medium enterprises (SMEs) are industries that contribute significantly to supporting the economy and improving the welfare of developing countries (Gherghina et al., 2020; Mukherjee & Mukherjee, 2022). In many cases, SMEs are responsible for employing a significant percentage of the labor force, thereby alleviating poverty and fostering social stability (Lodorfos, 2019; Ng et al., 2016). The definition and measurement of SME business indicators vary between countries. The World Bank defines SMEs using the criterion of number of workers (Madani, 2018). A micro business is a business entity employing a total of 10 employees, while a small business employs 10-49 employees and a medium business has 50-249 employees. The application of this definition has been observed in various countries where similar criteria are utilized to categorize SMEs. The use of the definition is consistent across many parts of the world, underscoring the global relevance of this classification (Cunningham, 2010).

In particular, the definition of and criteria for SMEs in Indonesia have been established through Law Number 20 of 2008 concerning Micro, Small and Medium Enterprises (MSMEs) and Government Regulation Number 7 of 2021 concerning Facilitation, Protection and Empowerment of Cooperatives and Micro, Small and Medium Enterprises. Law Number 20 of 2008 defines MSMEs as follows: (1) a micro business has a maximum annual turnover of 300 million Rupiah and assets (other than land and business buildings) of a maximum of 50 million Rupiah; (2) a small business is characterized with an annual turnover of between 300 million to 2.5 billion Rupiah and assets (other than land and business buildings) of 50 million to 500 million Rupiah; and

(3) a medium business has an annual turnover of 2.5 billion to 50 billion Rupiah and assets (other than land and business buildings) of 500 million to 10 billion Rupiah (Laila et al., 2023; Tambunan, 2019).

Meanwhile, Government Regulation Number 7 of 2021 defines MSMEs in the following manner: (1) a micro business has a maximum annual turnover of 2 billion Rupiah and assets (other than land and business buildings) of a maximum of 1 billion Rupiah; (2) a small business is characterized with an annual turnover of 2 billion – 15 billion Rupiah and assets (other than land and business buildings) of 1 billion – 5 billion Rupiah; and (3) a medium business has an annual turnover of between 15 billion to 50 billion Rupiah and assets (other than land and business buildings) of 5 billion – 10 billion Rupiah (Srimulyani & Hermanto, 2021).

SMEs are typically located near the availability and production raw materials around business sites (K. & K., 2019), suggesting that they are capable of absorbing a large number of workers, especially in rural areas (Kumarasinghe, 2017). In addition, the use of raw materials available around business sites facilitates the process of increasing the added value of available natural resources to meet domestic market needs (Khatri, 2020; Masocha, 2019). Unfortunately, only a handful of SMEs are oriented and able to compete in the global market (Herlinawati & Machmud, 2020; Naradda Gamage et al., 2020; Prasanna et al., 2019) due to limited human resources, business capital, and technology (Navarathne, 2023).

Role of SMEs in Economic Growth

SMEs play a vital role in the economic growth of developing countries. According to Sirin et al. (2022), SMEs hold a significant market share in these countries. However, macroeconomic indicators may affect the business patterns and performance of SMEs. For example, high investment risks and banking liquidity risks may reduce the output and investment capabilities of SMEs, making it challenging to achieve economic growth targets. On the other hand, Zulu-Chisanga et al. (2021) argued that empowering SMEs significantly contributes to achieving economic growth targets. The higher the growth of the SME business, the higher the economic growth in the country. Therefore, governments should focus on empowering SMEs and facilitating increased SME exports to support economic growth. SMEs are a crucial element in achieving GDP targets and reducing unemployment rate. A literature search conducted on SMEs in EU countries revealed that GDP, the number of SMEs and SME workers are significantly and positively correlated (Woźniak et al., 2019). Additionally, Nguyen et al. (2020) applied a post-Kaleckian/Keynesian macroeconomic framework to reveal the contribution of SMEs to stock markets and business innovation in Hong Kong, Singapore, Thailand, and Malaysia. The study showed that SMEs have a significant influence on the stock market and business innovation through several channels, including private investment, savings, productivity, and employment. Furthermore, Surya et al. (2021) reported that empowering SMEs has positive effects on economic growth. Several study find-

ings revealed that economic growth supported by business innovation boosts SME productivity and society welfare (Abbas et al., 2020; Arsawan et al., 2022; Ato Sarsah et al., 2020; Indrawati et al., 2020; Jalil et al., 2022; Tian et al., 2021). Achieving economic growth is a sign of a relatively high level of SME productivity (Ayyagari et al., 2007; Beck et al., 2005; Garcia-Martinez et al., 2023).

Linkage between SMEs and Other Macroeconomic Indicators

SMEs also interact and contribute to several macroeconomic indicators, such as poverty rate, unemployment rate, inflation rate, and money supply (Cicea et al., 2019; Li et al., 2021; Panda et al., 2021). Manzoor et al. (2019) stated that, in theory, poverty could be described using the power theory (allocation of income and wealth by political power) and the theory of personal income distribution (the size of income distribution to provide equality). The inability of political power to guarantee the allocation of resources and income, relatively low levels of creativity, and relatively weak levels of innovation and entrepreneurship contribute to poverty (Chen & Liang, 2020; Ferejo et al., 2022; Nursini, 2020).

Ali et al. (2014) noted that the early period of development economics literature did not emphasize the contribution of economic development to poor communities. The emphasis of the literature is on the capital intensity of large-scale companies. In addition, the economic development process is more directed at urban development or, to a lesser extent, the rural development process, resulting in poverty and income inequality significantly occurring in rural areas. Empirically, the study showed that SME output has a significant and negative impact on poverty in Pakistan, suggesting that poverty alleviation strategies, especially in rural areas, may utilize SMEs. In simple terms, numerous empirical studies analyzed the correlation between SMEs and poverty reduction, including Beck et al. (2005); Ghafoor et al. (2015); Cicea et al. (2019); and Dvorsky et al. (2021). Sharma and Rai (2023) found that SMEs play a significant role in reducing poverty and unemployment levels. SMEs are instrumental in increasing people's income. Recently, SMEs have established themselves as business entities existing in significant numbers to reduce poverty in Nigeria (Akpoviroro Kowo et al., 2019). Therefore, policy-makers may encourage an increase in SME business scale through capital facilitation (Caloffi et al., 2018; Mina et al., 2021; Ullah et al., 2021).

Aceleanu et al. (2014) argued that Romania and the European Union's support for SMEs is able to position these business entities as an instrument of sustainable and inclusive growth strategies that guarantee relatively high levels of employment, productivity, and social cohesion. In simple terms, SMEs bring benefits in several forms, such as a competitive business environment, opportunities for technological development and adaptation, utilization of markets that are not attractive to large companies, and reference for local economic development through local resources (Cusolito et al., 2016; Levy & Powell, 2003; Sarango-Lalan-gui et al., 2023; Spahiu & Durguti, 2023; Williamson et al.,

2006). Specifically, Rotar et al. (2019) found that the number of service sector SME workers had significant implications for the labor market in 28 European Union countries from 2005 to 2016.

Several literatures revealed the relationship between SMEs, inflation and money supply (Bhusal & Silpakar, 2012; Omodero, 2019; Osakwe et al., 2019; Qayyum, 2022; Su et al., 2016). Ajagbe (2012) stated that economic indicators, such as inflation, have different impacts on SMEs and large industries. A relatively small and stable increase in the inflation rate provides an incentive for SMEs to produce and market goods and services to both domestic and international markets. However, a relatively high level of inflation has implications for the selling price of goods and services, which also tends to increase (Vinayagathan, 2013). Consequently, SMEs cannot produce and sell goods, or even compete, in various markets (Ipinnaie et al., 2017), which in turn is more detrimental to SMEs (Adekunle, 2024; Ilegbinosa & Jumbo, 2015). In addition, Finnegan and Kapoor (2023) suggested that monetary policy focuses on providing sufficient liquidity and financial access to SMEs. In particular, the higher the money supply, the higher the liquidity and production capacity of SMEs (Aribaba et al., 2019). To date, SMEs face legal and institutional obstacles to accessing economic liquidity and financing from banks (Fouejieu et al., 2020). The high level of risk to SMEs businesses and the inability to provide financial reports can hinder the development of SMEs (Gupta & Gregoriou, 2018). The more difficult it is to access finance, the more difficult it is for SMEs to increase their business capacity (Fraser et al., 2015; Okello Candiya Bongomin et al., 2017; Manzoor et al., 2021).

METHODOLOGY

Data

This study utilized secondary data published by the Central Bureau of Statistics of Indonesia, Central Bank of Indonesia and Ministry of SME and Cooperation of Indonesia. The study determined several SME indicators consisting of the number of business entities (Q), number of workers (L), and total exports (X). The Q and L indicators express a significant contribution to the total industrial indicators in Indonesia (above 90%). In contrast, indicator X contributes less significantly to the total industry (below 40%), suggesting that the majority of SMEs carry out production and marketing processes in the domestic market, or only a small portion are able to compete in the global market. A detailed statistical description of all research indicators (variables) is presented in Table 1.

The study examined data from 1997 to 2020, which represents two crises with a significant impact on the Indonesian economy. The beginning of the study period (1997) was the Asian financial crisis, while the end of the study period (2020) was the global health and economic crisis. Thus, this study examined the causality of SMEs indicators with Indonesian macroeconomic indicators during crisis and non-crisis.

Several macroeconomic indicators were selected for this study, including economic growth (EG), inflation rate (INF), poverty rate (POV), unemployment rate (EU), and money supply (MS). The determination of the EG, POV, and EU indicators suggests that the existence of SMEs can be a driving force for economic growth, poverty reduction and unemployment reduction. Table 1 shows the mean economic growth of 3.98%, while the mean unemployment rate is four times the economic growth, and the unemployment rate is two times the economic growth. Meanwhile, the inflation rate and money supply were utilized to examine the relationship between SMEs indicators, the price dynamics of various domestic market commodities, and the level of economic liquidity.

Econometric Framework

A causality test determines the causal relationship between variables in a vector autoregressive (VAR) system. The causality test in VAR modeling aims to observe the influence of variables both in the long and short term. The existence of a relationship between variables does not prove causality or influence. Therefore, to determine whether there is a one-way or two-way influence, a causality test is necessary. If an event x occurs before y , there is a possibility that x affects y but not vice versa, which is the idea behind the application of the Granger causality test (Gujarati et al., 2003).

The relationship between SMEs and macroeconomic indicators was explored by Aladin et al. (2021), Nursini (2020), Dike et al. (2020), as well as Manzoor et al. (2019). However, macroeconomic indicators, including money supply, as a booster of domestic economic liquidity have yet to receive sufficient attention. The interaction between SME indicators and macroeconomic indicators can be estimated using a causality approach. Therefore, this study used the Granger causality test and vector autoregression estimations to investigate the causality between SMEs and macroeconomic indicators in Indonesia from 1997 to 2020.

The Granger causality test modeling can be expressed as follows:

$$MI_t = \alpha_0 + \beta_1 SME_t + \varepsilon_t \quad (1)$$

$$SME_t = \alpha_0 + \beta_1 MI_t + \varepsilon_t \quad (2)$$

where MI represents macroeconomic indicators of economic growth, poverty rate, unemployment rate, inflation rate and money supply. Meanwhile, SME business indicators included the number of business entities, the number of workers, and total exports; “ t ” indicates the period 1997-2020; while α is the intercept, β is the slope (parameter), and “ ε ” is the error term.

To test the hypothesis, the F test was used with the following hypothesis stages:

Hypothesis:

$H_0 : \theta_{1p} \text{ or } \gamma_{2p} = 0$ (The variable θ has no influence on the variable γ and vice versa)

$H_1 : \theta_{1p} \text{ or } \gamma_{2p} \neq 0$ (The variable θ has influence on the variable γ and vice versa)

Test Statistics:

Table 1. Research Variables

Variable	Description	Mean	Min.	Max.
<i>SME Indicators (SME)</i>				
Q	Number of SMEs (entities)	51,409,661	36,813,578	65,465,497
L	Number of SME workers (people)	94,999,919	64,313,573	123,229,387
X	Total SME export (billion Rupiah)	152,629	39,277	339,191
<i>Macroeconomic Indicators (MI)</i>				
EG	Economic growth (%)	3.98	-13.13	6.35
INF	Inflation rate (%)	9.13	1.92	58.45
POV	Poverty rate (%)	14.84	9.41	24.20
UE	Unemployment rate (%)	7.25	4.69	11.24
MS	Total money supply M2 (billion Rupiah)	2,693,676	355,643	6,905,939

Source: CBS and Central Bank of Indonesia (processed)

$$F = \frac{(RSS_R) - (RSS_{UR})/p}{(RSS_R)/(n-b)}$$

where:

RSS_R = Residual sum of squares from conditional regression (restricted)

RSS_{UR} = Residual sum of squares from unconditional regression (unrestricted)

p = Number of lags

n = Number of data observations

b = Number of parameters estimated in the model

Equations (1) and (2) were further expanded into vector autoregression model as follows:

$$MI_t = \alpha_0 + \beta_1 MI_{t-1} + \beta_2 SME_t + \varepsilon_t \quad (3)$$

$$SME_t = \alpha_0 + \beta_1 SME_{t-1} + \beta_2 MI_t + \varepsilon_t \quad (4)$$

The simple difference between the Granger causality test and vector autoregression model is the use of lag dependent variables in vector autoregression estimation.

RESULTS AND DISCUSSION

Unit Root Test

Estimating causality between SME indicators and Indonesian macroeconomic indicators during the 1997-2020 period required a unit root test since the type of indicator data was in the time series category, suggesting that time series data should be stationary for econometric estimation. The two-unit root tests included augmented Dickey-Fuller (ADF) and Phillips-Perron (PP), which have been widely used. The estimation results of the unit root tests are presented in [Table 2](#).

The unit root test results revealed that all SME indicators are stationary at the first difference, suggesting that these indicators have an integration of 1 or I (1). Furthermore, three macroeconomic indicators have been stationary at levels including economic growth, inflation rate, and money supply. On the other hand, two macroeconomic indicators have a stationary level at the first difference, consisting of poverty rate and unemployment rate.

[Table 3](#) outlines the Granger causality test results, demonstrating the causality estimates between SMEs and macroeconomic indicators using Equations (1) and (2). The

findings of this test revealed three aspects. First, there was no causality between SME indicators and economic growth. This implies that the growth of SMEs and economic growth were not closely related and had little impact on each other between 1997 and 2020 and 1999 and 2019. Second, all SME indicators had a positive one-way causality with inflation rate, indicating that the number of business entities, the number of workers, and total exports of SMEs drove a certain level of inflation. The significant number of SMEs and SME workforce in the total national industry boosted inflation. Therefore, business owners and policymakers may encourage the scaling up of SMEs and control the impact of inflation.

Third, the number of SMEs had a positive one-way causality with poverty rate between 1997 and 2020 and 1999 and 2019. However, having a relatively large number of SMEs on a micro-scale was merely a partial solution to alleviating poverty. Micro-scale businesses require scaling up to stimulate poverty reduction. Meanwhile, the number of workers and total exports had a two-way causality with poverty rate in different periods and degrees of significance. For instance, the number of workers had a one-way causality with the poverty rate between 1997 and 2020 and 1999 and 2019, while there was a two-way causality in 1999-2019. On the other hand, total exports had a one-way causality with the poverty rate between 1997 and 2020 and 1999 and 2019, while there was a two-way causality in 1997-2020. These suggest the relationship between the number of workers and total exports on poverty rate in Indonesia during crisis and non-crisis situations. Therefore, SMEs and policymakers can encourage the improvement of SME contribution, especially during crises, in the context of poverty alleviation.

Granger Causality Test

The relationship between SME indicators and unemployment rate varied in terms of period and degree of significance. The number of SMEs had a one-way causality with reasonable unemployment rate during the 1999-2019 period, while during the 1997-2020 period, both variables had two-way causality. Additionally, the number of workers

Table 2. Results of Unit Root Tests

	Q	L	X	EG	INF	POV	UE	MS
<i>Augmented Dickey-Fuller:</i>								
Level	-0.006	-1.489	-0.394	-3.538**	-3.722**	-0.838	-1.608	2.681*
1st Difference	-6.146***	-6.847***	-5.254***	-	-	-7.888***	-3.306**	0.163
<i>Phillips-Perron:</i>								
Level	0.013	-1.055	-1.945	-3.538**	-3.757***	-0.509	-1.757	5.764***
1st Difference	-6.343***	-6.816***	-3.474**	-	-	-7.795***	-3.348**	0.367

Note: ***, ** and * denote the significant level at 1%, 5% and 10%, respectively.

Table 3. Causality between SMEs and Macroeconomic Indicators (Lag 1)

Variables	1997-2020 (including crisis periods)			1999-2019 (excluding crisis periods)		
	F-statistics	Prob.	Result	F-statistics	Prob.	Result
<i>SMEs and Economic Growth:</i>						
Q does not Granger cause EG	0.518	0.479	Rejected	0.149	0.704	Rejected
EG does not Granger cause Q	0.018	0.895	Rejected	0.918	0.351	Rejected
L does not Granger cause EG	1.161	0.294	Rejected	0.001	0.948	Rejected
EG does not Granger cause L	0.089	0.768	Rejected	0.148	0.705	Rejected
X does not Granger cause EG	0.289	0.596	Rejected	0.001	0.995	Rejected
EG does not Granger cause X	0.916	0.350	Rejected	0.813	0.379	Rejected
<i>SMEs and Inflation Rate:</i>						
Q does not Granger cause INF	5.486	0.029	Accepted	15.739	0.001	Accepted
INF does not Granger cause Q	0.354	0.558	Rejected	1.928	0.183	Rejected
L does not Granger cause INF	7.449	0.012	Accepted	13.840	0.002	Accepted
INF does not Granger cause L	0.001	0.976	Rejected	0.004	0.953	Rejected
X does not Granger cause INF	5.884	0.024	Accepted	16.006	0.001	Accepted
INF does not Granger cause X	0.924	0.347	Rejected	0.024	0.878	Rejected
<i>SMEs and Poverty Rate:</i>						
Q does not Granger cause POV	10.227	0.004	Accepted	13.771	0.001	Accepted
POV does not Granger cause Q	0.998	0.329	Rejected	0.009	0.926	Rejected
L does not Granger cause POV	19.931	0.000	Accepted	10.700	0.004	Accepted
POV does not Granger cause L	0.245	0.625	Rejected	2.853	0.109	Rejected
X does not Granger cause POV	4.084	0.056	Accepted	5.476	0.032	Accepted
POV does not Granger cause X	2.835	0.107	Rejected	0.017	0.897	Rejected
<i>SMEs and Unemployment Rate:</i>						
Q does not Granger cause UE	4.450	0.047	Accepted	9.869	0.006	Accepted
UE does not Granger cause Q	6.974	0.015	Accepted	1.369	0.258	Rejected
L does not Granger cause UE	4.372	0.049	Accepted	8.176	0.011	Accepted
UE does not Granger cause L	0.249	0.622	Rejected	0.264	0.614	Rejected
X does not Granger cause UE	1.820	0.192	Rejected	6.662	0.019	Accepted
UE does not Granger cause X	0.003	0.957	Rejected	0.207	0.655	Rejected
<i>SMEs and Money Supply:</i>						
Q does not Granger cause MS	6.452	0.019	Accepted	22.866	0.000	Accepted
MS does not Granger cause Q	0.325	0.575	Rejected	0.195	0.664	Rejected
L does not Granger cause MS	2.557	0.125	Rejected	23.012	0.000	Accepted
MS does not Granger cause L	0.001	0.937	Rejected	0.721	0.407	Rejected
X does not Granger cause MS	0.598	0.448	Rejected	0.103	0.751	Rejected
MS does not Granger cause X	2.612	0.122	Rejected	4.992	0.039	Accepted

Table 4. Optimal Lags

Lag	AIC	SC	HQ
<i>SMEs and Economic Growth:</i>			
0	95.891	96.089	95.938
1	89.458*	90.450*	89.692*
<i>SMEs and Poverty Rate:</i>			
0	95.041	95.239	95.087
1	89.935*	90.926*	90.168*
<i>SMEs and Unemployment Rate:</i>			
0	95.713	95.911	95.759
1	89.157*	90.149*	89.391*
<i>SMEs and Inflation Rate:</i>			
0	97.456	97.654	97.502
1	92.528	93.519*	92.761*
<i>SMEs and Money Supply:</i>			
0	121.782	121.981	121.829
1	111.861	112.852*	112.094*

Note: *indicates lag order selected by the criterion. AIC is Akaike Information Criterion. SC is Schwarz Information Criterion. HQ is Hannan-Quinn Information Criterion.

had a one-way causality with the unemployment rate in 1997-2020 and 1999-2019. However, total exports had a one-way causality with the unemployment rate only from 1999 to 2019. The detailed findings are presented in [Table 3](#).

All three SME indicators had a one-way causality with the amount of money circulating in a given period. For example, the number of business entities had a one-way causality with the amount of money in circulation during the 1997-2020 and 1999-2019 periods. Meanwhile, the number of workers had a one-way relationship with money supply during the 1999-2019 period, indicating that the higher the level of economic liquidity, the more conducive it is for SMEs to carry out export transactions.

Vector Autoregression (VAR) Model Analysis

[Table 4](#) shows the optimal lags of SME indicators with economic growth, poverty rate, unemployment rate, inflation rate, and money supply. All SME indicators have optimal lags of one, according to the AIC, SC, and HQ criteria. Therefore, the vector autoregression (VAR) estimation process used an optimal level of lag = 1.

Equations (3) and (4) were estimated using vector autoregression (VAR) to reveal and measure the level of relationship between SME indicators and Indonesian macroeconomics during the 1997-2020 period. The results are presented in [Table 5](#) and highlight the following findings. First, the impact of the number of business entities and total exports of SMEs on economic growth is significant at 1% level. However, the number of business entities is negative, while the impact of total exports is positive, suggesting that the relatively large number of small businesses does not create advantages in driving national economic growth. On the other hand, total SME exports, which are not dominant in the global market, stimulate economic growth. In addition,

the achievement of economic growth in the current period can be determined by the level of economic growth in the previous period, with the direction of significance being positive.

Second, only the number of business entities as an indicator of SMEs has implications in controlling the inflation rate in Indonesia, indicating that a relatively large number of SMEs provides benefits for maintaining a relatively low inflation rate. However, the inflation rate for the current period is also determined by the inflation rate for the previous period with a certain magnitude, and the direction of significance is positive. Third, there is no evidence that SME indicators have any consequences for poverty rate in Indonesia. However, the poverty rate for the current period can be determined by the previous poverty rate with a certain magnitude, and the sign of significance is positive. Fourth, total SME exports do not offer an advantage in reducing the unemployment rate in Indonesia, signifying that total SME exports is not relevant to lowering national unemployment rate. Conversely, the current period's unemployment rate can be determined by the previous period's unemployment rate in a positive direction.

The number of business entities and total exports of SMEs have different impacts on money supply. Increasing the number of SMEs leads to an increase in money supply, while increased total SME exports could hinder achieving required money supply. The money supply for the current period is determined by the money supply for the previous period with a certain magnitude, and the direction of significance is positive.

[Table 6](#) shows the results of the Johansen cointegration test between SMEs and Indonesian macroeconomic indicators for the 1997-2020 period. The estimation was carried out to identify the long-term relationship between economic indicators, which would facilitate the assessment of their balance pattern. The results indicate two empirical

Table 5. Results of Vector Autoregression Estimations

	EG	INF	POV	UE	MS
C	14.561 (6.205)***	29.674 (5.188)***	27.958 (3.708)***	2.887 (1.499)	-848035 (-4.487)***
EG(-1)	0.287 (3.985)***				
INF(-1)		0.140 (2.711)**			
POV(-1)			0.495 (3.389)***		
UE(-1)				0.717 (2.719)***	
MS(-1)					1.467 (8.121)***
Q	-0.001 (-3.287)***	-0.001 (-2.148)*	-0.001 (-1.425)	0.001 (0.857)	0.035 (4.571)***
L	0.001 (1.518)	0.001 (0.734)	-0.001 (-1.767)	-0.001 (-0.863)	-0.006 (-1.773)
X	0.001 (4.875)***	0.001 (0.943)	-0.001 (-0.616)	-0.001 (-2.018)*	-1.694 (-6.394)***
Adj. R-squared	0.626	0.731	0.965	0.809	0.999
F-statistics	8.029**	12.431***	118.050***	18.852***	6624.580***
Observations	22	22	22	22	22

Note: The t-statistics are presented in the parenthesis (). ***, ** and * denote the significant level at the 1%, 5% and 10%, respectively.

Table 6. Results of Johansen Cointegration Tests

Variables	Hypothesized No. of CE(s)	SME Indicators (Q, L, X)	
		Trace Statistic	Max. Eigenvalue Statistic
EG	None	104.780***	63.620***
	At Most 1	41.161***	31.514***
INF	None	100.149***	65.262***
	At Most 1	34.887***	17.797***
POV	None	60.924***	34.517***
	At Most 1	24.407**	-
UE	None	59.0115***	37.997***

Note: ***, ** and * denote the p-values of MacKinnon-Haug-Michelis (1999) at 1%, 5% and 10%, respectively.

evidences of cointegration between SME indicators, economic growth, and inflation using both trace statistics and maximum eigenvalue statistics. Additionally, there are two pieces of empirical evidence of cointegration between SME indicators and poverty rate using trace statistics and one piece of empirical evidence using maximum eigenvalue statistics. However, there is only one piece of empirical evidence of cointegration between SME indicators and unemployment rate using both trace statistics and maximum eigenvalue statistics. Lastly, there is no empirical evidence of cointegration between SME indicators and money supply.

This study reveals the relationship between SME business indicators and Indonesian macroeconomic indicators between 1997 and 2020 using the Granger causality test and vector autoregression. Several findings showed that SME indicators (number of business entities, number of workers,

and total exports) have causality with macroeconomic indicators (inflation rate, poverty rate, unemployment rate, and money supply). However, SMEs have no causal relationship with economic growth. Furthermore, the number of SMEs has a significant and negative effect on economic growth and inflation rate. Meanwhile, the number of SMEs has a significant and positive impact on money supply. Total SME exports have a significant and harmful consequence on unemployment rate and money supply.

Several works of literature explained the challenges and contributions of SMEs to the economy. Epede and Wang (2022) highlighted the significant contribution of SMEs to economic growth and global supply chains in developing countries. In addition, SMEs can be a driving force for business innovation. Furthermore, Gherghina et al. (2020) stated that SMEs play a significant role in the local economy, including providing jobs, reducing poverty levels, and

encouraging economic growth. Therefore, the business obstacles faced by SMEs should be resolved by the government, as evidenced by the approach in Romania during the observation period from 2009 to 2017.

Jauhari and Periansya (2021) further described the relationship between SMEs and economic growth and poverty alleviation in Indonesia from 2000 to 2019. The study found that SMEs had a one-way causality with economic growth and poverty. Specifically, SMEs had a significant and positive impact on poverty in the initial five-year observation period. During the COVID-19 pandemic, SMEs in Spain were under pressure, leading to a significant decrease in the performance of the domestic economy (Garcia-Perez-de-Lema et al., 2022). Therefore, policymakers need to determine strategic policies to develop SMEs in the long term.

CONCLUSION

This study aimed to investigate the causality between SME business indicators and Indonesian macroeconomics during the 1997-2020 period using the Granger causality test and vector autoregression. The contribution of the study to literature is significant in several ways. First, it provides an in-depth analysis of the causality between SME business indicators (number of business entities, number of workers, and total exports) and Indonesian macroeconomic indicators (economic growth, inflation rate, unemployment rate, poverty rate, and money supply). Second, the Granger causality test, vector autoregression, and Johansen cointegration test provide benefits for uncovering causality between SMEs and Indonesian macroeconomic indicators. Third, policymakers can use this study to scale up SMEs by providing more assistance and attention. Increasing the scale of SME business is an effort to achieve economic growth; control inflation rate, unemployment rate, and poverty rate; and utilize the money supply as liquidity for SMEs and the national economy.

Numerous studies indicate that SME indicators such as the number of business entities, the number of workers, and total exports, demonstrate causality with macroeconomic indicators, including inflation rate, poverty rate, unemployment rate, and money supply. Nevertheless, SMEs do not show a causal relationship with economic growth.

The study shows that SMEs indicators in Indonesia had a one-way causality with macroeconomic indicators from 1997 to 2020, implying that the development of SMEs influences the achievement of Indonesia's macroeconomic goals. The number of SMEs has a significant and negative impact on economic growth and inflation, while having a significant and positive impact on exports and money supply. On the other hand, total SME exports have a significant and negative impact on unemployment rate and money supply.

This study provides several implications. The first is policy implication, which emphasizes the facilitation and stimulation of SME business indicators such as the quality of production, the quality of worker, and the quality of export. This would lead to the scale-up business processes. Several studies confirmed that SMEs also interact and contribute to several macroeconomic indicators, such as

poverty rate, unemployment rate, inflation rate, and money supply. The first step to be taken includes establishing a National Council for the Development and Empowerment of SMEs chaired by the President of the Republic of Indonesia or the Vice President of the Republic of Indonesia.

The national council should subsequently develop a blueprint for the development and empowerment of SMEs, both in the short, medium, and long term. The blueprint must be equipped with clear, measurable, and comprehensive key performance indicators (KPIs). The blueprint serves a guideline for the implementation of integrated SME management, as well as a reference in monitoring and evaluating SME development and empowerment in the future.

Second, the managerial implication, which emphasizes the need to pay more attention to the higher quality of production process and marketing, especially for export-oriented SMEs. One approach that is relevant to the results of this research is the application of total quality management (TQM), which is a comprehensive management approach focusing on the continuous improvement of all aspects of the organization, including production processes and customer satisfaction (Lu et al., 2022). In addition, through the importance of utilizing data analytics, SMEs can better understand market trends and customer preferences, thereby improving product offerings and marketing strategies (Verma et al., 2020). The integration of advanced technology and data-driven practices also plays an important role in improving the quality of production processes.

LIMITATIONS AND FUTURE RESEARCH

This study features certain limitations that may encourage future research. First, it is important to declare the selection of sectoral data in future research. As SMEs are categorized into several sectors, future research may specifically examine the food and beverage sector, which is the dominant business preference for SMEs in Indonesia. Second, as this study was limited to secondary data, future research would be more likely to obtain results that reflect the more comprehensive condition of SMEs in Indonesia if primary data and a qualitative approach were utilized.

Future research may consider other variables such as institutionalization, SME competitiveness, and factors that influence SME competitiveness. It is important to examine SME competitiveness as only competitive products can penetrate the export market. Based on the finding that total SME exports have a significant and harmful consequence on unemployment rate, any increase in total SME exports potentially affect the decrease in unemployment rate.

Moreover, previous studies employed a similar approach to this research, namely Tripathi et al. (2015); Plíhal (2017); Aysan and Disli (2019); Gričar et al. (2019), and Dajčman (2020). It is recommended that future research use other econometric techniques such as dynamic panel regression and spatial econometrics, while in understanding the factors affecting SME competitiveness, analysis using SEM-PLS (Structural Equation Modelling - Partial Least Square) could be considered.

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ACKNOWLEDGMENT

This research would not have been possible without the exceptional support of a research grant from Universitas

Ciputra Surabaya under letter of agreement no: 031/UC-LPPM/DIP/SP3H/IX/2023.

Submitted: January 23, 2024 CDT. Accepted: November 18, 2024 CDT. Published: March 21, 2025 CDT.



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References

- Abbas, J., Zhang, Q., Hussain, I., Akram, S., Afaq, A., & Shad, M. A. (2020). Sustainable Innovation in Small Medium Enterprises: The Impact of Knowledge Management on Organizational Innovation through a Mediation Analysis by Using SEM Approach. *Sustainability*, 12(6), 2407. <https://doi.org/10.3390/su12062407>
- Aceleanu, M. I., Trașcă, D. L., & Șerban, A. C. (2014). The role of small and medium enterprises in improving employment and in the post-crisis resumption of economic growth in Romania. *Theoretical and Applied Economics*, XXI(1).
- Adekunle, A. O. (2024). THE IMPACT OF MONETARY POLICY ON SMALL AND MEDIUM SCALE ENTERPRISES (SMES) IN THE PERIOD OF ECONOMIC CRISES. *Gusau Journal of Accounting and Finance*, 4(2), 240–253. <https://doi.org/10.57233/gujaf.v4i2.14>
- Ajagbe, F. A. (2012). Inflation and Small and Medium Enterprises Growth in Ogbomoso Area, Oyo State, Nigeria. *Journal of Economics and Sustainable Development*, 3(8). <http://www.iiste.org>
- Akpoviro Kowo, S., Adeleke Oba Adenuga, O., & Owotutu Sabitu, O. (2019). The role of SMEs development on poverty alleviation in Nigeria. *Insights into Regional Development*, 1(3), 214–226. [https://doi.org/10.9770/ird.2019.1.3\(3\)](https://doi.org/10.9770/ird.2019.1.3(3))
- Aladin, A., Dewata, E., Sari, Y., & Aryani, Y. A. (2021). *The Role of Small and Medium Enterprises (SMES) and Economic Growth in Indonesia: The VECM Analysis*. <https://doi.org/10.2991/ahsseh.k.210122.017>
- Ali, S., Rashid, H., & Aamir Khan, M. (2014). The role of small and medium enterprises and poverty in Pakistan: An empirical analysis. *Theoretical and Applied Economics*, XXI(4(593)), 67–80. [https://EconPapers.repec.org/RePEc:agr:journl:v:xxi:y:2014:i:4\(593\):p:67-80](https://EconPapers.repec.org/RePEc:agr:journl:v:xxi:y:2014:i:4(593):p:67-80)
- Aribaba, F. O., Olamide Ahmodu, A.-L., Oladele, R., Yusuff, A. S., & Olaleye, R. B. (2019). The Role of Deposit Money Banks' Loan Facilities in Financing Small and Medium-Scale Enterprises in Nigeria. *Academic Journal of Interdisciplinary Studies*, 8(2), 277–284. <https://doi.org/10.2478/ajis-2019-0040>
- Arsawan, I. W. E., Koval, V., Rajiani, I., Rustiarini, N. W., Supartha, W. G., & Suryantini, N. P. S. (2022). Leveraging knowledge sharing and innovation culture into SMEs sustainable competitive advantage. *International Journal of Productivity and Performance Management*, 71(2), 405–428. <https://doi.org/10.1108/IJPPM-04-2020-0192>
- Ato Sarsah, S., Tian, H., Dogbe, C. S. K., Bamfo, B. A., & Pomegbe, W. W. K. (2020). Effect of entrepreneurial orientation on radical innovation performance among manufacturing SMEs: the mediating role of absorptive capacity. *Journal of Strategy and Management*, 13(4), 551–570. <https://doi.org/10.1108/JSMA-03-2020-0053>
- Aysan, A., & Disli, M. (2019). Small business lending and credit risk: granger causality evidence. *Economic Modelling*, 83, 245–255. <https://doi.org/10.1016/j.econmod.2019.02.014>
- Ayyagari, M., Beck, T., & Demirguc-Kunt, A. (2007). Small and Medium Enterprises Across the Globe. *Small Business Economics*, 29(4), 415–434. <https://doi.org/10.1007/s11187-006-9002-5>
- Beck, T., Demirguc-Kunt, A., & Levine, R. (2005). SMEs, Growth, and Poverty: Cross-Country Evidence. *Journal of Economic Growth*, 10(3), 199–229. <https://doi.org/10.1007/s10887-005-3533-5>
- Bhusal, T. P., & Silpakar, S. (2012). Growth and inflation: Estimation of threshold point for Nepal. *Economic Journal of Development Issues*, 131–138. <https://doi.org/10.3126/ejdi.v13i0.7216>
- Caloffi, A., Mariani, M., Rossi, F., & Russo, M. (2018). A comparative evaluation of regional subsidies for collaborative and individual R&D in small and medium-sized enterprises. *Research Policy*, 47(8), 1437–1447. <https://doi.org/10.1016/j.respol.2018.04.022>
- Cebula, R., & Rossi, F. (2022). Quantitative easing, macroeconomic stability and economic policy effectiveness. *Journal of Financial Economic Policy*, 14(4), 468–475. <https://doi.org/10.1108/JFEP-06-2021-0149>
- Chen, H., & Liang, M. (2020). Empirical Analysis on Regional Economic Growth from the Perspectives of Entrepreneurship and Investment in Research and Development. *International Journal of Sustainable Development and Planning*, 15(8), 1259–1265. <https://doi.org/10.18280/ijssdp.150812>
- Cicea, C., Popa, I., Marinescu, C., & Ștefan, S. C. (2019). Determinants of SMEs' performance: evidence from European countries. *Economic Research-Ekonomska Istraživanja*, 32(1), 1602–1620. <https://doi.org/10.1080/1331677X.2019.1636699>
- Cunningham, L. X. (2010). Managing human resources in SMEs in a transition economy: evidence from China. *The International Journal of Human Resource Management*, 21(12), 2120–2141. <https://doi.org/10.1080/09585192.2010.509620>
- Cusolito, A. P., Safadi, R., & Taglioni, D. (2016). *Inclusive Global Value Chains: Policy Options for Small and Medium Enterprises and Low-Income Countries*. World Bank. <https://doi.org/10.1596/978-1-4648-0842-5>
- Dahliah, D., Sidik Tjan, Y., & Rahmi, R. (2023). The Effect SME in Overcoming Poverty and Unemployment: Empirical Study of Makassar City, Indonesia. *Golden Ratio of Social Science and Education*, 3(1), 14–23. <https://doi.org/10.52970/grsse.v3i1.281>
- Dajčman, S. (2020). Economic policy and confidence of economic agents – a causal relationship. *Review of Economic Perspectives*, 20(4), 471–484. <https://doi.org/10.2478/revecp-2020-0023>

- Dike, G., Anetoh, J., Jeffery, O., Anetoh, V., Adaeze, O., Monday, E., & Kobimdi, I. (2020). *Effect of Economic Indicators on the Performance of Small and Medium Scale Enterprises in Nigeria*. 412. <https://doi.org/10.35629/5252-0204412420>
- Dvorsky, J., Belas, J., Gavurova, B., & Brabenec, T. (2021). Business risk management in the context of small and medium-sized enterprises. *Economic Research-Ekonomska Istraživanja*, 34(1), 1690–1708. <https://doi.org/10.1080/1331677X.2020.1844588>
- Epede, M. B., & Wang, D. (2022). Global value chain linkages: An integrative review of the opportunities and challenges for SMEs in developing countries. *International Business Review*, 31(5), 101993. <https://doi.org/10.1016/j.ibusrev.2022.101993>
- Ferejo, M. N., Ahmed, H. M. S., Muzeyin, J. R., Amde, S. J., Thomran, M., & Mamuye, F. (2022). Exploring Factors Affecting Growth of Micro and Small Enterprises: Evidence from Ethiopia. *International Journal of Sustainable Development and Planning*, 17(5), 1523–1533. <https://doi.org/10.18280/ijssdp.170516>
- Finnegan, M., & Kapoor, S. (2023). ECB unconventional monetary policy and SME access to finance. *Small Business Economics*, 61(3), 1253–1288. <https://doi.org/10.1007/s11187-023-00730-0>
- Fouejieu, A., Ndoye, A., & Sydorenko, T. (2020). *Unlocking Access to Finance for SMEs: A Cross-Country Analysis* (No. WP/20/55). <https://doi.org/10.5089/9781513536156.001>
- Fraser, S., Bhaumik, S. K., & Wright, M. (2015). What do we know about entrepreneurial finance and its relationship with growth? *International Small Business Journal: Researching Entrepreneurship*, 33(1), 70–88. <https://doi.org/10.1177/0266242614547827>
- Garcia-Martinez, L. J., Kraus, S., Breier, M., & Kallmuenzer, A. (2023). Untangling the relationship between small and medium-sized enterprises and growth: a review of extant literature. *International Entrepreneurship and Management Journal*, 19(2), 455–479. <https://doi.org/10.1007/s11365-023-00830-z>
- Garcia-Perez-de-Lema, D., Madrid-Guijarro, A., & Durendez, A. (2022). Operating, financial and investment impacts of Covid-19 in SMEs: Public policy demands to sustainable recovery considering the economic sector moderating effect. *International Journal of Disaster Risk Reduction*, 75, 102951. <https://doi.org/10.1016/j.ijdrr.2022.102951>
- Ghafoor, A., Dean, A., Iqbal, A., & Scholar, M. P. (2015). Impact of Small & Medium Enterprises on Poverty: A Case Study of Khanewal District-Pakistan. *Journal of Economics and Sustainable Development*, 6(3). <http://www.iiste.org/Journals/index.php/IJEDS/article/view/20580>
- Gherghina, Ștefan C., Botezatu, M. A., Hosszu, A., & Simionescu, L. N. (2020). Small and Medium-Sized Enterprises (SMEs): The Engine of Economic Growth through Investments and Innovation. *Sustainability*, 12(1), 347. <https://doi.org/10.3390/su12010347>
- Gričar, S., Šugar, V., & Bojnec, Š. (2019). Small and medium enterprises led-growth in two adriatic countries: granger causality approach. *Economic Research-Ekonomska Istraživanja*, 32(1), 2161–2179. <https://doi.org/10.1080/1331677x.2019.1645711>
- Gujarati, D. N., Burr Ridge, B., Dubuque, I., Madison, I., & New York San Francisco St Louis Bangkok Bogota Caracas Kuala Lumpur Lisbon London Madrid Mexico City Milan Montreal New Delhi Santiago Seoul Singapore Sydney Taipei Toronto, W. (2003). *BASIC ECONOMETRICS FOURTH EDITION*. <http://www.mhhe.com>
- Gupta, J., & Gregoriou, A. (2018). Impact of market-based finance on SMEs failure. *Economic Modelling*, 69, 13–25. <https://doi.org/10.1016/j.econmod.2017.09.004>
- Herlinawati, E., & Machmud, A. (2020). The Effect of Innovation on Increasing Business Performance of Smes in Indonesia. *WSEAS TRANSACTIONS ON BUSINESS AND ECONOMICS*, 17, 51–57. <https://doi.org/10.37394/23207.2020.17.7>
- Ilegbinosa, I. A., & Jumbo, E. (2015). Small and Medium Scale Enterprises and Economic Growth in Nigeria: 1975–2012. *International Journal of Business and Management*, 10(3). <https://doi.org/10.5539/ijbm.v10n3p203>
- Indrawati, H., Caska, & Suarman. (2020). Barriers to technological innovations of SMEs: how to solve them? *International Journal of Innovation Science*, 12(5), 545–564. <https://doi.org/10.1108/IJIS-04-2020-0049>
- Ipinnaiye, O., Dineen, D., & Lenihan, H. (2017). Drivers of SME performance: a holistic and multivariate approach. *Small Business Economics*, 48(4), 883–911. <https://doi.org/10.1007/s11187-016-9819-5>
- Jalil, M. F., Ali, A., & Kamarulzaman, R. (2022). Does innovation capability improve SME performance in Malaysia? The mediating effect of technology adoption. *The International Journal of Entrepreneurship and Innovation*, 23(4), 253–267. <https://doi.org/10.1177/14657503211048967>
- Jauhari, H., & Periansya, P. (2021). Economic Growth, Poverty, Urbanization, and the Small and Medium Enterprises (SMEs) in Indonesia: Analysis of Cointegration and Causality. *Binus Business Review*, 12(2), 143–150. <https://doi.org/10.21512/bbr.v12i2.6573>
- K., S., & K., J. R. (2019). Cost-reduction and quality improvement using DMAIC in the SMEs. *International Journal of Productivity and Performance Management*, 68(8), 1528–1540. <https://doi.org/10.1108/IJPPM-10-2018-0360>
- Khaled, A., Al-tamimi, K., & Jaradat, M. S. (2019). *THE ROLE OF SMALL MEDIUM ENTERPRISES IN REDUCING THE PROBLEM OF UNEMPLOYMENT IN JORDAN*. 28–37.
- Khatrī, M. B. (2020). Small and Medium Scale Enterprises and their Role in Employment Generation in Nepal. *Tribhuvan University Journal*, 33(1), 129–140. <https://doi.org/10.3126/tuj.v33i1.28688>

- Kumarasinghe, P. J. (2017). Hindering and fostering factors SMEs performance in the Western Province of Sri Lanka. *International Journal of Management Excellence*, 9(2), 1097–1102. <https://doi.org/10.17722/ijme.v9i2.928>
- Laila, N., Ratnasari, R. T., Ismail, S., Mohd Hidzir, P. A., & Mahphoth, M. H. (2023). The intention of small and medium enterprises' owners to participate in waqf: the case of Malaysia and Indonesia. *International Journal of Islamic and Middle Eastern Finance and Management*, 16(3), 429–447. <https://doi.org/10.1108/IMEFM-01-2022-0014>
- Levy, M., & Powell, P. (2003). Exploring SME Internet Adoption: Towards a Contingent Model. *Electronic Markets*, 13(2), 173–181. <https://doi.org/10.1080/1019678032000067163>
- Li, Z., Anaba, O. A., Ma, Z., & Li, M. (2021). Ghanaian SMEs Amidst the COVID-19 Pandemic: Evaluating the Influence of Entrepreneurial Orientation. *Sustainability*, 13(3), 1131. <https://doi.org/10.3390/su13031131>
- Liu, Y., Dilanchiev, A., Xu, K., & Hajiyeve, A. M. (2022). Financing SMEs and business development as new post Covid-19 economic recovery determinants. *Economic Analysis and Policy*, 76, 554–567. <https://doi.org/10.1016/j.eap.2022.09.006>
- Lodorfos, G. (2019). Guest editorial. *International Journal of Organizational Analysis*, 27(2), 222–224. <https://doi.org/10.1108/IJOA-05-2019-995>
- Lu, Q., Yang, Y., & Yu, M. (2022). Can SMEs' quality management promote supply chain financing performance? An explanation based on signalling theory. *International Journal of Emerging Markets*. <https://doi.org/10.1108/IJOEM-03-2022-0456>
- Madani, A. El. (2018). SME Policy: Comparative Analysis of SME Definitions. *International Journal of Academic Research in Business and Social Sciences*, 8(8). <https://doi.org/10.6007/IJARBS/v8-i8/4443>
- Manzoor, F., Wei, L., Nurunnabi, M., & Abdul Subhan, Q. (2019). Role of SME in Poverty Alleviation in SAARC Region via Panel Data Analysis. *Sustainability*, 11(22), 6480. <https://doi.org/10.3390/su11226480>
- Manzoor, F., Wei, L., & Siraj, M. (2021). Small and medium-sized enterprises and economic growth in Pakistan: An ARDL bounds cointegration approach. *Heliyon*, 7(2), e06340. <https://doi.org/10.1016/j.heliyon.2021.e06340>
- Masocha, R. (2019). Normative Environmental Configuration of SMEs within the Sustainable Development Discourse in South Africa: An Empirical Study. *Sustainability*, 11(23), 6537. <https://doi.org/10.3390/su11236537>
- Mina, A., Minin, A. D., Martelli, I., Testa, G., & Santoleri, P. (2021). Public funding of innovation: Exploring applications and allocations of the European SME Instrument. *Research Policy*, 50(1), 104131. <https://doi.org/10.1016/j.respol.2020.104131>
- Mujahid, N., Begam, A., & Nargis. (2019). SMEs Output and GDP Growth: A Dynamic Perspective. *Journal of Asian Business Strategy*, 9(1), 53–65. <https://doi.org/10.18488/journal.1006.2019.91.53.65>
- Mukherjee, S., & Mukherjee, A. (2022). Indian SMEs in Global Value Chains: Status, Issues and Way Forward. *Foreign Trade Review*, 57(4), 473–496. <https://doi.org/10.1177/00157325221092609>
- Naradda Gamage, S. K., Ekanayake, E., Abeyrathne, G., Prasanna, R., Jayasundara, J., & Rajapakshe, P. (2020). A Review of Global Challenges and Survival Strategies of Small and Medium Enterprises (SMEs). *Economies*, 8(4), 79. <https://doi.org/10.3390/economies8040079>
- Navarathne, K. A. S. (2023). An Exploratory Case Study of the Factors Hindering the Success of Small and Medium Enterprises. *Journal of Small Business Strategy*, 33(2). <https://doi.org/10.53703/001c.77456>
- Ng, H. S., Kee, D. M. H., & Ramayah, T. (2016). The role of transformational leadership, entrepreneurial competence and technical competence on enterprise success of owner-managed SMEs. *Journal of General Management*, 42(1), 23–43. <https://doi.org/10.1177/030630701604200103>
- Nguyen, T., Chaiechi, T., Eagle, L., & Low, D. (2020). Dynamic impacts of SME stock market development and innovation on macroeconomic indicators: A Post-Keynesian approach. *Economic Analysis and Policy*, 68, 327–347. <https://doi.org/10.1016/j.eap.2020.10.002>
- Nursini, N. (2020). Micro, small, and medium enterprises (MSMEs) and poverty reduction: empirical evidence from Indonesia. *Development Studies Research*, 7(1), 153–166. <https://doi.org/10.1080/21665095.2020.1823238>
- Ogundipe, M. (2022). *The Impact of CBN Monetary Policy on the Survival SMEs in Nigeria*. <https://doi.org/10.21203/rs.3.rs-2011162/v1>
- Ogunjimi, J. A. (2021). The Role of Small Medium Scale Enterprises in Tackling Unemployment in Nigeria. *DBN Journal of Economics & Sustainable Growth*, 73–92.
- Okello Candiya Bongomin, G., Mpeera Ntayi, J., Munene, J. C., & Akol Malinga, C. (2017). The relationship between access to finance and growth of SMEs in developing economies. *Review of International Business and Strategy*, 27(4), 520–538. <https://doi.org/10.1108/RIBS-04-2017-0037>
- Omodero, C. O. (2019). Effect of Money Supply on Economic Growth: A Comparative Study of Nigeria and Ghana. *International Journal of Social Science Studies*, 7(3), 16. <https://doi.org/10.11114/ijsss.v7i3.4137>
- Osakwe, A. C., Ibenta, S. N. O., & Ezeabasili, V. N. (2019). Monetary Policy and the Performance of the Manufacturing Sector in Nigeria (1986–2017). *International Journal of Academic Research in Business and Social Sciences*, 9(2). <https://doi.org/10.6007/IJARBS/v9-i2/5553>
- Panda, A. K., Nanda, S., & Panda, P. (2021). Working Capital Management, Macroeconomic Impacts, and Firm Profitability: Evidence from Indian SMEs. *Business Perspectives and Research*, 9(1), 144–158. <https://doi.org/10.1177/2278533720923513>

- Plíhal, T. (2017). Granger causality between stock market and macroeconomic indicators: evidence from germany. *Acta Universitatis Agriculturae Et Silviculturae Mendelianae Brunensis*, 64(6), 2101–2108. <https://doi.org/10.1118/actaun201664062101>
- Prasanna, R., Jayasundara, J., Naradda Gamage, S. K., Ekanayake, E., Rajapakshe, P., & Abeyrathne, G. (2019). Sustainability of SMEs in the Competition: A Systemic Review on Technological Challenges and SME Performance. *Journal of Open Innovation: Technology, Market, and Complexity*, 5(4), 100. <https://doi.org/10.3390/joitmc5040100>
- Qayyum, A. (2022). Money, Inflation, and Growth in Pakistan. *The Pakistan Development Review*, 203–212. <https://doi.org/10.30541/v45i2pp.203-212>
- Rotar, L. J., Pamić, R. K., & Bojnec, Š. (2019). Contributions of small and medium enterprises to employment in the European Union countries. *Economic Research-Ekonomska Istraživanja*, 32(1), 3302–3314. <https://doi.org/10.1080/1331677X.2019.1658532>
- Sarango-Lalangui, P., Rodríguez, J., Tapia Carreño, K., & Galarza, B. (2023). Evolution and Trends in SME Digitization Research: A Bibliometric Analysis. *Journal of Technology Management & Innovation*, 18(1), 53–66. <https://doi.org/10.4067/S0718-27242023000100053>
- Sharma, A. K., & Rai, S. K. (2023). Understanding the Impact of Covid-19 on MSMEs in India: Lessons for Resilient and Sustained Growth of Small Firms. *Journal of Small Business Strategy*, 33(1). <https://doi.org/10.53703/001c.72698>
- Sirin, S. M., Uz, D., & Sevindik, I. (2022). How do macroeconomic dynamics affect small and medium-sized enterprises (SMEs) in the power sector in developing economies: Evidence from Turkey. *Energy Policy*, 168, 113127. <https://doi.org/10.1016/j.enpol.2022.113127>
- Spahiu, M., & Durguti, E. (2023). EXAMINATION OF DECISION-MAKING STRUCTURES' PERCEPTIONS OF COMPONENTS ON THE INFLUENCES OF SME SUCCESS. *Journal of Liberty and International Affairs, Institute for Research and European Studies - Bitola*, 9(1), 242–258. <https://doi.org/10.47305/JLIA2391242s>
- Srimulyani, V. A., & Hermanto, Y. B. (2021). Impact of Entrepreneurial Self-Efficacy and Entrepreneurial Motivation on Micro and Small Business Success for Food and Beverage Sector in East Java, Indonesia. *Economies*, 10(1), 10. <https://doi.org/10.3390/economies10010010>
- Su, C.-W., Fan, J.-J., Chang, H.-L., & Li, X.-L. (2016). Is there Causal Relationship between Money Supply Growth and Inflation in China? Evidence from Quantity Theory of Money. *Review of Development Economics*, 20. <https://doi.org/10.1111/rode.12194>
- Surya, B., Menne, F., Sabhan, H., Suriani, S., Abubakar, H., & Idris, M. (2021). Economic Growth, Increasing Productivity of SMEs, and Open Innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(1), 20. <https://doi.org/10.3390/joitmc7010020>
- Tambunan, T. (2019). Recent evidence of the development of micro, small and medium enterprises in Indonesia. *Journal of Global Entrepreneurship Research*, 9(1), 18. <https://doi.org/10.1186/s40497-018-0140-4>
- Tian, H., Dogbe, C. S. K., Pomegbe, W. W. K., Sarsah, S. A., & Otoo, C. O. A. (2021). Organizational learning ambidexterity and openness, as determinants of SMEs' innovation performance. *European Journal of Innovation Management*, 24(2), 414–438. <https://doi.org/10.1108/EJIM-05-2019-0140>
- Tripathi, V., Seth, R., & Bhandari, V. (2015). Foreign direct investment and macroeconomic factors: evidence from the indian economy. *Asia-Pacific Journal of Management Research and Innovation*, 11(1), 46–56. <https://doi.org/10.1177/2319510x14565041>
- Ullah, F., Degong, M., Anwar, M., Hussain, S., & Ullah, R. (2021). Supportive tactics for innovative and sustainability performance in emerging SMEs. *Financial Innovation*, 7(1), 80. <https://doi.org/10.1186/s40854-021-00284-8>
- Verma, S., Singh, V., & Bhattacharyya, S. S. (2020). Do big data-driven HR practices improve HR service quality and innovation competency of SMEs. *International Journal of Organizational Analysis*, 29(4), 950–973. <https://doi.org/10.1108/IJOA-04-2020-2128>
- Vinayagathan, T. (2013). Inflation and economic growth: A dynamic panel threshold analysis for Asian economies. *Journal of Asian Economics*, 26, 31–41. <https://doi.org/10.1016/j.asieco.2013.04.001>
- Weaven, S., Quach, S., Thaichon, P., Frazer, L., Billot, K., & Grace, D. (2021). Surviving an economic downturn: Dynamic capabilities of SMEs. *Journal of Business Research*, 128, 109–123. <https://doi.org/10.1016/j.jbusres.2021.02.009>
- Wehinger, G. (2014). SMEs and the credit crunch: Current financing difficulties, policy measures and a review of literature. *OECD Journal: Financial Market Trends*, 2013(2).
- Williamson, D., Lynch-Wood, G., & Ramsay, J. (2006). Drivers of Environmental Behaviour in Manufacturing SMEs and the Implications for CSR. *Journal of Business Ethics*, 67(3), 317–330. <https://doi.org/10.1007/s10551-006-9187-1>
- Woźniak, M., Duda, J., Gąsior, A., & Bernat, T. (2019). Relations of GDP growth and development of SMEs in Poland. *Procedia Computer Science*, 159, 2470–2480. <https://doi.org/10.1016/j.procs.2019.09.422>
- Zulu-Chisanga, S., Chabala, M., & Mandawa-Bray, B. (2021). The differential effects of government support, inter-firm collaboration and firm resources on SME performance in a developing economy. *Journal of Entrepreneurship in Emerging Economies*, 13(2), 175–195. <https://doi.org/10.1108/JEEE-07-2019-0105>