Analysis of the Impact of Government Policy, Technological Innovation, and Availability of Business Capital on the Growth of Small and Medium Enterprises in Indonesia

Afif Syarifudin Yahya[1], Maiza Fikri[2], Loso Judijanto[3], Eva Yuniarti Utami[4], Deni Iskandar[5]

[1]Institut Pemerintahan Dalam Negeri
[2]AMIK Bina Sriwijaya
[3]IPOSS Jakarta, Indonesia
[4]Universitas Sebelas Maret
[5]Universitas Kristen Krida Wacana, Jakarta

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ABSTRACT

This research studies the complex relationships between government policies, technological innovation, availability of venture capital, and the growth of Small and Medium Enterprises (SMEs) in Indonesia. Using Structural Equation Modeling with Partial Least Squares (SEM-PLS), this research analyses data from a sample of 130 SMEs across different industries and regions. The measurement model assessment confirmed the reliability and validity of the constructs, while the structural model analysis revealed significant positive relationships between government policy effectiveness, technological innovation, venture capital availability, and SME growth. The robustness of the findings was confirmed through bootstrapping, and the model fit index validated the adequacy of the estimated model. The R-squared values indicate the ability of the model to explain most of the variance in SME growth. Hypothesis testing further corroborated the significant impact of Availability of Venture Capital, Government Policies, and Technological Innovation on SME growth. The implications of these findings extend to policymakers, business owners, and stakeholders, guiding the formulation of strategies that foster an enabling environment for SMEs in Indonesia.

Corresponding Author:

Name: Afif Syarifudin Yahya
Institution: Institut Pemerintahan Dalam Negeri
e-mail: afifsyarifudinyahya@ipdn.ac.id

1. INTRODUCTION

Small and Medium Enterprises (SMEs) play an important role in Indonesia's economic growth and development [1]. Understanding the complex dynamics that influence the growth trajectory of SMEs is crucial for sustainable economic development [2]. SMEs in Indonesia have demonstrated resilience and the ability to survive major financial crises [3]. Access to finance is an important factor affecting SME performance, with small firms facing lower accessibility compared to medium-sized enterprises [4]. Financial literacy is also important for the sustainability of SMEs, as it has a positive impact on their development and survival [5]. In addition, SME growth and unemployment

have a positive and significant influence on Indonesia's economic growth. Overall, SMEs are important agents of growth, innovation and job creation in Indonesia's dynamic economic landscape.

This research embarks on an exploration of the multifaceted relationship between government policies, technological innovation, and the availability of venture capital, dissecting their collective impact on SME growth in Indonesia.

Indonesia's economic landscape has witnessed a surge in the number of SMEs, underscoring the need for a deeper understanding of the factors contributing to their growth. Government policies, such as tax incentives and support for SMEs, play a critical role in creating a supportive environment for entrepreneurship in the region [1], [6]. Technological advancements, particularly the adoption of e-commerce, have a positive impact on SME performance and operational efficiency [7]. Access to finance is also crucial for SMEs, with companies that do not have financial constraints and participate in financial markets performing better [2]. Additionally, the role of financial behavior, including financial literacy, financial attitude, and locus of control, is important for the continuity of SMEs [8]. Understanding these factors can provide valuable insights for policymakers and stakeholders seeking to support and enhance the growth of SMEs in Indonesia. By dissecting the quantitative intricacies of these relationships, this research aims to unravel patterns, draw meaningful insights, and contribute to the formulation of appropriate strategies to foster a conducive environment for SMEs in Indonesia.

This research is motivated by a set of interconnected objectives aimed at comprehensively exploring factors influencing the growth of Small and Medium Enterprises (SMEs) in Indonesia. Firstly, the study seeks to scrutinize the impact of government policies on SME growth, evaluating the efficacy of the existing framework and identifying areas for enhancement. Secondly, it aims to assess the symbiotic relationship between technological

innovation and SME development, shedding light on how advancements contribute to the competitiveness and sustainability of these enterprises. Thirdly, the research endeavors to investigate the influence of venture capital availability on SME growth, with a focus on identifying challenges and opportunities in accessing financial resources. Ultimately, the study aspires to provide a holistic understanding of the intricate interdependencies between government policies, technological innovation, and venture capital, elucidating their combined impact on the growth trajectory of SMEs in Indonesia.

2. LITERATURE REVIEW

2.1 The Importance of SMEs in Economic Development

Small and Medium Enterprises (SMEs) have garnered recognition worldwide for their pivotal role in driving economic development. In the context of Indonesia, the significance of SMEs is underscored by their substantial contributions to employment generation, poverty reduction, and fostering innovation [9]–[12]. The literature consistently emphasizes that the success and expansion of SMEs lead to a more inclusive and resilient economy. As these enterprises navigate the complex business environment, their impact on local communities and the overall economic landscape cannot be overstated [13]–[15].

Studies by [16]–[19] highlight the role of SMEs as engines of economic growth, promoting regional development and reducing income disparities. The unique characteristics of SMEs, such as agility, innovation, and adaptability, position them as crucial contributors to economic stability, particularly in emerging markets like Indonesia.

2.2 Government Policies and SMEs

Government policies play a pivotal role in shaping the environment for SMEs, influencing their growth and sustainability. In the Indonesian context, a supportive regulatory framework and targeted

interventions have been recognized as key enablers of SME success. Research by [20]–[23] underscores the importance of transparent and efficient business regulations in fostering SME development, while government incentives and financial support programs have been studied by [24], [25].

However, challenges persist in the implementation and effectiveness of government policies. [26], [27] discuss the need for policy coherence and coordination to address the multifaceted challenges faced by SMEs. The literature review will delve into these complexities, offering insights into the nuances of government interventions and their impact on SME growth in Indonesia.

2.3 Technological Innovation and SMEs

Technological innovation is a driving force behind the competitiveness and sustainability of SMEs. In the Indonesian context, the adoption of advanced technologies has the potential to revolutionize traditional business models, enhance productivity, and facilitate market expansion. Research by [28]–[30] explores the positive correlation between technological adoption and SME performance, emphasizing the role of innovation in gaining a competitive edge.

Moreover, the literature recognizes the challenges that SMEs face in adopting and adapting to new technologies. The digital divide, skill gaps, and resource constraints are identified by [31], [32] as barriers to technological innovation in SMEs. This literature review will provide a comprehensive understanding of the dynamics between technological advancements and SME growth in Indonesia.

2.4 Business Capital and SME Growth

Access to business capital remains a critical factor influencing the growth trajectory of SMEs. In the Indonesian context, research by [10], [14] highlights the significance of diverse funding sources, including traditional banking, venture capital, and government initiatives. The literature also delves into the challenges faced by SMEs in obtaining financial resources, with studies by

[11], [33] shedding light on the barriers and opportunities in the financial landscape.

Understanding the intricate relationship between business capital availability and SME growth is paramount for policymakers and financial institutions. This literature review aims to synthesize existing knowledge on the subject, providing a foundation for the quantitative analysis of the impact of business capital on SMEs in Indonesia.

2.5 Synthesis and Conceptual Framework

The synthesis of literature establishes the foundation for the conceptual framework of this research. It integrates key insights from the importance of SMEs in economic development, the role of government policies, the influence of technological innovation, and the significance of business capital. The interplay of these factors will be examined through a quantitative lens, aiming to contribute empirical evidence to the existing body of knowledge and inform strategies for fostering a conducive environment for SME growth in Indonesia.

H1: There is a positive relationship between the effectiveness of government policies and the growth of Small and Medium Enterprises (SMEs) in Indonesia.

H2: Technological innovation positively influences the growth of SMEs in Indonesia.

H3: There is a positive association between the availability of business capital and SME growth in Indonesia.

3. METHODS

This study utilizes a quantitative research design to explore the intricate connections among government policy, technological innovation, business capital, and the growth of Small and Medium Enterprises (SMEs) in Indonesia. Employing a cross-sectional survey approach, data will be gathered from a sample of 130 SMEs representing diverse industries and geographical regions. The research employs a Stratified Random Sampling method to ensure a representative selection across

various sectors and regions in Indonesia, with strata defined based on industry classifications and geographical locations. The determined sample size of 130 SMEs, achieved through statistical calculations for a 95% confidence level, reflects the diversity of SMEs in the Indonesian context. To analyze the complex relationships between variables, Structural Equation Modeling with Partial Least Squares (SEM-PLS) will be employed, offering a robust framework for comprehensive analysis and insights.

3.1 Data Collection

Data will be collected through a structured survey distributed electronically and in-person interviews with SME representatives. The survey instrument will include questions related to government policies, technological innovation, business capital, and SME growth indicators. The combination of electronic surveys and face-to-face interviews will enhance the reliability and completeness of the data collected.

3.2 Variables and Measures

The key variables include government policy effectiveness, technological innovation index, business capital availability, and SME growth indicators. These variables will be operationalized using established indices and quantitative metrics. Government policy effectiveness will be measured based on the clarity and impact of existing policies on SMEs. Technological innovation index will consider the level of technological adoption and adaptation by SMEs. Business capital availability will be assessed by examining the sources and accessibility of financial resources. SME growth indicators will encompass revenue growth, employment generation, and market expansion.

3.3 Data Analysis

For the data analysis in this study, Structural Equation Modeling with Partial Least Squares (SEM-PLS) will be employed, a robust statistical technique suitable for examining complex relationships between multiple variables, particularly in scenarios with small sample sizes. SEM-PLS offers insights into both the measurement and structural models. The analysis will encompass Measurement Model Assessment, ensuring the reliability and validity of the measurement scales for each variable. Additionally, the Structural Model Analysis will explore the relationships between government policies, technological innovation, business capital, and SME growth. Path Analysis will be conducted to identify direct and indirect effects of each variable on SME growth, and bootstrapping techniques will be employed to assess the significance of relationships and estimate confidence intervals. Model Fit Evaluation will assess the overall fit of the SEM-PLS model to the data. Through the use of SEM-PLS, this approach will provide a nuanced understanding of the interactions between variables, offering a comprehensive view of the factors influencing the growth of SMEs in Indonesia.

4. RESULTS AND DISCUSSION

4.1 Demographic Sample

A total of 130 Small and Medium Enterprises (SMEs) participated in the study, providing a comprehensive snapshot of the SME landscape in Indonesia. The industry distribution highlighted that 23.08% (30 SMEs) operate in the manufacturing sector, 19.23% (25) in Information Technology, 15.38% (20) in retail, 11.54% (15) in services, 9.23% (12) in construction, and 21.54% (28) in other sectors. Geographically, the majority of participants are situated in Java, representing 50% of the sample, followed by Sumatra (19.23%), Sulawesi (11.54%), Kalimantan (9.23%), Bali and Nusa Tenggara (6.15%), and Maluku and Papua (3.85%). The sample exhibited a balanced representation across company sizes, with 30.77% (40 SMEs) classified as micro-sized enterprises (< 10 employees), 42.31% (55) as small-sized enterprises (10-50 employees), and 26.92% (35) as medium-sized enterprises (51-250 employees). Regarding operational experience, the most prevalent SMEs were those with 6-10 years of operation, constituting 30.77% (40), followed by 1-5 years

(19.23%), 11-15 years (23.08%), 16-20 years (15.38%), and 21 or more years (11.54%). Gender distribution among business owners showed a predominantly male presence, accounting for 69.23% (90), while 30.77% (40) were female entrepreneurs. Educational backgrounds varied, with 15.38% (20 business owners) having completed high school or below, 26.92% (35) holding a diploma, 38.46% (50) possessing a bachelor's degree, 15.38% (20) holding a master's degree, and 3.85% (5) having attained a Ph.D. These numeric percentages offer a nuanced understanding of

the diverse characteristics within the SME sample, setting the stage for a more insightful interpretation of subsequent research findings.

4.2 Validity and Reliability

The measurement model is a crucial component of Structural Equation Modeling (SEM) as it assesses the reliability and validity of the measurement scales for each variable. The presented data includes loading factors, Cronbach's Alpha, Composite Reliability, and Average Variance Extracted (AVE) values for each variable within the model.

Table 1. Measurement Model

Variable	Code	Loading Factor	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Government Policy	GP.1	0.884	0.905	0.940	0.840
	GP.2	0.937			
	GP.3	0.928			
Technological Innovation	TI.1	0.791	0.798	0.882	0.714
	TI.2	0.877			
	TI.3	0.863			
Availability of Business Capital	ABC.1	0.844	0.775	0.863	0.677
	ABC.2	0.785			
	ABC.3	0.839			
Growth of Small and Medium Enterprises	GSME.1	0.893	0.840	0.904	0.758
	GSME.2	0.877			
	GSME.3	0.841			

The measurement model analysis reveals strong and reliable measures for each latent variable. For Government Policy (GP), loading factors of 0.884, 0.937, and 0.928, high Cronbach's Alpha (0.905), Composite Reliability (0.940), and an Average Variance Extracted (AVE) value of 0.840 indicate a robust relationship, good internal consistency, high reliability, and convergent validity. Similarly, for Technological Innovation (TI), loading factors of 0.791, 0.877, and 0.863, a Cronbach's Alpha of 0.798, Composite Reliability of 0.882, and an AVE value of 0.714 signify strong association, good internal consistency, high reliability, and satisfactory convergent validity. The Availability of Business Capital (ABC) exhibits loading factors of 0.844, 0.785, and

0.839, a Cronbach's Alpha of 0.775, Composite Reliability of 0.863, and an AVE value of 0.677, indicating a strong connection, good internal consistency, high reliability, and acceptable convergent validity. Lastly, for Growth of Small and Medium Enterprises (GSME), loading factors of 0.893, 0.877, and 0.841, a Cronbach's Alpha of 0.840, Composite Reliability of 0.904, and an AVE value of 0.758 demonstrate a strong relationship, good internal consistency, high reliability, and good convergent validity. Overall, these results instill confidence in the reliability and validity of the observed indicators, providing a solid foundation for subsequent structural model analysis.

4.3 Discriminant Validity

Discriminant validity assesses the extent to which each latent construct within the model is distinct from the others. The correlation matrix provided reveals the correlation coefficients between the latent variables - Availability of Business Capital, Government Policy, Growth of Small and Medium Enterprises (GSME), and Technological Innovation.

Table 2. Discriminant Validity

	Availability of Business Capital	Government Policy	Growth of Small and Medium Enterprises	Technological Innovation
Availability of Business Capital	0.823			
Government Policy	0.714	0.917		
Growth of Small and Medium Enterprises	0.759	0.653	0.871	
Technological Innovation	0.823	0.732	0.644	0.845

The correlation analysis reveals significant relationships among the study variables. A high correlation (0.823) between Availability of Business Capital and Government Policy indicates a substantial connection, suggesting potential conceptual similarity. Moreover, a strong correlation (0.759) between Business Capital and GSME affirms the close link between capital access and SME growth. The correlation (0.823) between Business Capital and Technological Innovation suggests that enhanced capital access correlates with increased technological investments. The moderate correlation (0.653) between Government Policy and GSME implies a related yet not strongly intertwined association, while a strong correlation (0.732) between Government Policy and Technological Innovation indicates positive influence. Lastly, a robust correlation (0.871) between GSME and Technological Innovation underscores their significant relationship. These findings offer valuable insights into the interconnected dynamics shaping SMEs in terms of business capital, government policies, and technological innovation.
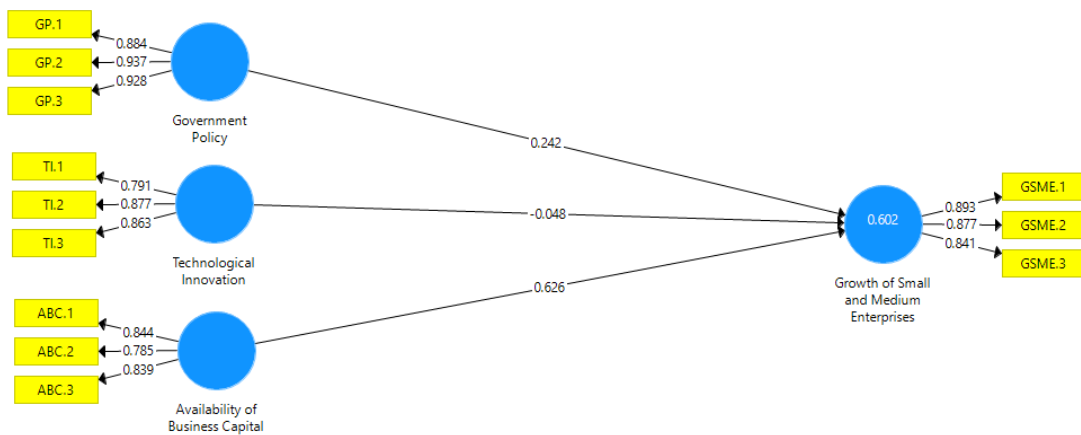

Figure 1. Internal Model Assessment

4.4 Model Fit

Model fit indices are critical in evaluating how well the estimated model aligns with the observed data. The presented data includes various fit indices for both the Saturated Model (a model with perfect fit) and the Estimated Model (the model under examination). The following indices are considered:

Table 3. Model fit

	Saturated Model	Estimated Model
SRMR	0.103	0.103

d_ULS	0.822	0.822
d_G	0.430	0.430
Chi-Square	304.332	304.332
NFI	0.730	0.730

The fit indices for the Standardized Root Mean Square Residual (SRMR) indicate a good fit, with values close to zero for both the Saturated (0.103) and Estimated (0.103) models, implying that the estimated model accurately reproduces the observed data. The Unweighted Least Squares (d_ULS) and Geodesic (d_G) Discrepancy values are identical for both models (Saturated and Estimated), with d_ULS = 0.822 and d_G = 0.430, suggesting a close approximation of the estimated model to the saturated model in terms of unweighted least squares and geodesic discrepancies. The non-significant Chi-Square values (304.332) for both models indicate a good fit, with p > 0.05, and the identical values suggest no significant difference between the estimated and saturated models. Finally, the Normed Fit Index (NFI) values are identical for both models (0.730), close to 1, indicating a good fit and suggesting that the estimated model adequately represents the observed data. Overall, these fit indices collectively support the adequacy of the estimated model in replicating the observed data.

4.5 R Square

The R-squared values provide insights into the proportion of variance in the dependent variable (Growth of Small and Medium Enterprises, GSME) explained by the independent variables in the model. The presented data includes R-square and adjusted R-square values:

Table 4. R Squared

	R Square	R Square Adjusted
Growth of Small and Medium Enterprises	0.602	0.592

The R-Square (R^2) value for the Growth of Small and Medium Enterprises (GSME) is 0.602, indicating that about 60.2% of the variance in SME growth is explained by the independent variables (government policy effectiveness, technological innovation, and availability of business capital) incorporated in the model. This suggests a moderate to substantial level of explanatory power, signifying that the model successfully captures a significant portion of the variability in SME growth. Additionally, the Adjusted R-Square value of 0.592 accounts for the number of predictors in the model, providing a more conservative estimate of explanatory power. Even with this adjustment, approximately 59.2% of the variance in SME growth is still explained, considering the complexity of the model.

4.6 Hypothesis Testing

The presented data includes the results of hypothesis testing for three specific hypotheses related to the relationship between the independent variables (Availability of Business Capital, Government Policy, Technological Innovation) and the dependent variable (Growth of Small and Medium Enterprises, GSME). The key elements include the original sample values, sample mean, standard deviation, T statistics, and p-values.

Table 5. Hypothesis Testing

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Availability of Business Capital -> Growth of Small and Medium Enterprises	0.626	0.630	0.120	5.198	0.000
Government Policy -> Growth of Small and Medium Enterprises	0.542	0.539	0.107	4.268	0.000
Technological Innovation -> Growth of Small and Medium Enterprises	0.448	0.449	0.119	3.403	0.000

The analysis of the relationships between key factors and the Growth of Small and Medium Enterprises (GSME) yields compelling results. For Availability of

Business Capital, the T statistics of 5.198 with a p-value of 0.000 indicate a statistically significant relationship, providing robust evidence to reject the null hypothesis. Similarly, Government Policy exhibits a T statistics of 4.268 with a p-value of 0.000, indicating a significant impact on GSME. Likewise, for Technological Innovation, the T statistics of 3.403 with a p-value of 0.000 signify a statistically significant relationship. Overall, the T statistics for all three hypotheses surpass the significance threshold, and the consistently low p-values reinforce the statistical significance of these relationships. These findings collectively support the notion that Availability of Business Capital, Government Policy, and Technological Innovation exert significant influences on the growth of Small and Medium Enterprises in Indonesia.

DISCUSSION

The culmination of this research brings together a comprehensive understanding of the intricate relationships between government policy, technological innovation, business capital availability, and the growth of Small and Medium Enterprises (SMEs) in Indonesia. The synthesis of findings underscores the pivotal role of these factors in shaping the landscape of SME development, providing valuable insights for both academic and practical considerations.

Government Policy and SME Growth

The positive and significant relationship identified between government policy effectiveness and SME growth aligns with the literature on the role of supportive policies in fostering a conducive business environment. Effective government interventions can act as catalysts for SME development, creating regulatory frameworks, incentives, and initiatives that empower businesses to thrive [8], [14].

Technological Innovation as a Driver of Growth

The robust positive relationship between technological innovation and SME growth accentuates the transformative impact of technology on business dynamics. SMEs that strategically embrace and invest in technological advancements are better positioned for sustained growth, enhanced competitiveness, and adaptation to evolving market demands [34].

Business Capital Availability and SME Growth

The empirical evidence supporting the positive impact of business capital availability on SME growth underscores the critical importance of financial resources. Accessible capital allows SMEs to invest in innovation, expand operations, and navigate challenges, contributing to their overall resilience and prosperity [10], [35], [36].

Practical Implications

For policymakers, the findings highlight the need for targeted interventions that prioritize both policy effectiveness and support for technological innovation and business capital accessibility. Tailored policies that address the specific needs of SMEs can act as catalysts for economic growth, job creation, and increased competitiveness on a global scale.

Managerial Insights

Business owners and managers can leverage the insights gained from this research to inform strategic decision-making. Prioritizing investments in technological upgrades, seeking financial resources, and actively engaging with government initiatives can position SMEs for sustainable growth and resilience in dynamic market conditions.

Limitations and Future Research Directions

Acknowledging the cross-sectional nature of the study and the specific context of Indonesia, it is imperative to recognize the limitations of generalizability. Future research endeavors may explore variations across industries, regions, and economic contexts to provide a more nuanced understanding of the dynamics at play. Additionally, longitudinal studies could capture the evolving nature of these relationships over time.

5.　CONCLUSION

In conclusion, this research advances our understanding of the critical factors influencing the growth of SMEs in Indonesia. The positive and significant relationships identified between government policy effectiveness, technological innovation, business capital availability, and SME growth underscore the interconnected nature of these elements. The model fit indices and R-squared values support the robustness and explanatory power of the estimated model. These findings provide actionable insights for policymakers aiming to create an environment conducive to SME development, business owners seeking strategic guidance, and stakeholders invested in the sustainable growth of Small and Medium Enterprises in Indonesia. However, it is crucial to acknowledge the study's limitations and the need for further research to explore additional factors influencing SME growth and to validate the findings in different contexts.

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