



Uncovering The Impact of Technology Characteristics and Business Environment Characteristics In Spurring Business Performance

Heri Setiawan^{1*} A.Jalaludin Sayuti² and Sari Lestari Zainal Ridho³

^{1,2,3} Business Administration Department, State Polytechnic of Sriwijaya, Palembang, Indonesia

*Corresponding author. email: heri.setiawan@polsri.ac.id

Abstract. The use of information technology (IT) by Small and Medium enterprises (SMEs) is an important key in strengthening competitiveness and expanding the market. This study reveals the role of technology characteristics and the business environment in spurring the business performance of small and medium enterprises. The questionnaire was distributed to respondents online based on a Google form. The study sample was set to be around 120 respondents using the purposive sampling method. The results of the study revealed that technology characteristics can spur business performance. On the other hand, the characteristics of the business environment are also able to spur business performance. Companies that can adapt to external changes and understand market dynamics will be better able to maintain competitiveness and maintain optimal performance. The synergy between the use of technology and the ability to cope with a dynamic business environment is a key factor in achieving sustainable business performance.

Keywords: technological characteristic, business environment characteristic, business performance, SMEs

1 Introduction

The use of information technology (IT) in the business world has become an important element in improving operational efficiency and competitiveness [1]. Companies can reduce reliance on manual labor, save time, and reduce costs through process automation. Information technology also integrates various departments, resulting in smoother and more structured coordination and workflows [2]. In addition, information technology provides new opportunities in marketing strategies and customer relationships. The use of digital platforms, such as social media and e-commerce websites, allows companies to reach consumers more widely and effectively [3]. Customer data collected through this platform can be analyzed using big data to understand consumer behavior and market trends so that companies can design more targeted marketing strategies. Personalizing ads and services to customers has become easier with the support of accurate data analysis. Information technology also improves the security of the company's data and operational systems [4]. Cloud systems and data encryption help protect sensitive business information from the risk of leaks and cyberattacks [5]. Companies

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can maintain the continuity of their operations amid rapid technological changes and ensure that they are always ready to compete in an increasingly digital and global market with the right IT implementation [6].

The use of information technology (IT) by Small and Medium Enterprises (SMEs) is an important key in strengthening competitiveness and expanding the market [7]. SMEs can improve operational efficiency, save costs, and reduce human error in business processes through the use of technology such as accounting software, inventory management, and point-of-sale systems [8]. SME owners can also monitor transactions, finances, and stock of goods in real-time, which helps in faster and more accurate decision-making with digital systems. In addition, information technology allows SMEs to connect directly with consumers through digital platforms such as social media, e-commerce, and marketplaces [9]. SMEs can expand their market reach without having to spend a fortune on conventional marketing with an online presence. Information technology also makes it easy for SMEs to personalize customer experiences, analyze purchasing trends, and run more effective promotional campaigns, by leveraging consumer data collected through digital platforms [10]. Information technology also helps SMEs maintain the security of business and customer data [11]. The use of cloud computing allows SMEs to securely store important data and access it at any time without having to worry about data loss due to device damage [12]. By adopting IT, SMEs can face competition in the digital era better prepared, accelerate business growth, and adapt to ever-evolving technological changes [13].

The relationship between technology characteristics and business performance is very close, where the right technology can have a significant impact on a company's productivity and competitiveness [14]. One of the important characteristics of technology is efficiency, which allows businesses to do more in less time with fewer resources [15]. Efficient technology, such as automation systems, simplifies the management of day-to-day operations, reduces human error, and reduces operational costs. This improves business performance by creating a smoother and more structured workflow. Another characteristic that affects business performance is the flexibility of technology. Adaptive and scalable technology allows companies to adapt to changing markets and dynamic customer needs [16]. Cloud computing and data-driven systems allow companies to expand or decrease capacity as needed without sacrificing performance [17]. Flexibility helps businesses respond quickly to new challenges and opportunities, maintaining a competitive advantage in a rapidly changing business environment [18]. Reliability is also a technology characteristic that is critical to business performance. Reliable technology ensures business operations can run without interruption [19]. Companies can increase productivity, maintain customer trust, and ensure sustainable business continuity by relying on powerful and proven technology [20].

The characteristics of the business environment have a significant influence on business performance [21] because dynamic external conditions can determine the opportunities and challenges that companies must face [22]. One of the factors in the business environment is uncertainty, where regulatory changes, economic fluctuations, or technological developments can suddenly affect business operations [23]. Businesses that can adapt to this unstable environment, with flexible strategies and good risk management [24] will usually excel in maintaining optimal performance despite external changes. In addition, the level of competition in the industry is also an important characteristic that has a direct impact on business performance [25]. Companies need to

continue to innovate and improve efficiency to survive and thrive in a highly competitive business environment [26]. Fierce competition forces businesses to offer high-quality products or services at competitive prices [27] as well as invest in technology and human resources to maintain a position in the market. On the other hand, in an environment with a low level of competition, businesses may have more discretion in setting prices and strategies, but must also be wary of newcomers. Companies can improve their competitiveness and maintain good performance amid ongoing market changes by understanding and responding effectively to the business environment [28].

This survey reveals the clout of technology characteristics and business environment characteristics in spurring business performance of the micro, small, and medium enterprises sectors in Palembang.

2 Literature Review and Hypothesis

Technology Characteristics and Business Performance

The characteristics of technology have a significant influence on business performance [29]. Advances in information and communication technology have revolutionized the way businesses operate, interact with customers, and make strategic decisions [15]. The ease of use of technology allows businesses to quickly adapt to changes in the market and customer needs thereby improving overall performance [17]. The scalability of technology allows businesses to remain flexible and responsive to changes in demand that are critical for sustainable growth and optimal performance [30]. Businesses can invest more in product innovation, marketing, and employee development at a lower cost which contributes to improved business performance [28]. Effective use of analytics improves a business's ability to optimize operations, identify new opportunities, and improve overall performance [16]. A personalized customer experience is key to building strong relationships with customers and improving business performance [31]. Technology characteristics that drive adaptability and innovation are essential for long-term business performance [32]. Businesses that can adapt quickly to technological innovations can respond better to market changes, customer needs, and competitive pressures [33].

H1: Characteristics of technology capable of improving business performance

Characteristics of the Business Environment and Business Performance

The characteristics of the business environment have a significant influence on business performance [15]. Global and local economic conditions play an important role in business performance. Companies that can adapt to changing economic conditions, for example by adjusting pricing strategies or product diversification, tend to have better performance [34]. Technological advancements can improve business performance by introducing operational efficiencies, new products and services, and more effective marketing methods [24]. Technologies such as automation, big data, and artificial intelligence (AI) allow companies to optimize business processes, reduce costs, and make better decisions based on accurate data. Companies that are quick to adopt new technologies and innovate tend to have a competitive advantage and better performance [23]. Changes in consumer preferences and behaviors can significantly affect business performance [35]. Companies need to understand and adapt to social trends to stay

relevant and competitive. Companies that successfully respond to social changes well can improve their brand image, building customer loyalty [20]. The ever-changing regulatory environment can affect business performance [26]. Regulations that support innovation, such as the protection of intellectual property rights, can encourage companies to continue to innovate and improve performance [36]. The level of competition in the industry has a major impact on business performance [37]. Companies that manage to differentiate themselves from competitors through innovation, quality, and superior customer service will typically experience better performance [38].

H2: Characteristics of the business environment can improve business performance

3 Methods

This study utilizes data obtained from the distribution of questionnaires to small and medium business owners or managers who are members of the Nusantara SME community in Palembang City. The questionnaire was distributed to respondents online based on a Google form. The study sample was set to be around 120 respondents using the purposive sampling method. Technology characteristics were measured with nine items adapted from [39]; [40]; [41]; and [42]. Environmental characteristics were measured with nine items adapted from [39]. SME business performance was measured using seven items adapted from [43]; [44]. The measurement scale uses Likert with 5 scales. Data analysis uses the SEM-PLS device to obtain the validity, reliability, and relationship values between variables.

4 Results

Analysis of Measurement Model

The first step taken before the PLS-SEM analysis is to test the validity and reliability as the most important requirements. The minimum value standards and adjustments to the analysis results referring to previous studies are applied to this study. [45] stated that to meet the significance value requirement, each construct of the outer loading value must be more than 0.70. Then, the validity of convergence will be under the provisions and accepted if the AVE value for each minimum construct is 0.50 [45]. Reflecting on the amount of value that has been following the minimum requirements, all constructs are considered valid. Cronbach Alpha has a high level of reliability with values between 0.939 to 0.960 and composite reliability ranging from 0.949 to 0.967. Furthermore, a VIF value for all constructs is obtained of no more than 5 so that it can be stated that there is no multicollinearity in the model (Table 1).

Table 1. Result of Validity and Reliability Test

Variables	Items	Outer Loading	AVE	CR	Cron. α	VIF
Technology Characteristic	TC1	0.866	0.808	0.967	0.960	1.340
	TC2	0.941				
	TC5	0.881				
	TC6	0.936				

	TC7	0.888				
	TC8	0.821				
	TC9	0.952				
Business Environment Characteristic	BEC1	0.799	0.677	0.949	0.939	2.412
	BEC2	0.732				
	BEC3	0.934				
	BEC4	0.914				
	BEC5	0.770				
	BEC6	0.851				
	BEC7	0.814				
	BEC8	0.837				
	BEC9	0.905				
Business Performance	BP1	0.919	0.783	0.962	0.953	2.876
	BP2	0.935				
	BP3	0.954				
	BP4	0.870				
	BP5	0.782				
	BP6	0.894				
	BP7	0.829				

Table 2 describes each construct having an AVE square root value above the requirements needed to determine the intercorrelation amount. The HTMT value was lower than the cut-off value of 0.9 and was declared to meet the requirements of the validity of the discrimination.

Table 2. Discriminant Validity Test

Variables	TC	BEC	BP
TC	0.899		
BEC	0.861	0.823	
BP	0.818	0.802	0.885

TC: Technology Characteristic; BEC: Business Environment Characteristic; BP: Business Performance

Analysis of Structural Model

Table 3 presents the value of chi-square (χ^2) = 308.078 and has matched the significance level ($p = 0.00$). SRMR (residual squared standard mean) is the standard for model conformity from the study. The study model will be able to meet the standard if the SRMR value is less than 0.08. Table 3 describes the SRMR value = 0.070. The value of the Normed fit index (NFI) = 0.505 and it can be described that the model has met the applicable conditions.

Table 3. Goodness of Fit

Goodness of fit	Mod. Estimated
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SRMR	0.070
d-ULS	0.254
d-G	0.165
Chi-square (χ^2)	308.078
NFI	0.505

The results of path analysis for this study are described in Table 4. Technology characteristics significantly spur business performance ($\beta = 0.671$, $t = 5.705$, and $p = 0.000$) and support H₁. Business environment characteristics were able to significantly spur business performance ($\beta = 0.257$, $t = 2.196$, and $p = 0.029$) and support H₂.

Table 4. The Hypothesis Test

	Hyp.Path	Stand. Beta (β)	T-value	P-value	Decision
H ₁	TC → BP	0.671	5.705	0.000	Supported
H ₂	BEC → BP	0.257	2.196	0.029	Supported

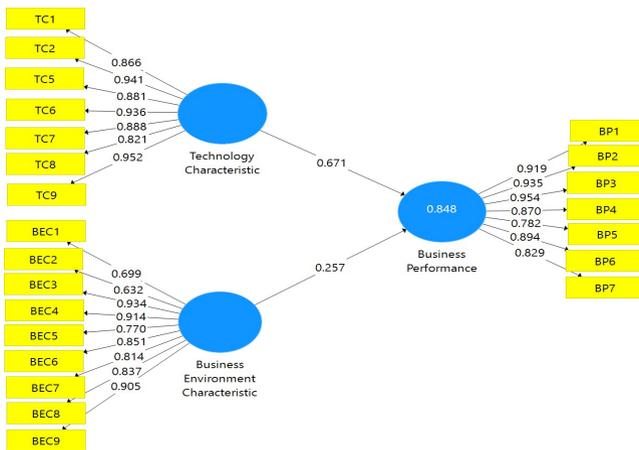


Figure 1. Results of Path Analysis

This study was able to reveal that technology characteristics can spur business performance ($\beta = 0.671$, $t = 5.705$, and $p = 0.000$) and support H₁. This review is in line with the study of [29]; [28]; [14]; [15]; [17]; [37]; [32]; [16]; [30] which describes that technological characteristics can stimulate business performance. Technological characteristics have a significant influence on business performance, as the right technology can support a company's productivity, efficiency, and competitiveness. One of the key characteristics is efficiency, where technology helps companies automate various processes, reduce human error, as well as speed up workflows. Companies can increase output while reducing operational costs, which in turn contributes to improving overall business performance with efficient technology, such as resource management software

or production automation systems. Additionally, the flexibility of technology allows businesses to more easily adapt to changing market conditions or consumer needs. The ability of technology to support business change and growth has a profound effect on the long-term performance of the company. Another characteristic that is no less important is the reliability of the technology. Reliable technology ensures that a company's operational systems can run smoothly without major disruptions, which can lead to lost time and costs. Companies can maintain optimal performance and avoid risks that can significantly disrupt the business with reliable technology.

Business environment characteristics were able to significantly spur business performance ($\beta = 0.257$, $t = 2.196$, and $p = 0.029$) and support H₂. This review is in line with the study of [24]; [33]; [20]; [37]; [34]; [36]; [15]; [26]; [23]; [35] which describes that business environment characteristics can stimulate business performance. The characteristics of the business environment have a great influence on business performance, as these external factors often determine the opportunities and challenges that companies must face. One of the important characteristics is uncertainty in the business environment, which can arise from regulatory changes, economic fluctuations, and technological developments. This uncertainty requires companies to have flexible strategies and good risk management. Companies that can adapt quickly to external changes tend to be more successful in maintaining stability and performance, despite being faced with uncertain market conditions. Companies must strive harder to stay relevant, by improving innovation, product quality, and operational efficiency in a highly competitive environment. Fierce competition forces companies to constantly look for new ways to attract and retain customers, as well as offer more value than competitors. Conversely, in an environment with low competition, businesses may have more freedom in pricing and strategy but still need to be alert to new threats that may arise. Then, companies that are responsive to these socio-cultural changes are better able to create effective marketing strategies and maintain strong business performance amid changing market preferences.

5 Conclusion

The characteristics of technology and the business environment have a positive and significant influence on business performance. Efficient, flexible, and reliable technology can increase productivity, reduce operational costs, and enable faster adaptation to market changes. The use of the right technology supports more optimal and sustainable business operations. Meanwhile, the characteristics of the business environment, such as uncertainty, level of competition, and socio-cultural dynamics, also have a direct impact on the company's performance. Companies that can adapt to the external environment and respond quickly to changes tend to be better able to maintain stability and improve their competitiveness. The synergy between the use of technology and the ability to cope with a dynamic business environment is a key factor in achieving superior and sustainable business performance. The limitations of research on the influence of technological characteristics and business environment characteristics on the performance of SMEs in Palembang include important aspects, the limitations of data and samples. The research only involves a limited number of SMEs in one community so it

does not fully represent the entire SME sector in Palembang City. Uneven sampling can limit the generalization of research findings to the entire SME population.

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