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***Research paper***

# Technology Relatedness Accounting System and Entrepreneur's Decision-Making Style on The Company Performance of SMEs: The Moderating Role of Product Diversification

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**Abstract**

This study examines the effects of Technology Relatedness Accounting Systems (TRAS) and Entrepreneur's Decision-Making Style on the performance of small and medium-sized enterprises (SMEs), with Product Diversification as a moderating variable. Using survey data from 318 technology-adopting SMEs in Indonesia, the study applies Structural Equation Modeling with Partial Least Squares (SEM-PLS) to test the proposed relationships. The results indicate that technology-relatedness—conceptualized as a second-order construct reflecting the complementarity of IT strategy, IT vendor management, IT human resources, and IT infrastructure—has a significant positive effect on SME performance. An entrepreneur's decision-making style also positively influences performance. Product diversification significantly negatively moderates the relationship between technology-relatedness and performance, suggesting that excessive diversification may increase coordination complexity and reduce the effectiveness of technological complementarities in resource-constrained SMEs. However, product diversification does not moderate the relationship between decision-making style and performance. This study contributes to the Resource-Based View by demonstrating that the performance impact of technology-related resources depends on their internal integration and strategic alignment rather than on diversification breadth alone. The findings provide actionable insights for SME managers and policymakers regarding effective digital capability development and diversification strategies.

***Keywords***: *Performance of SMEs; Technology Relatedness; Entrepreneur's Decision Making Style; Product diversification; Second Order Construct.*

## 1. Introduction

The increasingly complex and dynamic business environment compels firms to continuously adapt their strategies and operational practices in order to sustain competitiveness and improve performance (Wilenius, 2005). This adaptive imperative is particularly salient for small and medium-sized enterprises (SMEs), which face heightened resource constraints while simultaneously confronting rapid technological change. In response, SMEs have increasingly embraced technology-based services to enhance operational efficiency and market reach. In Indonesia, this transformation is evident in the widespread adoption of digital payment systems and platforms, including the Quick Response Code Indonesian Standard (QRIS), mobile-based SME applications, payment point services, and digital wallets. These developments highlight the growing centrality of information systems as a critical enabler of organizational adaptation amid accelerated advances in information technology (McLeod, 1997; Davis & Sun, 2006; Afolayan et al., 2015).

The strategic significance of information technology (IT) in contemporary business has substantially expanded the role of information systems beyond operational support. Increasingly, IT is recognized as a strategic asset capable of generating and sustaining competitive advantage (Chege & Wang, 2020). This shift is reflected in the rising proportion of organizational capital devoted to IT investments, which in many firms exceeds half of total capital expenditure (Ferneley & Bell, 2006). Within the Indonesian SME context, the proliferation of technology-enabled service infrastructures signals a strong commitment to digital investment. Recent evidence suggests that IT-related expenditures among SMEs continue to grow, reinforcing the strategic role of digital technologies in strengthening performance and long-term competitiveness (Kemenperin, 2024).

However, the performance outcomes of IT investments depend not only on financial commitment but also on organizational learning, governance structures, and effective IT management capabilities (Morikawa, 2004; Lopez et al., 2024). Prior studies emphasize that the coordination and structuring of IT resources across organizational units critically shape a firm's ability to exploit synergies and avoid resource fragmentation (Ruz et al., 2006). From a resource-based view (RBV), IT represents a strategic resource whose value is realized

through its alignment with complementary organizational assets and managerial capabilities. Drawing on the RBV of diversification and the economic theory of complementarities, cross-unit synergies arise from resource-relatedness and complementarity, enabling firms to share, recombine, and leverage resources to generate efficiency gains and enhanced value creation (Queiroz et al., 2025; Sai et al., 2025). These synergies may produce sub-additive cost effects, whereby joint utilization reduces total costs, as well as super-additive value effects, where combined resources yield greater benefits than their isolated use. For SMEs operating in increasingly digitalized markets, the effective integration of IT resources with strategic decision-making processes is therefore essential to achieving superior performance.

Technology relatedness plays a pivotal role in realizing these synergistic benefits, particularly through the creation of sub-additive cost efficiencies. When business activities are supported by shared technological linkages—such as IT strategy formulation, vendor management, IT human resource practices, and integrated infrastructure—organizations can reduce duplication, enhance coordination, and mitigate operational inefficiencies (Levinthal & Wu, 2025). Within the financial and accounting domain, Technology Relatedness Accounting Systems (TRAS) reflect the extent to which accounting applications, digital platforms, and financial information processes are interconnected. Rather than focusing on standalone technologies, TRAS emphasizes systemic integration to generate accurate, timely, and decision-relevant financial information that supports managerial control and strategic planning.

The performance-enhancing effects of technology-relatedness are further amplified through complementarities across the IT-enabled supply chain and managerial activities. The joint deployment of interdependent technological resources generates synergistic outcomes that exceed the sum of individual contributions, enabling firms to extract greater value from their digital investments. Empirical research demonstrates that effective management of cross-unit IT synergies enhances organizational coordination, flexibility, and knowledge flows, thereby improving overall firm performance (Katuri, 2025). From an RBV perspective, technology-relatedness constitutes a bundle of complementary and firm-specific resources that are difficult to replicate. When deployed as an integrated system, these resources become embedded in organizational routines, increasing causal ambiguity and reducing imitability, which ultimately supports sustained competitive advantage (Tanriverdi & Venkatraman, 2005; Zu et al., 2024).

Empirical evidence further confirms the performance implications of technology-relatedness. Conte et al. (2025), for instance, show that synergies among technology-related business units strengthen knowledge management capabilities, which in turn enhance financial performance. These findings underscore the importance of indirect mechanisms—particularly organizational capabilities—in translating technological linkages into performance gains. Despite growing scholarly interest, empirical investigations of technology-relatedness within SMEs remain limited in the Indonesian context, especially with respect to contingency factors such as diversification strategies. This study extends prior research by integrating insights from Al-Mamary and Abubakar (2025) and Dahri et al. (2025), who emphasize the role of IT management models and diversification in shaping the performance effects of technology-relatedness.

The digitalization of SMEs has emerged as a global phenomenon and a strategic pathway for enhancing competitiveness, operational efficiency, and adaptability. Contemporary research indicates that digital transformation extends beyond the adoption of basic technologies to encompass integrated digital systems, data-driven decision-making, and the development of organizational and human capital capabilities. Although SMEs increasingly adopt advanced technologies such as cloud computing, integrated information systems, and artificial intelligence, they continue to face challenges related to resource limitations, digital literacy, and organizational readiness. Nonetheless, empirical studies consistently demonstrate that well-integrated digitalization initiatives contribute to higher productivity, greater flexibility, and improved resilience in complex and competitive environments.

In multi-business firms, higher levels of diversification may weaken the performance impact of technology-relatedness due to increased coordination complexity and diluted strategic focus (Le & Nguyen, 2024). In contrast, SMEs typically pursue diversification through product expansion supported by digital technologies, such as digitally enabled and market-oriented offerings. Higher levels of product diversification may allow SMEs to more effectively leverage complementary IT resources and managerial processes, thereby strengthening the performance benefits derived from technology-related synergies. Accordingly, this study proposes that product diversification moderates the relationship between technology-relatedness and SME performance, amplifying the positive effects of technological integration on business outcomes.

## 2. Literature Review

This study is grounded in the Efficiency-based View, more widely recognized as the Resource-Based View (RBV), which conceptualizes firms as heterogeneous bundles of resources and capabilities. RBV posits that sustainable competitive advantage arises from the possession and effective deployment of valuable, rare, inimitable, and non-substitutable resources (Kaur & Kumar, 2024). Consistent with this perspective, El Nemar et al. (2025) emphasize that firms achieve superior performance when they control strategic resources that competitors cannot easily replicate or substitute. Such resources enable the implementation of unique strategies that remain inaccessible to rival firms due to asymmetries in resource endowments.

A central assumption of RBV is that competitive advantage is not derived solely from resource ownership, but also from firm-specific processes and capabilities that govern how resources are combined, managed, and exploited to achieve strategic objectives. Accordingly, RBV highlights the importance of organizational routines, managerial competencies, and knowledge-based assets in transforming resources into sustained performance outcomes (Abrokwah, 2024). Within this framework, information systems and digital technologies represent strategic "skills and knowledge sets" that enhance a firm's ability to coordinate activities, process information, and support strategic decision-making (Chen et al., 2024).

Drawing on RBV, this study conceptualizes technology-relatedness—comprising four interdependent dimensions—as a strategic resource that is inherently valuable and difficult to imitate when deployed as an integrated system. Technology-relatedness functions as a complementary resource bundle that enables firms to generate super-additive value synergies, whereby the combined contribution of interrelated technologies exceeds the sum of their individual effects (Le & Nguyen, 2024; Al-Mamary & Abubakar, 2025). Empirical evidence suggests that the integration of complementary IT resources with managerial processes has a substantial and meaningful impact on firm performance, particularly in the context of SMEs, where resource constraints heighten the importance of synergy creation (Dahri et al., 2025).

The RBV of diversification further argues that only strategic resources are capable of creating meaningful relatedness across business activities and generating performance-enhancing synergies. In contrast, non-strategic or generic resources fail to contribute to value creation and do not improve firm performance (Villasalero, 2017). When the four dimensions of technology relatedness are implemented cohesively, they collectively become more valuable, rare, and difficult to replicate, forming a complex and firm-specific resource configuration. Compared to simple resource similarity, synergies derived from resource complementarity are significantly more challenging for competitors to identify and imitate, as they require deep organizational understanding and strategic foresight (Schweikl & Obermaier, 2023; Fergnani, 2022).

Moreover, even when competitors recognize these complementarities, successful imitation necessitates systemic alignment across all dimensions of technology-relatedness. Any failure to replicate one dimension undermines the effectiveness of the entire configuration, thereby increasing causal ambiguity and barriers to imitation (Laten et al., 2016; Mahdad & Roshani, 2025). Consequently, the performance effects of technology relatedness are contingent upon the degree of complementarity among its dimensions. When effectively leveraged, this complementarity enables SMEs to generate super-additive value synergies that serve as a source of sustainable competitive advantage, ultimately leading to superior organizational performance (Wang et al., 2021). Therefore, the study proposes the following as its first hypothesis:

H1: Technology relatedness has a positive effect on SMEs' performance.

Decision-making refers to the process through which individuals or organizations select the most appropriate course of action from a set of available alternatives to address a problem or achieve specific objectives. In an organizational context, decision-making is inherently strategic, as it directly influences long-term survival, competitiveness, and overall business success (Inostroza et al., 2023). The process typically encompasses problem identification, information acquisition and analysis, generation and evaluation of alternative solutions, selection and implementation of the preferred option, and subsequent assessment of outcomes. Throughout these stages, decision-makers must account for a range of internal and external factors that shape the quality and effectiveness of their choices.

Within SMEs, entrepreneurs' decision-making style—the habitual approach adopted when evaluating information and selecting actions—plays a pivotal role in determining firm performance (Seronato & Martins, 2024). An effective decision-making style enables entrepreneurs to allocate resources efficiently and manage key operational functions, including human capital, financial resources, and marketing activities, thereby improving profitability and operational performance. In contrast, ineffective or misaligned decision-making can lead to inefficient resource utilization, operational disruptions, and financial losses, ultimately constraining firm performance and growth (Weerasekara & Bhanugopan, 2023). By shaping both strategic direction and day-to-day operational execution, entrepreneurial decision-making style emerges as a critical determinant of SME performance, with implications for sustained competitiveness and long-term business sustainability. Therefore, the study proposes the following as its second hypothesis:

H2: Entrepreneurs' Decision-Making Style has a positive effect on SMEs' performance

The utilization of information technology has become increasingly critical as contemporary SMEs no longer depend exclusively on traditional revenue streams but increasingly pursue fee-based and value-added income sources (Song et al., 2005). This strategic shift compels SMEs to leverage IT in the development of innovative products and services that enhance business performance. From a diversification perspective, Ansoff's product–market framework suggests that firms seeking growth may introduce new products or functionalities that are similar or closely related to existing offerings (Nageswarakurukkal et al., 2020). Such diversification strategies enable firms to convert internal cost centers into profit-generating units and may extend beyond tangible products to encompass service-oriented and digitally enabled activities.

Within the SME context, product diversification facilitates more effective exploitation of complementary technology-related resources and managerial processes, thereby amplifying performance outcomes. SMEs pursuing diversification through technology-enabled products are required to strengthen collaboration with IT vendors, enhance strategic coordination across business activities, optimize the utilization of existing IT infrastructure, and develop human resource capabilities to support implementation success (Turulja & Bajgoric, 2018). These integrative efforts are expected to intensify the synergistic value generated from technology-relatedness, allowing SMEs to extract greater returns from their IT investments.

The theoretical foundations of this argument are rooted in the Resource-Based View (RBV), as articulated by Barney (1991) and Wernerfelt (1984), which posits that competitive advantage and superior performance primarily derive from the effective management and deployment of firm-specific resources rather than from external environmental conditions alone. In the SME context, this perspective is particularly salient, as resource constraints associated with a smaller scale can be mitigated through the strategic use of unique and inimitable resources (Rugman & Verbeke, 2002). Empirical evidence supports this view: Newbert (2008) demonstrates that organizational capabilities and intangible resources, including managerial expertise and innovation capacity, significantly influence SME performance. Similarly, Wiklund and Shepherd (2003) show that the interaction between internal resources and entrepreneurial orientation contributes positively to both firm growth and profitability. Collectively, these insights suggest that product diversification, when supported by complementary technology-related resources and aligned with RBV principles, serves as an effective mechanism through which SMEs can enhance performance and sustain competitive advantage in increasingly digitalized and competitive environments.

This study conceptualizes product diversification as a moderating variable that strengthens the relationship between entrepreneurs' decision-making styles and SME performance. From a Resource-Based View (RBV) perspective, decision-making styles—whether rational, intuitive, or adaptive—represent managerial capabilities, which are intangible strategic resources (Ismail et al, 2010). While essential for guiding strategic and operational choices, these capabilities require complementary mechanisms to translate into superior performance. Product diversification enables SMEs to leverage managerial capabilities more effectively by capitalizing on multiple market opportunities, reducing reliance on a single revenue stream, and mitigating business risks. Empirical evidence shows that proactive and innovative decision-making yields higher performance when supported by diversified product portfolios. In the context of digital transformation, IT capabilities act as strategic resources that enhance efficiency, innovation, and market responsiveness, and their integration with entrepreneurial decision-making generates greater value in SMEs with diverse products (Bharadwaj, 2000; Trainor et al., 2014). Thus, product diversification plays a pivotal moderating role in enhancing the effectiveness of decision-making on sustainable SME performance. Therefore, this study proposes the following moderation hypothesis:

H3: Product diversification acts as a moderator in the relationship between technology-relatedness and the performance of SMEs.

H4: Product diversification acts as a moderator between entrepreneurs' decision-making styles and the performance of SMEs.

## 3. Methodology

This study employs a hypothesis-testing research design with a causal approach to examine relationships among the proposed variables. The target population consists of 318 technology-adopting SMEs in Medan City, represented by management leaders or owners with comprehensive knowledge of organizational strategies, technology use, and performance outcomes. Data were collected via a cluster-based approach, using both electronic (Google Forms) and direct distribution of questionnaires, with SME information sourced from the local Cooperatives and SMEs Office to ensure accuracy. Measurement instruments were adapted from established studies to ensure validity and reliability. Technology relatedness was measured using scales by Tanriverdi (2006) and Tanriverdi & Venkatraman (2005), capturing the extent to which IT infrastructure and management processes—strategy, vendor management, human resources, and infrastructure—are shared across business activities, rated on a five-point scale. Product diversification, operationalized as a moderating variable, was

measured using Zhao & Luo's (2002) five-item scale assessing technology-driven product development, innovation, customer alignment, pricing, and competitive advantage. Firm performance was measured using Govindarajan & Fisher's (1990) nine-item perceptual scale, capturing financial and non-financial outcomes, including product development and market share. Hypotheses were tested using Structural Equation Modeling (SEM) with Partial Least Squares (PLS), selected for its suitability in predictive analysis, complex models, and relatively small SME samples. PLS-SEM allowed simultaneous evaluation of measurement validity and structural relationships, providing insights into both direct and moderating effects.

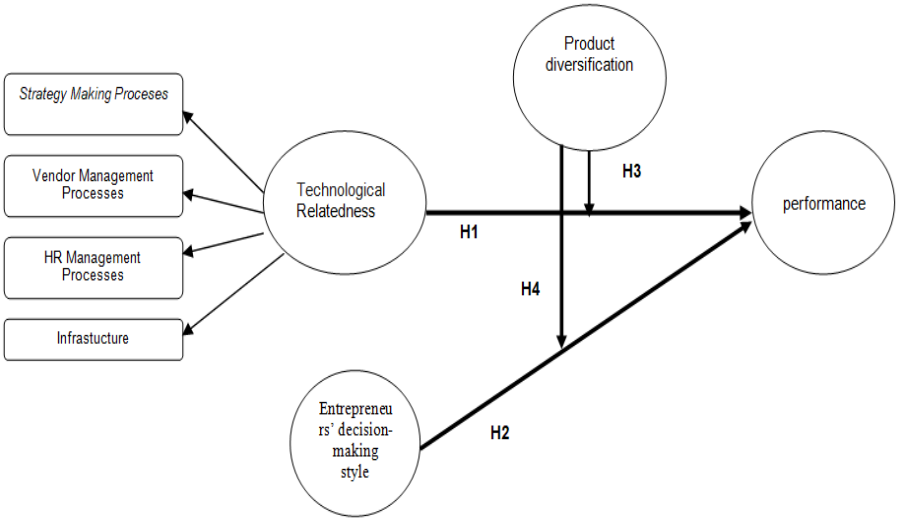


**Fig. 1:** SEM Model.

## 4. Results and Discussion

A total of 318 questionnaires were returned in this study, consisting of 191 questionnaires submitted via Google Forms and 127 questionnaires collected in person. Of these, 21 were unusable, resulting in a total of 297 questionnaires used for data processing. The response rate was 93.4%. This high response rate is due to the fact that most of the returned questionnaires were submitted in person, allowing for contact with the relevant SMEs. To anticipate differences in responses to the delivery method, a non-response bias test was carried out. In this study, a non-response bias test was not carried out regarding the return period because no questionnaires were returned after the cut-off date. So the non-response bias test can only be carried out between responses sent via Google Form or taken directly.

**Table 1:** Non-Response Bias Test

| Variabel | Questionnaire | n | Mean | Levene Test F | Levene Test Sig. | t | Sig. | Dicission |
|---|---|---|---|---|---|---|---|---|
| Technological Relatedness | Google Form | 191 | 65.72 | 0.914 | 0.357 | 1.233 | 0.086 | Iqual |
| | Direct Delivery | 127 | 63.04 | | | | | |
| Entrepreneur's Dicission Making Style | Google Form | 191 | 36.15 | 0.533 | 0.382 | 1.791 | 0.094 | Iqual |
| | Direct Delivery | 127 | 34.39 | | | | | |
| Product Diversification | Google Form | 191 | 22.17 | 1.140 | 0.081 | 1.363 | 0.117 | Iqual |
| | Direct Delivery | 127 | 21.58 | | | | | |
| Performance | Google Form | 191 | 57.33 | 0.802 | 0.377 | 0.917 | 0.201 | Iqual |
| | Direct Delivery | 127 | 59.07 | | | | | |

Source: Own computation based on primary data (2025).

The conclusion that can be drawn from Table 1. The non-response bias test shows unbiased results; it can be processed together with the questionnaire answers sent via Google Form and those submitted directly. Furthermore, data quality testing confirmed that after eliminating invalid instruments, it could be declared valid and reliable because the outer loading had a value > 0.70, as seen in Figure 2 of the outer loading and FIT model. Table 2 also meets the convergent validity test criteria, as the instrument has a CR value > 0.70 and an AVE value above 0.50. Overall, all variable indicators are valid and reliable for hypothesis testing.

**Table 2:** Validity Testing

| Constructs | CR | AVE |
|---|---|---|
| Entrepreneur's _Dicission Making Style | 0.803 | 0.577 |
| HRM Management _Process | 0.890 | 0.669 |
| Infrastructure | 0.794 | 0.659 |
| Performance | 0.857 | 0.666 |
| Product Diversification | 0.877 | 0.641 |
| Strategy Making _Process | 0.796 | 0.566 |
| Technological Relatedness | 0.867 | 0.547 |
| Vendor Management _Process | 0.806 | 0.675 |

Source: Own computation based on primary data (2025).

After evaluating the model fit through assessment of both the outer (measurement) model and the inner (structural) model, a complete SEM model was produced, as shown in Figure 2. Outer Loadings and Model Fit analysis concluded that the model demonstrates good convergent validity, with the independent variables explaining 69.7% of the variance in the dependent variable.

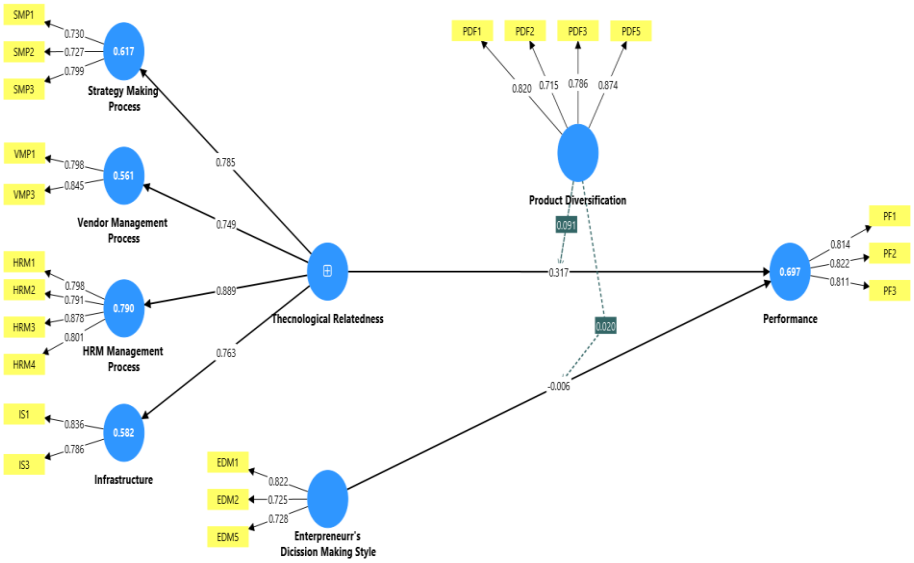


**Fig. 2:** Outer Loading and Model FIT.

Source: Own computation based on primary data (2025).

Table 4 in the appendix provides a summary of the hypothesis testing results, which are evaluated based on the magnitude of the T-statistic values. A hypothesis is considered significant and thus accepted if $p < 0.05$. The detailed T-statistic estimations can be found in the bootstrapping test results, presented in Table 4 of the appendix.

**Table 4:** Hypotheses Testing

| Hypothesis | Original Sample | P values | Conclussion |
|---|---|---|---|
| Technological Relatedness -> Performance | 0.934 | 0.000 | Accepted |
| Entrepreneur's _Dicission Making Style -> Performance | 0.317 | 0.006 | Accepted |
| Product Diversification x Technological Relatedness -> Performance | -0.791 | 0.020 | Accepted |
| Product Diversification x Entrepreneur's _Dicission Making Style -> Performance | 0.027 | 0.765 | Rejected |

Source: Own computation based on primary data (2025).

Table 4. Hypotheses Testing presents the structural model results regarding the four hypotheses. It was concluded that three (3) hypotheses were accepted and one (1) hypothesis was rejected. H1 (Technological Relatedness -> Performance) is accepted with a significant positive relationship (r=0.934; p=0.000). H2 (Entrepreneur's _Decision Making Style -> Performance) is accepted with a significant positive relationship (r=0.317; p=0.006). H3 (Product Diversification x Technological Relatedness -> Performance) is accepted with a significant negative relationship (r=-0.791; p=0.020), which means that Product Diversification can moderate the influence of Technological Relatedness on Performance. H4 (Product Diversification x Entrepreneur's _Dicission Making Style -> Performance) is rejected due to an insignificant positive relationship (r=0.027; p=0.765), which means that Product Diversification does not moderate the influence of Entrepreneur's _Dicission Making Style on Performance.

The acceptance of Hypothesis 1 (H1) indicates that the complementarity among the four dimensions of technology-relatedness exerts a positive and significant effect on firm performance. This finding suggests that technology-relatedness, when treated as an integrated and complementary construct, enhances organizational outcomes rather than operating as isolated technological components. In the context of SMEs, information technology represents a substantial investment, as reflected in the significant allocation of resources toward IT system development, technology adoption, human resource training, supply chain integration, and collaboration with electronic delivery channel vendors. Such investments are strategically intended to improve operational efficiency and overall firm performance. The results of this study are consistent with prior empirical evidence demonstrating the performance-enhancing role of information technology. Schweikl and Obermaier (2023) and Villasalero (2017) similarly found that effective utilization and integration of IT resources positively influence organizational performance. By adopting a reflective second-order factor model, this study empirically confirms that technology-relatedness operates as a higher-order construct, in which the joint deployment of IT infrastructure, IT strategy, IT human resources, and vendor management generates synergistic effects that exceed the impact of individual dimensions.

The acceptance of Hypothesis 2 (H2) indicates that entrepreneurs' decision-making styles have a positive and significant effect on SME performance. Decision-making represents a systematic process through which managers and entrepreneurs select the most appropriate course of action to resolve problems and achieve organizational objectives. Consistent with prior studies, this process involves problem identification, information gathering and analysis, generation and evaluation of alternatives, decision selection, implementation, and outcome assessment, with both internal and external factors influencing each stage (Inostroza et al., 2023). The findings of this study align with the results reported by Weerasekara and Bhanugopan (2023), who emphasize that the quality of managerial decision-making directly shapes organizational performance. Effective decision-making styles enable entrepreneurs to manage key operational functions—including human resource allocation, financial planning, and marketing strategies—more efficiently and strategically. In contrast, inappropriate or poorly informed decisions may result in operational inefficiencies, misallocation of resources, and financial losses, thereby constraining firm performance. From a strategic perspective, the results underscore that the decision-making approach adopted by entrepreneurs or managers plays a critical role in determining business outcomes. Entrepreneurs who apply rational, adaptive, or innovative decision-making styles are better positioned to respond to environmental uncertainty, enhance competitiveness, and sustain long-term business performance. Accordingly, this study provides empirical support for the argument that entrepreneurial decision-making styles constitute a key managerial capability that significantly influences SME performance.

The results of this study provide empirical support for Hypothesis 3 (H3), indicating that product diversification significantly moderates the relationship between technology-relatedness and SME performance. Specifically, higher levels of product diversification strengthen

the positive impact of technology-relatedness on performance by encouraging SMEs to more intensively utilize technology in the development of new products and services. Through diversification, SMEs are able to extend the application of shared technological resources and managerial processes to multiple offerings, thereby enhancing value creation and overall business performance. These findings diverge from those reported by Wang et al. (2021), who observed that increasing levels of diversification may weaken, or even reverse, the performance effects of information technology synergies. However, this divergence can be explained by contextual differences in diversification strategies and organizational scale. In large or multi-business firms, higher diversification often entails expansion into unrelated industries, which increases coordination complexity and reduces the firm's ability to effectively integrate IT resources across heterogeneous business units. Such complexity can dilute IT synergies and constrain performance outcomes. In contrast, product diversification in SMEs is typically more focused and technologically related, involving the development of new or modified products and services that build upon existing technological capabilities. Under these conditions, diversification does not fragment IT resources but instead enhances their deployment across a broader yet related product portfolio. Consequently, higher levels of product diversification enable SMEs to better exploit technology-relatedness by reinforcing complementarities among IT infrastructure, managerial processes, and product innovation activities. These findings underscore the contingent nature of diversification, suggesting that its moderating effect on the technology–performance relationship depends critically on the relatedness and scale of diversification strategies employed by firms.

The results of this study do not support Hypothesis 4 (H4), indicating that product diversification does not significantly moderate the relationship between entrepreneurs' decision-making styles and SME performance. This finding suggests that, within the sampled SMEs, variations in product diversification neither strengthen nor weaken the performance effects of entrepreneurs' decision-making approaches. In other words, while decision-making styles directly influence SME performance, their impact does not appear to be contingent upon the level of product diversification. This result contrasts with the findings of Weerasekara and Bhanugopan (2023), who reported that higher levels of diversification amplify the positive effect of entrepreneurial decision-making styles on firm performance. One plausible explanation for this discrepancy lies in differences in how diversification is conceptualized and operationalized. Whereas prior studies may have examined broader forms of diversification, including expansion across multiple business segments, this study focuses primarily on product diversification within the SME context, which may involve a more limited scope and complexity. Furthermore, contextual and organizational factors may help explain the absence of a moderating effect. Cultural differences in managerial interaction patterns, coordination mechanisms, and decision-making authority across organizational levels can influence how strategic decisions are translated into performance outcomes (Sambamurthy & Zmud, 1999). In SMEs, where organizational structures are often less formalized, increasing product diversification may introduce coordination challenges that limit the effective integration of managerial decisions across products and activities. As diversification increases, the complexity of aligning decision-making processes with operational execution may offset potential synergy gains, thereby weakening the expected moderating role of diversification. Additionally, the growing complexity associated with diversification may hinder the firm's ability to fully leverage complementary IT resources across activities, indirectly constraining performance outcomes. These findings suggest that product diversification does not universally enhance the effectiveness of entrepreneurial decision-making and highlight the importance of contextual factors—such as organizational structure, cultural dynamics, and implementation capabilities—in shaping performance effects. Collectively, this result underscores the contingent nature of diversification strategies in SMEs and calls for further research to explore alternative moderators that may better capture the conditions under which entrepreneurial decision-making translates into superior performance.

## 5. Conclusion

This study examines the effects of technology-relatedness and entrepreneurs' decision-making styles on SME performance, while also testing the moderating role of product diversification. Based on the results of the SEM-PLS analysis, three hypotheses are supported, and one is not. The findings demonstrate that super-additive value synergies arising from the complementary integration of IT resources across organizational activities exert a significant and positive influence on firm performance. These results highlight the strategic importance of managing information technology as an integrated and complementary system rather than as isolated investments. The analysis further reveals that product diversification significantly strengthens the relationship between technology-relatedness and SME performance. SMEs with higher levels of product diversification are better positioned to leverage complementary IT resources in developing new products and services, thereby enhancing overall performance. In contrast, product diversification does not moderate the relationship between entrepreneurs' decision-making styles and performance, suggesting that managerial decision-making capabilities influence performance independently of diversification level within the SME context. This study has several limitations. One limitation concerns the inability to fully verify whether all questionnaires were completed by the intended respondents. The analysis assumes that questionnaires identified as being completed by SME managers or owners were valid, unless explicitly indicated otherwise, in which case they were excluded. Future research is encouraged to employ direct survey methods and incorporate structured interviews to improve respondent verification and enrich the depth of empirical insights. From a managerial perspective, the findings provide important implications for SME owners and managers. The results underscore that investments in information technology should not be undertaken in a fragmented manner, but rather managed as an interconnected and complementary system. SME managers are advised to integrate IT strategy, vendor management, IT human resource development, and IT infrastructure into a coherent governance framework. Such integration enables firms to generate cost efficiencies through sub-additive cost synergies, reduce resource duplication, enhance operational coordination, and ultimately maximize performance outcomes under conditions of resource constraints.

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