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RESEARCH ARTICLE

The Effects of Transformational Leadership and Dynamic Capabilities on MSMEs Performance: The Role of Digital Technology Adoption as Mediator

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ABSTRACT

Micro, Small, and Medium-sized Enterprises (MSMEs) are fundamental to the global economy. The COVID-19 pandemic has acted as a catalyst for the digital transformation of MSMEs and entire industries, such as retail, manufacturing, and services. In Malaysia, MSMEs represent 97% or 1.2 million of registered businesses. In Malaysia, MSMEs represent 97% of registered businesses. A 2021 World Bank report revealed that over 60% of Malaysian MSMEs frequently utilize online platforms and digital marketing, indicating a strong inclination towards leveraging digital technology to drive sales. Despite this, Malaysia's digital performance in comparison to other regions remains suboptimal. Hence, this study aims to achieve three primary objectives: (i) to investigate the impact of transformational leadership and dynamic capabilities on MSMEs' performance, (ii) to examine the mediating role of digital technology adoption, and (iii) to assess the direct effect of digital technology adoption on MSMEs' performance. Data were collected from 146 MSMEs in Kelantan, Malaysia, and analyzed using the PLS-SEM technique. The findings indicate that while there is no significant direct effect between transformational leadership and dynamic capabilities on MSMEs' performance, digital technology adoption significantly influences their performance. Moreover, the relationship between dynamic capabilities and MSMEs' performance is mediated by digital technology adoption. These results underscore the critical importance for MSMEs to integrate digital technology into their organizational strategies to thrive in dynamic markets.

1. INTRODUCTION

The COVID-19 pandemic has greatly changed the global economy in the past three years. The scenario is proven when the Euro-zone has the sharpest drop in their GDP by 3.8 % in the first quarter of 2020 (Đukić et al., 2021). The US economy was even more devastating as it has had the largest decline in the first quarter by 1.2% since the financial crisis (PWC, 2020). Likewise, China faced a 13% to 24% decrease in the investment value of micro, small, and medium enterprises (MSMEs) and a 6.2% increase in unemployment (Toiba et al., 2022). Meanwhile, the occurrence of this unexpected pandemic has affected the Malaysian society as well as all sectors and industries. It has inevitably led to the closure of many businesses, especially the MSMEs. Over 2700 MSMEs were closed between March and October 2020 (Rashid et al., 2021). Many entrepreneurs across the industry have been badly affected by the pandemic with many experiencing a significant drop in sales and having to consolidate their businesses to survive. However, there are some MSMEs who survived in their businesses during the pandemic since eventually, they transformed their businesses online and adopted a digital platform for the business activities. It is noteworthy that the pandemic has accelerated the digital adoption among MSMEs businesses and the entire industries such as retail,

manufacturing, and services in Malaysia. The adoption of digital technology entails the integration of computing, information, communication, and connection technologies that result in notable improvements to an entity's properties (Sarya et al., 2023).

In Malaysia**,** 97% or 1.2 million registered businesses are MSMEs, and the contribution of MSMEs to the GDP also increased to 38.4**%** in 2022 compared to 37.4**%** in 2021 (The Star, 2023). By 2025, Malaysia's digital economy, which has been booming, is anticipated to account for 22.6% of the country's gross domestic product (GDP) and generate 500,000 employment opportunities (Yeong et al., 2023). With rapid developments that fundamentally alter how business is performed, the digital business revolution has made the industry environment more competitive and challenging for MSMEs. Furthermore, the Malaysia Digital Economy Blueprint (MyDIGITAL), which was released in 2021, also aims to utilise digitised knowledge and information as primary elements of production and networking among individuals, businesses, devices, data, and processes (Subramaniam, 2021). This blueprint provides direction to make Malaysia a competitive country in this new era. MyDIGITAL initiative is a critical benchmark to realize the 12th Malaysia Plan (2021 -2025).

The need for digitalisation is to ensure the continuity of economic activities in any industry including MSMEs. The World Bank reported in 2021 that more than 60% of MSMEs used online platforms and digital marketing rather frequently, indicating that Malaysian MSMEs are more interested in implementing digital technology to boost sales. However, in comparison to another region, Malaysia still underperforms. For that reason, to revive entrepreneurship for business performance and recovery strategy, the current business model among entrepreneurs in Malaysia needs technology-based or digital technology adoption for them to be resilient and continue with the current business. MSMEs entrepreneurs need to make big shifts to improve the business continuity and recovery strategy. In MSMEs, designing robust digitalisation strategies should be tailored to their current scale, size and industry needs of enterprises and the journey towards digital transformation may differ from one company to another (Guo et al., 2020). By adopting a digital technology, MSMEs can unlock vast new potential in enhancing overall productivity and competitiveness. Importantly, MSMEs will be free to dedicate more resources in product planning and development, creating dynamic new market offerings while automating their sales processes, and becoming more efficient and agile to emerging consumer trends.

For the organization to successfully adopt digital technologies, employee optimisation is crucial. Every organization must, among other things, utilize the full potential of its employees, and leadership plays a very important role in the process. Leadership is considered as a key factor in directing all organizational components towards the effective achievement of organizational goals since it needs to provide interaction between all members of the organization (Suwanto et al., 2022). An organization's ability to survive depends on its leaders' capacity to continue being effective, and their willingness to fulfil the organization's goals, which are fulfilled with the help of effective leadership. Thus, organizations will fail to succeed without capable leadership, without initiating follower actions, without fostering high employee motivation, and without developing employee engagement. In the case of MSMEs, the leaders should ensure that the actions are aimed at helping employees develop knowledge, skills, and experience. It was found that leaders who adopt a transformational leadership approach are better able to motivate employees to excel beyond expectations. Transformational leadership will more likely make employees motivated and keep them move ahead of their own interest to achieve organizational goals (Qomariah et al., 2023). This confirmed previous findings that leadership style has a significant influence on performance. Many studies have examined the significant impact of transformational leadership on work outcomes such as job performance and employee reactions; however, limited study has investigated the effect of transformational leadership on organization performance which is mediated by digital technology adoption.

Dynamic capabilities allow businesspeople to create new business models and be more agile in adapting to changes with the resources they have. In addition, balancing external and internal collaboration is necessary to create a flexible and conducive organizational culture (Warner & Wäger, 2019). Nowadays, MSMEs face fierce competition and pressure for innovation to be at par with the most recent advancements in technology. Most of the organizations' businesses will revolutionize their processes by enhancing efficiency and unlocking new growth opportunities to leverage emerging technology such as artificial intelligence, cloud computing, big data analytics, and the

Internet of Things (IoT). To serve better customers' needs and moving towards adopting the digital technology, organizations should possess the dynamic capabilities' characteristics in their business. Dynamic capability allows businesses flexibility to combine and reorganise internal and external competencies that quickly respond to the changed environment (Aan et al., 2023). Dynamic capability strategies are highly aligned towards agility, produce fast response as an adaptability, and possess malleability of adapting innovation and revolution in facing an environment of constant change, as well as ambidexterity (van de Wetering et al., 2020). In this regard, there is a need to conduct a study by looking at a new model of digital technology adoption in improving the business performance of MSME's entrepreneurs to face the complex environment and emerging market.

Therefore, the objectives of this study are in threefold:

i. To investigate the effect of transformational leadership and dynamic capabilities on MSMEs performance.

ii. To examine the role of digital technology adoption as a mediator

iii. To assess the direct effect of digital technology adoption on the MSMEs' performance. Furthermore, research objectives are designed to address specific research questions or gaps in the current understanding.

This paper is organized into five sections. The background of the study, research questions and objectives are presented in Section 1. Section 2 elaborates on the theoretical underpinning and hypotheses development, while research methodology and data analysis are described in Section 3. Section 4 contains results and discussion while the conclusion, implication, and future research avenues are provided in Section 5.

2. THEORETICAL UNDERPINNING AND HYPOTHESES DEVELOPMENT

This study combined resource-based theory of the firm (RBV) and dynamic capabilities theory as a point of departure to understand how firms can develop and leverage their internal resources and capabilities, such as transformational leadership and dynamic capabilities, to successfully adopt and utilize digital technologies. RBV emphasizes the internal resources and capabilities of a firm, suggesting that competitive advantage arises from possessing valuable, rare, and difficult-to-imitate resources (Wernerfelt, 1984; Barney, 1991). Transformational leadership can be viewed as a key resource that drives innovation and organizational change, enabling firms to adapt to dynamic environments. Transformational leaders inspire and empower employees to think creatively, take risks, and embrace change, which can lead to the development of new products, services, and processes that enhance business performance (Siangchokyoo et al., 2020). Furthermore, in the digital age, digital technologies have become a critical resource for firms, enabling them to streamline operations, enhance customer engagement, and develop innovative products and services. RBV helps us understand how firms can leverage digital technologies as valuable resources to gain a competitive edge.

Dynamic capabilities theory extends the RBV framework by emphasizing the importance of a firm's ability to sense, seize, and reconfigure its resources and capabilities in response to changing market conditions. In the context of digital technology adoption, dynamic capabilities theory suggests that firms must continuously adapt and evolve their technological capabilities to remain competitive (Teece et al., 1997; Eisenhardt & Martin, 2000). This includes not only adopting new technologies but also integrating them into existing business processes and reconfiguring organizational structures to leverage the full potential of digital innovations. In this study, the adoption of digital technologies can be seen as a manifestation of dynamic capabilities, as firms that are able to quickly adopt and effectively utilize digital tools are better positioned to respond to market changes and exploit new opportunities. Moreover, existing literature on business performance, the effects of transformational leadership and dynamic capabilities on business performance, and the role of digital technology adoption as a mediator in these relationships are elaborated in the following sections.

2.1. Business performance

The term "business performance" refers to a process that is both continuous and adaptable, and it involves managers, partners, and the person who runs the firm. This process reflects the outcome of business operations and the strategic management process (Yusrinadini et al., 2019). The result of business performance in MSMEs can be described by tangible and intangible indicators. According to previous study, MSMEs has been described by a set of 14 indicators, including reputation, productivity, employee satisfaction, profits, sales, timely order delivery, adequate working capital, effectiveness in production operations, product quality, target achievement, clientele, ease of supervision, product diversification, and cost reduction (Gopang, 2017). If organizations can achieve their target, they have successfully achieved their business performance goals. Business performance can be described depending on the success level of the firms in fulfilling their objectives (Mahmudova & Kovacs, 2018). The indicator of business performance can also be changed according to the changes in business environment. A recent study has shown that micro, small and medium-sized enterprises (MSMEs) play a significant role in the global economy. As a result, it is crucial to provide them with specialised expertise in performance management to support their growth and foster enhancements (Rojas-Lema et al., 2021). Recently, previous study has considered the success of implementing technology and business system as an indicator of successful business performance. The use of e-commerce has significantly influenced the improvement of MSMEs' business performance, as well as their entrepreneurial and market orientation (Octovia, 2020). Hence, these hypotheses are proposed:

H1: *Transformational leadership is positively related to business performance.*

H2: *Dynamic capabilities are positively related to business performance*.

2.2. Transformational leadership and digital technology adoption

Transformational leadership theory, which was developed by Bass in 1999, exhibits four distinct dimensions which are idealised influence or charisma, inspirational motivation, intellectual stimulation, and individualised concern. Previously, transformational leadership was identified as a strategy that encourages technology among their employees. The results indicate that transformational leadership behaviours promote technological innovation at the strategic business unit level (Chen et al., 2012). Transformational leaders can facilitate the successful use of technology in an organization's business transformation. Transformational leadership induces the process of follower transformation in the sense that leaders can influence employees to embrace group goals through collective identification and value internalisation and build self-efficacy to adjust to the change (Siangchokyoo et al., 2020). Recent research has shown that transformational leadership behaviours may have led to positive technology adoption among employees. Initially, employees expressed concerns about the potential effects of implementing Industry 4.0 technology. However, managers' transformational leadership behaviours played a crucial role in helping employees recognise the advantages, overcome their worries, and develop confidence in the new technology (van Dun & Kumar, 2023). As such, this study aims to examine the correlation between transformational leadership and technology adoption within the context of small and medium-sized enterprises (SMEs). Therefore, this hypothesis is proposed:

H3: *Transformational leadership is positively related to digital technology adoption.*

2.3. Dynamic capabilities and digital technology adoption

Dynamic capabilities, which were introduced by Teece et al. (1997), are organization's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environment. These capabilities involve sensing environmental changes, seizing opportunities, and transforming resources to create value. The dynamic capabilities framework emphasizes the importance of flexibility, adaptability, and learning as sources of competitive advantage. Dynamic capabilities are also defined as the organisational and strategic processes through which businesses acquire new resource configurations in response to the way markets emerge, collide, divide, evolve, and perish (Eisenhardt & Martin, 2000). Current researchers agree that dynamic capabilities serve to enhance the likelihood of organisational success within the currently prevailing context (Bailey & Breslin, 2020). The influence of dynamic capabilities towards technology adoption has been previously discussed through absorptive capability (one of the components in dynamic capabilities).

Absorptive capabilities have been identified to have close relationship with technology adoption and firm performance (Arifin & Frmanzah, 2015). Furthermore, dynamic capabilities also assist organisation in moving to new configuration of resources and has been identified as an important role in technology adoption. A firm's dynamic capabilities play a central role in informing the firm's perceptions of a technological innovation's characteristics that drive the adoption decision (Graham & Moore, 2021). The objective of this study is to examine the correlation between technology adoption and dynamic capabilities within the SME sector. Therefore, this hypothesis is proposed:

H4: *Dynamic capabilities are positively related to digital technology adoption.*

2.4 The mediating effect of digital technology adoption

According to Hershanty et al. (2021), digital transformation serves as a mediator between information technology capabilities and dynamic capabilities on company performance. The results of the study concluded that information technology capabilities and dynamic capabilities have an influence on company performance through digital transformation. This aligns with a study by Nurhayati and Astono (2024) which stated that digital transformation serves as a mediator in the relationship between dynamic capabilities and business resilience. The study revealed that dynamic capabilities directly influence digital transformation and contribute to the success. Furthermore, dynamic capabilities indirectly affect business resilience through digital transformation, with digital transformation acting as a mediator in the correlation between dynamic capabilities and business resilience. This finding underscores the significance of dynamic capabilities in driving digital transformation adoption and subsequently business resilience, particularly in the context of Indonesia MSMEs. Another study by Putritamara et al. (2023) investigated the influence of dynamic capabilities and digital transformation on business resilience during the COVID-19 pandemic. The result showed that dynamic capabilities play an important role in improving MSMEs' digital technology. However, the essential role of digital technology on business resilience only happens for micro, small, and medium firms of family businesses. As such, digital technology has an insignificant effect on firm resilience in small non-family businesses. Yet, the effect of dynamic capabilities on firm resilience is mediated by digital technology.

The findings of another research stated that transformational leadership is not associated to product innovation performance (Sattayaraksa & Boon, 2018), which then raised a debate whether transformational leadership associates with either subunit performance or only overall performance of the organization. For example, currently, researchers are eager to see whether transformational leadership has an impact towards technology adoption that lastly will impact business performance. However, there is still little exposure about the role that leadership plays in digital transformation undertaking (McCarthy et al., 2022). It is still not clear whether transformational leadership and digital technology adoption have significant relationship or not. The results from Sousa-Zoomer et al. (2020) showed that digital transformation acts as a mediator in these two relationships: (1) between digital intensity in business processes and business performance, and (2) between conditions for action and interaction and performance. Organizations with robust digital transformation capabilities establish a foundation to navigate rapid changes, thereby sustaining competitiveness. Digital business models become pivotal in environments requiring digital intensity, such as establishing digital partnerships with external entities, sustaining and enhancing business performance. Similarly, Songkajorn et al. (2022) revealed that digital technology adoption serves as a mediator in the relationship between dynamic capabilities and organizational strategic intuition. By synthesizing the findings from various studies, it becomes evident that integrating digital technology into the leadership and operational strategies of MSMEs can significantly influence their performance outcomes. Thus, the following hypotheses are proposed:

H5: *Digital technology adoption mediates the relationship between transformational leadership and business performance.*

H6: *Digital technology adoption mediates the relationship between dynamic capabilities and business performance.*

2.5 Digital technology adoption and business performance

Prior research has considered the role of digital technology in predicting business continuity and performance (Clark et al., 2014). They further investigated the latter dimension that combines digital technology, business models, and sustainability. According to Kane et al. (2016), the dimension of digital technology reflects a firm's capability to explore and exploit new technologies. A study by George et al. (2021) explored how digital technologies are helping to address and promote sustainable development. With digital technologies, entrepreneurial organizations have adopted innovative approaches to tackle seemingly intractable societal challenges such as digital sustainability activities. The research proposes and generates novel questions for entrepreneurship, business models, and ecosystems as new ways of thinking. Therefore, digital technology can spur empirical advances in entrepreneurship, innovation, and strategy with the potential for a positive impact on business performance and continuity. Another recent study by Yang and Zhang (2021) stated that digital technologies have been extensively studied in academic research and industry. The research focuses on why and how manufacturing firms adopt digital technologies and the impact of the adoption on supply chains. The study identifies and synthesizes the impact of digital technology adoption on business performance and continuity into four aspects which are efficiency, structure, sustainability, and innovation. The research proposes a conceptual framework consisting of driver, process, and impact, and discusses their inter-relationships. Furthermore, the study also identifies that technological intelligence and supply chain cooperation are two important factors and proposed two-dimensional levels of adopting digital technologies according to their low-to-high degrees. Based on the discussion above, this study guides entrepreneurs in adopting digital technologies and developing appropriate business strategies at different digitalization levels. Thus, the following hypothesis is proposed:

H7: *Digital technology adoption is positively related to the business performance.*

3. MATERIALS AND METHODS

In order to investigate the effects of transformational leadership and dynamic capabilities on MSMEs performance, and to examine the role of digital technology adoption as a mediator, the primary data were collected through google survey form using a structured questionnaire. The questionnaire was distributed to MSMEs located in the districts of Kelantan, Malaysia. The owners or managers were targeted because they are the key informants of the business, and they are usually involved in the overall running of the firms. A total of 146 responses were returned and useable for the final analysis using the structural equation model partial least square (SEM-PLS 4.0). In addition, the study was cross-sectional since the data on the constructs of interest were only collected at a single point in time (Zikmund et al., 2017). The questionnaire was adopted and adapted from a few selected established questionnaires which were measured with 5-point Likert-scale ranging from strongly disagree to strongly agree. Transformation leadership was measured from a study by Bass and Avolio (2004) whereas the measurement items of dynamic capabilities were based on Adhiatma et al. (2022). The measurement items of digital technology adoption and business performance were adopted from Mwantimwa (2019), and Wahyuni and Sara (2020), respectively. Moreover, Wiklund (1999) suggested that performance measures should include growth and financial performance.

4. RESULTS

4.1. Validity and reliability analyses

Hair et al. (2011) highlighted the importance of assessing the quality of the measurement model through convergent validity, which considers factor loadings, average variance extracted (AVE), and composite reliability (CR). In this study, all indicator loadings exceeded the threshold of 0.5 (see Table 1), indicating that each item reliably measures its intended construct. Additionally, AVE values ranged from 0.654 to 0.743, exceeding the recommended threshold of 0.5, suggesting that the constructs capture more variance than measurement error. Furthermore, CR values ranged from 0.947 to 0.962, surpassing the threshold of 0.7, indicating high internal consistency. These results collectively demonstrate strong convergent validity, indicating that the measurement model effectively measures the intended constructs.

Table 1: Validity test results

Construct	Item	Loading	CA	CR	AVE
Transformational Leadership (TL)	KT1	0.819	0.947	0.951	0.654
	KT2	0.821			
	KT3	0.766			
	KT5	0.843			
	KT6	0.866			
	KT7	0.818			
	KT8	0.828			
	KT9	0.788			
	KT10	0.787			
	KT11	0.782			
	KT12	0.774			
Dynamic Capabilities (DC)	KD1	0.791	0.942	0.947	0.743
	KD2	0.875			
	KD3	0.911			
	KD4	0.860			
	KD5	0.844			
	KD6	0.868			
	KD7	0.880			
Business Performance (BP)	PP1	0.888	0.961	0.962	0.740
	PP2	0.857			
	PP3	0.824			
	PP4	0.914			
	PP5	0.869			
	PP6	0.899			
	PP7	0.843			
	PP8	0.850			
	PP9	0.808			
	PP10	0.843			
Digital Technology Adoption (DTA)	PTD1	0.802	0.950	0.952	0.690
	PTD2	0.798			
	PTD3	0.887			
	PTD4	0.824			
	PTD5	0.825			
	PTD6	0.867			
	PTD7	0.813			
	PTD8	0.814			
	PTD9	0.826			
	PTD10	0.848			

*AVE: Average Variance Extracted; CA: Cronbach Alpha: CR: Composite Reliability

The measurement model's discriminant validity was assessed using the Hererotrait-Monotrait (HTMT) ratio of correlations, as suggested by Henseler et al. (2015). This method compares the correlations between different constructs (Heterotrait) to the correlations within the same construct (Monotrait). A threshold value of less than 0.85 has been recommended in the literature (Clark & Watson, 1995; Kline, 2011) to indicate discriminant validity. Additionally, Voorhees et al. (2016) proposed a more stringent threshold of less than 0.90. In this study, the HTMT ratios presented in Table 2 are all below the recommended thresholds, indicating strong discriminant validity. This

suggests that the constructs in our measurement model are distinct from each other and are measuring different underlying concepts.

Table 2: Heterotrait-Monotrait Ratio (HTMT)

	BP	DTA	DC	TL
BP				
DTA	0.608			
DC	0.588	0.753		
TL	0.423	0.533	0.666	

4.2. Structural model

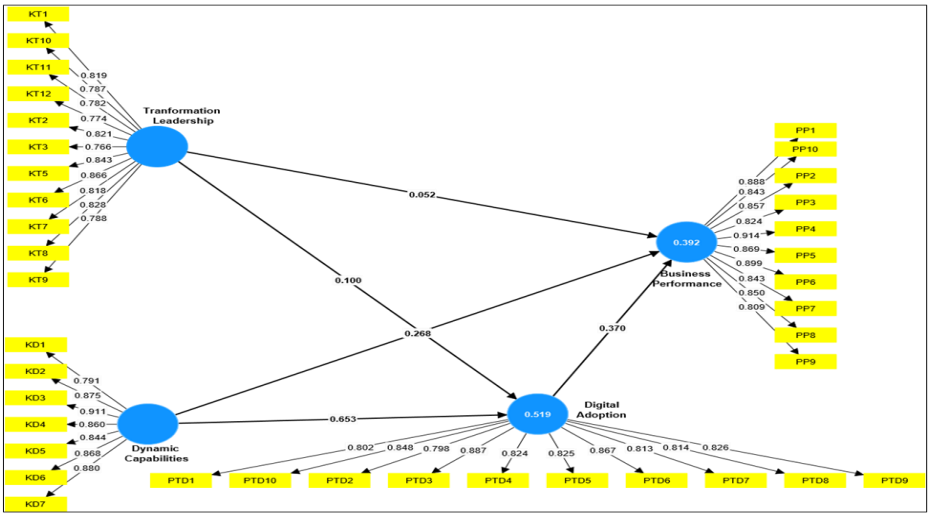

Figure 1: Structural model

Another criterion for evaluating the structural model's performance is the predictive relevance Q^2. This metric assesses how well the model, and its parameter estimates can predict the observed values (Chin, 2010; Hair et al., 2011). In PLS-SEM, Q^2 is evaluated through cross-validated redundancy, which checks the model's ability to predict new data accurately (Hansmann & Ringle, 2005). Q^2 values are computed using a blindfolding procedure, where data points are sequentially removed and predicted based on the remaining data. In this study, the Q^2 values for business performance (0.283) and digital technology adoption (0.353) were both above 0, indicating that the model has predictive relevance and validity. This suggests that the structural model can effectively predict new data, highlighting its robustness and reliability in explaining the relationships between variables.

4.3. Hypotheses testing and discussion

Path analysis was conducted to assess the structural model, with R2 values and the significance of path coefficients serving as primary evaluation criteria (Hair et al., 2011). Cohen (1988) suggested that a good model should have an R^2 value of over 0.26 for endogenous latent variables. In this study, the R^2 value was found to be 0.392 (see Figure 1), indicating that transformational leadership, dynamic capabilities, and digital technology adoption can explain 39.2% of the variance in MSMEs' performance, which is a substantial proportion.

Table 3: Result of direct effect

Direct Relationship	Hypothesis	Beta	Standard deviation	T statistics	P values	Results Hypotheses
TL-> DTA	H1	0.100	0.080	1.252	0.211	Not supported
DC-> DTA	H2	0.653	0.077	8.470	0.000	Supported
TL -> BP	H3	0.052	0.117	0.444	0.657	Not supported
DC -> BP	H4	0.268	0.145	1.844	0.065	Not supported
DTA -> BP	H7	0.370	0.137	2.696	0.007	Supported

Next, the significance of hypotheses was assessed using path coefficients and the bootstrapping technique. The results revealed that the relationship between transformational leadership and digital technology adoption was not significant (β=0.100, t=1.252, p>0.00), while the relationship between dynamic capabilities and digital technology adoption was significant (β=0.653, t=8.470, p<0.00). Therefore, H1 was not supported, and H2 was supported. Furthermore, the relationships between transformational leadership and business performance (β=0.052, t=0.444, p>0.00), and dynamic capabilities with business performance (β=0.268, t=1.844, p>0.00) were found to be insignificant, leading to the rejection of H3 and H4. However, digital technology adoption was found to have a significant relationship with business performance (β=0.370, t=2.696, p<0.00), which supported H7.

Table 4: Result of mediating effect

Mediating effect	Hypothesis	Beta	Standard deviation	T statistics	P values	Results Hypotheses
TL -> DTA -> BP	H5	0.037	0.033	1.115	0.265	Not supported
DC -> DTA -> BP	H6	0.242	0.098	2.457	0.014	Supported

Table 4 presents the results of the indirect effects between transformational leadership, dynamic capabilities, and business performance, with digital technology adoption proposed as a mediator. The analysis revealed that while digital technology adoption did not significantly mediate the relationship between transformational leadership and business performance (β=0.037, t=1.115), it mediated the relationship between dynamic capabilities and business performance (β=0.242, t=2.457). Thus, H5 was not supported, and H6 was supported.

The results of the path analysis provide compelling insights into the relationships between transformational leadership, dynamic capabilities, and digital technology adoption with MSME performance, offering valuable implications for theory and practice. Firstly, the result which found transformational leadership does not significantly influence digital technology adoption suggests a nuanced relationship. While transformational leaders are known for their ability to inspire and motivate employees, the adoption of digital technologies may require specific strategic initiatives and resources beyond leadership charisma. This underscores the importance of leadership in actively championing digital initiatives, providing necessary resources, and fostering a culture conducive to technological innovation. For example, consider an MSME which is led by a transformational leader who is highly charismatic and inspirational. While this leader may be able to motivate employees to embrace change, the adoption of digital technologies may stall if the organization lacks the necessary resources, such as funding for technology investments or expertise in digital implementation. In this case, leadership alone may not be sufficient to drive digital transformation. To effectively adopt digital technologies, transformational leaders must go beyond inspiration and actively champion digital initiatives within their organizations. This may involve allocating resources for technology investments, providing training and support for employees to adapt to new technologies, and fostering a culture of innovation and experimentation. By doing so, transformational leaders can create an environment where digital technology adoption is not only encouraged but also supported at all levels of the organization, leading to successful digital transformation.

Secondly, the significant relationship between dynamic capabilities and digital technology adoption aligns with the Resource-Based View (RBV) theory, which suggests that firms can achieve a competitive advantage by leveraging their unique resources and capabilities. In the context of this study, dynamic capabilities refer to a firm's ability to adapt to changing environments and innovate, which are essential for successfully adopting digital technologies. For example, one MSME may have a strong focus on developing dynamic capabilities, regularly investing in employee training, technology upgrades, and process improvements. On the other hand, another MSME has a more static approach, with little emphasis on adapting to changing market conditions or technological advancements. When faced with the need to adopt digital technologies to improve operational efficiency and competitiveness, the MSME is more likely to succeed due to its strong dynamic capabilities. Its ability to quickly adapt to new technologies, integrate them into existing processes, and innovate new ways of doing business gives it a significant advantage over another MSME which may struggle to adapt and adopt digital technologies effectively.

Thirdly, the insignificant relationships between transformational leadership, dynamic capabilities, and business performance underscore the multifaceted nature of organizational success. While transformational leadership and dynamic capabilities are widely recognized as drivers of innovation and organizational agility, they directly influence financial performance which may be nuanced and mediated by other organizational factors. In this study, for instance, MSMEs are led by a highly charismatic and visionary CEO who embodies transformational leadership qualities. Despite the CEO's efforts to inspire and motivate employees, the firm's financial performance may not see immediate improvements if other critical factors, such as market conditions, competitive pressures, or operational inefficiencies, are not addressed. Similarly, even if the firm has invested in developing dynamic capabilities, such as the ability to adapt to market changes and innovate new solutions, these capabilities alone may not translate into immediate financial gains if the firm fails to effectively capitalize on its strengths or address weaknesses in other areas of its operations.

Lastly, the significant relationship between digital technology adoption and business performance underscores the transformative power of digitalization for MSMEs. MSMEs that effectively adopt digital technologies are likely to experience improvements in operational efficiency, customer engagement, and market competitiveness, ultimately leading to enhanced financial performance. This highlights the strategic imperative action by MSMEs to prioritize digitalization effort as a key driver of sustainable growth and competitiveness. For example, one MSME may adopt digital technology that enables the MSME to streamline its inventory management processes by reducing stockouts and improving order fulfillment times. As a result, the MSME is able to meet customer demands more efficiently, leading to increased customer satisfaction and loyalty. Additionally, digital technologies can help MSMEs expand their market reach and access new customer segments. For instance, an MSME that adopts e-commerce platforms can reach customers beyond its local market, potentially increasing sales and revenue.

5. CONCLUSION, CONTRIBUTION, LIMITATION, AND FUTURE RESERCH AGENDA

The results of this study indicate an insignificant effect between transformational leadership and dynamic capabilities on MSMEs performance; however, digital technology adoption illustrates a significant effect on MSME performance. Moreover, the relationship between dynamic capabilities and MSMEs performance is mediated by digital technology adoption. Studies suggest that digital technologies can enhance organizational capabilities, and ultimately influence performance positively. Therefore, this study offers a novelty by connecting transformational, leadership, dynamic capabilities, and digital technology adoption in the case of MSMEs in Malaysia.

This study makes several contributions to the existing literature. First, by applying the RBV and dynamic capabilities theory, it provides empirical evidence on the relationship between transformational leadership, dynamic capabilities, and digital technology adoption with MSMEs' performance in Malaysia. Second, by highlighting the mediating role of digital technology adoption in the relationship between dynamic capabilities and MSMEs' performance, the study offers insights into the mechanisms through which digital technologies can enhance organizational performance. Third, the study contributes to the literature by focusing on MSMEs, which are crucial drivers of economic growth and innovation in Malaysia.

From a practical standpoint, the findings of this study have several implications for MSMEs in Malaysia. Firstly, they underscore the importance of embracing digital technology adoption as a strategic imperative action in enhancing performance and competitiveness. MSMEs should invest in developing digital capabilities and integrating digital technologies into their operations to capitalize on the opportunities presented by the digital economy. Secondly, the study highlights the role of dynamic capabilities in driving digital technology adoption and ultimately, performance. MSMEs should focus on developing the ability to sense, seize, and reconfigure resources to adapt to changing market conditions and leverage digital opportunities. Finally, the study emphasizes the need for leadership that inspires and motivates employees to embrace digital transformation. Transformational leaders can play a critical role in fostering a culture of innovation and digital adoption within MSMEs, thereby enhancing their performance in dynamic markets.

The study acknowledges several limitations that should be considered when interpreting the results. Firstly, the sample size of 146 MSMEs from Kelantan, Malaysia may limit the generalizability of the

findings to MSMEs in other regions or countries. Additionally, the reliance on self-reported data introduces the potential for response bias. Future research could address these limitations by using a larger and more diverse sample and complementing self-reported data with objective measures or qualitative methods. Furthermore, the cross-sectional design of the study limits its ability to establish causal relationships between variables. Longitudinal studies could provide more robust evidence of the relationships between transformational leadership, dynamic capabilities, digital technology adoption, and MSME performance over time.. Moving forward, future research could explore moderating variables that may influence the relationships between transformational leadership, dynamic capabilities, and digital technology adoption with MSME performance. Comparative studies across different countries or regions could provide valuable insights into the contextual factors that may influence these relationships. Additionally, qualitative research could be used to gain a deeper understanding of the mechanisms through which these variables influence MSME performance, providing richer insights for practitioners and policymakers.

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