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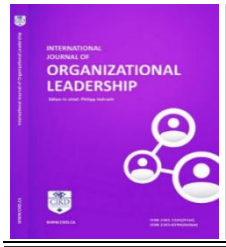

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Digital Business Transformation of Malaysian Small and Medium-Sized Enterprises: A Review on Digital Leadership and Digital Culture

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ABSTRACT

The digitalization of Malaysia's economic industry over the past decade has compelled Small and Medium-Sized Enterprises (SMEs) to adopt technology to remain competitive amidst the industrial revolution. Digital disruptions, driven by technological evolution, impact various business operations, necessitating SMEs to undergo Digital Business Transformation (DBT). As integral contributors to Malaysia's transition to a high-income nation, SMEs must leverage emerging technologies and relevant talent to foster socio-economic development and community stability. This study examines the relationship between Digital Leadership (DL) and Digital Culture (DC) in facilitating DBT among Malaysian SMEs in the service sector. A survey conducted among these SMEs provides data to evaluate the proposed theoretical framework, which incorporates the strategic alignment theory. The findings underscore the critical role of Service Level Alignment (SLA) towards a successful DBT. Contrarily, Strategy Execution Alignment (SEA), Technology Transformation Alignment (TTA), and Competitive Potential Alignment (CPA) do not significantly impact DBT. Additionally, a significant positive correlation exists between DC and DBT, highlighting the importance of a digital-ready workforce and innovative digital strategies. These insights enhance the understanding of how DL and DC influence DBT success, offering valuable perspectives for improving the sustainability and competitiveness of Malaysian SMEs. The study underscores the necessity for SMEs to strategically align their operations with digital advancements to thrive in a rapidly evolving digital economy. The findings from this study can suggest new prospects for the growth and survival of SMEs. It can also promote DBT awareness amongst SME owners by developing new policies and governance to steer the complex DBT process.

Small and Medium-Sized Enterprises (SMEs) are navigating the challenges of the Fourth Industrial Revolution (4IR), which has heightened risks and disrupted market operations, stability, efficiency, and sustainability. Recent years have seen significant shifts in the industrial and manufacturing sectors, transitioning from the Third Industrial Revolution to the 4IR through the adoption of digital technologies (Maretto et al., 2023; McKinsey & Company, 2022). Over the past decade, Malaysia has been progressing towards digitalization, with businesses, households, and the government increasingly embracing these changes. To foster continued economic growth, a balanced development strategy that focuses on both the manufacturing and modern service sectors is essential (Asyraf et al., 2019). The Malaysian government has been actively transforming various industries through digital initiatives, and the burgeoning digital economy has garnered significant interest from SMEs. Deloitte (2016) defines the digital economy as the utilization of mobile services for payments, e-commerce websites for transactions, and emerging technologies for business operations.

The COVID-19 pandemic underscored the inevitability of digital transformation for businesses. Despite a 33% growth in e-commerce value to RM896 billion in 2020, SME adoption of digital technologies remains limited (Koe & Wulandari, 2023). Around 77% of SMEs in Malaysia are still in the early stages of DT, lagging behind their peers such as Singapore, the Philippines, Vietnam, and Thailand (Bernama, 2023). Among the SMEs that have embraced digital transformation, only 6.3% are leveraging advanced technologies like data analytics. According to Tan (2021), barriers to DT include cost issues, lack of awareness, talent, and inadequate infrastructure. In response to the pandemic's economic impact, the Twelfth Malaysian Plan (RMKe-12) was revised, aligning with the Shared Prosperity Vision 2030 (SPV 2030) to address the preservation of the environment, empowerment of the economy, and social reengineering (Ministry of Economy, 2021a). This plan prioritizes the digital economy, 4IR, connectivity of infrastructures, and sustainable energy.

The need for a thorough strategy to bolster the nation’s preparedness for a digital economy is recognized by the Malaysian government. Consequently, the Malaysia Digital Economy Blueprint (MyDIGITAL) was developed to promote collaborative efforts through innovative partnerships among people, private entities, and the public sector (Ministry of Economy, 2021b). The blueprint aligns with the SPV 2030 and RMKe-12 to achieve shared objectives and reach specific outcomes through a structured method. The implementation of this roadmap is divided into three phases, each designed to progressively meet these goals. Additionally, the 'Economic Recovery Plan' (ERP) was devised by the government as a measure to revitalize the nation's economy. With a focus on long-term post-COVID-19 economic growth acceleration, the Economic Planning Unit directed the ERP's efforts towards digitalization, making it a priority. Amidst the pandemic, widespread quarantine measures and the promotion of social distancing led to a surge in online activities and the adoption of digital platforms by the public. Following the pandemic, it was predominantly large corporations, rather than SMEs, that capitalized on digital technology. However, the barriers hindering Malaysian SMEs from harnessing the advantages of digital technology, both before and after the pandemic, need to be addressed.

Digital Leadership (DL) has been defined by scholars in various ways, influenced by factors such as digital technology, the process of digitalization, innovative behavior, and the specific context or environment in which it is applied, as well as existing leadership styles and theories

(Magesa & Jonathan, 2021). El Sawy et al. (2016) frame DL as effectively executing the right actions to ensure the strategic success of digitalization for both the enterprise and its surrounding business ecosystem. Antonopoulou et al. (2019) describe DL as the process of reaching objectives associated with information and communication technologies while effectively managing the use of both human resources and these technologies. In a different perspective, Mihardjo and Sasmoko (2020) state that DL encompasses both the cultural aspects and the competencies of a leader in utilizing digital technology to enhance organizational value. In contrast, Digital Culture (DC) is reflected by organizations that prioritize adaptability, collaboration, and continuous learning (Cameron & Quinn, 1999; Leal-Rodríguez et al., 2023). Their members are characterized by curiosity, cooperation, analytical thinking, and openness to change (Cameron & Quinn, 1999; Leal-Rodríguez et al., 2023). DC encompasses the shared values, beliefs, and behaviors that shape how an organization utilizes digital technologies and adapts to changes.

Limited research exists on how DL, and DC affect the Digital Business Transformation (DBT) of Malaysian SMEs. Past studies have mainly focused on how DL and DC affect human capital (Fathony & Hendarman, 2023) and employee/firm performance (Muniroh et al., 2022). Hence, this study aims to investigate the roles of leadership and digital culture in facilitating the successful DBT of SMEs in Malaysia. Specifically, the research examines the support provided by leaders and cultural shifts that can drive DBT. Additionally, the study identifies crucial factors that can impact the DBT of SMEs. An examination of how DBT influences the sustainability and competitiveness of SMEs in Malaysia is imperative. Such an analysis can yield valuable insights and enhance understanding of the potential influence of digital leadership and digital culture on SMEs' transformation and growth.

Literature Review

This study investigates how digital leadership (DL) and digital culture (DC) facilitate Digital Business Transformation (DBT) for SMEs in Malaysia. The current landscape necessitates a significant shift towards digitization and digitalization for resilience and growth. Digital Transformation (DT) involves adopting digital tools and processes to achieve business objectives, while DBT encompasses more than technology, emphasizing and leveraging modern cloud-based technologies to enhance performance and business environments. SMEs must embrace DBT to avoid disruption, realize the benefits of transformation, and maximize value from digital technologies and business models (Ghobakhloo & Ching, 2019). The research explores the Strategic Alignment Theory (SAT), highlighting the alignment of an organization’s structure and resources with its strategy and business environment, ensuring that business and product development strategies align with customer and market needs, leading to economic success (Henderson & Venkatraman, 1991).

Digital Leadership (DL) and Strategic Alignment Theory (SAT)

Digital Leadership (DL) encompasses guiding and motivating organizational change through digital technologies (Vogel & Hultin, 2018). It requires leaders to adeptly coach, facilitate, and support employees while integrating digital processes, promoting innovation, and aligning technological, financial, and human resources (Dahlström et al., 2017). Success in Digital Transformation (DT) hinges significantly on DL, which blends transformational leadership

traits with strategic IT deployment to foster a conducive organizational culture (Deloitte, 2013). This includes understanding the digital landscape, developing new business models, and ensuring that digital strategies align with corporate goals (Bennis, 2013). Effective DL in SMEs involves leveraging digital competencies to drive DT and enhance overall organizational performance (Sow & Aborbie, 2018).

Strategic Alignment Theory (SAT) provides a framework for aligning IT strategies with business objectives and organizational culture (Henderson & Venkatraman, 1992). SAT emphasizes the importance of synchronizing digital initiatives with organizational goals through components such as business strategy, IT strategy, organizational infrastructure, and IS infrastructure (Henderson & Venkatraman, 1993). The theory underscores the need for leaders to support change management, resource allocation, and vision sharing to ensure that IT investments contribute to the desired organizational outcomes (Willcocks & Sykes, 2000). By aligning digital leadership with SAT, organizations can effectively navigate DT, address resistance to change, and foster an adaptive and innovative culture that supports long-term sustainability and growth (Belitski & Liversage, 2019).

Additionally, The Strategic Alignment Model (SAM) by Henderson and Venkatraman (1993) identifies four main alignments between business and IT: Strategy Execution Alignment (SEA), Technology Transformation Alignment (TTA), Competitive Potential Alignment (CPA), and Service-Level Alignment (SLA). SEA involves aligning IS infrastructure with business strategy, with top executives creating strategies and IS/IT management implementing them (Henderson & Venkatraman, 1993). TTA aligns IT strategy with business strategy to support IS/IT infrastructure and processes, emphasizing efficient design and implementation (Henderson & Venkatraman, 1993). CPA focuses on leveraging emergent IT competencies to influence business strategy and develop new products and services (Henderson & Venkatraman, 1993). SLA emphasizes shaping an effective IS/IT organization within the business, with leadership playing a vital role in resource allocation and responsiveness to end-users' needs (Henderson & Venkatraman, 1993).

In the context of SMEs, understanding IT strategies and business alignment is crucial as many competitors and suppliers integrate IT into their operations (Street et al., 2017). SME leaders face the challenge of aligning digital technology with business strategy amid continuous technological advancements (Li et al., 2016). This study aims to examine how SME leaders with transformational styles and digital ambitions align business and technology strategies to drive DL in Malaysia. Limited research exists on SMEs regarding DL and technology-business alignment, necessitating an investigation into the relationship between DL sub-elements and DBT based on the literature review, leading to the development of the following hypotheses for empirical testing:

H_1: There is a significant relationship between strategy execution alignment (SEA) and digital business transformation.

H_2: There is a significant relationship between technology transformation alignment (TTA) and digital business transformation.

H_3: There is a significant relationship between competitive potential alignment (CPA) and digital business transformation.

H4: There is a significant relationship between service level alignment (SLA) and digital business transformation.

Digital Culture (DC)

Resistance to change often arises from organizational culture, necessitating top management support for initiatives like Digital Culture (DC). However, existing theories lack integration of top management support constructs (Boonstra, 2013), and technology implementation success is not adequately associated with leadership behaviors. Digital Transformation (DT) requires a corresponding shift in organizational culture, known as DC (Hemerling et al., 2018). DC empowers employees, fosters rapid decision-making, and attracts younger talent. Key actions for cultivating DC include employee engagement, leadership by example, training, and recruiting individuals with digital competencies (Jäntti & Hyvarinen, 2018). Firsova (2021) underscores DC's role in facilitating successful DT and DBT by promoting innovation and knowledge diffusion. DBT hinges on a robust DC to navigate the challenges posed by digital disruption. Leaders must recognize DT as a foundational strategic shift and cultivate a culture conducive to change while aligning with the organization's broader strategy. Building a DC demands a concerted and disciplined effort, necessitating an exploration of its drivers and significance. Consequently, this study seeks to investigate the correlation between DC and OC in Malaysian SMEs.

Sood (2018) identifies various reasons for the frequent failure of DT, with one key factor being the absence of a DC. To achieve successful DT, it is essential to develop a DC that fosters new behaviors, encouraging individuals to move away from outdated mindsets. According to Sood (2018), meaningful change in DC occurs when organizations base their products and services on customer feedback and actively engage with customers instead of merely maintaining internal alignment. Additionally, promoting a culture of innovation is crucial and acts as a major differentiator, as organizations need to embrace a "try fast, fail fast" approach to learn from setbacks and adjust accordingly. McKinsey & Company (2017) found that one-quarter of the surveyed companies in their study identified a culture resistant to risk and experimentation, along with a lack of a shared understanding of the company culture, as their greatest challenges. To address this, strong support from leadership is essential, cascading down through the management hierarchy to every employee, ensuring the organizational structure aligns with digital objectives. Leaders must transition from a top-down decision-making approach to a coaching style when necessary. Additionally, functional and departmental silos should be dismantled, replaced by self-organized, cross-functional, and non-hierarchical teams, empowering employees to manage tasks from beginning to end. Ultimately, the report emphasized that avoiding risks is the greatest risk, warning that companies that remain stagnant will suffer the most from digital disruption.

The traditional methods of business operation must gradually phase out to integrate a new DC that aligns with the organizational context. Scaling at this level presents significant challenges, as traditional cultures often rely on hierarchical power structures, whereas DC focuses on collaboration, delegation, and agility. Consequently, changes in processes, practices, and systems are essential; instilling new behaviors throughout the organization will be impossible without them. This transformation is particularly challenging and requires considerable effort, which is why many initiatives fall short and eventually dissipate. For

effective collaboration, it is crucial to explore knowledge-based and community-oriented approaches when implementing digital tools to drive DT (Bettoni et al., 2018).

In a study of a MultiNational Corporation (MNC) based in France and its subsidiaries, Martínez-Caro et al. (2020) found that managers can gain significant advantages by establishing an organizational culture that aligns with their digital strategy. The research emphasized the crucial role of DC as a precursor to effectively utilizing digital technologies for organizational performance. The findings revealed that a supportive culture is essential for adopting new technologies, as DC facilitates the digitization of businesses and enhances the value derived from digital technologies. Given these positive outcomes, the study aims to investigate whether similar results can be observed in Malaysian SMEs. This research could demonstrate that DC can be effectively implemented within smaller workforces compared to MNCs in various countries. Martínez-Caro et al. (2020) believed that properly managed digital technologies within an organization can generate exceptional value.

Without a strong DC, Digital Business Transformation (DBT) is likely to fail for any organization facing digital disruption. Leaders must recognize DT as a crucial strategic paradigm shift that necessitates cultivating a culture that supports this change and aligns with the company's overall strategy. While establishing a DC within an organization is achievable, it requires a robust and disciplined approach. Therefore, it is essential to investigate the factors that contribute to the development of DC and its significance. The following hypothesis was developed for this study based on the literature review:

H_5: There is a significant relationship between digital culture and digital business transformation.

The current body of literature recognizes the importance of DL and DC in relation to DBT. However, there is a significant lack of empirical research that examines how these two elements interact specifically within SMEs. Most previous studies have considered DL and DC as distinct concepts, often analyzing their impacts on organizational results separately. This separation is concerning, as both DL and DC are essential for achieving successful transformation efforts. Moreover, although it is acknowledged that digital transformation involves not only technological advancements but also significant shifts in organizational culture, there are few studies that have effectively explored this connection, particularly within the SME sector.

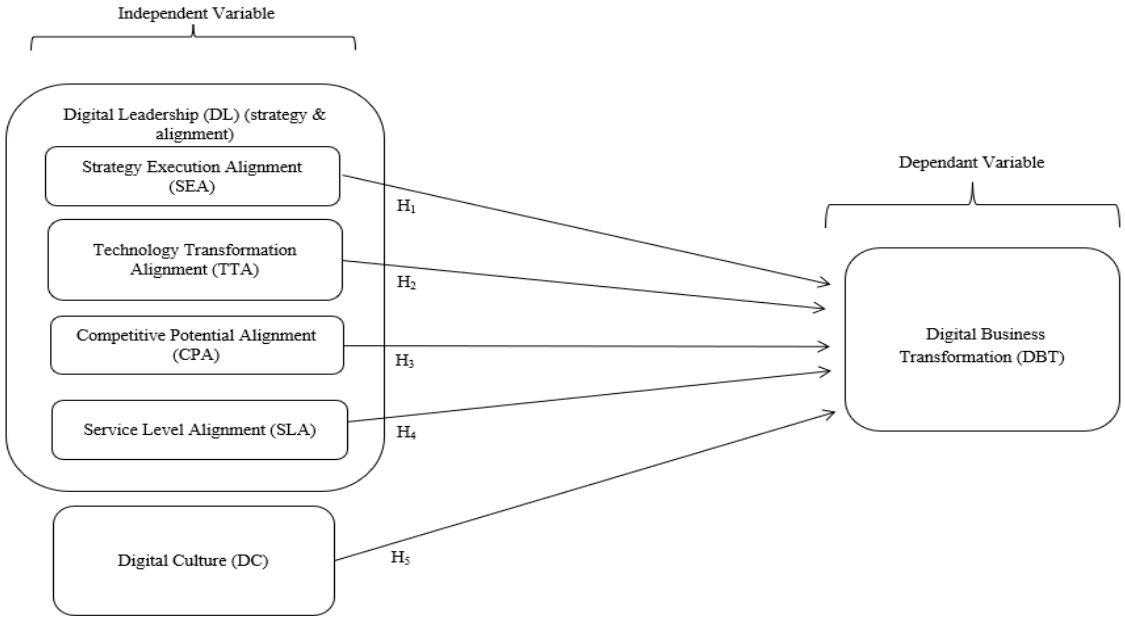
Additionally, existing literature frequently depends on theoretical models that inadequately address the specific challenges encountered by SMEs, including resource constraints, organizational inertia, and resistance to change (Takacs et al., 2022). This gap hinders the understanding of how SME leaders can leverage digital culture and leadership approaches in facilitating successful business transformations. Furthermore, studies tend to overlook the dynamic and evolving characteristics of digital transformation processes (Ivančić et al., 2019), resulting in a static perspective on leadership and culture that fails to consider the continual shifts in the digital environment.

This research seeks to fill these significant gaps by conducting a comprehensive analysis of the interplay between DL and DC in shaping DBT within Malaysian SMEs. By emphasizing the combined effects of these factors, the study aims to provide important insights into how SMEs can effectively manage the challenges associated with digital transformation, thereby

enriching the larger conversation about successful leadership and culture in the digital era. Figure 1 depicts the research framework of this study.

Figure 1

Research Framework



Method

This research adopts a positivist approach, characterized by its quantitative methodology, aiming to explore the correlation between digital leadership and digital culture in facilitating DBT within SMEs in Malaysia. The population of interest includes employees from Malaysian SMEs in the service sector cluster, specifically those involved in decision-making related to DBT. According to the most recent data from the Department of Statistics Malaysia (SMECorp, 2023), micro, small, and medium enterprises (MSMEs) made up 96.9% of all business establishments in Malaysia in 2023, totaling 1,101,725 firms. The sample size for this study was determined using G*Power, a statistical tool frequently used for power analysis. Given the study's focus on the relationship between digital leadership and digital culture within SMEs, a minimum of 138 respondents was required to ensure adequate statistical power. This was necessary to produce reliable and generalizable results for the SME population in Malaysia. A total of 178 responses were collected, and after screening for incomplete and invalid entries, 156 responses were deemed usable. The study primarily relies on gathering primary data, utilizing survey instruments distributed among employees of SMEs in the service sector cluster, following a pilot test with 30 participants to ensure relevant experience in DL, DC, and DBT as well as to enhance the validity and reliability of the final study. Data collection is primarily conducted through online questionnaires administered via Google Forms to willing participants from selected SMEs. The survey questions are predominantly close-ended and designed to align with the research objectives. Responses are quantified using a Likert scale, comprising both 5-point and 7-point scales, chosen to encourage authentic responses and maintain respondent engagement throughout the survey process (Croasmun & Ostrom, 2011; Joshi et al., 2015). The demographic breakdown of the sample in this study provides a clear picture of the respondents'

backgrounds. In terms of gender, 70.5% of the respondents were male, while 29.5% were female. Regarding the total length of working experience within SMEs, the majority of the participants (62.8%) had between 3 to 8 years of experience, followed by 24.4% who had worked in SMEs for 9 to 14 years, and 12.8% with 15 years or more. As for their job positions, a significant portion (44.9%) held roles as managers or project managers, while 21.2% were in C-suite or senior executive roles. The remaining respondents held positions such as team lead or functional lead (19.9%), with smaller percentages distributed across various other roles, including owner or partner (10.9%) and specific functions like human resource, IT, or sales. For this study, Partial Least Squares Structural Equation Modeling (PLS-SEM) is employed to assess the reliability and validity of the research model. Using PLS-SEM allows researchers to thoroughly evaluate the reliability and validity of their measurement model before moving on to analyze the relationships within the structural model. Table 1 depicts the research design elements of this study.

Table 1

Research Design Elements

Research Design Component	Description	Rationalization
Nature of study	Confirmatory	Hypothesis testing is conducted to validate predetermined relationships derived from the theory adopted.
Role of theory	Theory testing	The study reviewed the Structural Alignment Theory (SAT) to enhance comprehension and explore the crucial roles played by SME leaders and employees in DBT.
Sampling process	Purposive sampling	The respondents for this study were chosen and selected based on the following criteria: (a) Malaysian citizens, (b) holding positions at the executive level, senior managerial level, managerial level, project management level, or owners of SME companies which are registered with SME Corporation Malaysia, (c) a minimum of three years of experience in roles involving the support of DT and decision-making regarding the strategic direction of SMEs, and (d) have engaged in DBT activities.
Data collection method	Survey	The questionnaire was distributed using Google Forms via relevant platforms such as the Chamber of Commerce, LinkedIn, and WhatsApp groups. According to the analysis conducted using G*Power, a minimum sample size of 138 respondents is needed for this study. Out of the total 178 sets of responses received through the survey, only the input from 156 respondents was deemed to be usable after straight-lining was conducted as well as the removal of responses with uncompleted pages, double entries, and missing values.
Researcher interference	Minimal	Minimal interference with the work nature of SME employees during the distribution and collection of questionnaires was ensured.

Results

In this study, SmartPLS 4.0 was employed to construct and analyze the model using PLS-SEM to assess the relationships between variables and ensure the reliability and validity of the model. Following the guidelines outlined by researchers, the data analysis in SmartPLS entails two main steps: evaluating the measurement model and examining the structural model (Chin, 1998; Henseler & Chin, 2010; Urbach & Ahlemann, 2010).

Measurement Model Evaluation

Before delving into the relationships between the constructs, it is imperative to assess the measurement model to ensure its validity and reliability. The evaluation of the measurement model involves testing indicator reliability, internal consistency reliability, convergent validity, and discriminant validity (Cheung et al., 2023; Hair et al., 2020).

According to Urbach and Ahlemann (2010), indicator reliability assesses the consistency of a variable or variables in measuring what they are intended to measure. It is also emphasized that the reliability of each construct should be evaluated independently of others (Urbach &

Ahlemann, 2010). Factor loading values were examined to assess indicator reliability (Ringle et al., 2012). Loadings of 0.7 or higher are deemed acceptable (Hair et al., 2011). In this study, an initial assessment revealed that some constructs fell below the recommended thresholds for Average Variance Extracted (AVE), prompting the removal of low-loading items to improve internal consistency reliability and convergent validity (Hair, et al., 2021). Following the removal of low-loading items, Table 2 illustrates the factor loadings that meet the acceptable threshold, affirming the presence of indicator reliability.

Additionally, the internal consistency reliability was assessed through Composite Reliability (CR), an alternative measure akin to Cronbach's Alpha (α), with a threshold value above .70 indicating adequacy. Table 2 demonstrates that the CR for each construct surpassed .70, affirming the presence of internal consistency reliability. Convergent validity was evaluated using the AVE, with a minimum value of .50, which is considered satisfactory. Table 2 illustrates that the AVE for each construct exceeded 0.5, indicating a satisfactory level of convergent validity. Figure 2 depicts the final measurement model.

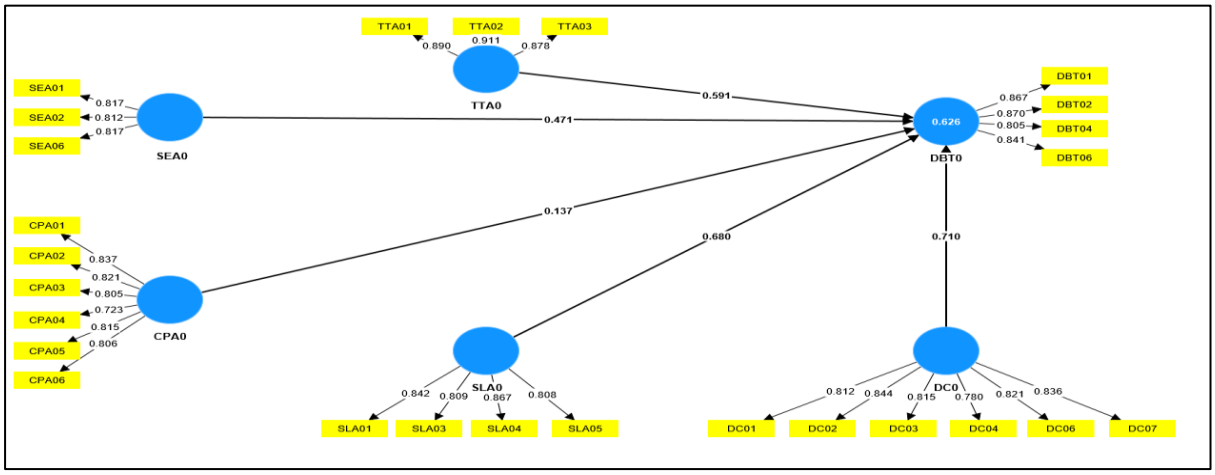
Table 2

Factor Loadings, Composite Reliability, and AVE off each Construct and Item.

Constructs	Items	Factor Loadings	α	CR	AVE
Strategic Execution Alignment	SEA01	.82	.75	.86	.67
	SEA02	.81			
	SEA06	.82			
Service Level Alignment	SLA01	.84	.85	.90	.69
	SLA03	.81			
	SLA04	.87			
	SLA05	.81			
Technology Transformation Alignment	TTA01	.89	.87	.92	.79
	TTA02	.91			
	TTA03	.88			
Competitive Potential Alignment	CPA01	.84	.89	.92	.64
	CPA02	.82			
	CPA03	.81			
	CPA04	.72			
	CPA05	.82			
	CPA06	.81			
Digital Culture	DC01	.81	.90	.92	.67
	DC02	.84			
	DC03	.82			
	DC04	.78			
	DC06	.82			
	DC07	.84			
Digital Business Transformation	DBT01	.87	.87	.91	.72
	DBT02	.87			
	DBT04	.81			
	DBT06	.84			

Figure 2

Measurement Model



As for the evaluation of discriminant validity, the Fornell-Larcker criterion was employed (Henseler et al., 2016). Discriminant validity ensures that a measurement of a construct is distinct and captures unique aspects not captured by other measures in a Structural Equation Model (SEM) (Hair et al., 2010). Discriminant validity is gauged by identifying correlations between measures that may overlap, and determining the extent to which items differentiate among constructs (Ramayah et al., 2018). Rasoolimanesh (2022) asserts that the purpose of this assessment is to avoid drawing questionable conclusions due to a lack of discriminant validity. The results presented in Table 3, obtained through SmartPLS 4 analysis, demonstrate the adequacy of discriminant validity for the constructs, as confirmed by the Fornell-Larker criterion. Additionally, the Heterotrait–Monotrait Ratio of correlations (HTMT) serves as an alternative method for assessing discriminant validity, in place of the Fornell and Larcker criterion (Henseler et al., 2015). HTMT values should remain below .90 to confirm that the two reflective constructs are distinct, as demonstrated in Table 4.

Table 3

Fornell-Larcker Criterion

Constructs	CPA	DBT	DC	SEA	SLA	TTA
CPA	**.80**					
DBT	.14	**.85**				
DC	.14	.71	**.82**			
SEA	.15	.47	.36	**.82**		
SLA	.18	.68	.53	.66	**.83**	
TTA	.21	.59	.51	.68	.69	**.89**

Table 4

Heterotrait–Monotrait Ratio of Correlations (HTMT)

Constructs	CPA	DBT	DC	SEA	SLA	TTA
CPA						
DBT	.15					
DC	.14	.79				
SEA	.18	.58	.42			
SLA	.20	.78	.59	.81		
TTA	.25	.68	.57	.83	.80	

Structural Model Evaluation

After evaluating and establishing the measurement model, the subsequent step involves analyzing the structural model. According to Hair et al. (2017), this assessment aims to predict

the significance and relationships of one or more constructs with dependent constructs. Figure 3 illustrates the structural model derived from SmartPLS 4 following non-parametric bootstrapping with a sample size of 5000. Model fit was assessed using the Standardized Root Mean Square Residual (SRMR), which measures the difference between observed and model-implied correlations (Ringle et al., 2024). This criterion helps to avoid model misspecification in PLS-SEM (Henseler et al., 2014). SRMR value below .08 indicates good fit, and in this study, the SRMR was .06, reflecting a well-fitting model. The structural model is also evaluated based on the predictive power and strength of relationship between the latent variables. The Coefficient of Determination (R^2) value obtained was .62, falling within the moderate range. This indicates that the model was able to explain significantly the variance between DBT. On the other hand, Predictive-Relevance (Q^2) values are used to evaluate the goodness of fit for structural models, where a Q^2 value greater than 0 indicates that the model has predictive relevance (Fathurahman & Sihite, 2022). The Q^2 attained for this study is .44, which shows good predictive relevance. A Q^2 value, which is more than .3 and less than .5 depicts that the model can predict the dependent variable with reasonable accuracy.

Figure 3

Structural Model

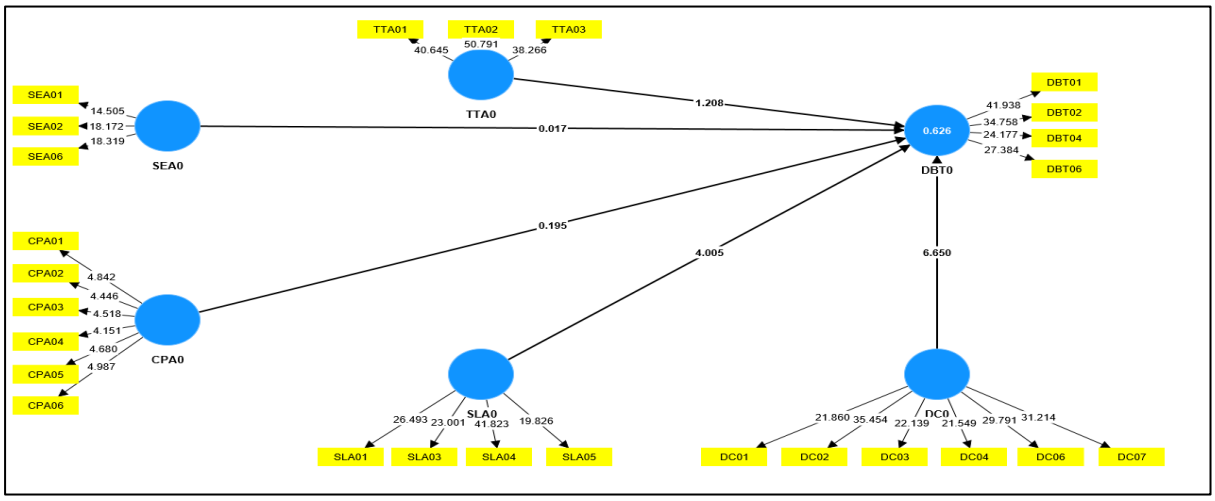


Table 5 displays the path coefficients for the current study. To have a meaningful impact on the research model based on a 95% confidence interval, the P value needed to be below .05, while the t-statistic value had to exceed 1.96. Two out of the five hypotheses tested have shown significance and are supported, while three hypotheses have been rejected. Specifically, SEA, TTA, and CPA demonstrate no significant relationship with digital business transformation.

Table 5

Path Coefficients and Hypotheses Results

Hypothesis	Relationship	Original Sample	*M*	*SD*	***t*	*p*	Results
H1	SEA -> DBT	-.00	.00	.09	0.01	.987	Not Supported
H2	TTA -> DBT	.09	.09	.08	1.20	.227	Not Supported
H3	CPA -> DBT	-.01	-.00	.06	0.19	.846	Not Supported
H4	SLA -> DBT	.36	.36	.09	**4.00**	**.000**	**Supported**
H5	DC -> DBT	.46	.47	.07	**6.65**	**.000**	**Supported**

*Note. ** represents significance at 95%*

Discussion

Digital Leadership (DL) comprises four sub-elements: SEA, TTA, CPA, and SLA, which collectively drive Digital Business Transformation (DBT) as a catalyst for organizational change and design (Munas & Arun, 2020). SLA is the only sub-element among the four that shows a significant positive relationship with DBT, supported by its t-statistics and p-value. In contrast, SEA, TTA, and CPA do not exhibit a significant relationship with DBT. Several factors may account for SME employees' perception that SEA, TTA, and CPA are not significant. Specifically, TTA is integral to the business strategy, yet the existing IS/IT infrastructure and processes are inadequate. Technology architects may not have effectively designed and implemented the necessary IS/IT infrastructure, including the external elements of the IT strategy, to support the business side. Top management should act as visionaries and architects, enabling business and IT executives to collaboratively plan how technologies can be utilized and infrastructures developed to effectively operate the business. Business executives must recognize the shortcomings of the current IS/IT systems and address them appropriately. Changes in infrastructure, people, processes, and tasks should be implemented to recommend suitable technological adoptions (Henderson & Venkatraman, 1993). Activities that do not add value must be eliminated to introduce new value and provide the necessary leadership to support the technological vision. By benchmarking against competitors, the performance of TTA can be assessed based on the value that IT contributes to the products and services offered by the business. Additionally, some organizations may overlook the importance of workforce management in implementing their business strategies through technology. Furthermore, as noted by Ratheeswari (2018) and Khin and Hung Kee (2022), upgrading IS and digital technology in the workplace is intertwined with the people involved at every level. All business activities increasingly rely on IT, IS, and digital technology, necessitating that the workforce be trained to navigate both internal and external processes effectively. A study by Khin and Hung Kee (2022) emphasized that technological and operational readiness was lower than managerial readiness. This disparity can be attributed to several factors, including the time required to identify operational resources, the need to train and equip the workforce with essential technical skills, the preparation of infrastructure, and the development of teamwork and collaboration among staff (Khin & Hung Kee, 2022).

Regarding CPA, which is an aspect of the IT strategy, the alignment perspective focuses on leveraging emerging IT competencies to manage new products and services. New types of relationships, such as commercial governance, should be cultivated; however, Malaysian SMEs may not be prepared for such collaborations. Additionally, leaders or executives might lack the necessary vision to implement changes that could affect their business strategy, and leadership is not perceived as a catalyst for helping managers and employees recognize potential threats and opportunities from an IS/IT perspective. In the service sector, the provision of quality service to customers is the main objective. The study by Munas and Arun (2020), stated that CPA is all about the capabilities of IT and how it can assist companies to bring impact on its products and services offered. SMEs in Malaysia need to look at new ways to build relationships with customers and suppliers so that new business governance can be enabled. New landscapes from the point of business strategy must be observed that will allow SMEs to develop distinctive capabilities to compete (Johan & Handika, 2017); however, from the findings, this is lacking in Malaysian SMEs. Henceforth, CPA cannot be attained without developing the exact digital

capability. The IS/IT strategy needs to be efficient in that it contributes and becomes the prime reason changes can be made in business strategy for SMEs to compete, stay relevant with time and remain sustainable. Since IT strategy is the anchor, SMEs need to invest in digital technologies to improve their way of working with customers and suppliers by having better links to information (Vrontis et al., 2022). This will eventually reduce errors, perform better and improve the quality of services and goods by reducing lead times. Therefore, to compete, the fundamental is to work as closely as possible together in the physical and digital world through the use of technology. Competition may involve products and the manufacturing sector; therefore, future research may examine the sector to obtain different outcomes/findings. At present, all those mentioned for CPA are missing or not implemented in the Malaysian services sector. Business leadership is used as the basis for the performance criteria in measuring the CPA using quantitative and qualitative methods. Henderson and Venkatraman (1993) viewed customer relationships and increases in revenue to review the performance of IS/IT technology.

Additionally, IT management should act as a catalyst to keep top executives updated on emerging technologies and their potential applications in business decision-making. This critical role appears to be lacking in the Malaysian context, as it does not adequately represent how SMEs in Malaysia leverage digital technology to develop their market strategies and establish strategic advantages (Almashalah & Osses, 2020). Business strategy in the SEA is a driving force for the organization and the IS infrastructure. According to Hourani (2017), business strategy serves as the primary driver behind a company's organizational design and Information Systems (IS) infrastructure decisions. The top executives and the head of IS management play crucial roles as both formulators and executors of strategy within the organization. Additionally, research by Burton and Obel (2018) has shown that business strategy not only drives design and change within an organization but also influences the modifications needed for IS and IT infrastructure in the context of digitalization. Therefore, any transformation done within an organization has to be correlated with the company's corporate strategy, and usually, performance is measured in terms of financial gain; hence, it is viewed from a cost perspective. From the empirical findings, SMEs in Malaysia exhibit an increased responsiveness towards sustainability via the exploitation of digital technology and preparedness of their SME employees. Business strategy is a driving force for the organization and the IS infrastructure. In Malaysian SMEs, top executives typically focus on business survival and take the necessary measures to exploit digital technology, build only the required IS infrastructure, invest in training and development for their employees, and form relationships with customers to respond rapidly to new business opportunities. The IS and IT management tend to respond to the changes drafted in the business strategy and, consequently, are seen as rather reactive and implement the infrastructure and technology that is desirable to support the execution of the business strategy (Almashalah & Osses, 2020). In SEA, IT focuses on cost reduction mainly to increase performance efficiency, which highly correlates to what most Malaysian SMEs want and focus in that direction.

IT strategy is a key driver in the SLA perspective, concentrating on enhancing business infrastructure for Malaysian SMEs. Given that performance criteria emphasize customer satisfaction, IT infrastructure must be designed to fulfill customer demands. SMEs often initiate IT projects to achieve short-term objectives, aiming for quick wins before shifting their focus to long-term business goals. In this context, top executives prioritize these initiatives, while IS

management provides the executive leadership necessary to ensure customer satisfaction remains a central focus. In the service sector, SLA has a significant relationship with DBT because it can increase customer service quality, enhance customer relationships, optimize processes using data analysis, and continuously improve operational functions to focus on customers. This is made possible via the functional integration of two domains to build resources in the IT domain and business domain to accommodate the changing landscape of the marketplace of Malaysian SMEs. Organizational infrastructure adapts to changes and adopts the necessary IT strategy as part of the fulfillment of the SLA to meet the customers' expectations.

An organization's culture includes behaviors and values that characterize how things are done within the organization. To establish a healthy culture within an organization, employees must change their behavior and adapt their approach to the activities they perform, as well as collaborate with others both internally and externally in the organization. To successfully implement DBT, it is necessary to establish a culture that supports change. Embracing digital culture would allow organizations to remain competitive in a rapidly evolving marketplace, attract more individuals who possess digital skills, and increase operational efficiency through digital technology. The findings show a significant relationship between digital culture and DBT. The t-statistics and p-value of this relationship are significant. The results reveal that digital culture has an impact on DBT. This finding validates the results of the literature, which stated that digital culture is necessary for successful transformation. The findings show that digital culture is crucial, and Malaysian SMEs in the service sector are willing to change, orient their processes to meet customers' needs, are open to new ideas, are willing to take risks to make decisions under uncertainties and collaborate with customers by embracing new technology. Hemerling et al. (2018) expressed that changes in employees' behaviors from participating in activities and collaborating with others inside and outside their organization can drive digital transformation projects. Research conducted by Mansor (2022) examined the impact of organizational culture on the adoption of digital transformation and found that digital leadership plays a crucial role in shaping digital culture. Additionally, the study indicated that digital culture significantly influences the digital transformation of SMEs, particularly in areas such as vision, agile working methodologies, customer focus, digital leadership, and collaboration. These findings reinforce the conclusion that digital culture is vital for the successful DBT of Malaysian SMEs. Furthermore, employees can deliver results quickly when they are empowered by digital culture. According to Burton and Obel (2018), culture shapes the organization's design, and research by Mansor (2022) reinforces that a culture of continuous learning at the workplace and leveraging digital technologies improves and enhances business performance. Hiring and developing digital talent to drive transformation with focus-driven digital transformation by a dedicated group instills the digital culture better in an organization. The capability of SMEs to keep customers happy and meet their expectations will drive the growth and sustainability of the businesses.

Organizations that cultivate a digital culture can create an environment that promotes innovation and continuous learning. Researchers have proposed various strategies for organizations to develop a digital culture effectively. These methods include setting examples for employees, constantly engaging employees, providing training opportunities, hiring individuals equipped with digital mindsets and capabilities, and gradually transitioning to

digital culture without rushing the process (Li et al., 2016). SMEs need to take into account the methods recommended for creating a digital culture to prepare both current and potential employees for the effective execution of digital transformation and DBT. Firsova (2021), explained that digital transformation and DBT can facilitate a re-evaluation of business processes, which enables organizations to modify their value propositions, target customer segments, consumer relationships, and distribution channels. According to Ikeda and Marshall (2016), organizations that successfully implement digital transformation are usually the ones that take proactive steps to cultivate a digital culture that fosters innovation and encourages the rapid adoption of new digital technologies among their employees. Organizations need a robust digital culture to effectively navigate digital disruptions. Without this foundation, efforts to implement digital business transformation are likely to be unsuccessful. By adhering to the framework for digital culture transformation and DBT adoption, Malaysian SMEs can clarify their digital vision.

Conclusion

The research explored how digital leadership in Malaysia's services sector can align business and technology to foster growth and sustainability. It found that SME leaders in Malaysia are not fully prepared to lead their companies towards survival, as they continue to operate under outdated business models. A shift is necessary to strategically guide current SMEs into the future by adopting emerging digital technologies alongside a structured organizational change. Digital leadership is the new direction towards digital business transformation to see how SMEs look at the influence of their leaders, commitment, and passion towards a developed nation. Through a review of structural alignment theory and related literature, hypotheses were formulated to examine the relationship between digital leadership and DBT. Five hypotheses were examined, with two (SLA and DC) showing support for DBT, while the other three (SEA, TTA, and CPA) did not support DBT and demonstrated a non-significant relationship. SME owners and leaders need to adopt a new approach to drive DBT by aligning business and IT strategies and enhancing their workforce's digital skills. Leaders must be highly adaptable and agile, enabling them to navigate and adjust their businesses by considering both macro and micro perspectives. Leaders should also equip themselves with digital expertise and skills, understanding global drivers by analyzing situations and opportunities and staying updated on innovations to deliver greater value to their customers. Future SMEs will thrive when leadership embraces continuous learning, unlearning, and openness in shaping future business strategies and guiding employees to become both competent and competitive. Digital leadership should focus on improving managerial expertise, aligning business and IT strategy, and fixing organization structure, IT infrastructure, and processes with its workforce management on a holistic level.

SMEs can deliver high-quality services by adopting technology that supports the development of robust platforms. Ensuring the success of SMEs' DBT can help Malaysia achieve high-income nation status by adopting innovative business models across various industries. The findings of this study could contribute to the formulation of a well-defined policy under the RMKe-12. The main agenda of *Dasar Keusahawanan Nasional 2030* (DKN 2030) is to empower businesses and increase their awareness of digital disruptions by ensuring that SMEs adopt digitalization. This initiative will further minimize the gap between technology

and people and exploit big data for analytics and DBT. Aligned with Malaysian government initiatives, DBT can foster sustainable development and strengthen the national economy. The research findings can raise awareness of DBT among Malaysian SMEs and serve as a foundation for developing new policies under the 13th Malaysia Plan, which is set to be implemented this year.

Declarations

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