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DIGITAL ENTREPRENEURIAL CULTURE IN THAI REAL ESTATE SMES: THE ROLES OF INNOVATION, DIGITAL TRANSFORMATION AND SOCIAL MEDIA USE IN DRIVING BUSINESS PERFORMANCE USING FUZZY TOPSIS AND SEM

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ABSTRACT

This study examines digital transformation in Thai real estate SMEs by shifting attention from technology adoption toward the cultural conditions that shape how digital resources are interpreted and enacted in practice. Instead of treating digital transformation (DTX), social media use (SMX), market orientation (MKO) and brand orientation (BNO) as independent drivers of performance, the study conceptualizes Digital Entrepreneurial Culture (DEC) as an organizing system that integrates these elements with entrepreneurial orientation (ENO) and innovation (INV) to generate competitive advantage (CPX) and business performance (BPF). Grounded in the Resource-Based View (RBV) and Resource-Advantage (R-A) Theory, two-phase mixed-methods design is employed. An e-Delphi study with 24 experts, combined with Fuzzy TOPSIS, is used to identify and prioritize key components. This is followed by a survey of 1,151 Thai real estate SMEs analyzed using Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM). The findings show that digital and market-related resources do not directly determine performance. Instead, they shape the cognitive and strategic conditions through which firms interpret opportunities. ENO emerges as the central mechanism translating these conditions into innovation, while CPX represents the primary pathway to performance outcomes. The results suggest that performance differences arise from how resources, behaviors and strategic orientations are aligned within a coherent cultural system, rather than from digital adoption alone. The study contributes by establishing that digital transformation enhances business performance only when embedded as a socio-cultural process, where meaning, trust, and strategic interpretation convert organizational resources into sustained competitive advantage.

KEYWORDS: Digital Entrepreneurial Culture, Digital Transformation, Entrepreneurial Orientation, Competitive Advantage, Social Media Use, Innovation, Fuzzy TOPSIS

1. INTRODUCTION

Small and medium-sized enterprises (SMEs) are increasingly required to rethink how they operate in response to rapid digital change. Maintaining competitiveness in such conditions involves more than adopting new technologies; it requires adjustments in work processes, decision-making routines, and underlying business models. Existing research consistently shows that digital transformation can enhance innovation, organizational flexibility, and firm performance, particularly when supported by the development of digital capabilities and strategic alignment (Kahveci, 2025; Clemente-Almendros et al., 2024; Valdez-Juárez et al., 2024; Almeida, 2025; Amin, 2025). These insights are consistent with the Resource-Based View (RBV) and Resource-Advantage (R-A) Theory, which emphasize that competitive advantage depends not only on resource possession, but on the ability to configure and deploy those resources effectively. In the real estate industry, these challenges take on a distinctive form. Business operations rely heavily on information transparency, brand credibility, and long-term customer relationships. Despite this, the sector has often been characterized as relatively slow in adopting digital practices compared to other service industries. However, the expansion of digital marketing and social media has begun to reshape how customers search for information, evaluate alternatives, and make property decisions. Interactions that were once mediated through physical branches and agent networks are increasingly shifting toward real-time, platform-based engagement. Empirical studies suggest that the strategic use of digital marketing and social media enhances brand visibility, strengthens customer engagement, and supports service innovation, all of which contribute to improved firm performance (Sharabati et al., 2024; Fu et al., 2024; Alhamami, 2024; Apidana et al., 2024). At the same time, SMEs do not respond to digital transformation in a uniform manner. Differences in digital capabilities, resource availability, and managerial mindsets lead to considerable variation in how digital tools are used. Many firms continue to rely on fragmented and reactive approaches, particularly in their use of social media, rather than integrating these tools into a coherent strategic framework (Nayak et al., 2025; Singh & Kumar, 2023). As a result, the potential of digital technologies is often only partially realized.

Within the context of Thai real estate SMEs, this issue becomes more pronounced. The integration of digital platforms and social media into traditional business models is not only a matter of marketing, but also one of organizational strategy and entrepreneurial capability. To better understand this process, recent literature has introduced the concept of Digital Entrepreneurial Culture (DEC), which emphasizes how values, mindsets, and behavioral patterns shape the way organizations interpret and utilize digital technologies (Bazadough, 2024; Sivulca, 2024; Merrouche & Lagaguena, 2025; Jewapatarakul & Ueasangkomsate, 2024). From this perspective, digital technologies are not merely operational tools, but mechanisms that influence how firms perceive opportunities, make decisions, and act strategically.This view aligns with RBV, which treats culture, knowledge, and entrepreneurial orientation as critical intangible resources, as well as with R-A Theory, which explains how these resources are translated into competitive advantage. It also resonates with research on entrepreneurial orientation and innovation, which highlights the roles of proactiveness, risk-taking, and innovativeness in shaping firm performance (Qasim et al., 2025; Murniningsih, 2025; Ngammoh, 2025). However, despite these advances, much of the existing literature continues to examine digital transformation, marketing orientation, and organizational behavior as separate domains. Limited attention has been given to how these elements interact as an integrated system that connects digital resources, organizational cognition, and strategic action to business performance. This gap is particularly evident in the context of Thai real estate SMEs, where empirical studies that position DEC as a central mechanism integrating digital transformation (DTX), social media use (SMX), market orientation (MKO), brand orientation (BNO), entrepreneurial orientation (ENO), innovation (INV), and competitive advantage (CPX) remain limited. Existing research rarely examines how these elements operate together or clarifies their relative importance within a unified framework. As a result, there is still a lack of system-level understanding of how digital and organizational resources are combined and transformed into sustained performance. To address this limitation, the present study conceptualizes Digital Entrepreneurial Culture as a configuration of interrelated strategic components within Thai real estate firms. A mixed-methods approach is adopted. In the first stage, Fuzzy TOPSIS is used to identify and prioritize the relative importance of the key components. In the second stage, Structural Equation Modeling is applied to examine how these components are linked to business performance. By integrating these approaches, the study aims to

provide a more comprehensive explanation of how digital transformation operates within a broader cultural and strategic context. The findings suggest that organizational success cannot be explained by technology adoption alone. Instead, it depends on how resources, strategic orientations, and capabilities are aligned and reinforced as a coherent system. Such alignment enables firms to develop stronger competitive positions and achieve improved performance, particularly within the context of emerging digital economies.

2. LITERATURE REVIEW

2.1. Theoretical foundations: Resource-Based View (RBV), Resource-Advantage (R-A) Theory and Digital Entrepreneurial Culture (DEC)

The Resource-Based View (RBV) defines differences in firm performance through the possession and effective deployment of valuable, rare, inimitable, and non-substitutable resources, especially intangible assets, such as knowledge, organizational culture, customer relationships, and brand equity (Barney, 1991; Barney et al., 2021). In this perspective, digital technologies, digital skills, market data, brand reputation and entrepreneurial mindsets are regarded as strategic resources that can be leveraged to build competitive advantage and superior performance in SMEs. This logic extends to competitive dynamics by viewing markets as characterised by ongoing, disequilibrium competition, where firms with superior resource and capability configurations enjoy comparative advantages that can be transformed into competitive advantages and, ultimately, heterogeneous performance outcomes (Hunt & Morgan, 1995; Hunt, 2000). In this view, digital, marketing, branding and innovation resources in SMEs are not just inputs but foundational elements that explain why firms in the same industry exhibit different competitive positions and business performance (Wales et al., 2021; Fernandes et al., 2025). Building on RBV and R-A Theory, the notion of Digital Entrepreneurial Culture (DEC) is used in this study to describe a firm-level configuration of values, cognitive frames, routines and behaviours shaped by digital technologies, market knowledge and entrepreneurial attitudes (Bazadough, 2024; Wales et al., 2021). In the context of Thai real estate SMEs, DEC refers to eight related strategic components which are: Digital Transformation (DTX), Social Media Use (SMX), Market Orientation (MKO), Brand Orientation (BNO), Entrepreneurial Orientation (ENO), Innovation (INV), Competitive Advantage (CPX), and Business Performance (BPF). Overall, these components show how digital and market-based resources are integrated and used to generate competitive advantage and elevated performance in this sector.

2.2. Digital transformation (DTX)

Digital Transformation (DTX) in SMEs refers to the deliberate integration of digital technologies into core business processes, customer interactions, and value creation activities, rather than the ad hoc adoption of isolated tools (Clemente-Almendros et al., 2024; Almeida, 2025). In real estate SMEs, DTX typically involves the use of property listing platforms, virtual tours, customer relationship management systems, data analytics, and digital transaction processes, all of which enhance information processing, coordination, and responsiveness. From an RBV perspective, digital infrastructure, data assets, and digital skills constitute valuable and difficult-to-imitate intangible resources that can support superior performance (Barney et al., 2021). R-A Theory further indicates that firms that orchestrate these digital resources more effectively can develop comparative advantages that translate into competitive advantage and performance differences (Hunt & Morgan, 1995). Within the DEC framework, DTX functions as the digital backbone that enables firms to reconfigure resources, improve operational efficiency, and support service innovation. Empirical evidence indicates that digital transformation strengthens innovation capabilities and facilitates opportunity recognition and entrepreneurial action (Cen et al., 2025; Valdez-Juárez et al., 2024). In addition, DTX can directly enhance business performance through improved efficiency, faster response times, and enhanced service delivery, particularly in information-intensive industries such as real estate.

Accordingly, the following hypotheses are proposed:

H1: Digital transformation positively influences innovation.

H2: Digital transformation positively influences business performance.

2.3. Market Orientation (MKO)

Market Orientation (MKO) refers to a firm's strategic capability to generate, disseminate, and respond to market intelligence related to customers, competitors, and environmental conditions (Narver & Slater, 1990; Kohli & Jaworski, 1990). In SMEs, MKO has been consistently associated with improved opportunity recognition, more timely strategic responses, and a greater propensity to innovate, particularly when supported by digital technologies (Butkouskaya et al., 2024; Al Azzani et al., 2024).

Within RBV, market knowledge is considered a critical intangible resource, while R-A Theory posits that firms that effectively organize around such knowledge can develop superior marketing capabilities and achieve competitive advantage (Hunt, 2000; Yaqub et al., 2024). From the DEC perspective, MKO shapes how firms interpret digital and market signals, guiding strategic attention, opportunity identification, and resource allocation. Empirical studies show that market-oriented firms are more likely to translate digital insights into entrepreneurial initiatives and new offerings, thereby strengthening both entrepreneurial orientation and competitive advantage (Yaqub et al., 2024; Sun et al., 2025).

Thus, the following hypotheses are proposed:

H3: Market orientation positively influences social media use.

H4: Market orientation positively influences competitive advantage.

H5: Market orientation positively influences entrepreneurial orientation.

2.4. Brand Orientation (BNO)

Brand Orientation (BNO) reflects the extent to which a firm places its brand at the center of strategic decision-making, value creation, and communication activities (Urde, 1999). In trust-intensive industries such as real estate, strong brand orientation plays a critical role in reducing perceived risk, enhancing credibility, and fostering long-term customer relationships (Briandana, 2022; Molina Morejón et al., 2024). From an RBV perspective, brand equity, reputation, and customer trust are key intangible resources that are difficult to replicate and can generate sustained performance advantages. R-A Theory further indicates that a well-executed brand strategy can exert a strong influence on competitive advantage (Temprano-García et al., 2023; Kusi et al., 2022). Within the DEC framework, BNO functions as a strategic identity system that shapes how firms present themselves on digital platforms, communicate value propositions, and differentiate their offerings. Firms with strong brand orientation are more likely to develop distinctive digital content, maintain consistency in communication, and pursue proactive market positioning, thereby reinforcing entrepreneurial orientation and competitive advantage.

Accordingly, the following hypotheses are proposed:

H6: Brand orientation positively influences entrepreneurial orientation.

H7: Brand orientation positively influences business performance.

2.5. Social Media Use (SMX)

Social Media Use (SMX) refers to the extent to which firms strategically employ social platforms for market intelligence, customer engagement, branding, and transaction support, rather than treating them as sporadic promotional tools (Marolt et al., 2022; Bruce et al., 2023). In SMEs, purposeful social media use enables firms to gather detailed customer insights, monitor competitors, and co-create content with users, thereby enhancing both knowledge and relational capital. From an RBV perspective, these capabilities constitute valuable and difficult-to-imitate intangible marketing resources. R-A Theory further suggests that firms that effectively leverage social media can strengthen visibility, trust, and customer relationships, thereby improving competitive positioning and performance (Marolt et al., 2022; Meier et al., 2023). Within the DEC framework, SMX functions as a digital interface that connects firms to their external environment. It facilitates the flow of market information and provides a platform for experimentation with new messages, offerings, and engagement strategies at relatively low cost. This interactive environment supports opportunity recognition and encourages a more proactive, innovation-oriented posture, particularly in visually intensive industries such as real estate (Ndung'u et al., 2022).

Accordingly, the following hypotheses are proposed:

H8: Social media use positively influences entrepreneurial orientation**.**

H9: Social media use positively influences business performance.

2.6. Entrepreneurial orientation (ENO)

Entrepreneurial Orientation (ENO**)** is defined as a firm-level strategic posture characterised by innovativeness, proactiveness and risk-taking (Miller, 1983; Lumpkin & Dess, 1996). Extensive empirical work shows that ENO acts as a behavioural driving mechanism that transforms existing resources and information into opportunity-seeking behaviour, experimentation and more aggressive strategic moves, especially in SMEs (Kraus et al., 2012; Wales et al., 2021). That determines how digital, marketing and branding resources are mobilised and recombined. R-A Theory positions ENO as a key mechanism through which resource endowments are converted into comparative and competitive advantages (Hunt, 2000; Fernandes et al., 2025). Recent studies in emerging markets indicate that SMEs with strong ENO are more willing to invest in digital projects under uncertainty, to experiment with

new service concepts and to use social media and other digital channels to enter new customer segments (Yaskun et al., 2023; Qasim et al., 2025). From RBV, ENO can be interpreted as a behavioural resource... Recent studies in emerging markets indicate that SMEs with strong ENO are more willing to invest in digital projects under uncertainty (Widyastuti et al., 2024; Yaseen et al., 2024). In the DEC framework proposed here ENO is treated as the core behavioural engine that receives inputs from DTX, SMX, MKO and BNO transmits their influence towards Innovation, Competitive Advantage and overall Business Performance in Thai real estate SMEs.

Consistent with the structural model, the following hypotheses are proposed:

H10: Entrepreneurial orientation positively influences innovation.

H11: Entrepreneurial orientation positively influences business performance.

2.7. Innovation (INV)

Innovation (INV) encompasses new or significantly improved products, services, processes, and business models, particularly those enabled by digital technologies and customer data. In real estate SMEs, innovation may include virtual viewing solutions, data-driven pricing tools, new service offerings, and collaborative business models. RBV conceptualizes innovation capability as a knowledge-intensive resource embedded in organizational routines and learning processes, making it difficult for competitors to replicate (Gunday et al., 2011). R-A Theory emphasizes that innovation serves as a mechanism through which resource configurations are transformed into superior value propositions and competitive positions (Hassan et al., 2024; Valdez-Juárez et al., 2024). Prior studies indicate that digital transformation and social media use enhance innovation by providing richer data, facilitating customer feedback, and enabling low-cost experimentation (Marolt et al., 2022; Iatzaz Ul Hassan et al., 2024). Entrepreneurial orientation further strengthens innovation by encouraging proactive behavior, risk-taking, and openness to new ideas (Alegre & Chiva, 2013; Yaskun et al., 2023).

Accordingly, the following hypotheses are proposed:

H12: Innovation positively influences competitive advantage.

2.8. Competitive Advantage (CPX)

Competitive Advantage (CPX) denotes a firm's relative superiority in delivering value to target customers compared with competitors, whether through lower costs, higher quality, superior service, better customer experience, or a distinctive combination of these (Porter, 1985). In the RBV tradition, CPX is seen as the outcome of unique, valuable and hard to imitate resource and capability configurations. R-A Theory further specifies that firms with superior resource positions and capabilities are able to sustain competitive advantages that lead to superior financial and non-financial outcomes (Hunt & Morgan, 1995). In real estate SMEs, competitive advantage may emerge from superior brand trust, more responsive digital customer journeys, better market knowledge or the ability to close transactions more efficiently via digital tools (Nguyen & Kotaskova, 2023; Chen et al., 2024). Within DEC, CPX is conceptualised as the intermediate strategic outcome that links digital and entrepreneurial cultural elements DTX, SMX, MKO, BNO, ENO and INV to final BPF. BNO firms with strong ENO and innovation capabilities have been found to develop more distinctive value propositions and relational advantages, which translate into perceived superiority over rivals (Temprano-García et al., 2023; Ngammoh, 2025). (CPX) denotes a firm's relative superiority in delivering value to target customers compared with competitors, whether through lower costs, higher quality, superior service, better customer experience or a distinctive combination of these (Al-Omoush et al., 2022; Forbes Communications Council, 2024).

Consistent with this position in the model, the following relationship is proposed:

H13: Competitive advantage positively influences business performance.

2.9. Business Performance (BPF)

Business Performance (BPF) in this study combines financial and nonfinancial indicators, including sales growth, profitability, market share, customer satisfaction, loyalty and brand reputation. SMEs research shows that digitally capable, market and brand oriented and entrepreneurially driven firms tend to outperform their peers on both dimensions, particularly in turbulent and digitally disrupted environments (Wales et al., 2021; Almeida, 2025; OECD, 2023). Under RBV and R-A Theory, is the ultimate manifestation of how effectively firms transform their resource base competitive advantages and cultural configurations into tangible results. In the DEC model for Thai real estate SMEs, BPF is positioned as the final outcome of the systemic configuration of DEC, DTX, SMX, MKO, BNO, ENO, INV and CPX jointly shape both short-term and long-term performance. Prior studies find that innovation and competitive advantage often mediate the effects

of strategic orientations and digitalization on SMEs performance, while entrepreneurial orientation can exhibit both direct and indirect effects (Marolt et al., 2022; Yaqub et al., 2024, Qasim et al., 2025). From the literature reviewed in this study establishes its conceptual framework on 3 foundations: the RBV, R-A Theory and the notion of DEC. Within this framework 8 core strategic components are defined and explicated, namely DTX, SMX, MKO, BNO, ENO, INV, CPX and BPF. These components are conceived as an interrelated system of elements that jointly constitute the DEC of Thai real estate SMEs. In the DEC model for Thai real estate SMEs, BPF is positioned as the final outcome Prior studies find that innovation and competitive advantage often mediate the effects of strategic orientations and digitalization on SMEs performance (Marolt et al., 2022; Yaqub et al., 2024). Overall, the causal relationships among these eight components are synthesized into a structural conceptual model accompanied by thirteen research hypotheses H1–H13. These hypotheses describe the pathways through which organizational resources and the firm's strategic marketing frame DTX, SMX, MKO and BNO are channel via the behavioral driving mechanism of ENO and INV towards CPX and BPF as illustrated in Fig. 1. Conceptual research model.

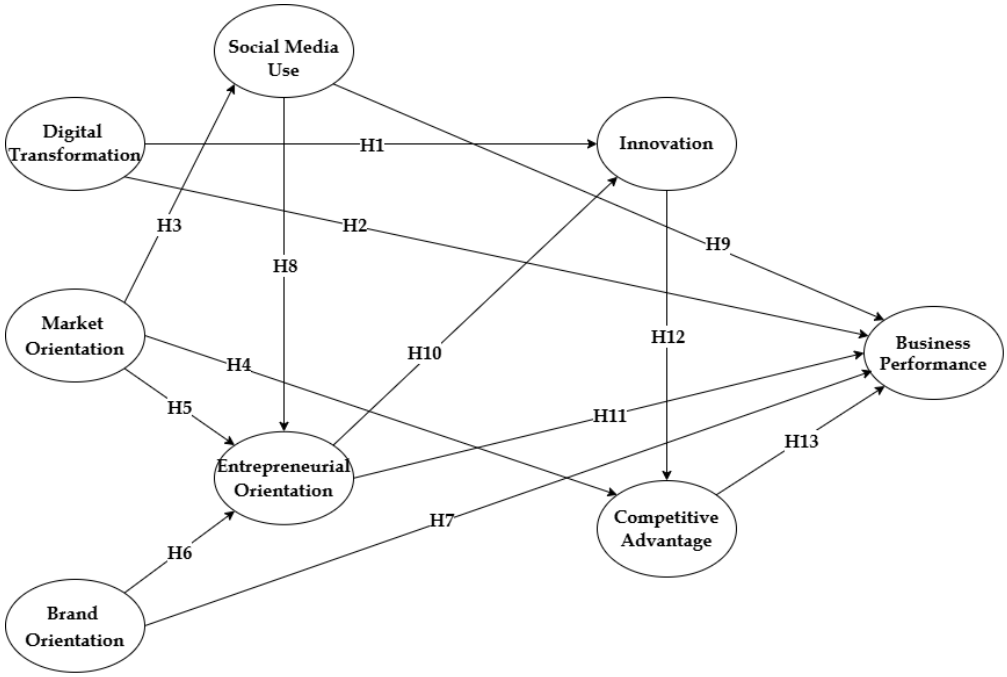

Figure. 1: Conceptual Framework

To ensure transparency and ease of verification regarding the linkages between theory, empirical literature and the proposed hypotheses this study also presents Table.1. Mapping of core constructs to DEC, RBV and R-A Theory. This table summarizes the role of each construct within the DEC framework the theoretical lenses that underpin each construct and the hypotheses associated with each of the eight components. The table thus serves as an integrative linking map connecting the literature review with the structural model Table 1. and the empirical research design developed.

Table 1: Mapping of core constructs to DEC, RBV and R-A Theory

Construct	Role in Digital Entrepreneurial Culture (DEC)	Theoretical (DEC, RBV, R-A Theory)	Related Hypotheses
DTX	Provides the strategic digital infrastructure and data backbone that enables digitally enabled work practices in real estate SMEs.	RBV: Digital technologies and skills as valuable, hard to imitate resources. R-A Theory: Superior digital resoutrce positions as comparative advantages that can be leveraged into competitive advantage and performance. DEC: Foundational layer of digital routines and connectivity.	H1: DTX → INV H2: DTX → BPF
MKO	Serves as the firm's strategic market-sensing frame, guiding how market intelligence is generated, interpreted and used in entrepreneurial decision making	RBV: Market knowledge as an intangible knowledge resource. R-A Theory: Superior generation and use of market intelligence as a basis for comparative advantage. DEC: Cognitive frame that steers digital opportunity recognition	H3: MKO → SMX H4: MKO → CPX H5: MKO → ENO
BNO	Positions the brand as a central strategic identity, shaping value	RBV: Brand equity, reputation and trust as inimitable intangible assets. R-A	H6: BNO → ENO H7: BNO → BPF

	propositions, customer experience and digital storytelling.	Theory: Strong brands as comparative competitive advantages by reducing perceived risk and enhancing perceived value. DEC: Identity anchor for digital entrepreneurial initiatives.	
SMX	Acts as a real-time digital interface with the market, enabling opportunity sensing, experimentation and relationship building.	RBV: Online content, communities and relationships as market and relational resources. R-A Theory: Effective social media use as a market facing resource that supports positional advantage. DEC: Key arena where digital entrepreneurial behaviours are enacted	H8: SMX → ENO H9: SMX → BPF
ENO	Functions as the behavioural engine of DEC, transforming digital, market and brand resources into proactive innovative and risk-taking strategic actions.	RBV: ENO as a behavioural resource that shapes the deployment of other resources. R-A Theory: Entrepreneurial posture enables superior resource leveraging for advantage. DEC: Core attitudinal and behavioural dimension of digital entrepreneurial culture.	H10: ENO → INV H11: ENO → BPF
INV	Functions as the behavioural engine of DEC, transforming digital, market and brand resources into proactive innovative and risk-taking strategic actions.	RBV: Innovation capability as a knowledge-based resource underpinning sustainable differentiation. R-A Theory: Main channel through which resource combinations are translated into positional advantage and performance. DEC: Creative output of digital entrepreneurial culture	H12: INV → CPX
CPX	Intermediate strategic outcome reflecting superior market positioning arising from distinctive digital, market, brand, entrepreneurial and innovation configurations.	RBV: Emergent result of unique, hard-to-imitate resource configurations. R-A Theory: Central construct linking resource positions to performance heterogeneity. DEC: Bridge between internal cultural, resource configurations and external performance	H13: CPX → BPF
BPF	Final outcome of DEC covering financial and non-financial performance of Thai real estate SMEs.	RBV: Overall result of effective deployment of strategic resources. R-A Theory: Performance heterogeneity driven by differences in resource positions and competitive advantages. DEC: System-level outcome of how DTX, SMX, MKO, BNO, ENO, INV and CPX interact.	

3. METHODS

3.1. Research design and approach

To examine how digital entrepreneurial culture operates within Thai real estate SMEs, a mixed-methods design was employed, combining qualitative and quantitative approaches in two sequential phases to examine how DEC is embedded through DTX, SMX, MKO, ENO and INV in shaping BPF. The design systematically combines qualitative and quantitative approaches. In the qualitative phase, the study employs Fuzzy TOPSIS e-Delphi technique to refine, validate and confirm the proposed conceptual model based on evaluations from 24 experts drawn from 3 key sectors related to digital transformation and the real estate industry. The results of this phase are used to prioritise the strategic importance of the components within the DEC and to provide a foundation for specifying the structural model and measurement indicators in the subsequent phase. In the quantitative phase, data are collected from 1,151 real estate SMEs in Thailand using an online questionnaire with seven-point Likert scales. The data are analysed using confirmatory factor analysis (CFA) to assess the reliability and validity of the measurement model followed by structural equation modeling (SEM) to examine the fit of the structural model to test the causal relationships among the variables specified in the research hypotheses. The overall methodological procedure is summarised in Fig. 2. Research design and The Mixed Methods Research Process which illustrates the sequence of steps from defining the research objectives, selecting experts, identifying and ranking the components, developing and validating the research instruments through to integrating the qualitative findings Fuzzy TOPSIS e-Delphi with the quantitative testing CFA-SEM. This integrated process is designed to ensure that the research methodology is rigorous, valid and appropriate for the context of real estate SMEs in Thailand.

This study received ethical approval from the Human Research Ethics Committee of Rangsit University (Approval No. COA. NO. RSUERB2025-174) prior to the commencement of data collection.

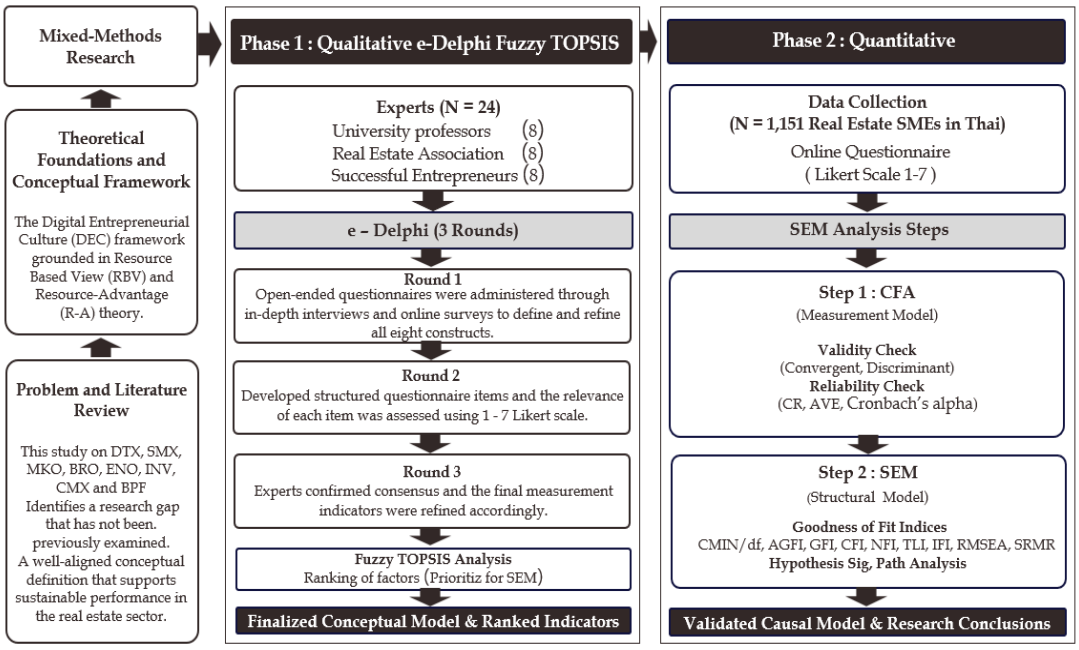

Figure. 2: Research design and The Mixed-Methods Research Process

3.2. Qualitative Research

Phase 1. of this study adopts an integrated approach to build expert consensus and prioritise measurement items across the eight core constructs. Fuzzy TOPSIS is employed to support ranking under conditions of uncertainty, while the e-Delphi process is used to iteratively refine and stabilise expert judgements. This combined procedure facilitates the empirical screening and purification of the measurement structure, resulting in a set of indicators that is theoretically coherent and provides a robust foundation for questionnaire development and subsequent SEM analysis in Phase 2. In addition, the outcomes of this phase support the conceptualisation of DEC as a system level configuration of resources and capabilities, consistent with the logic of the RBV and R-A Theory in explaining how resources are transformed into CPX and BPF.

3.3. Population and sampling

The population in Phase 1 comprised experts involved in strategic decision making or knowledge development in the real estate sector and digital transformation in Thailand. A purposive sampling approach was employed to select 24 experts from 3 main sectors, with 8 experts in each group: University academics in the fields of digital business, management and real estate, Representatives from real estate business associations and relevant public government agencies and Real estate entrepreneurs or business executives with a proven track record of success. The selection criteria for experts were as follows: At least 10 years of professional experience related to the real estate business, holding a position at the level of executive, policy maker or academic specialist in a relevant field and Willingness to participate in the study and ability to complete all three online rounds of the e-Delphi process. From a methodological perspective, recent reviews of e-Delphi studies in the social sciences suggest that expert panel sizes typically range from around 8–23 participants or low two-digit numbers close to 20–30 for a single stakeholder group. Such sizes are generally considered sufficient to build consensus while keeping the response burden manageable (Nasa et al., 2021, Shang et al., 2023, MacFarlane et al., 2025). Furthermore, contemporary methodological guidelines recommend avoiding overly large expert panels more than 30 participants to prevent logistical complications and to maintain the stability of consensus (Naisola-Ruiter et al., 2022).

The inclusion of 24 experts in this study is therefore consistent with recommendations mentioned above, in terms of content sufficiency and practical possibility for a three-round e-Delphi process, while ensuring sufficient a variety of perspectives across the three key sectors associated with digital entrepreneurial culture in the Thai real estate industry.

3.4. Research instruments

The research instrument in Phase 1 was an online questionnaire designed for expert respondents, focusing on the assessment of the strategic importance of the 8 core components of DEC. Expert evaluations were captured using a 7-level linguistic ordinal scale ranging from least important to highest

strategic importance with each linguistic term converted into a triangular fuzzy number (TFN) of the form l = lower bound, m = modal value and u = upper bound (l, m, u). This TFN structure was developed based on the fuzzy set theory and multi criteria decision making literature, which recommend TFNs as an effective way to map linguistic judgements into numerical form in a systematic and transparent manner (Zadeh, 1965, Hwang and Yoon, 1981; Chen, 2000, Büyüközkan and Çifçi, 2012; Sahu et al., 2024). The linguistic scale and the associated TFN values used in this study are summarized in Table (3). Linguistic scale and triangular fuzzy numbers for seven level importance ratings. By adopting TFNs rather than crisp numerical ratings the questionnaire design aims to better capture the inherent uncertainty and vagueness embedded in expert judgements on strategic criteria, consistent with recent Fuzzy TOPSIS applications in strategic evaluation and criteria weighting (Ishikawa et al., 1993; Kahraman et al., 2015; Mahapatra and Mohanty, 2020; Aytekin and Büyüközkan, 2021; Sahu et al., 2024).

3.5. Data collection

Data collection in Phase 1 was implemented through a three-round e-Delphi process using a secure web-based survey platform that ensured respondent anonymity and enabled iterative feedback consistent with contemporary Delphi practice (Linstone and Turoff, 2002; Skulmoski et al., 2007; Niederberger and Spranger, 2020). In the first round, the initial questionnaire was distributed to all 24 experts. They were asked to rate the importance of each of the eight components and to provide open-ended comments, including suggestions for additional components or refinements of the conceptual definitions. This exploratory step allowed the research team to capture a wide range of perspectives and to validate the completeness and clarity of the proposed construct set (Okoli and Pawlowski, 2004; Hsu and Sandford, 2007). In the second round, the researchers synthesized the Round 1 results They were invited to reconsider and, if appropriate, adjust their ratings in light of the group feedback, following modern e-Delphi guidelines that emphasize anonymous controlled feedback and iterative convergence (Skulmoski et al., 2007; Niederberger and Spranger, 2020). In the third round, experts were asked to confirm their final judgements on the importance of each component after reviewing the aggregated fuzzy summaries of the group responses. Levels of consensus were evaluated using fuzzy means and dispersion measures to ensure that the resulting judgements had reached an acceptable degree of stability for subsequent Fuzzy TOPSIS analysis (Hsu and Sandford, 2007; Hasson and Keeney, 2011; Sahu et al., 2024). This iterative e-Delphi process reduces the influence of any single expert, mitigates social pressure effects and supports the development of well-considered consensus on complex strategic issues under uncertainty which is particularly suitable for defining and prioritising cultural and strategic constructs such as digital entrepreneurial culture (Linstone and Turoff, 2002; Okoli and Pawlowski, 2004; Niederberger and Spranger, 2020). The data were collected over a period of two months, between August and September 2025.

3.6. Data Analysis

The seven level linguistic ratings obtained from experts in each e-Delphi round were first converted into Triangular Fuzzy Numbers (TFN) according to the scale specified in Table 2. This conversion yielded a fuzzy decision matrix for the eight components of DEC which formed the basis for Fuzzy TOPSIS analysis (Hwang and Yoon, 1981, Chen, 2000; Mahapatra and Mohanty, 2020).

The Fuzzy TOPSIS procedure followed standard steps for multi-criteria decision-making under uncertainty:

1. Construction of the fuzzy decision matrix for the eight components, aggregating expert TFN for each component.
2. Fuzzy normalization of the decision matrix, to render the criteria comparable and account for the benefit type nature of the importance ratings (Chen, 2000; Büyüközkan and Çifçi, 2012).
3. Determination of the fuzzy positive ideal solution (FPIS) and fuzzy negative ideal solution (FNIS) for the set of components, representing, respectively, the most and least desirable importance profiles under the fuzzy scale used (Hwang and Yoon, 1981; Chen, 2000).
4. Computation of the fuzzy distance between each component and both the FPIS and FNIS, capturing how close each component is to the ideal and how far from the anti-ideal in a fuzzy sense (Mahapatra and Mohanty, 2020; Aytekin and Büyüközkan, 2021).

Calculation of the closeness coefficient for each component as the ratio of its distance from the FNIS to the sum of its distances from FPIS and FNIS, followed by ranking the eight components according to these coefficients to obtain their strategic priority order (Chen, 2000; Büyüközkan and Çifçi, 2012).

Table 2: Linguistic scale and triangular fuzzy numbers for seven-level importance ratings

Likert	Label	Verbal Descriptor	TFNs (l,m,u)
1	MinA	Minimal Alignment	0.00, 0.00, 0.10
2	LowA	Low Alignment	0.00, 0.15, 0.30
3	LimA	Limited Alignment	0.10, 0.30, 0.50
4	ParA	Partial Alignment	0.30, 0.50, 0.70
5	ClrA	Clear Alignment	0.50, 0.70, 0.90
6	HighA	High Alignment	0.70, 0.85, 1.00
7	FullA	Full Alignment	0.90, 1.00, 1.00

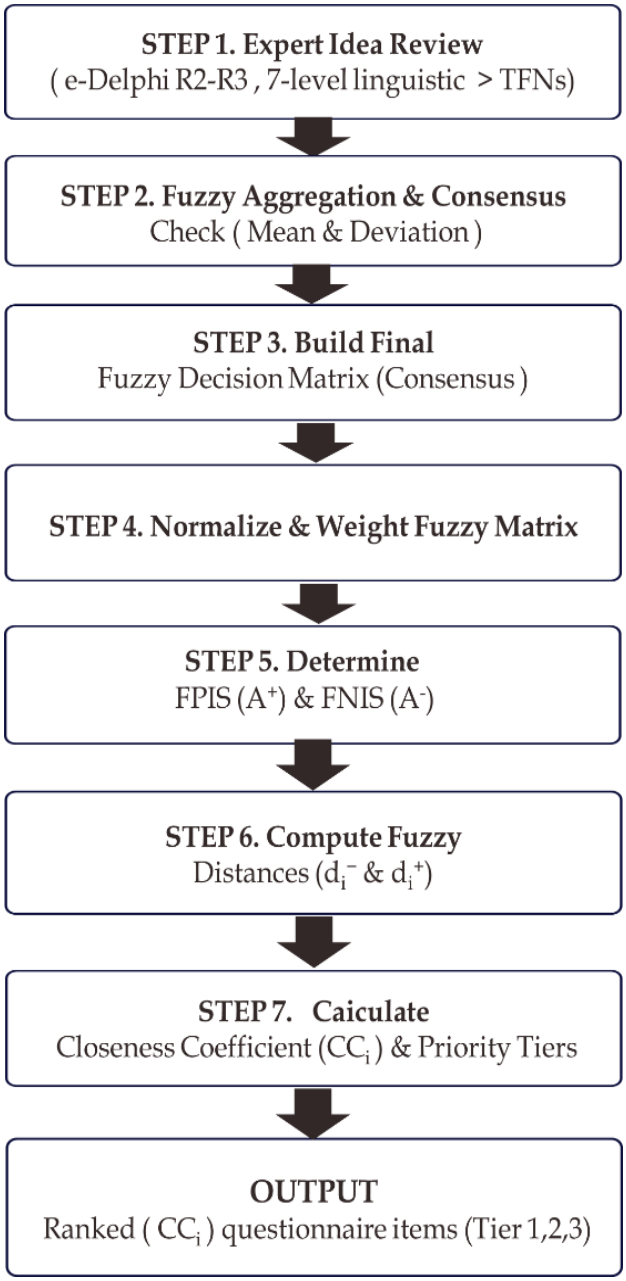

Figure. 3: e-Delphi Consensus Driven Fuzzy TOPSIS Framework

Table. 3: Interpretation Criteria for the Closeness Coefficient (CCi) Range

Closeness Coefficient (CC_i) Range	Interpretation
0.67 – 1.00	High Alignment
0.34 – 0.66	Medium Alignment
0.00 – 0.33	Low Alignment

Note. The Closeness Coefficient (CC_i) indicates the relative proximity of each component to the ideal solution in Fuzzy TOPSIS with higher values reflecting stronger alignment.

This methodological framework is consistent with recent applications of fuzzy TOPSIS for ranking strategic criteria, evaluating expert-based judgements and supporting decision-making in uncertain environments in management and service sectors (Kahraman et al., 2015, Mahapatra and Mohanty, 2020; Aytekin and Büyüközkan, 2021, Sahu et al., 2024). In the present study, the resulting ranking of the eight components provides an empirically grounded prioritisation of digital entrepreneurial culture elements which is later compared with the structural relationships validated through SEM in Phase 2.

4. QUANTITATIVE RESEARCH

4.1 Population and sampling

Phase 2 Quantitative research design to test the structural model linking DEC and BPF among Thai real estate SMEs. The target population comprised SMEs owners operating in the real estate sector in Thailand including property developers, real estate brokerage, agency firms and related real estate service businesses. Data collection 1,151 questionnaires from SMEs respondents.

4.2. Quantitative research instrument

The quantitative research instrument was a structured self-administered questionnaire developed based on the qualitative findings from Phase 1 the proposed conceptual model and validated measurement scales identified in prior literature. The items were then adapted to the Thai real estate SMEs context and aligned with the overarching framework of DEC. The eight latent constructs DTX, SMX, MKO, BNO, ENO, INV, CPX and BPF were modelled as reflective latent variables. Each construct was measured using multiple indicators on 7 points Likert type scale ranging from 1 = least agreement to 7 = highest agreement a format commonly recommended for management research using SEM (Hair et al., 2018; Kline, 2016). Initial item pools were generated by adapting established scales from prior studies for each construct and then refining them using expert feedback from Phase 1 to ensure contextual relevance for Thai real estate SMEs.

4.3. Data collection

Quantitative data were collected through an online questionnaire to reach real estate SMEs across Thailand and to align with the digital context of the study. Survey invitations were distributed via professional associations, industry networks and online channels, targeting primary decision makers such as business owners and senior executives. Participation was voluntary all responses were treated confidentially and used solely for academic purposes. To reduce social desirability bias, screening questions were included to ensure that respondents operated in the real estate sector and met the national criteria for SMEs. Data collection using an online questionnaire from SMEs entrepreneurs was carried out between October and November 2025.

4.4. Data analysis

Quantitative data analysis followed a two-step procedure: (1) evaluation of the measurement model using Confirmatory Factor Analysis (CFA) and (2) assessment of the structural model using covariance based Structural Equation Modeling (SEM). This approach is consistent with established methodological guidelines in social science and management research. Prior to analysis, preliminary data screening was conducted including checks for missing values, outliers and distributional properties. Internal consistency reliability was assessed using Cronbach's alpha, while Composite Reliability (CR) and Average Variance Extracted (AVE) were used to evaluate construct reliability and convergent validity. Discriminant validity was examined using the Fornell–Larcker criterion and CFA was then performed to confirm the factor structure of the eight latent constructs before testing the structural model. Model fit was assessed using multiple indices, including the chi-square to degrees of freedom ratio (CMIN/df) < 3.00, the Adjusted Goodness-of-Fit Index (AGFI) ≥ 0.90, the Comparative Fit Index (CFI) ≥ 0.90, the Tucker–Lewis Index (TLI) ≥ 0.90, and the Standardized Root Mean Square Residual (SRMR) < 0.05, following widely accepted thresholds in the SEM literature (Byrne, 2016; Kline, 2016; Hair et al., 2018; Hair et al., 2023).

5. RESULTS

This study adopted a two-phase research design to validate and test the proposed conceptual framework by integrating qualitative and quantitative approaches. In the first phase qualitative insights were obtained from 24 experts drawn from the real estate sector through a structured three round e-Delphi process combined with Fuzzy TOPSIS which was used to refine the initial pool of indicators and build consensus across all observed variables. In the second phase a quantitative validation was conducted using survey data from 1,151 Thai real estate SMEs entrepreneurs. The reliability and validity of the measurement indicators were examined using CFA and the hypothesized structural relationships were tested using SEM. The findings confirm the overall fit of the model and support the role of DEC to test the proposed research hypotheses

and to examine the causal relationships among the constructs as specified in the developed conceptual framework.

5.1. Qualitative

The results of the Fuzzy TOPSIS e-Delphi analysis indicate that measurement items across all core constructs were consistently evaluated at high levels with Closeness Coefficient (CC_i) values ranging approximately from 0.80 to 0.89. For DTX, MKO, and SMX items emphasizing proactive top-management involvement, post-service follow-up and interactive customer engagement through digital platforms received the highest rankings. These findings highlight the importance of strategic leadership commitment and customer centered digital communication as foundational enablers within the system. Similarly, BNO and ENO exhibited uniformly high CC_i values exceeding 0.88 particularly for indicators related to the strategic use of branding and the continuous pursuit of new business opportunities. For INV, CPX, and BPF items capturing alignment with market trends, service quality enhancement and customer retention achieved strong expert consensus. The findings indicate, the ranking patterns suggest that business performance reflects the cumulative outcome of the effective configuration and deployment of organizational resources and capabilities Table 4.

Table 4: Results of the Fuzzy TOPSIS Analysis for Expert Consensus and Measurement Item Prioritization

Code	Question	(d_i^-)	(d_i^+)	CC_i	Rank CC_i	Alignment
DTX1	Our executives actively champion the adoption of digital technologies across core business operations, including sales systems, document workflows, and accounting processes.	0.1241	0.9130	0.8803	1	High
DTX2	Our executives consistently promote employee development in digital competencies, including training in advanced technologies such as artificial intelligence (AI).	0.1481	0.8943	0.8580	2	High
DTX3	Our business has reconfigured employee collaboration and work processes through the integration of digital technologies.	0.1812	0.8707	0.8278	3	High
MKO1	You assess customer satisfaction both before and after the sales process.	0.1532	0.8909	0.8532	2	High
MKO2	You focus on delivering services that exceed customer expectations.	0.1712	0.8779	0.8368	3	High
MKO3	You follow up with customers after service delivery.	0.1433	0.8981	0.8624	1	High
BNO1	You use your brand as a foundation for developing business strategies.	0.1229	0.9139	0.8815	2	High
BNO2	You use your brand as a tool to create additional business value.	0.1041	0.9290	0.8992	1	High
BNO3	You consistently use your brand in marketing and business operations.	0.1159	0.9194	0.8880	3	High
SMX1	You use social media to share information with customers, such as housing loan interest rates or knowledge about real estate.	0.1532	0.8909	0.8532	2	High
SMX2	You use social media to collect feedback from customers.	0.1712	0.8779	0.8368	3	High
SMX3	You use social media to build and enhance your brand image with customers.	0.1433	0.8981	0.8624	1	High
ENO1	You continuously seek new business opportunities.	0.1349	0.9044	0.8702	1	High
ENO2	You place importance on managing business risks.	0.1360	0.9036	0.8692	2	High
ENO3	You focus on building partnerships with external individuals or organizations for business growth.	0.1442	0.8974	0.8616	3	High
INV1	You create new products or services to meet customer needs.	0.1416	0.8996	0.8640	2	High
INV2	You develop new product or service designs to create market differentiation.	0.1312	0.9075	0.8737	2	High
INV3	You improve products or services to align with market trends or customer behaviors, such as energy conservation.	0.1139	0.9207	0.8899	1	High
CPX1	Your business offers products or services of higher quality than competitors.	0.1423	0.8988	0.8633	1	High
CPX2	Your business has faster operational processes or management systems than competitors.	0.1442	0.8974	0.8616	2	High
CPX3	Your business can control costs more effectively than competitors.	0.1811	0.8704	0.8278	3	High
BPF1	Your business can reduce operational or financial costs effectively.	0.2071	0.8531	0.8047	3	High
BPF2	Your business can consistently retain existing customers.	0.1881	0.8652	0.8214	1	High
BPF3	Your business can retain employees over time, such as reducing turnover rates.	0.1992	0.8562	0.8113	2	High

Table 4. Results of the Phase 1 Fuzzy TOPSIS analysis showing that all measurement items achieved high expert consensus, as indicated by elevated closeness coefficient (CC_i) values and were therefore retained for subsequent CFA analysis.

Table 5: Demographic and Business Profile of Real Estate SME Respondents

Demographic Attribute	Category	N	Percentage (%)
Gender	Male	617	53.60
	Female	534	46.40
Age Group	Below 30 years	111	9.70
(Years)	31–40 years	425	37.00
	41–50 years	574	49.80
	51–60 years	41	3.50
Business Revenue (THB)	1.8-50 million	1013	88.40
	50-100 million	134	11.60
Number of Employees	Not exceeding 5 persons	807	70.10
	5-30 persons	327	28.40
	30-50 persons	7	0.60
	50-100 persons	7	0.60
	100-300 persons	3	0.30
Area of Residence	Bangkok Metropolitan Region	524	45.57
	Central Region	246	21.39
	Northern Region	120	10.43
	Northeastern Region	181	15.74
	Southern Region	79	6.87
Educational Attainment	Below Bachelor's Degree	294	25.50
	Bachelor's Degree	665	57.80
	Master's Degree	183	15.90
	Doctoral Degree	9	0.80
Years of Experience	2-5 years	998	86.70
	6–10 years	116	10.10
	More than 10 years	37	3.20
Type of Business	Real Estate Development	250	21.70
	House Construction and Renovation	366	31.70
	Real Estate brokerage and Related Services	535	46.60
	Total	1,151	100

Table 5. Demographic and business characteristics of respondents, predominantly small-sized Thai real estate SMEs.

5.2. Measurement Model Assessment: Confirmatory Factor Analysis (CFA)

Table 6: Measurement Reliability and Convergent Validity of Constructs

Construct	Std. Loading			Cronbach's alpha	CR	AVE
	Item 1	Item 2	Item 3			
DTX	0.986	0.854	0.720	0.912	0.839	0.650
SMX	0.796	0.816	0.804	0.841	0.847	0.649
MKO	0.723	0.787	0.797	0.799	0.780	0.543
BNO	0.794	0.753	0.763	0.816	0.781	0.544
ENO	0.786	0.726	0.769	0.790	0.771	0.529
INV	0.754	0.751	0.771	0.797	0.770	0.527
CPX	0.738	0.731	0.762	0.798	0.788	0.553
BPF	0.764	0.728	0.763	0.841	0.796	0.565

Table 6. reports the assessment of measurement reliability and convergent validity using CFA. All standardized factor loadings exceed the recommended threshold of 0.70 (0.720–0.986) indicating adequate indicator reliability. Cronbach's alpha and CR values for all constructs are above 0.70 (0.790–0.912 and 0.770–0.847) respectively confirming internal consistency. In addition, Average Variance Extracted (AVE) values exceed 0.50 for all constructs (0.527–0.650) supporting convergent validity. These results support the interpretation of DEC as a system level configuration of resources and capabilities in line with RBV logic which facilitates competitive positioning as emphasised by R-A Theory and provides a sound basis for subsequent structural model.

Table 7: Discriminant Validity Assessment Using the Fornell–Larcker Criterion

Construct	DTX	SMX	MKO	BNO	ENO	INV	CPX	BPF
DTX	**0.806**							
SMX	0.503	**0.806**						
MKO	0.512	0.584	**0.739**					
BNO	0.507	0.581	0.653	**0.737**				

ENO	0.488	0.551	0.612	0.652	**0.728**			
INV	0.507	0.590	0.618	0.603	0.670	**0.726**		
CPX	0.463	0.555	0.586	0.574	0.566	0.664	**0.744**	
BPF	0.463	0.560	0.599	0.583	0.593	0.590	0.667	**0.752**

Note: Diagonal elements represent √AVE off diagonal elements represent inter construct correlations.

Table 7. confirms discriminant validity under the Fornell–Larcker criterion with √AVE values for all constructs DTX = 0.806, SMX = 0.806, MKO = 0.739, BNO = 0.737, ENO = 0.728, INV = 0.726, CPX = 0.744, BPF = 0.752) exceeding all inter construct correlations including the highest correlations between INV, CPX (0.664) and CPX, BPF (0.667). Consistent with the RBV and R-A Theory perspectives these results indicate that the DEC components function as a system level configuration of distinct yet interdependent resources and capabilities that jointly generate CPX and drive BPF.

5.3. Structural Model Assessment: Structural Equation Modeling

The structural model was evaluated using Maximum Likelihood estimation. All key model fit indices met the recommended criteria confirming that the model represents the data well. These indices confirm that the proposed model demonstrates excellent fit and is appropriate for hypothesis testing.

Table 8. The Goodness of Fit Indices for SEM. CMIN/df =2.956, AGFI = 0.939, GFI = 0.962, CFI = 0.970, NFI = 0.955, TLI =0.955, IFI = 0.970, RMSEA =0.041 and SRMR = 0.037.

Overall, these results indicate that both the measurement structural models exhibit acceptable and consistent fit across all evaluated criteria supporting the robustness of subsequent hypothesis testing and structural path analysis.

Table 8: Demonstrates the Goodness of SEM Fit Index.

Goodness of Fit	Criteria for consideration	Result	Interpretation
CMIN/df	≤ 3.00 (Hair et al., 2018; Kline, 2023)	2.956	Acceptable
AGFI	≥ 0.90 (Kline, 2023)	0.939	Acceptable
GFI	≥ 0.90 (Hair et al., 2018; Kline, 2023)	0.962	Acceptable
CFI	≥ 0.90 (Hair et al., 2018; Kline, 2023)	0.970	Acceptable
NFI	≥ 0.90 (Kline, 2023)	0.955	Acceptable
TLI	≥ 0.90 (Hu & Bentler, 1999; Kline, 2023)	0.955	Acceptable
IFI	≥ 0.90 (Kline, 2023; Henseler et al., 2023)	0.970	Acceptable
RMSEA	≤ 0.08 (Kline, 2023)	0.041	Acceptable
SRMR	≤ 0.05 (Hu & Bentler, 1999; Kline, 2023)	0.037	Acceptable

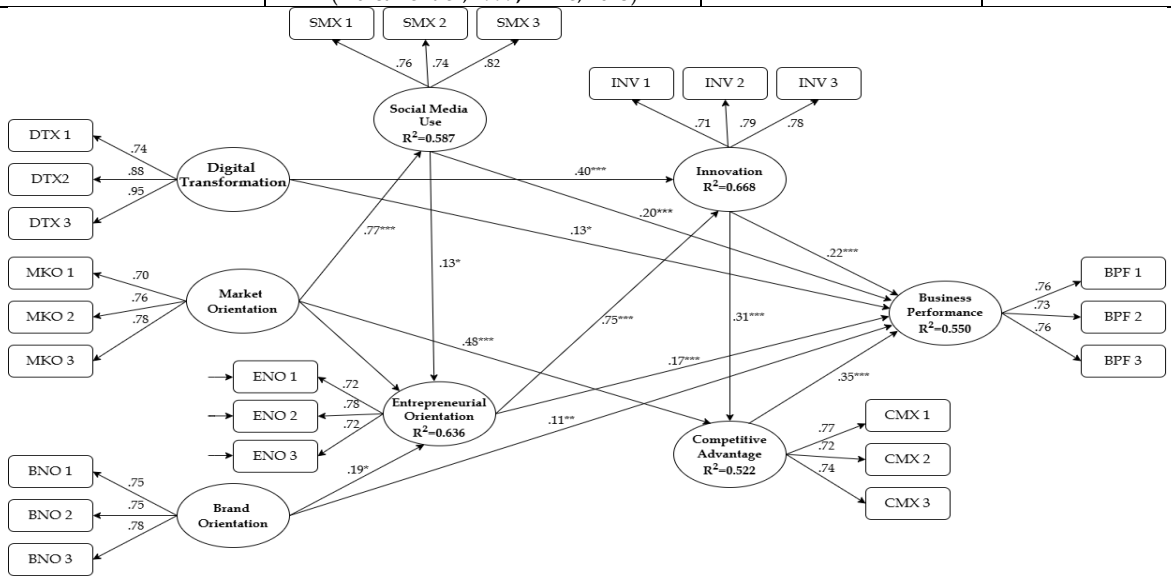

Figure. 4: Structural Equation Modeling

6. HYPOTHESIS

All 13 hypotheses H1–H13 were statistically supported. This Table 9. reports results of hypothesis testing using SEM indicating that all thirteen hypotheses are statistically supported, confirming the robustness of the proposed causal framework.

6.1. Upstream Digital and Market Resources

From the perspective of the RBV firm performance does not arise simply from possessing digital or market resources but rather from the firm's ability to reconfigure and transform those resources into value creating strategic capabilities. Consistent with this logic the results of H1–H2 indicate that DTX has a significant effect on INV (β = 0.121) and a smaller but significant effect on BPF (β = 0.059). This pattern indicates that digital resources create value primarily through capability development rather than acting as direct performance drivers. In contrast the results of H3–H5 highlight the central role of MKO which exerts strong effects on SMX (β = 0.766), ENO (β = 0.531) and CPX (β = 0.480). These findings indicate that market knowledge functions as a foundational resource that shapes entrepreneurial behavior and competitive positioning within the DEC system.

6.2. Brand Orientation and Social Media Use as Enabling Resources

Within the RBV framework intangible assets such as brand related resources and relational digital platforms serve as enabling mechanisms that stimulate entrepreneurial processes and support value creation. The results of H6–H7 show that BNO positively influences ENO (β = 0.189) and BPF (β = 0.114) reinforcing the role of brand-based resources in activating entrepreneurial behavior and supporting performance outcomes. Similarly the results of H8–H9 demonstrate that SMX affects ENO (β = 0.132) and also exerts a direct effect on BPF (β = 0.199). This pattern indicates that social media functions both as an interaction-oriented resource and as a partial performance driver within the organization's cultural system.

6.3. Entrepreneurial Orientation, Innovation, and Competitive Advantage

According to the logic of R-A Theory superior firm performance emerges when entrepreneurial and innovative capabilities are translated into defensible competitive positions. The results of H10–H11 confirm that ENO serves as a core behavioural mechanism exerting a strong influence on INV (β = 0.753) and a direct effect on BPF (β = 0.170). This finding positions ENO as the central behavioural mechanism within the DEC system. In addition, the results of H12–H13 indicate that INV significantly enhances CPX (β = 0.308) and that CPX exerts the strongest direct effect on BPF (β = 0.352). This pattern closely aligns with R-A Theory which emphasises that superior performance stems from CPX derived from the effective configuration and deployment of organisational resources and capabilities.

Table 9: Hypothesis Testing Results (with Significance Levels)

H	Path	β	b	S.E.	C.R.	p-value	Result
H1	DTX → INV	0.121	0.083	0.024	3.424	***	Supported
H2	DTX → BPF	0.059	0.045	0.022	1.998	*	Supported
H3	MKO → SMX	0.766	0.788	0.064	12.381	***	Supported
H4	MKO → CPX	0.480	0.625	0.072	8.684	***	Supported
H5	MKO → ENO	0.531	0.566	0.120	4.727	***	Supported
H6	BNO → ENO	0.189	0.169	0.069	2.459	*	Supported
H7	BNO → BPF	0.114	0.135	0.050	2.678	**	Supported
H8	SMX → ENO	0.132	0.137	0.062	2.212	*	Supported
H9	SMX → BPF	0.199	0.271	0.057	4.770	***	Supported
H10	ENO → INV	0.753	0.889	0.065	13.754	***	Supported
H11	ENO → BPF	0.170	0.224	0.062	3.623	***	Supported
H12	INV → CPX	0.308	0.318	0.050	6.363	***	Supported
H13	CPX → BPF	0.352	0.379	0.045	8.393	***	Supported

Note: * p < .05, ** p < .01, and *** p < .001. All hypotheses show statistically significant effects demonstrating strong causal relationships within the model.

7. DISCUSSION

This study implemented the hypothesises that digital transformation solely leads to improved firm performance. However, evidence from Thai real estate SMEs indicates that digital technologies are insufficient to explain variations in performance, therefore it required to use technologies are interpreted, integrated, and enacted within organizational practices together.

From the perspective of this study results, Digital Entrepreneurial Culture (DEC) functions as an organizing logic that presents firms interpret market signals, prioritize opportunities, and respond to uncertainty. In a trust-based industry such as real estate, where decisions are relational and high risks, these dynamics become influential. The findings

reveal that DTX, SMX, MKO, and BNO do not directly influences performance outcomes, they establish the conditions that inform strategic thinking and decision making. Entrepreneurial Orientation (ENO) is important mechanism that translates these conditions into action of experimentation, proactiveness, and risk-taking. These behaviours stimulate innovation, which enhances competitive advantage as the primary pathway to improved business performance.

In addition, the relatively weak direct influence of DTX found that digitalization, in the absence of cultural alignment, has limited impact. Firms that do not embed digital tools within broader entrepreneurial and market-oriented practices are difficult to achieve sustained performance gains.

8. CONCLUSION

This study demonstrates that digital transformation in Thai real estate SMEs cannot be understood as a purely technological process. The results show that performance differences are not determined by the extent of digital adoption, but by how digital resources are integrated into organizational culture and entrepreneurial practice. By introducing Digital Entrepreneurial Culture (DEC), the study provides a mechanism that links resource potential to competitive outcomes. Digital transformation, social media use, market orientation, and brand orientation shape the conditions under which firms interpret their environment, while entrepreneurial orientation and innovation translate these conditions into strategic action. Competitive advantage, in turn, becomes the primary pathway through which performance is realized. The findings extend RBV and R-A Theory by demonstrating that resources do not create value independently. Their impact depends on how they are configured, interpreted, and enacted within a cultural system. In this sense, DEC operates as a coordinating structure that aligns resources, behavior, and strategy over time. More broadly, the study highlights that digital transformation is inseparable from socio-cultural dynamics. In the real estate context, digital platforms function not only as technological tools but as spaces where trust, identity, and relationships are continuously constructed. Sustainable performance therefore depends on the firm's ability to manage these cultural dimensions alongside technological change.

Future research should investigate how digital entrepreneurial culture evolves across different industries and institutional contexts, especially in examining how cultural configurations influence the long-term course of digital transformation. This means that sustainable competitive advantage in digitally mediated environments depends on technological capabilities and also on an organization's ability to align digital resources with its cultural and strategic meaning systems.

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