Journal of Information Systems Engineering and Management
2025, 10(43s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

Research Article

Entrepreneurial Spirit and Utilization of Technology Affecting Business Resilience of Thai Young Entrepreneurs: Exploring the Mediation Effect of Business Agility and the Moderation Effect of Collectivism

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ARTICLE INFO

Received: 30 Dec 2024

Revised: 05 Feb 2025

Accepted: 25 Feb 2025

ABSTRACT

This study investigates the interplay between entrepreneurial spirit (ENS), technology utilization (UOT), and business resilience (BRE) among young Thai entrepreneurs, with a focus on the mediating role of business agility (BAG) and the moderating effect of collectivism (COL). Drawing on Dynamic Capability Theory and Contingency Theory, the research employs Structural Equation Modeling (SEM) to analyze survey data from 337 young entrepreneurs (aged 18–35) operating small and medium-sized enterprises (SMEs) in Thailand.

The results demonstrate that both entrepreneurial spirit and technology utilization significantly enhance business resilience through direct and indirect pathways. Specifically, entrepreneurial spirit exhibits a strong positive impact on business agility ($\beta = 0.78$, $p < 0.05$), which subsequently strengthens resilience ($\beta = 0.72$, $p < 0.05$). Similarly, technology utilization significantly boosts agility ($\beta = 0.62$, $p < 0.05$) and resilience ($\beta = 0.38$, $p < 0.05$), with agility serving as a critical mediator. The indirect effects of ENS and UOT on BRE via BAG are also significant ($\beta = 0.56$ and $\beta = 0.45$, respectively, $p < 0.05$). Furthermore, collectivism moderates the relationship between agility and resilience, amplifying the positive effects of agility in fostering resilience.

These findings underscore the importance of fostering entrepreneurial competencies and technological adoption to enhance business agility and resilience, particularly in volatile and uncertain environments. The study highlights the cultural dimension of collectivism as a key factor that strengthens resilience by promoting collaboration and resource-sharing among entrepreneurs. Practical implications include recommendations for entrepreneurs to integrate agile practices and digital tools into their operations, as well as for policymakers to design supportive initiatives that encourage technological adoption and collaborative networks.

Keywords: Entrepreneurial Spirit, Utilization of Technology, Business Resilience, Business Agility, Collectivism

INTRODUCTION

The transition into the 21st century has ushered in a significant structural shift, presenting both opportunities and challenges within an increasingly volatile and complex global environment. These transformations necessitate that nations worldwide adapt accordingly to ensure economic and social stability while fostering resilience to navigate global uncertainties. One of the critical drivers of economic growth in this era is entrepreneurship, as entrepreneurs play a vital role in integrating innovation and production into the economic system (Schumpeter, 1934). Governments across the globe, including Thailand, have implemented policies to support entrepreneurial development, with a particular emphasis on nurturing young and emerging entrepreneurs. A key strategy in addressing contemporary economic challenges is the investment in human capital, particularly among adolescents, who represent the next generation of business leaders. Encouraging entrepreneurial mindsets among young individuals involves promoting self-reliance, job creation, and technological proficiency, thereby equipping them to pursue entrepreneurship as a

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viable alternative to traditional employment (Organisation for Economic Co-operation and Development [OECD], 2020).

Thai youth exhibit considerable entrepreneurial potential, particularly given their adaptability, technological expertise, and innovative capabilities. The encouragement of entrepreneurial aspirations among young people not only contributes to individual career development but also plays a pivotal role in national economic progress by fostering the establishment of new businesses (Autio, Keeley, Klofsten, Parker, & Hay, 2001). However, the contemporary business landscape is marked by uncertainties stemming from social, economic, and technological crises. Small and medium-sized enterprises (SMEs), which form the backbone of many economies, face significant risks, including market disruptions and financial instability. While some businesses succumb to these challenges, others demonstrate resilience and even thrive. Entrepreneurial resilience—the ability to adapt, innovate, and navigate adversities—is thus a critical determinant of long-term business sustainability (Bullough & Renko, 2013). Entrepreneurs who fail to cultivate resilience are at a higher risk of business failure, while those who effectively develop resilience can leverage opportunities to address complex problems with innovative business solutions (Ayala & Manzano, 2014). However, building and sustaining resilience requires a systematic and strategic approach.

Entrepreneurial spirit plays a fundamental role in fostering innovation, adaptability, and sustainable economic development. In the face of rapid economic and technological changes, entrepreneurs with a strong entrepreneurial mindset actively seek innovative solutions, enabling them to introduce new products and services that align with evolving market demands (Kuratko, 2007). This, in turn, enhances market diversity and economic growth. The presence of an entrepreneurial spirit is associated with job creation, increased economic dynamism, and greater community development, particularly in developing economies where entrepreneurship fosters employment opportunities and income generation (Zahra & Dess, 2001). Furthermore, entrepreneurial resilience is closely linked to creativity, risk management, and problem-solving skills (Gibb, 2002), which are essential in navigating uncertainties and business challenges (Hisrich & Peters, 2013).

In the digital age, characterized by rapid technological advancements, entrepreneurs must continuously adapt to leverage emerging technologies to gain competitive advantages. The integration of digital tools and technology in business operations enhances efficiency, optimizes production and service processes, and expands market access through digital platforms (Nambisan, 2017). Entrepreneurs who effectively utilize technology are better positioned to respond to market shifts with agility and flexibility. Moreover, digital transformation facilitates data-driven decision-making, cost reduction, and improved customer engagement, thereby enhancing business sustainability and competitiveness in dynamic market environments (Bughin, Catlin, Hirt, & Willmott, 2018).

Business resilience in the contemporary era is increasingly dependent on the effective interplay between entrepreneurial spirit and technological adaptation. Entrepreneurial resilience fosters proactive problem-solving and innovation, while digital technologies enable businesses to swiftly adapt to market fluctuations and crises. The integration of technology into entrepreneurial ventures not only enhances decision-making through data analytics but also strengthens business agility, customer engagement, and operational efficiency. While existing research has extensively explored the impact of entrepreneurial spirit and digital transformation on business performance, studies focusing on their combined influence as key drivers of resilience and adaptability, particularly among young Thai entrepreneurs, remain limited. This research gap underscores the need for empirical studies that investigate how entrepreneurial spirit and technology utilization contribute to business agility and resilience in the face of uncertainty (Felin & Powell, 2016).

Recognizing the critical role of entrepreneurship in economic recovery and sustainability, this study aims to explore the resilience of young Thai entrepreneurs by examining the impact of entrepreneurial spirit and technology utilization. The study seeks to develop a causal relationship model that elucidates how these factors contribute to business resilience through enhanced agility and a collective entrepreneurial mindset. This research will provide valuable insights and strategic guidelines for new entrepreneurs, equipping them with the necessary skills and psychological preparedness to navigate volatile business environments effectively. By fostering resilience and innovation, this study aims to contribute to the broader discourse on entrepreneurship as a catalyst for sustainable economic development in Thailand and beyond.

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Research Objectives

1. To test the influence of entrepreneurial spirit, the utilization of technology, and business agility on the resilience of businesses operated by new-generation Thai entrepreneurs.
2. To test the moderating effect of a collective mindset on the relationship between business agility and the resilience of businesses operated by new-generation Thai entrepreneurs.
3. To present a causal relationship model for the resilience of businesses operated by new-generation Thai entrepreneurs.

LITERATURE REVIEW

In this research, the investigator has studied the foundational theories used in developing the conceptual framework for the research, which explains the causal relationships in the resilience of businesses operated by new-generation Thai entrepreneurs, as follows:

1.Dynamic Capability Theory

The Dynamic Capability Theory, developed by Teece and Pisano (1994) from the Resource-Based View (Barney, 1991), focuses on integrating unique resources that align with future opportunities (Teece, Pisano, & Shuen, 1997; Teece, 2012). This theory posits that the organizational environment is not static but constantly changing. Businesses, therefore, must develop new capabilities that align with these changes (Teece, Pisano, & Shuen, 1997), using organizational capabilities to integrate both old and new resources to create, enhance, or modify capabilities based on those resources to adapt to environmental changes (Helfat et al., 2007). Wang and Ahmed (2007) describe dynamic capabilities as abilities developed from an organization's recognition of opportunities and threats, which influence managerial decisions and lead to the adaptation of resources and capabilities in response to changes. Organizations with dynamic capabilities are not only able to cope with competition but can also shape competitive landscapes and achieve outcomes through entrepreneurship, innovation, and business model adjustments. However, if an organization possesses only capabilities or resources without dynamic capabilities, it may only continue producing and selling the same products, using the same processes, to the same customers (Winter, 2003).

2.Contingency Theory

The Contingency Theory of Management, rooted in systems theory, posits that businesses today should operate as open systems. This shifts the focus from internal characteristics to business organizations that are constantly changing due to external environmental factors such as competition, interaction, and interdependence. A key concept of this theory is that there is no one best way to organize a corporation; the effectiveness of an organizational structure varies. Thus, the optimal organization must align with the specific circumstances the business is facing (Galbraith, 1973). If businesses operate differently, they inherently encounter different environments and thus require different management approaches to handle these environments (Robbins & Coulter, 2002). Therefore, Contingency Theory opposes the idea of universal management theories by emphasizing management practices that are contingent upon the realities and contexts of the organization. For entrepreneurs, this theory prioritizes adapting to environmental conditions over seeking a one-size-fits-all solution. Thus, business agility relies on flexible planning and preparedness for uncertainty.

Based on the foundational theories mentioned, this research has formulated hypotheses within the conceptual framework of the study, detailed as follows:

2.1 Concepts and Theories Related to Entrepreneurial Spirit

The concept of the entrepreneurial spirit, or entrepreneurial mindset, involves the development of theories that explore how personality patterns or behaviors arise from thought processes, structured into five distinct cognitive groups: 1) the opportunity recognizing mind, 2) the designing mind, 3) the risk managing mind, 4) the resilient mind, and 5) the effectuating mind (Duening, 2010). This framework is consistent with various studies that describe the psychological characteristics of entrepreneurs, categorizing them into five groups: risk acceptance, control over one's environment, the need for achievement, innovativeness, and tolerance for ambiguity (Dehghanzadeh et al., 2016).

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Other researchers such as Rekha, Ramesh, and Bharathi (2014) have identified attributes of the entrepreneurial spirit including risk-taking ability, learning from experience, innovation ability, and a positive attitude. Meanwhile, Ireland, Hitt, and Sirmon (2003) developed the concept of the entrepreneurial spirit as a growth mindset that facilitates the development of resilience, creativity, and continuous innovation (Nara Kittimetikul, 2020).

Scholars have identified that the entrepreneurial spirit greatly influences the decision to start new businesses (Arenius & Minniti, 2005). However, past research has studied various factors of the entrepreneurial spirit in different contexts (Camelo-Ordaz, Diánez-González, & Ruiz-Navarro, 2016). The entrepreneurial spirit thus serves as a boundary of an individual's perception of economic opportunities as well as social and cultural aspects. Components of the entrepreneurial spirit in research include opportunity recognition, self-efficacy, entrepreneurial networks, perceived ease of doing business, and fear of failure (Tripopsakul, Mokkhamakkul, & Puriwat, 2022).

2.2 The Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT) was developed in 2003 by Venkatesh et al. It is a comprehensive synthesis of theories related to human behavior regarding technology usage. The study's findings indicate that the acceptance and use of technology by individuals largely depend on the provision of resource support and guidance (Facilitating Conditions) and the influence of their intentions to use the technology (Behavioral Intention). The model consists of three main components: 1) Performance Expectancy, 2) Effort Expectancy, and 3) Social Influence.

When new technologies with diverse features are introduced, individuals and organizations unfamiliar with these technologies tend to adopt them to survive in competitive environments. Thus, the application of technology becomes a crucial concept in the world of technology. In another sense, utilization can be seen as the level of technology diffusion where individuals or organizations decide to choose and use new technologies over traditional methods. Therefore, the utilization of technology is a process that begins with the user's acceptance of technology and ends with its full application (Yadegari, Mohammadi, & Masoumi, 2024). In reality, this utilization also represents the process by which an individual decides whether to integrate the technology into their daily life or work (Liu, Cruz, and Rincon, 2019). The influence of the spread of information and communication technology, closely related to the informatization process, is a process whereby societies or organizations use information and communication technology to enhance efficiency in operations, data storage, communication, and decision-making. The shift from traditional systems that rely on paper-based processes or conventional working methods to the use of technology, which can process information quickly and efficiently, represents a significant transformation. This informatization process, now prevalent across all businesses and industries, is influenced by several factors such as organizational resources, strategies, skills, and capabilities (Zwicker, Souza, Vidal, & Siqueira, 2008; Özşahin, Çallı, & Coşkun, 2022). Scholars have proposed tools essential for evaluating the utilization of technology within businesses. For instance, Zwicker et al. (2022) suggest that the level of informatization in organizations can be assessed through several dimensions, including IT organizational use, IT infrastructure, IT application attributes, IT governance, and IT impacts. Siqueira, de Souza, & Barbosa (2019) developed an index to measure the intensity of ICT usage among SMEs, which can be evaluated through internal integration, external integration, decision-making, and the use of ICT for knowledge and innovation creation. Furthermore, Özşahin, Çallı, & Coşkun (2022) proposed five dimensions of ICT utilization: communication, internal integration, integration with customers, interorganizational integration, and strategic integration. These dimensions provide a comprehensive framework for assessing how businesses leverage ICT to enhance operations, decision-making, and innovation.

2.3 Business Agility

Business agility leads to the development of new business strategies that enable rapid and efficient responses to unforeseen events, while maintaining competitiveness in rapidly changing and unpredictable market environments. Business agility has become a key strategy for seizing opportunities arising from market shifts and for responding swiftly to customer demands. It plays a critical role in enhancing the competitive capabilities of businesses within various industry contexts (Lee & Yang, 2014).

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e-ISSN: 2468-4376
https://www.jisem-journal.com/

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Moreover, business agility is a component of dynamic capabilities, crucial for organizational survival amidst drastic changes in the business environment (Felipe, Roldán, & Leal-Rodríguez, 2016). Park (2011) states that business agility refers to the ability of a business to detect and respond to market obstacles and opportunities in a timely manner, comprising three dimensions: 1) Sensing Agility is the ability to timely identify and detect critical business situations. 2) Decision-Making Agility is the capacity to interpret the detected situations by identifying opportunities and obstacles and transforming them into actionable plans in a timely manner. 3) Acting Agility is the ability to dynamically reconfigure organizational resources, adjust business processes, and introduce new innovations to the market in a timely fashion. This is consistent with Nafei (2016), who studied business agility by categorizing its components into three dimensions: 1) Sensing Agility is the organization's ability to detect and monitor environmental changes, such as shifting customer preferences, new competitors' movements, and emerging technological advancements, in a timely manner. 2) Decision-Making Agility is the process of gathering, restructuring, and evaluating relevant information from various sources to interpret business implications without delay, allowing the identification of opportunities and obstacles, and the development of strategic plans to realign resources and enhance competitive strategies and 3) Acting Agility is the organizational activities focused on reorganizing resources and adapting business processes based on decisions made, enabling the organization to respond to environmental changes effectively and efficiently. Several studies have found that entrepreneurial spirit, attitudes, and a focus on entrepreneurship are closely related to business agility. For example, the study by Tahmasebifard, Zangoueinezhad, & Jafari (2017) revealed that an entrepreneurial focus significantly influences the ability to enhance business agility, particularly in terms of responsiveness, performance, flexibility, and speed. Similarly, Champatong, Sawangdee, & Poprateep (2022) found that an entrepreneurial focus and leadership in management significantly influence the agility of hotel businesses in Thailand. Additionally, Wahab et al. (2023) discovered that entrepreneurial spirit influences the success of small and medium-sized enterprises (SMEs) among young Muslim entrepreneurs. Furthermore, Alborathy, Masmoudi, & Ismael (2023) found that organizational agility is significantly correlated with the emphasis on entrepreneurship. Based on these findings, the following research hypotheses are proposed:

H1: Entrepreneurial spirit has a direct positive influence on business agility.

Furthermore, numerous studies have explored the relationship between technology utilization and business agility, and findings suggest that a business's ability to adopt and effectively leverage technology significantly influences the development of business agility. Examples of such studies include Garcia-Alcaraz et al. (2017), Qosasi et al. (2019), Arshad et al. (2024), and Qosasi et al. (2019). Based on these findings, the following research hypothesis is proposed:

H2: Technology utilization has a direct positive influence on business agility.

2.4 Organizational Resilience

Currently, the definition of "Organizational Resilience" remains unclear (Linnenluecke, 2017). From the review of existing literature, when the concept of resilience is applied to business, it can be summarized that business resilience refers to an organization's ability to employ strategies and business models in response to changing circumstances. This includes proactive preparation and the capacity to adapt to changes that impact the organization (Hamel & Valikangas, 2003). It reflects the organization's ability to transform and grow continually over time (Gittell et al., 2016), as well as the capacity to return to normal operations after experiencing disruptions. Business resilience is closely related to the organization's response to changes that cause chaos and discontinuity, both on an individual and organizational level (Bhamra et al., 2011). Business resilience is regarded as the capability of a business to anticipate, prepare for, respond to, and adapt to changes that can occur at any time, including sudden disruptions, to ensure its survival and prosperity. It embodies the ability to fall and swiftly rise again.

To build resilience or recovery capabilities in a systematic and holistic manner, it is essential to start by shifting the mindset and broadening the view of resilience. This involves seeing crises as inevitable changes, preparing for them, managing them, and leveraging opportunities that arise from competition, rather than simply attempting to prevent unavoidable events. By adopting this broader perspective, businesses can make proactive decisions and focus on future crises, allowing them to grow and have strategies in place for recovery after those crises. This could include developing flexible systems to respond to uncertainty or fostering individuals with resilient mindsets.

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Crises such as natural disasters, economic recessions, terrorist attacks, and military interventions often lead to unpredictable changes and have immediate effects on the business sector. The application of ambiguity and complexity theories as alternative frameworks, as noted by Russell & Faulkner (2004), suggests that unpredictable crises often spark innovation. During such periods, entrepreneurs are likely to identify gaps amid the chaos, seize opportunities, and initiate changes to the existing status quo. These crises, while disruptive, can serve as catalysts for transformation and innovation in businesses, driving them to adapt and evolve. Entrepreneurship is widely recognized as a key driver of economic growth, especially during times of uncertainty and turbulence (Williams & Vorley, 2014). This has raised the question of whether young entrepreneurs can stimulate change and innovation during crises, and if so, what these changes entail. These questions address business resilience, particularly in terms of generating revenue and supporting the continued survival of businesses (Dahles & Susilowati, 2015). The concept of resilience, therefore, focuses on understanding the varying responses to external changes and impacts, highlighting how different businesses adapt to and recover from disruptive events. This drive leads to the creation of innovation (Williams & Vorley, 2014, p. 259). In the business context, business resilience refers to an organization's ability to survive, adapt, and grow amidst volatile changes (Fiksel, 2006, p. 16; Hamel & Välikangas, 2003). Resilient businesses are able to recover from disruptions and demonstrate adaptability, which can lead to broader transformations (Fiksel, 2006). Small businesses, in particular, are highly responsive to external impacts due to their greater flexibility, adaptability, and creativity compared to larger firms (Williams & Vorley, 2014).

The study by Maalouf et al. (2024), which examined managers and business owners, demonstrated that agile businesses tend to have a higher likelihood of business resilience. Additionally, a highly competitive environment strengthens the relationship between business agility and resilience. In other words, in a fiercely competitive environment, business agility and resilience are enhanced. Conversely, in a less competitive environment, both agility and resilience are reduced. Similarly, the study by Lotfi & Saghiri (2018) found that business agility fosters resilience. Agility is the ability to quickly respond to changing market conditions (Braunscheidel & Suresh, 2009). Based on these findings, the following research hypothesis is proposed:

H3: Business agility has a direct positive influence on business resilience.

According to the Resource-Based View (RBV) theory, many researchers have noted that agility and business resilience are capabilities that can provide a unique competitive advantage to companies. From the RBV perspective in the current context, it can be hypothesized that Entrepreneurial Leadership is strongly related to these capabilities. Such attributes are rare, valuable, non-substitutable, and imperfectly imitable, which can directly impact business performance and sustainability (Barney, 1991; Grant, 1991; Wernerfelt, 1984). Entrepreneurial leadership, by fostering agility and resilience, enables businesses to navigate uncertainties and maintain long-term success, reinforcing their competitive position.

Additionally, technology utilization is considered a key capability for entrepreneurs, particularly in the context of innovation and adaptation in the digital era. This capability is linked to leveraging technology to enhance business efficiency, create competitive differentiation, and increase the ability to respond to rapidly changing market demands. Effective use of technology allows businesses to innovate, streamline operations, and stay agile, which is critical for maintaining a competitive edge and achieving sustainable growth in today's dynamic business environment. According to the concept of Dynamic Capabilities (Teece, Pisano, & Shuen, 1997), an organization's ability to adapt under changing environmental conditions—including the integration of new technologies to improve work processes—drives agility and creates competitive advantages. This adaptability is a crucial factor in enhancing the innovation capabilities of entrepreneurs. By continuously updating and reconfiguring resources, including technology, businesses can respond effectively to market shifts, improve operational efficiency, and foster innovation, thereby gaining a sustainable competitive edge. and Sharma, G. D. et al. (2020) found that the use of digital technologies, such as the application of online platforms and automation systems, effectively enhances business resilience. These technologies enable businesses to maintain continuity and reduce risks during crises. Based on this concept, the researcher has developed the following research hypothesis:

H4: Entrepreneurial spirit has a direct positive influence on business resilience.

H5: Entrepreneurial spirit has an indirect positive influence on business resilience through business agility.

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e-ISSN: 2468-4376
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H6: Technology utilization has a direct positive influence on business resilience.

H7: Technology utilization has an indirect positive influence on business resilience through business agility.

2.5 Collectivism

The concept of Collectivism, or group-centered thinking, is a sociological concept that emphasizes the importance of working together and prioritizing the group over the individual (Triandis, 1995). In the context of entrepreneurial development, this concept plays a crucial role in fostering networking and collaboration among entrepreneurs, as well as promoting the sharing of resources and knowledge (Hofstede, 2001). Research has found that entrepreneurs who exhibit collectivist traits are more likely to succeed in business due to the support from social and family networks (Lindsay, 2005). The emphasis on sharing and collaboration enables entrepreneurs to more easily access necessary resources, such as capital, knowledge, or market opportunities (Liñán & Santos, 2007). In cultures with a collectivist orientation, entrepreneurs often focus on building sustainable and socially responsible businesses, in contrast to entrepreneurs in individualistic societies who may prioritize personal profit (Sarasvathy, 2001).

Collectivist cultures also promote innovation through collaboration, problem-solving, mutual support, idea exchange, and the integration of perspectives from various sectors (Bruton et al., 2010). A key mechanism of the collectivist concept in entrepreneurship development is the creation of social networks, which play a vital role in enabling entrepreneurs to access a diverse range of resources and opportunities (Putnam, 2000). For instance, local entrepreneurial networks or industry groups working together can serve as valuable sources of learning and support for new entrepreneurs (Johannisson, 1998). Based on this concept, the following research hypothesis is proposed:

H8: The collective mindset moderates the influence of business agility on business resilience..

Research Methods

This study employed a quantitative research design utilizing a survey as the primary data collection tool. To empirically test the proposed research model, Structural Equation Modeling (SEM) was implemented. SEM was chosen due to its effectiveness in analyzing complex relationships between latent variables while minimizing measurement errors (Hair, Black, Babin, & Anderson, 2019).

Sample and procedures

The research was conducted using SEM modeling, focusing on a population of young entrepreneurs aged 18–35 years who serve as executives or owners of small and medium-sized enterprises (SMEs). These entrepreneurs were selected based on their experiences of overcoming unpredictable business challenges, such as economic volatility, changes in consumer demand, competitive business environments, and the impact of public health crises. The study particularly examined their use of technology and business agility in fostering business recovery.

Due to the large and indeterminate population, the sample size was calculated using Cochran's formula (1953) at a 95% confidence level, yielding a required sample size of 385 young entrepreneurs. Additionally, Hair et al. (2019), Schumacker and Lomax (2010), and Kline (2011) suggest that the appropriate sample size for SEM analysis should be 10–20 times the number of observed variables. Given that this study included 16 observed variables, the sample size recommendation ranged from 160 to 320 respondents.

A non-probability sampling method was applied using purposive sampling and snowball sampling to ensure participants met the research objectives. To enhance response rates and data reliability, both traditional paper-and-pencil and online questionnaires were employed (Hays & McCallum, 2005). A total of 362 completed questionnaires were returned, reflecting a 94.03% response rate. After eliminating 25 responses due to missing or outlying data, 337 valid responses remained for the final analysis. The completed surveys were directly submitted to the researchers, ensuring anonymity and confidentiality. The data were subsequently analyzed using Linear Structural Relations (LISREL), incorporating frequency, means, and standard deviation analyses.

Research Instrument

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A quantitative questionnaire was designed using a five-point Likert scale, measuring Entrepreneurial Spirit (ENS), Utilization of Technology (UOT), Business Agility (BAG), and Business Resilience (BRE). The survey was structured into six sections, each derived from established literature to ensure validity and reliability.

Measures

The hypothesized model included four key constructs: Entrepreneurial Spirit (ENS), Utilization of Technology (UOT), Business Agility (BAG), and Business Resilience (BRE). The measurement scales for these constructs were adapted from previously validated research instruments. Since the original scales were developed in English, they were translated into Thai using a standard translation and back-translation process (Brislin, 1986). This method ensured clarity, linguistic consistency, and cultural relevance (Presser et al., 2004).

All items were assessed on a five-point Likert-type scale. To validate the constructs, Exploratory Factor Analysis (EFA) was conducted, identifying factors with eigenvalues greater than 1. The factor loadings ranged from 0.42 to 0.89, explaining 53.21% to 64.62% of the variance across the constructs. The reliability of the constructs was confirmed using Cronbach's alpha, with reliability coefficients ranging from 0.71 to 0.87, exceeding the 0.70 threshold recommended by Hair et al. (2019) and Jump (1978). These results confirmed the reliability and internal consistency of the measurement items.

Entrepreneurial Spirit (ENS)

Entrepreneurial Spirit (ENS) was tested by a scale adapted from the Entrepreneurial Spirit Index: An Application of the Entrepreneurial Cognition Approach, constructed by Tripopsakul, Mokkhamakkul, & Puriwat, W. (2022). The scale was developed to measure entrepreneurial intent, opportunity recognition, self-skill perception, entrepreneurial networking, perceived ease of doing business, and fear of failure. Respondents indicated their agreement with each item on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree).

Utilization of Technology (UOT)

The Utilization of Technology was measured by a scale adapted from the ICT Adoption Scale Development for SMEs, proposed by Özşahin, Çallı, & Coşkun (2022). Thai young entrepreneurs were asked to rate their agreement with statements related to communication, internal integration, integration with customers, interorganizational integration, and strategic integration on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree).

Business Agility (BAG)

Business Agility was measured by a scale adapted from research done by Jaworski and Kohli (1993). The scale included three dimensions: sensing agility, decision-making agility, and acting agility. Respondents indicated their agreement with each item on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree).

Business Resilience (BRE)

Business Resilience was measured by a scale adapted from research to develop a tool to measure and compare organizations' resilience, conducted by Lee, Vargo, & Seville (2013). The construct consisted of two dimensions: planned resilience and adaptive resilience. Respondents indicated their agreement with each item on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree).

Collectivism (COL)

Collectivism was measured by an adapted version of Matsumoto et al.'s Individualism / Collectivism Assessment Inventory (Matsumoto et al., 1997). The instrument incorporates items that cater to personal traits rather than broader cultural traits and has been found to be more appropriate for examining youth entrepreneurial behaviors (Yi, 2002). The scale consists of six items. Respondents indicated their agreement with each item on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree).

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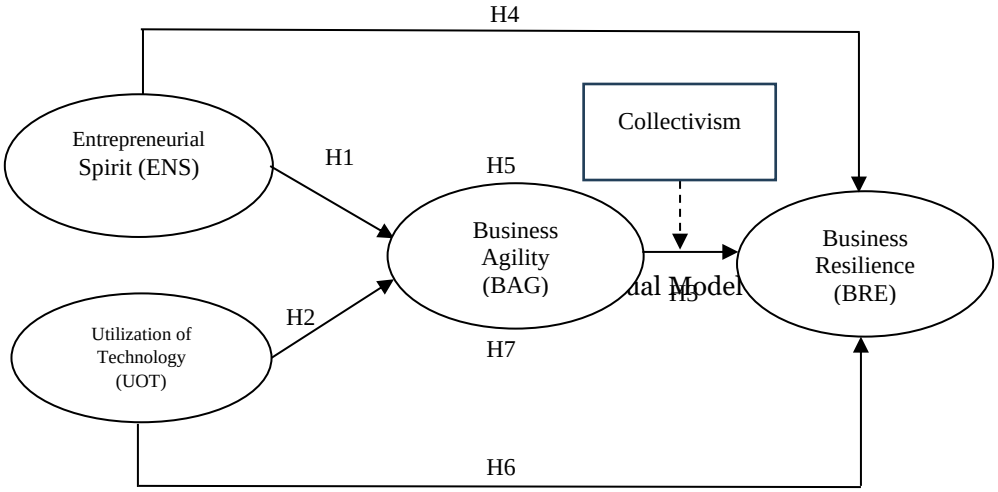

DATA ANALYSIS & RESULTS

Descriptive Statistics of Sample Demographics

The demographic analysis revealed that the majority of respondents were female (62.50%), with the remaining 37.5% being male. The age distribution showed that 70% of respondents were between 26–35 years old, while 30% were between 18–25 years old. In terms of education, 79.5% of respondents held a bachelor's degree. The forms of business formation included partnership businesses (34.56%) and sole proprietorships (31.22%). The average monthly business revenue was between 50,000–100,000 baht.

Descriptive Analysis of Observed Variables

The descriptive analysis of the model's observed variables was as follows: Entrepreneurial Spirit (ENS) consisted of six observed variables, including Entrepreneurial Intent (EI), Opportunity Recognition (OR), Self-skill Perception (SP), Entrepreneurial Networking (EN), Perceived Ease of Doing Business (PE), and Fear of Failure (FF), with means ranging from 3.80 to 4.19 and standard deviations ranging from 0.46 to 0.67. Utilization of Technology (UOT) consisted of five observed variables: Communication (CM), Internal Integration (II), Integration with Customers (IC), Interorganizational Integration (IO), and Strategic Integration (SI), with means ranging from 4.03 to 4.26 and standard deviations ranging from 0.41 to 0.65. Business Agility (BAG) had three observed variables: Sensing Agility (SS), Decision-Making Agility (DC), and Acting Agility (AC), with means ranging from 3.85 to 4.28 and standard deviations ranging from 0.44 to 0.56. Business Resilience (BRE) consisted of two observed variables: Planned Resilience (PR) and Adaptive Resilience (AR), with means ranging from 3.83 to 4.19 and standard deviations ranging from 0.46 to 0.68.

The Influences on Observed Variables

The analysis focused on the influences of entrepreneurial spirit and utilization of technology on business resilience, mediated by business agility and moderated by collectivism. The model was consistent with the model values: p-value = 0.605, Chi-square = 64.75, df = 58, RMSEA = 0.014, according to Schermelleh-Engel et al. (2003).

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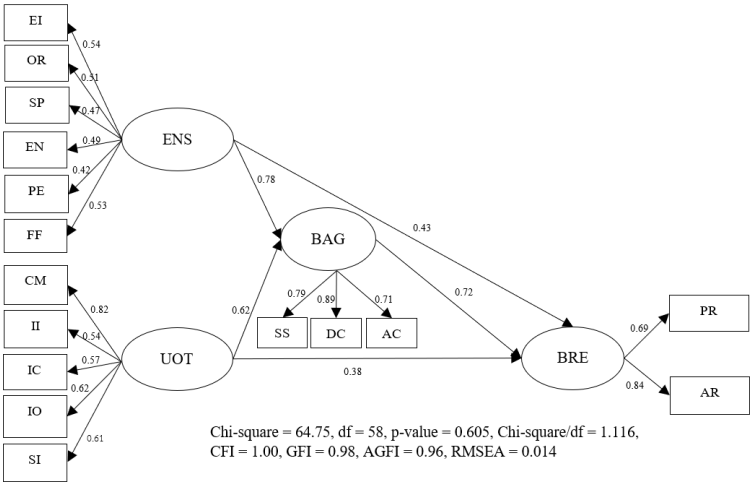

Figure 2 Entrepreneurial spirit and utilization of technology on business resilience which mediated by business agility

Table I The analysis of influence in Structural Equation Model

Antecedents	**Consequences**					
	BAG			**BRE**		
	DE	IE	TE	DE	IE	TE
ENS	.78*	-	.78*	.43*	.56*	.99*
UOT	.62*	-	.62*	.38*	.45*	.83*
BAG	-	-	-	.72*	-	.72*
Statistical Values: χ^2= 64.75 df = 58 p = .605 GFI = .98 AGFI = .96 RMSEA = .014						
SEM: BAG BRE R^2 .72 .87						

DE = Direct Effect, IE = Indirect Effect, TE = Total Effect, * p < .05

The business resilience of Thai young entrepreneurs was directly influenced by business agility with a positive value of .72 at the significance level of .05 (Hypothesis 3 was supported). It was also significantly influenced by entrepreneurial spirit and utilization of technology with positive values of .43 (Hypothesis 4 was supported) and .38 (Hypothesis 6 was supported), respectively. Positive indirect effects were also found from ENS mediated to BAG, which was .56 at the significance level of .05 (Hypothesis 5 was supported), as well as an indirect effect from UOT mediated to BAG, which was significant (Hypothesis 7 was supported).

Positive influences were also found from ENS to BAG (with a positive value equal to .78 at the significance level of .05) (Hypothesis 1 was supported). Business agility was also positively influenced by UOT with a positive value equal to .62 at the significance level of .05 (Hypothesis 2 was supported).

DISCUSSION

Summary of Key Findings

This study examined the influence of entrepreneurial spirit and technology utilization on business resilience, with business agility serving as a crucial mediating factor. The findings confirm that both entrepreneurial spirit and technology utilization significantly contribute to business resilience, supporting the proposed hypotheses.

Journal of Information Systems Engineering and Management
2025, 10(43s)
e-ISSN: 2468-4376
https://www.jisem-journal.com/

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Entrepreneurial spirit exhibited a strong positive impact on business agility (β = .78, p < .05) and indirectly influenced business resilience through agility (β = .56, p < .05), validating Hypotheses 1 and 5. Similarly, technology utilization had a significant positive effect on business agility (β = .62, p < .05) and indirectly enhanced business resilience (β = .45, p < .05), supporting Hypotheses 2 and 7. Furthermore, business agility demonstrated a substantial direct effect on business resilience (β = .72, p < .05), reinforcing the notion that agility is fundamental in dynamic business environments (Braunscheidel & Suresh, 2009).

These findings align with existing literature, which highlights the importance of entrepreneurial attributes such as opportunity recognition and innovation in fostering business resilience (Williams & Vorley, 2014). Additionally, the results are consistent with prior research emphasizing the role of technology, particularly digital platforms, in enhancing agility and resilience in response to market disruptions (Sharma et al., 2020).

Interpretation of Results

The results of this study provide valuable insights into how entrepreneurial spirit and technology influence business resilience, particularly through the mediating role of agility. Entrepreneurial spirit, characterized by opportunity recognition, risk-taking, and innovation (Lindsay, 2005), enables businesses to remain flexible and adaptive in uncertain environments. This finding aligns with the dynamic capability's theory (Teece, Pisano, & Shuen, 1997), which underscores the role of entrepreneurial behavior in driving adaptability and innovation.

Moreover, the study reinforces the increasing importance of technology utilization in modern business operations. Technological advancements, including automation, digital platforms, and data-driven decision-making, enhance business agility by streamlining operations and enabling rapid responses to market conditions (Garcia-Alcaraz et al., 2017). Sarasvathy (2001) argues that leveraging technological innovation is a key determinant of entrepreneurial success, allowing businesses to build and maintain a competitive advantage.

Additionally, the findings suggest that business agility serves as a critical mediator that transforms entrepreneurial characteristics and technological integration into tangible resilience, enabling businesses to navigate crises effectively (Fiksel, 2006). Agility allows firms to anticipate, respond to, and recover from disruptions, which is vital for maintaining long-term sustainability in volatile environments (Lotfi & Saghiri, 2018).

Implications for Practice

For entrepreneurs and business leaders, the study underscores the necessity of cultivating both entrepreneurial competencies and technological expertise to enhance agility and resilience. Entrepreneurs should focus on developing agile business models that enable rapid adaptation to market fluctuations and external shocks. Additionally, training programs should emphasize digital transformation strategies and promote a collectivist mindset that fosters collaboration, knowledge-sharing, and resource pooling (Putnam, 2000).

From a policy perspective, governments and business support organizations should facilitate the adoption of emerging technologies by small and medium-sized enterprises (SMEs). This could be achieved by providing financial incentives for digital transformation, implementing technology-driven business training programs, and fostering collaboration among businesses through networking platforms. Prior research suggests that these strategies significantly improve business agility and resilience, ensuring long-term economic stability (OECD, 2020).

LIMITATIONS AND FUTURE RESEARCH

Despite its contributions, this study has certain limitations that should be addressed in future research. First, the sample was limited to young Thai entrepreneurs, which may affect the generalizability of the findings to other entrepreneurial contexts or age groups. Future studies should expand the sample to include entrepreneurs from diverse geographical regions and industry sectors to provide a more comprehensive understanding of the relationships examined. Additionally, this study employed a cross-sectional research design, limiting the ability to observe how the relationships between entrepreneurial spirit, technology utilization, agility, and resilience evolve over time. A longitudinal research approach would provide deeper insights into the long-term impact of these variables on business resilience. Future research could also explore the role of additional moderating factors, such as cultural influences and government policies, in shaping business resilience outcomes.

Conclusion

This study advances the understanding of resilience by delineating the pathways through which entrepreneurial spirit and technology utilization enhance business resilience, mediated by agility and moderated by collectivism. It underscores the need for holistic strategies that combine individual entrepreneurial traits, technological capabilities,

and cultural strengths to navigate volatile business landscapes. Future research should build on these findings to develop context-specific frameworks for resilience-building across diverse entrepreneurial ecosystems. The findings of this study affirm that entrepreneurial spirit and technology utilization are crucial determinants of business resilience, with business agility serving as a key mediating factor. The results underscore the importance of fostering agility within businesses, as this capability enables firms to swiftly adapt to market fluctuations and recover from disruptions. Entrepreneurs and policymakers should prioritize strategies that enhance entrepreneurial competencies and technological adaptability to ensure businesses remain resilient in an increasingly volatile global economy. Furthermore, the study highlights the need for a proactive approach in integrating digital transformation with entrepreneurial practices to sustain business competitiveness. Future research should explore the extent to which these dynamics vary across different cultural and industrial contexts, offering a more comprehensive understanding of business resilience. Additionally, investigating the long-term impact of entrepreneurial resilience on business growth and sustainability could provide valuable insights into shaping policies and strategic frameworks that support emerging entrepreneurs in navigating complex economic landscapes.

Acknowledgements

Appreciation and thanks throughout the course of the study process, the researchers express gratitude to Faculty of Business Administration for Society, Srinakharinwirot University for providing a research grant and to connected individuals for their cooperation.

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