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Resilience and Sustainable Performance of Moroccan Individual Entrepreneurs: Nexus with Entrepreneurial Competency and Digital and Financial Literacy

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Abstract

This research explores the multifaceted dimensions of individual entrepreneurship and the factors that influence entrepreneurial activity in Morocco. In line with the country's orientation and governmental initiatives toward entrepreneurship, this paper highlights how financial and digital literacies, as well as entrepreneurial competency, influence entrepreneurs' decisions to sustain and build resilient businesses. PLS-SEM was employed to analyze data collected through an online questionnaire from 155 individual entrepreneurs. The findings suggest that financial literacy and digital literacy have a positive and significant impact on entrepreneurial competency. Entrepreneurial competency has a statistically significant and positive impact on both sustainable performance and resilience. Furthermore, entrepreneurial competency has been proven to act as a mediator between financial literacy and resilience, as well as between financial literacy and sustainable performance. Similarly, entrepreneurial competency bridges the relationships between digital literacy and resilience, as well as between digital literacy and sustainable performance. Despite limitations regarding the population frame, the strong connections between constructs suggest that Moroccan authorities should reconsider existing support policies and develop more cohesive programs that assist entrepreneurs in improving their performance and resilience. These findings provide practitioners with actionable insights for shaping technical tools and adopting professional practices. For researchers, the results offer a foundation for future in-depth studies to evaluate the effectiveness of government initiatives and to support entrepreneurs through robust, data-driven analysis.

Keywords: financial literacy; digital literacy; entrepreneurial competency; entrepreneurial resilience; sustainable performance; Morocco

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1. Introduction

Entrepreneurship has consolidated its position as an accelerator of the worldwide economies' development, though its characteristics differ across different contexts. It may be experienced individually or collectively (Lumpkin & Dess, 1996), fostering autonomy and adaptability for individual entrepreneurs, and enabling scalability and synergy for group-based entrepreneurship. While the perspective may differ, the core process remains the same, where individuals are empowered to recognize opportunities, generate ideas, and translate them into entrepreneurial businesses that align with their passions. Additionally, the varied actions entrepreneurs do or do not take and the diverse environments in

which they operate are greatly different, distinguishing each new venture and contributing to its uniqueness (Lumpkin & Dess, 1996). Entrepreneurship is generally believed to be the domain of individuals merely because it is commonly linked to the introduction of innovative ideas and inventions (Kilby, 1971), where these individuals, based on their knowledge and experience, can recognize appropriate opportunities and set up entrepreneurial businesses (Hisrich & Shepherd, 2017) alongside the sole responsibility of risk-taking, resource-assembling, and decision-making. Throughout history, entrepreneurship has been associated with stories of self-motivated and self-driven individuals capable of generating strong, innovative ideas and turning them into businesses. These individuals are also determined to leave traditional jobs to enter unexplored niches of business and adopt innovative ideas (Cantillon, 1755; Lumpkin & Dess, 1996), sharing similarities as well as differences regardless of their distinctive home countries (Hisrich & Shepherd, 2017). Individual entrepreneurship is emerging in today's fast-paced environment as a critical notion to accelerate countries' development by stimulating innovation and creating jobs. From the perspective of growing and constructing economic potential, individual entrepreneurship is fundamental (Burchi et al., 2021). Consequently, understanding the nuances of individual entrepreneurship becomes highly important.

Self-employed individuals represent more than 50 percent of the workforce in the developing countries (World Bank, 2018). As a developing country, Morocco leads national and regional programs while also adhering to transnational initiatives to foster entrepreneurship in general and individual entrepreneurship in particular. In consultation with national private and public sector partners, Morocco has designed guidelines that aim to refine strategic sectors and set project conditions involving entrepreneurship and support the transformation of the Moroccan economy (OECD, 2024). The country's strategic orientation prioritizes individuals in order to extend the private sector and generate a fair playing field, thus enabling Morocco to reach a higher transition. For young entrepreneurs, getting into entrepreneurship is more of a thoughtful orientation rather than an alternative to shunning unemployment (Bertelsmann Stiftung, 2022). Since the implementation of the new legal framework of self-entrepreneurship in 2015, Moroccan authorities have granted 56,700 self-entrepreneur statuses, with 40 percent going to individuals aged 25 to 34 years (World Bank, 2018).

However, individual entrepreneurship in Morocco faces considerable uncertainty and ambiguity shaped by both personal and contextual factors. Key barriers include limited digital and financial literacies, which significantly constrain entrepreneurial outcomes and competitiveness, particularly in fragile countries like Morocco (World Bank, 2025b), where economic and regulatory frameworks require strengthening (Global Entrepreneurship Monitor, 2025).

Although Morocco has made progress in its financial services, it continues to lag behind in this area. It also has significant opportunities to advance digitalization. This progress would facilitate enterprise creation and improve the overall business environment (World Bank, 2025a).

Moroccan entrepreneurs encounter ongoing challenges, including poor financial management practices and the widespread presence of informal operations. Many entrepreneurs lack a basic understanding of financial principles such as budgeting, financial reporting, and informed decision-making. This weakens their managerial capabilities. Digital literacy challenges, such as limited access to devices, low trust in digital tools, and insufficient skills, further restrict the entrepreneur's ability to seize opportunities in the modern economy or transition to a cashless financing system.

This paper investigates the multifaceted dimensions of individual entrepreneurship in Morocco, which have not been extensively explored, let alone their determinants. It seeks

to unveil the complex interplay between competencies, digital and financial literacies, sustainable performance, and resilience. Although these factors have been studied separately, few studies explore their interaction in Morocco.

This research defines entrepreneurial competency as a foundational skill to set up, run, and grow a business. Financial literacy, the ability to understand and apply financial knowledge effectively, increasingly strengthens entrepreneurial competency. Digital literacy, the capacity to use digital technology and information effectively, intensifies entrepreneurial competency. Collectively, these factors are crucial for sustainable performance and resilience. By highlighting the diverse attributes that drive individual entrepreneurs, sustain their performance, and strengthen their resilience, the paper aims to provide insights for practitioners, policymakers, and scholars interested in cultivating the entrepreneurial panorama.

This paper sets the stage for a comprehensive analysis of factors impacting Moroccan individual entrepreneurs' performance and resilience by tackling the sub-cited research queries:

- What key factors contribute to the performance and the resilience of individual entrepreneurs?
- How do digital and financial literacy impact the performance and the resilience of individual entrepreneurs to face tough circumstances?
- What role does an entrepreneur's competency play in shaping the performance and resilience of individual entrepreneurs?
- To what extent does the entrepreneur's competency make him performant and resilient?

The structure of the paper is as follows. The theoretical background and hypotheses are emphasized in Section 2. Methodology is detailed in Section 3, whereas Section 4 examines the findings. Discussions are stipulated in Section 5. Section 6 outlines the theoretical and empirical implications, followed by research constraints, and Section 7 underlines the conclusion.

2. Literature Review and Hypotheses Development

Individual entrepreneurs are faced with consistent challenges that they should overcome to sustain their performance and reach resilience. They are required to build and perfect their existing skills. The most critical of these skills are financial literacy, digital literacy, and entrepreneurial competencies.

These factors strengthen entrepreneurs' resilience and lead to sustainable performance. They help entrepreneurs succeed in a constantly changing business environment. It is suggested that resilience and sustainability are both beneficial and supportive notions (Florez-Jimenez et al., 2025; Zhang et al., 2025). They are also interconnected (Weber, 2023), with sustainability acting as a responsive action to resilience (Xie et al., 2025). The relevant literature was reviewed, and related hypotheses were developed to measure these interactions and concepts.

2.1. Literature Review

Targeted research on entrepreneurship with a specific focus on individual entrepreneurship in Morocco is necessary. However, the current research agenda highlights a gap in empirical and field-based studies. Addressing this gap constitutes the main objective of this research.

Individual entrepreneurship has been increasingly recognized as a key generator of economic dynamism. It enhances entrepreneurs' capability to sustain performance and build resilience (Shatila et al., 2025). In the Moroccan context, the economy remains

fragile and unstable. This condition prevents entrepreneurs from managing, deciding, and growing effectively.

The literature suggests that fundamental literacies—financial and digital—are critical for entrepreneurs, as they help them scrutinize new opportunities and strengthen entrepreneurial competencies. The literature further suggests that the interplay between financial literacy, digital literacy, and entrepreneurial competency leads to sustainable performance and resilience (Alshebami & Aldhyani, 2022; Seraj et al., 2022). Accordingly, the research review of literature explores the factors impacting the sustainable performance and resilience of Moroccan individual entrepreneurs, particularly financial literacy, digital literacy, and entrepreneurial competency.

2.1.1. Financial Literacy

Access to funding and financing remains a persistent barrier for entrepreneurs operating in an ever-evolving business environment. In this context, financial literacy is widely recognized as a critical capability that strengthens decision-making and enhances the effective management of financial resources. Financial literacy concerns all individuals engaged in everyday financial management (Sumidartini & Muhyi, 2022; Zouitini et al., 2024). Deficiencies in this capability can lead to ill-informed financial decisions, which may ultimately hinder both personal and broader resilience (OECD, 2019). Financial literacy is a socially beneficial practice that has been born due to financial markets' volatilities and trends (Zaimovic et al., 2023) and the ability, as stated in financial literacy terms (Nogueira et al., 2025), of understanding and effectively employing varied financial skills to make decisions, deal with finances, and enhance economic welfare (Kass-Hanna et al., 2022). Financial literacy has become a substantial practice since the early 2000s, due to the growing complexity of financial markets and the difficulty people face when making tough decisions, particularly during periods of crisis. Enhanced financial literacy leads to financial stability by fostering growth and financial inclusion (Lontchi et al., 2022). Amnas et al. (2024) argue that financial literacy provides individuals with the understanding and abilities they need when making sound entrepreneurial decisions.

The variety of skills that enable people to make budgets, savings, and investments, alongside understanding the credit system, falls under the concept of financial literacy. It is an investment in human resources that not only allows individuals to acquire the knowledge but also the know-how to employ it (Lusardi & Mitchell, 2014). It influences the entrepreneurs' ability to make informed decisions and is recognized as a key indicator of effective financial capability (OECD, 2015, 2017, 2018, 2019). Moreover, it also helps entrepreneurs to manage resources effectively and to develop a solid understanding of cash flow management, budgeting, and investment principles.

Alshebami and Aldhyani (2022), Khan et al. (2022), Mohapatra et al. (2025), Zouitini et al. (2024), and several scholars acknowledge the significance of financial understanding in today's economy while boosting sustainable practices of entrepreneurship and growth.

Potrich et al. (2025) unveiled that being financially savvy is vital for youths to preserve their financial stability and to attain their overall well-being, and the likelihood of accumulating steady wealth is higher among financially literate adults (De Beckker et al., 2025).

2.1.2. Digital Literacy

At its essence, digital literacy is the concept that emphasizes the extent to which an individual comprehends and uses computer-related activities (Gilster, 1997). In the contemporary business landscape, digital literacy has become a substantial component of entrepreneurship (Skandalis, 2025) and an increasingly prominent focus within scholarly research (Wardana et al., 2023). It encompasses technological, cognitive, and socioemotional

dimensions of learning (Govender, 2025). Digital literacy refers to the know-how of using digital devices and the World Wide Web to access and engage with digitalized services. Beyond basic usage, advances in digital literacy imply high levels of mastery and autonomy in using and navigating these services effectively (Kass-Hanna et al., 2022).

It involves all competencies needed to use digital technologies to explore, evaluate, and generate information. As a component of their business curricula, several universities and colleges provide courses or programs on digital entrepreneurship and dedicate a variety of online devices, such as Massive Open Online Courses (MOOCs) and online forums (R. Singh et al., 2024). Studies highlight that digital literacy is an essential attribute of education, and individuals who are digitally literate improve their employability and chances to enter the job market (Wardana et al., 2023).

Digital literacy involves more than only using technological tools, the understanding of technology, and developing the skills needed to utilize it effectively, alongside enhancing learning (Yaseen et al., 2025). Optimizing the use of technological advances for learning, managing information, enhancing technological abilities, and boosting ethical awareness might be attributed to digital literacy (Wardana et al., 2023). This concept also designates the degree of an individual's technological maturity and readiness to engage effectively with digital environments.

2.1.3. Entrepreneurial Competency

Aligned with financial literacy, entrepreneurial competency is viewed as an aspect of human resources supporting firms in purchasing and effectively managing unique human capital (Molina-García et al., 2023). It is also acknowledged as a critical key skill for navigating the demands and complexities of the 21st-century workplace (Gracia-Zomeño et al., 2025; Park & Kim, 2025).

Entrepreneurial competency fosters a proactive approach to market changes, and greater entrepreneurship is narrowly correlated with a higher level of competency (Burchi et al., 2021). It is seen as a synthesis of skills, attitudes, and entrepreneurial orientation that boosts the entrepreneurial process (Zouitini et al., 2024).

When nurtured at earlier stages of life, competencies can generate significant long-term benefits for individuals' professional development. They foster financial awareness and knowledge needed to support effective management practices and informed decision-making. Teenagers and kids who acquire financial awareness and knowledge at earlier stages of their lives, often inherited from their familial environment, have more chances to cultivate stronger competencies. These competencies enhance their ability to navigate and settle tough financial situations more resolutely in the future (Alshebami & Aldhyani, 2022). Additionally, teaching children about financial literacy can help them to become financially competent and to improve the management of their lives (Alshebami & Aldhyani, 2022). Therefore, education related to sustainable entrepreneurship has become a fundamental means (García Hernández et al., 2025; Truong et al., 2022) to enable students to develop appropriate competencies and refine their perception of entrepreneurship (Abdelwahed & Alshaikhmubarak, 2023).

According to López-Núñez et al. (2022), entrepreneurial competency is recognized as a sequence of fundamental skills needed for accomplishing entrepreneurial actions. Entrepreneurial competency is a particular facilitator leading to sustainable performance (López-Núñez et al., 2022) and resilience (B. Ahmad et al., 2019; Muhammad et al., 2021; López-Núñez et al., 2022).

2.1.4. Sustainable Performance

Individual entrepreneurs often deal with unpredictable market conditions that can affect their sustainability. Entrepreneurs who are capable of integrating the three pillars of sustainability are regarded as sustainable. Sustainable entrepreneurs incorporate all components of sustainability into their core strategies and depict them in action plans (S. Ahmad & Mokhchy, 2023). They should be economically sound, socially integrated, and environmentally friendly to sustain and shift from the traditional way of driving businesses (S. Ahmad & Mokhchy, 2023; Zouitini et al., 2024).

Entrepreneurs seize opportunities for sustainable development and convert them to feasible business solutions for the market (Farny & Binder, 2021). They achieve this by developing new technologies, improving operational processes, and delivering innovative products and services that benefit both the ecosystem and the broader community (Mohapatra et al., 2025; Zouitini et al., 2024). In their entrepreneurial dynamic, sustainable entrepreneurs consider both society and environmental requirements simultaneously with economic performance achievement (S. Ahmad & Mokhchy, 2023).

Al Mamun et al. (2021) and Seraj et al. (2022), among other scholars, recognized that sustainable performance is indicated in the firms' long-term vision by adopting ideal techniques to satisfy their stakeholders' expected returns. It is a generalized notion covering economic, social, and environmental performances. This paper considers all three dimensions of performance sustainability.

2.1.5. Resilience

In conjunction with the rush towards financial literacy and the intense attention it has received from scholars and policymakers, resilience has also emerged as a sphere of interest for them (Fatoki, 2018; Seraj et al., 2022). The major characteristics associated with entrepreneurial resilience are changes in the environment, tough circumstances, and market adjustments and shifts.

Entrepreneurial resilience helps entrepreneurs not only to navigate and withstand specific challenges and crises, but also to prosper in highly dynamic and ambiguous contexts. Empirical studies suggest that resilience is crucial for creating a new, globally oriented openness (Clark, 2015). Resilience in the entrepreneurial field is the entrepreneur's capability of bouncing back and overcoming obstacles. It has been recognized as one of the most obvious distinguishing characteristics of the contemporary financial environment (Seraj et al., 2022).

Fatoki (2018) has admitted that resilience is the ability to attain objectives in spite of setbacks and downturns, to remain focused regardless of stress and threats, to manage negative emotions and circumstances, and to accept changes and alterations. At the individual level, resilience is conceptualized as a psychological and personal trait that enables entrepreneurs to overcome setbacks and hardships (B. Ahmad et al., 2019). At the organizational level, resilience refers to the capability of the business to surpass crises (Sumidartini & Muhyi, 2022) and also to survive professional obstacles and sustain operations in the face of setbacks (B. Ahmad et al., 2019).

2.2. Hypotheses

Hypotheses are developed to better understand the connections between the different constructs. These hypotheses are verified in the Results section.

2.2.1. Financial Literacy and Entrepreneurial Competency

According to OECD (2019), financial literacy combines literacy, competencies, and other resources. Literacy is not only crossing the boundary from "illiterate" to "literate"

but also the abilities and strategies that people develop throughout their lives. Relating to competencies, they encompass cognitive abilities applied in a financial aspect to access, compare, predict, and evaluate information.

As stated by Burchi et al. (2021), Maravilla and Flores (2025), Seraj et al. (2022), and others, knowledge resources, namely financial literacy, along with entrepreneurial competency, help businesses gain an edge over their competitors and enhance their comparative capability.

In Jakarta, Suparno and Saptono (2018) investigated the impact that entrepreneurship education and financial literacy have on abilities associated with entrepreneurship. Their findings stipulate that entrepreneurial skills are directly and positively impacted by financial literacy.

In their study of entrepreneurship in Saudi Arabia, Seraj et al. (2022) explored the link between sustainable performance, entrepreneurial competency, and financial literacy, with a particular focus on the mediating role of entrepreneurial resilience. The findings show that financial literacy strongly and favorably impacts entrepreneurial competency and resilience. Therefore, the subsequent hypothesis is suggested:

H1. *Financial literacy significantly and positively impacts entrepreneurial competency.*

2.2.2. Digital Literacy and Entrepreneurial Competency

To benefit from technological advances, protect against potential threats related to digital financial services, and understand and handle complex data, the OECD (2017) states that competencies are intensively needed. Furthermore, technological advancements have increased the need for specific abilities to make tough and strong decisions (P. Kumar et al., 2023). As an emerging concept, digital literacy has attracted comparatively limited attention within academia (Rahayu et al., 2022).

P. Kumar et al. (2023) concluded that competencies have a statistically significant impact on digital financial literacy, in research studying the way individuals in India perceive their financial comfort, along with the way it relates to capability, digital financial literacy, aptitudes, and financial decision-making autonomy.

R. Singh et al. (2024) considered Indian small and medium enterprises and found that entrepreneurial intention and competency were positively affected by digital entrepreneurial education and training, with entrepreneurial competence functioning as a mediator between the two.

This paper assesses digital literacy both directly and indirectly by considering the mediating effect of entrepreneurial competency to better understand its connection with resilience and sustainable entrepreneurship. Therefore, the subsequent hypothesis is suggested:

H2. *Digital literacy significantly and positively impacts entrepreneurial competency.*

2.2.3. Entrepreneurial Competency and Sustainable Performance

Greater entrepreneurship is highly correlated with higher levels of competencies (Burchi et al., 2021). Entrepreneurial competency is considered firm-specific skills and knowledge enabling resilience and enhancing enterprises' sustainable performance (Baawain et al., 2025). According to López-Núñez et al. (2022), entrepreneurial competency is a fundamental criterion of companies' sustainability.

In their study of the sustainable performance of the Philippines' small and medium enterprises, Maravilla and Flores (2025) revealed that economic performance is positively and significantly impacted by competencies. Furthermore, the development and success of these

specific types of enterprises are fundamentally dependent on the acquisition and application of requisite entrepreneurial competencies, as emphasized by Al Mamun et al. (2018).

Fazal et al. (2022) assessed entrepreneurial competencies and microenterprises sustainably in Malaysia and proved that competencies positively and significantly impact enterprise sustainability.

Aidara et al. (2021) studied the interplay between competitive advantage, entrepreneurial competencies, and economic sustainability performance. The findings showed that entrepreneurial competencies are significant predictors of performance in Senegal.

Similarly, Mokbel Al Koliby et al. (2022) found that Malaysian entrepreneurs' durable success is mainly predicted by entrepreneurial competencies.

Empirical evidence indicates that entrepreneurial competencies significantly predict enterprise performance across diverse contexts, including Malaysia, Spain, and Saudi Arabia (Al Mamun et al., 2018; López-Núñez et al., 2022; Seraj et al., 2022). Therefore, the subsequent hypothesis is suggested:

H3. *Entrepreneurial competency significantly and positively impacts sustainable performance.*

2.2.4. Entrepreneurial Competency and Resilience

Resilience is predicted on the presence of pertinent competencies, and the development of these competencies facilitates the emergence of resilient behaviors. Consequently, entrepreneurial aptitude is a substantial determinant in reinforcing and enhancing organizational resilience (Hidayat & Purwandari, 2021). Additionally, building new competencies assists entrepreneurs in broadening their self-confidence interval and strengthening resilience (Ngo & Vu, 2025).

Fatoki (2018), B. Ahmad et al. (2019), and others demonstrated through empirical research that competency significantly predicts resilience. Biswakarma and Bohora (2025) have concluded that dynamic capabilities, including competencies, enhance various organizational resources, such as strategic resilience, and ultimately contribute to greater firm performance.

Seraj et al. (2022) found that Saudi Arabian entrepreneurs who possess certain competencies are more resilient in the face of adversity.

Fatoki (2018) demonstrated that business success in South Africa, as defined by both personal and firm-specific characteristics, is strongly and positively linked to entrepreneurial resilience.

B. Ahmad et al. (2019) concluded that job resilience is significantly determined by job competency. Therefore, the subsequent hypothesis is suggested:

H4. *Entrepreneurial competency significantly and positively impacts entrepreneurial resilience.*

2.2.5. Entrepreneurial Competency, Financial Literacy, and Resilience

Business decision-making, when anchored with appropriate financial literacy, may foster development, enhance specific competencies for crisis survival, and ultimately facilitate the process of long-term resilience (Sumidartini & Muhyi, 2022). Given the inevitability of failure in entrepreneurial life, resilience empowers entrepreneurs to effectively navigate challenging situations. While they cannot alter realities, resilience allows them to adapt to circumstances beyond their control.

B. Ahmad et al. (2019) demonstrated via empirical research that resilience is significantly predicted by competency. Similarly, Seraj et al. (2022) have shown that literacy in finance strongly and positively affects the resilience of Saudi Arabian entrepreneurs.

Conversely, Sumidartini and Muhyi's (2022) research on Indonesian traditional markets revealed no statistically significant connection between financial literacy and resilience.

Financial literacy enables entrepreneurs to successfully handle their finances through equipping them with the knowledge that is required, yet such knowledge alone may not directly convert into resilience. This study considers entrepreneurial competency to determine the correlation it can serve between resilience and financial literacy by helping entrepreneurs apply financial knowledge in practical ways to overcome challenges. Therefore, the subsequent hypothesis is suggested:

H5. *The relationship between financial literacy and entrepreneurial resilience is mediated by entrepreneurial competency.*

2.2.6. Entrepreneurial Competency, Financial Literacy, and Sustainable Performance

Based on many research studies, including those performed by Alperovych et al. (2024), Burchi et al. (2021), and Lontchi et al. (2022), financial literacy is a key indicator that enhances organizations' success and growth. It is a key element in sustaining financial stability, promoting economic growth, and attaining financial welfare. The firm's performance and the extent of financial literacy of entrepreneurs are directly correlated, according to research from several academics (Burchi et al., 2021; Hussain et al., 2018; Molina-García et al., 2023; Zouitini et al., 2024). Molina-García et al. (2023) stated that financial literacy has a positive influence on the innovation and successful outcomes of small and medium firms. From his side, Turulja et al. (2025) affirmed that the use of innovative financial facilities constitutes an entrepreneurial competency that boosts growth opportunities to be seized by entrepreneurs.

A recent study by Padi et al. (2025) confirmed that the combination of financial literacy and entrepreneurial competency is effective in improving the performance of small and medium-sized firms in Ghana.

Burchi et al. (2021) studied sustainable entrepreneurial activity in Central European countries and financial literacy. Their findings indicate a positive and statistically strong link among constructs.

Mohapatra et al. (2025) suggest that financial literacy constitutes a critical set of competencies that ensures the transition from traditional to transformative financial techniques, thereby facilitating the adoption of Fintech and bridging the relationship to the sustainability of small and medium Indian enterprises.

Zouitini et al. (2024) explored the factors driving sustainable entrepreneurship in Morocco and concluded that sustainable entrepreneurship and financial literacy are significantly and positively correlated.

Hussain et al. (2018) examined how knowledge resources affect the businesses' performance in the United Kingdom and revealed that knowledge resources, like financial literacy and business experience, assist enterprises in performing sustainably.

Other scholars have examined the indirect effect of these variables. Nugraheni et al. (2025) stated that entrepreneurs can develop their core competencies to attain sustainable performance through the integration of digital, financial, and human capabilities. Peter et al. (2025) argued that entrepreneurs' financial literacy and expertise enhance other performance factors, including their competency to raise funds under more favorable conditions.

This study focuses on the role of entrepreneurial competency as a mediator connecting sustainable performance to financial literacy. Therefore, the subsequent hypothesis is suggested:

H6. *The relationship between sustainable performance and financial literacy is mediated by entrepreneurial competency.*

2.2.7. Entrepreneurial Competency, Digital Literacy, and Resilience

Entrepreneurship is a dynamic process through which entrepreneurs convert hardships into opportunities by leveraging technology, developing strategic partnerships, cultivating appropriate skills, and persevering despite failure. Entrepreneurs who seek growth prospects, regardless of the failure risk it may provoke, provide knowledge that spurs technological advancements and boosts economic resilience (Hisrich & Shepherd, 2017). Resilience is a multifaceted notion that connects with the digital and competencies. Despite the increasing significance of digital resilience for small- and medium-sized businesses, empirical studies that consider all its aspects are not representative. Additionally, the use and efficacy of digital resilience approaches in these specific company types have not been sufficiently studied (V. Kumar et al., 2024).

Imjai et al. (2024) admitted that Thai accountants who have developed specific technological abilities in addition to financial knowledge are able to enhance their management control competency and to create entrepreneurial resilience.

Additionally, Errida and Lotfi (2021) admitted that being technologically and financially literate provides people with an adaptive mindset that enables them to innovate, navigate challenging situations, and recover faster.

Khalil et al. (2022) investigated the connection between small and medium enterprises' resilience and digital technology in the course of the COVID-19 pandemic in emerging economies. The results demonstrated that digital technology is the primary driver of businesses thriving. Therefore, the subsequent hypothesis is suggested:

H7. *The relationship between digital literacy and entrepreneurial resilience is mediated by entrepreneurial competency.*

2.2.8. Entrepreneurial Competency, Digital Literacy, and Sustainable Performance

In the contemporary digital era, a particular knowledge-based attribute that constitutes an integral part of thriving performance and constitutes one of the hottest topics among scholars is digital literacy. Digital literacy reinforces the entrepreneurial competencies for making sound decisions, especially in complex situations. Additionally, it is necessary for nurturing dynamic capabilities, enhancing sustainable performance, and encouraging open innovation strategies (Imjai et al., 2024; Nugraheni et al., 2025).

Baawain et al. (2025) examined the determinants of sustainable performance; their findings reveal that entrepreneurial competency partially mediates the complex relationship between digital orientation and sustainable performance. Ye and Kulathunga (2019) investigated the extent to which financial literacy contributes to firm sustainability in Sri Lanka and concluded that techno-finance literacy is a significant factor predicting both a firm's performance and entrepreneurial resilience. Similarly, Ratnawati and Soelton (2022) confirmed that digital financial literacy strongly and positively influences the Indonesian micro-industry's performance. Therefore, the subsequent hypothesis is suggested:

H8. *The relationship between digital literacy and sustainable performance is mediated by entrepreneurial competency.*

2.3. Theoretical Background and Conceptual Framework

This study is grounded in two core theories, namely Human Capital Theory (Becker, 1964) and Resource-Based View of the Firm (Barney, 1991). Human Capital Theory serves as a fundamental theoretical framework for analyzing the individual-level determinants that influence entrepreneurial performance. It illustrates the extent to which individual capabilities, skills, and knowledge impact performance and productivity. According to Molina-García et al. (2023) and Lusardi and Mitchell (2014), human capital

areas like financial literacy, digital literacy, and entrepreneurial competency shape entrepreneurial outcomes.

The Resource-Based View is then considered to convert these individual-level determinants into firm-level ones. The Resource-Based View emerged as a firm-level theory, and its conceptual framework has been extended to entrepreneurship, where the entrepreneur constitutes the core strategic asset. The entrepreneur's competency and digital and financial literacies, in this study, are considered intangible, scarce, and valuable, constituting the firms' strategic foundation. In accordance with the Resource-Based View and considering their personal nature, these resources are heterogeneously distributed, unique, and difficult to imitate, which enhances the entrepreneur's competitive advantage and favors sustainability and resilience (Burchi et al., 2021; Seraj et al., 2022).

Following a thorough examination of the literature, we developed the conceptual framework that integrates the key theories and eight hypotheses that form the foundation of this study. The framework, illustrated in Figure 1, recapitulates the proposed relationships and constructs.

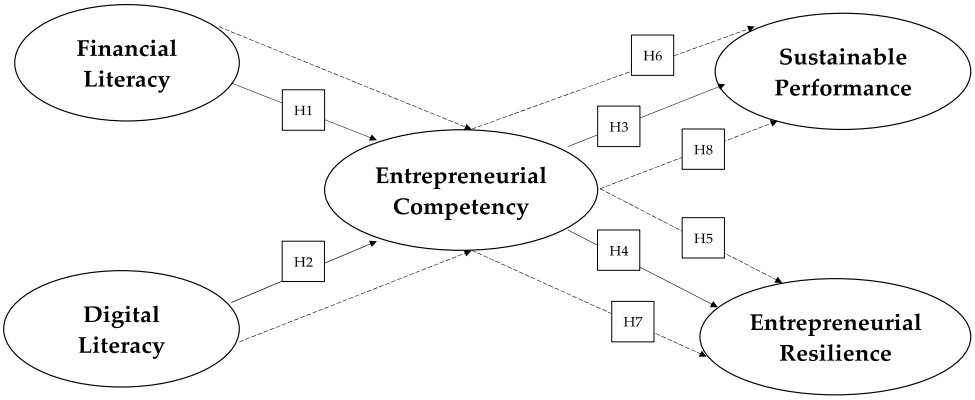


Figure 1. Hypothesized model.

3. Research Methods

The approach of quantitative research was deployed to explore factors affecting the sustainable performance and resilience of Moroccan individual entrepreneurs. In accordance with Morocco's orientation towards sustainability and resilience (Bank Al-Maghrib, 2023), this study shapes linkages between a selection of related constructs. This study examines a set of multivariate factors—encompassing financial literacy, digital literacy, entrepreneurial competency, sustainable performance, and entrepreneurial resilience—with the dual aim of mitigating the risks inherent in digital financial aspects and leveraging the opportunities presented by digital transformation (OECD, 2017). The study methodology includes sample and data collection, alongside data processing instruments and measurements.

3.1. Sample and Data Collection

Data for this study were initially collected in 2024 and previously analyzed in Zouitini et al. (2024), who examined different theoretical questions to determine the factors of sustainable entrepreneurship. This study addresses distinct research questions by examining previously untested variables (Glass, 1976).

A standardized and computerized questionnaire (Appendix A) was initially developed in English, then adapted into French and Arabic using a rigorous translation protocol performed by experts to enhance accessibility and effectiveness in primary data collection. The questionnaire was subsequently back-translated, and any disparities were reviewed by a panel to ensure accuracy and preserve the original meaning. It is essential to point out that the study did not require official ethical approval since the topic was not sensitive,

the survey's anonymity was respected, and no risk was identified. Additionally, before completing their forms, all participants had to comply with a written informed consent statement provided at the beginning of the questionnaire, which explicitly stipulated the objective of the study as well as the confidentiality, anonymity, and voluntary characteristics of the participation (Appendix A). The target group was guided by a mix of quantitative questions, such as rating scales, multiple-choice, dichotomous, and demographic questions. A questionnaire was adopted as the research method to amass data mainly due to the benefits it offers, including anonymity, accessibility, data accuracy, and flexibility in responding.

The sample of individual entrepreneurs involved in this study was formed based on a set of contacts gathered from CRI-Fez (Centre Regional d'Investissement). From a pool of 200, a sample of 155 individual entrepreneurs, adhering to the study's goals, was validated and asked to contribute by completing the online questionnaire. Before being available, the questionnaire was distributed to five senior researchers to test its relevance, and then remained accessible for nearly three months (first trimester of 2024) before being treated. These methodological specifics, aligned with Zouitini et al. (2024), demonstrate the consistency and reliability of the data collection. It was challenging to determine the population frame due to ambiguity and a lack of authorized datasets. A 5-point Likert scale was adopted to collect and examine data, and questions were carefully selected from the relevant literature and prior research (Alshebami & Aldhyani, 2022; Lontchi et al., 2022). Questions were adapted to meet the study's standards and facilitate accessibility and comprehension for respondents.

3.2. Sample Size Justification

Since the sufficiency of the sample size was not assessed before data collection, it was evaluated post hoc using the protocol from J. F. Hair et al. (2014a), relying on the 10-times rule along with statistical power analysis. According to the 10-times rule, the minimum required sample size is 20 based on the most significant structural path leading to the EC construct, and is 50 based on the greatest number of indicators leading to a construct. In accordance with Cohen (2016) guidelines, the post hoc statistical power was determined based on the most complex regression in the structural model (EC with two predictors: FL→EC and DL→EC), assuming a medium effect size ($f^2 = 0.15$), a significance level ($\alpha = 0.05$), and a statistical power level (≥ 0.80), and resulting in 67. The actual sample size of 155 thus exceeds both criteria, indicating that the study has adequate power for SEM-PLS analysis and mediation testing.

3.3. Data Processing Instruments

Data collected have been assessed by means of Structural Equation Modelling (SEM) based on the Partial Least Squares (PLS) approach. The model was built and analyzed in SmartPLS, an eco-friendly software application requiring little knowledge about the use and method (J. F. Hair et al., 2019b; Janadari et al., 2016; Ringle et al., 2015) and widely used in exploratory research, hypothesis development, and validation (J. F. Hair et al., 2013). SEM is a strong process to evaluate data in ways that are not feasible when using a standard linear model. It enables researchers to consider various correlations and measure variables that they cannot see or simultaneously evaluate (Stone, 2021). PLS is a reliable tool for exploring datasets and establishing deep comprehension. One of the most interesting algorithm tools, PLS, continues to attract researchers' interest due to the diagnostic tools that allow them to fully comprehend their models. Accordingly, using higher-order constructs enables researchers to apply PLS for a more enhanced and complicated research model (Crocetta et al., 2021). Adopting the PLS-SEM approach to assess and develop this study's model was

based on its capacity to handle many factors, small samples, and complicated models (J. F. Hair et al., 2013, 2019b). In this study, the mediating effect is considered, as the majority of structural models are concerned with mediating effects (J. F. Hair et al., 2013).

The study applies a quantitative-reflective methodology to support hypotheses and strengthen the conceptual framework. To empirically assess and interpret PLS-SEM findings, two related models were considered: the measurement model relating conceptual variables to measured variables and the structural model implying an interconnection between conceptual variables.

The reflective measurement model was assessed using a number of parameters. The first phase of this process is the degree to which every observed item reflects the assigned latent construct, measured by indicator loadings. Values exceeding 0.708 are recommended; values in the range of 0.40 to 0.708 are satisfactory in exploratory studies with additional improvements in the reliability and validity of the model (J. F. Hair et al., 2019a, 2021). The second phase is examining internal consistency reliability using three metrics: Composite Reliability, Cronbach's Alpha, and Reliability Coefficient rho_A. Both are primordial measures where values ranging from 0.70 to 0.90 are satisfactory to good, and those above 0.95 should be reconsidered as they indicate troublesome correlations between indicators' error terms. Reliability Coefficient rho_A is a comprehensive measure that accommodates the conservative Cronbach's Alpha and the liberal Composite Reliability. Reliability Coefficient rho_A admits the same thresholds of Cronbach's Alpha (J. F. Hair et al., 2021). The third phase is the convergent validity of each construct that determines how a construct describes the variation in underlying items. With a threshold of 0.50, the Average Variance Extracted (AVE) is the division of the sum of the squared loadings by the number of indicators (J. F. Hair et al., 2021). The last phase is the discriminant validity by means of two metrics: Fornell–Larcker criterion alongside Pearson Correlation, where the shared correlation between all constructs should be lower than their square roots AVE (Fornell & Larcker, 1981), and Heterotrait–Monotrait (HTMT) ratio with a threshold of less than 0.85 (J. F. Hair et al., 2013, 2014b, 2019a, 2021).

The structural model assessment, in its turn, relies on an additional set of measures to demonstrate one or more interactions corresponding to the hypothesized model constructs. The primary step in assessing the structural model is evaluating the concern of collinearity between predictor variables. The next steps are dedicated to the assessment of predictive relevance using the Coefficient of Determination R^2, and Cross-Validated Redundancy Q^2 (J. F. Hair et al., 2014b; Janadari et al., 2016; Sarstedt et al., 2014). Lastly, the significance and relevance of path coefficients should be evaluated to conclude the set of steps.

After confirming that the regression findings are free of any bias, additional measures should be calculated. The Coefficient of Determination R^2 is a measure of the predictive accuracy of the model; the values range from 0 to 1, where the value of 0.75 is considered significant (Sarstedt et al., 2014). As recommended by Sarstedt et al. (2014), Cross-Validated Redundancy Q^2 is another measure to assess the relevance of the hypothesized model, where Q^2 greater than 0 for each specific endogenous element implies that the path model's predictive accuracy is suitable for that construct. The last step is measuring the path coefficient to identify the consistency and significance of the structural paths using bootstrapping.

3.4. Common Method Bias Assessment

Potential common method bias was extensively addressed using both procedural and statistical remedies. Procedurally, measures included ensuring respondent anonymity, conducting pilot testing, and randomly ordering questions. These measures aimed to reduce the risk of unreliable or inflated correlations among observed variables that arise

from the use of a similar measurement method rather than from authentic underlying relationships. Statistically, the Full Collinearity Test was run to examine the Variance Inflation Factor (VIF) values for each latent construct. According to Kock (2015), all VIF values must be equal to or less than the accepted threshold of 3.3.

3.5. Constructs and Items

Using PLS-SEM to empirically assess the relationships between components, this study considers five predictor and predicted constructs. Entrepreneurial resilience (ER) and sustainable performance (SP), consisting of five items each, are vital for entrepreneurs' viability and adaptability; combined, they empower the entrepreneurs to thrive in an ever-changing landscape. To underline their role in the research framework, the study considers three other constructs: financial literacy (FL), digital literacy (DL), and entrepreneurial competency (EC), involving five, four, and five items, respectively. The mediation effect of EC is also addressed in this study. These constructs create a foundation for SP and ER and strengthen the research with useful comprehension.

4. Results

This study utilizes partial least squares structural equation modeling (PLS-SEM) with reflective criteria for model fitting and hypothesis testing. The approach reflects a robust statistical tool that is frequently applied in exploratory research. It is renowned for its reliability and adaptability to manage small sample sizes and accommodate non-normally distributed data. It is practically useful for exploring models where the aim is to foresee how dependent variables change based on independent variables.

There are in total two phases in PLS-SEM: measurement model and structural model assessment. According to several authors, including J. F. Hair et al. (2014b), Janadari et al. (2016), A. Singh and Sharma (2016), and Sarstedt et al. (2014), the first phase is the validation of the measurement model to guarantee the consistency and dependability of the constructs. It focuses on validating the relationships between the indicators and constructs being assessed. The second phase is developing a structural model to evaluate the theories and investigate the proposed relationships between latent constructs. Since the study considered the mediating effects of factors, additional testing techniques, such as bootstrapping, were employed to provide thorough insights.

4.1. Preliminary Analysis

Appendix B presents the descriptive statistics of the sample data, including variability through standard deviation and central tendencies via the mean and median. The data indicate that digital literacy (mean from 4.072 to 4.272, standard deviation from 0.871 to 0.978, and skewness from −1.110 to −1.613) and entrepreneurial competency (mean from 3.875 to 4.104, standard deviation from 0.873 to 1.018, and skewness from −1.118 to −1.548) are highly rated and tightly clustered around the mean, with negative skewness implying that respondents reported higher levels of digital literacy and entrepreneurial competency. Furthermore, the entrepreneurial resilience (mean from 3.721 to 4.110, standard deviation from 0.905 to 1.086, and skewness from −0.990 to −1.342) and financial literacy (mean from 3.573 to 3.715, standard deviation from 1.026 to 1.103, and skewness from −0.411 to −0.598) have a moderate rating where responses are more varied, suggesting that respondents may have a lack in resilience and financial literacy compared to both digital literacy and entrepreneurial competency. Lastly, sustainable performance (mean from 2.849 to 3.048, standard deviation from 0.790 to 0.853, and skewness from −0.240 to −0.646) has the lowest rating across all constructs, suggesting that participants have to show more engagement towards sustainability-related orientations.

The large majority of 155 respondents (66 percent), constituting two-thirds of Moroccan entrepreneurs, are male, according to sociodemographic statistics shown in Figure 2. Additionally, the vast majority of individuals in this dataset (87 percent) are highly competent and have advanced degrees. Only 12 percent of participants are at the lowest educational levels, while 46 percent have a master's degree or above, and 41 percent have a bachelor's degree. The age distribution suggests that the study consists mainly of young adults, falling under 40 years old, and constituting 61 percent of the dataset. The largest age group is 21–30 years with 46 percent, followed by 31–40 years with 34 percent.

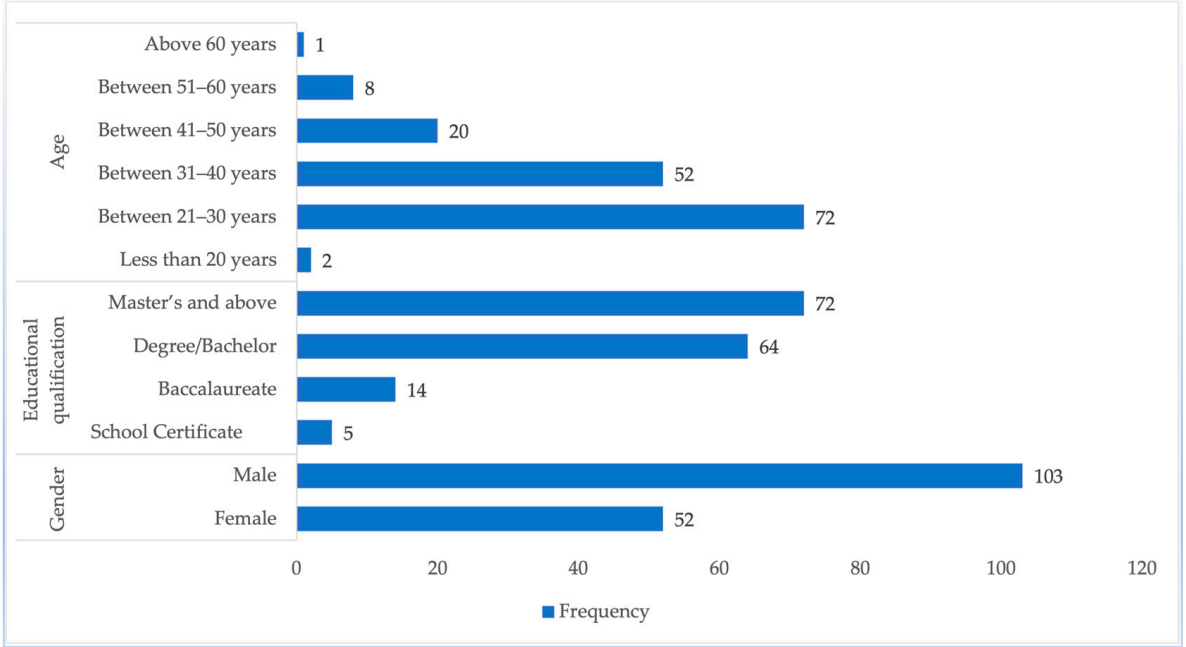


Figure 2. Socio-demographic statistics.

4.2. Measurement Model Assessment

The measurement model provides satisfactory and meaningful results. Table 1 shows that all construct-level VIF values are below 3.3, ranging from 1.000 to 1.271. This indicates that common method bias does not threaten the interpretation of the results, and there is no problematic multicollinearity.

Table 1. Full Collinearity Assessment (VIF).

Dependent Construct	Predictor Construct	VIF
DL	EC	1.271
EC	RESIL	1.000
FL	EC	1.271
EC	SP	1.000

Table 2, below, demonstrates that all indicator loadings surpass the suggested minimum value of 0.708, suggesting that indicators explain at least 50 percent of the variance of their corresponding latent constructs (J. F. Hair et al., 2019a, 2021) and lead to a strong relationship. For overall reliability and validity improvement, an item associated with digital literacy, identified as [DL4], was suppressed due to its weakness and the insignificance of the loading. J. F. Hair et al. (2019b) stated that in exploratory research, values that span from 0.40 to 0.708 are satisfactory unless they compromise the model's reliability and validity, in which case they should be deleted.

Table 2. Indicator Reliability, Internal Consistency, and Convergent Validity Assessment.

Constructs	Items	Loadings	Cronbach's Alpha (CA)	rho_A	Composite Reliability (CR)	Average Variance Extracted (AVE)
Digital Literacy	[DL1]	0.891	0.888	0.895	0.923	0.750
	[DL2]	0.848				
	[DL3]	0.913				
	[DL5]	0.809				
Entrepreneurial Competency	[EC1]	0.803	0.903	0.910	0.928	0.720
	[EC2]	0.873				
	[EC3]	0.912				
	[EC4]	0.822				
	[EC5]	0.830				
Financial Literacy	[FL1]	0.766	0.887	0.893	0.917	0.690
	[FL2]	0.784				
	[FL3]	0.889				
	[FL4]	0.850				
	[FL5]	0.860				
Entrepreneurial Resilience	[ER1]	0.836	0.893	0.898	0.921	0.701
	[ER2]	0.780				
	[ER3]	0.849				
	[ER4]	0.888				
	[ER5]	0.831				
Sustainable Performance	[SP1]	0.865	0.896	0.927	0.921	0.701
	[SP2]	0.872				
	[SP3]	0.827				
	[SP4]	0.811				
	[SP5]	0.802				

The three measures of consistency reliability were calculated: Cronbach's Alpha, Reliability Coefficient rho_A, and Composite Reliability. Cronbach's Alpha was run to estimate how well an array of items evaluates a single construct. The metric range, as stipulated in Table 2, is set between 0.80 and 0.90, indicating a good reliability (J. F. Hair et al., 2019a). The reliability coefficient rho_A was calculated to determine the credibility of the measurement tool and displayed substantial values in the range of 0.89 to 0.93 (Table 2), meaning that the test can consistently provide identical results under identical circumstances. The composite reliability is a liberal metric that is primarily used in SEM to evaluate the reliability of a latent construct using numerous indicators. This measure's range, as indicated in Table 2, exceeds 0.90 but is less than 0.95, suggesting excellent accuracy (J. F. Hair et al., 2019b).

In order to figure out the convergent validity, the Average Variance Extracted (AVE) has been determined. All values exceed the threshold of 0.50 (J. F. Hair et al., 2021) and reach a ceiling of 0.75 (Table 2); they indicate that the factor explains at least 50 percent of the variance in the indicators. This suggests that the construct is reliable and accurately reflects the conceptual framework that has been proposed. Additionally, it indicates that the indicators reflect the construct they aim to measure.

The last phase is the discriminant validity using two metrics: the Fornell–Larcker condition using Pearson correlation (Fornell & Larcker, 1981) and the Heterotrait–Monotrait (HTMT) ratio (J. F. Hair et al., 2013, 2014b, 2019a, 2021; J. Hair & Alamer, 2022). Table 3 indicates that, under the Fornell–Larcker condition, the square root of the AVE for each

construct surpasses its correlation with all other constructs in the model. As mentioned in Table 3, DL correlation with EC, FL, RESIL, and SP displays a coefficient of 0.866, greater than the separate correlations (0.638, 0.462, 0.641, 0.344); EC has a coefficient of 0.849, surpassing the individual correlations (0.506, 0.782, 0.434); FL has a coefficient of 0.831, exceeding the individual correlations (0.466, 0.326); and RESIL and SP show respective coefficients of 0.838 and 0.837. Additionally, the entire set of HTMT ratios shown in Table 4 is validated and below the 0.85 cutoff. The correlation between DL and EC is 0.705, DL and FL is 0.520, DL and RESIL is 0.716, DL and SP is 0.357, EC and FL is 0.564, EC and RESIL is 0.864, EC and SP is 0.449, FL and RESIL is 0.515, FL and SP is 0.356, and RESIL and SP is 0.352.

Table 3. Discriminant Validity: Fornell–Larcker Condition using Pearson Correlation.

	DL	EC	FL	RESIL	SP
DL	0.866				
EC	0.638	0.849			
FL	0.462	0.506	0.831		
RESIL	0.641	0.782	0.466	0.838	
SP	0.344	0.434	0.326	0.341	0.837

Table 4. Heterotrait–Monotrait Ratio (HTMT).

	DL	EC	FL	RESIL	SP
DL					
EC	0.705				
FL	0.520	0.564			
RESIL	0.716	0.864	0.515		
SP	0.357	0.449	0.356	0.352	

4.3. Structural Model Assessment

After assessing and verifying the measurement model, the structural model was constructed, as displayed in Figure 3, using a 10,000-sample bootstrapping procedure to test the significance of path coefficients. To highlight how the structural model assessment affects the hypotheses, the coefficient of determination R^2 was used as a primary metric. It demonstrates how well the independent variables explain endogenous or dependent variables. Chin (1998) stated that an R^2 greater than 0.67 is regarded as strong, R^2 ranging between 0.33 and 0.67 as moderate, between 0.19 and 0.33 as acceptable, and R^2 coefficients lower than 0.19 as rejectable. Table 5 indicates that the R^2 of the model's endogenous latent variables ranges from satisfactory for one variable (EC) to moderate for two variables (RESIL and SP), with 0.464, 0.648, and 0.207, respectively.

Table 5. Coefficient of determination of endogenous latent variables.

Construct	R Square	Interpretation
EC	0.464	Moderate
RESIL	0.648	Moderate
SP	0.207	Satisfactory

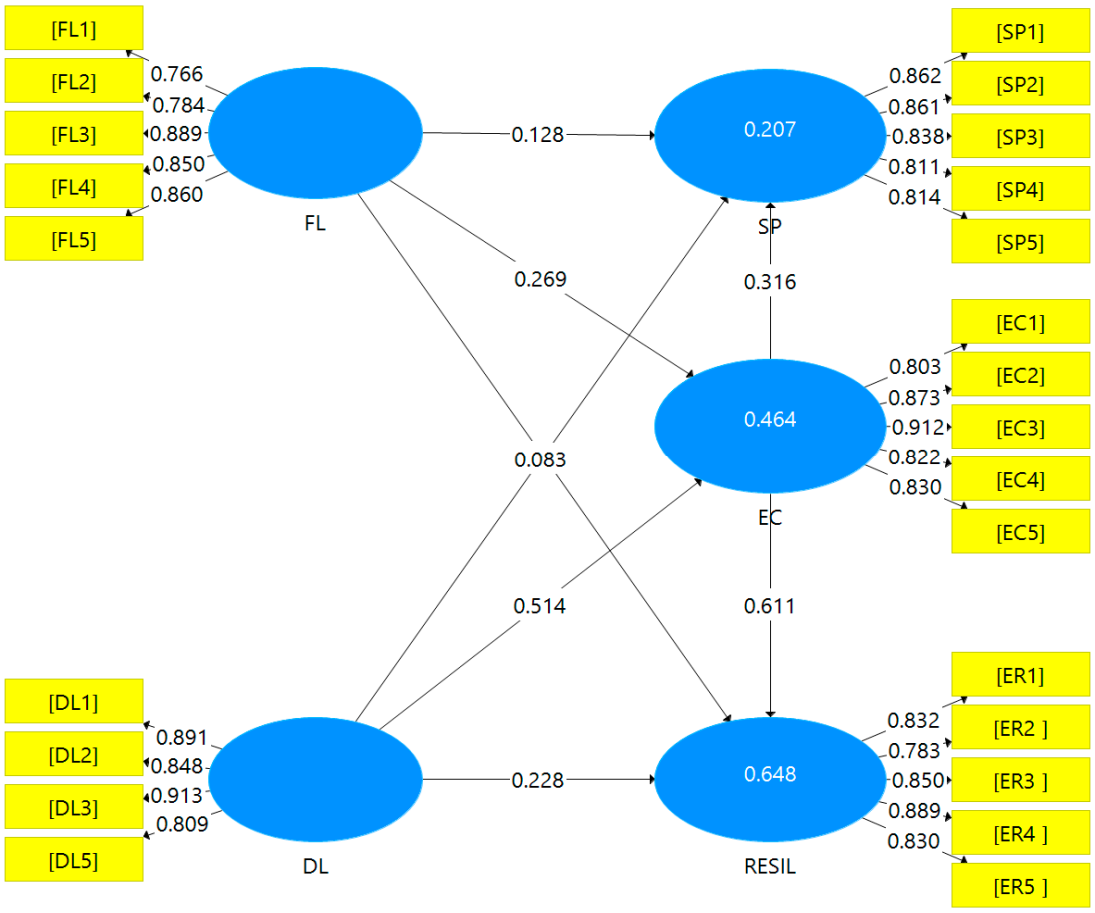


Figure 3. Structural Model.

The fit indices offer an overview of the overall adequacy of the model. Many fitness indices may highlight how effectively the structural model replicates empirical data (Stone, 2021). Table 6 displays the fit indices tested using SMARTPLS. The Standardized Root Mean Square Residual (SRMR = 0.070) evaluates the difference between predicted and observed correlations, where values ≤ 0.08 indicate a good fitting model. The Degrees of Freedom-Based Unweighted Least Squares (d_ULS = 1.470) and Goodness of Fit (d_G = 0.656) examine the discrepancy between the empirical and fitted correlation matrix, where lower values suggest a better fit. Kline (2023) confirmed that the Chi-Squared test (χ^2 = 550.469) is another important measure of goodness of fit for sample sizes of 75 to 200, where lower values indicate a better fit of the model. The normed fit index (NFI = 0.808) reflects the proportion of variance in the data explicated by the model, where values > 0.9 indicate good fit. The results of these tests validate the structural model's goodness of fit and recommend further exploration.

Table 6. Model fit indices.

Indication	Estimated Model	Interpretation
SRMR	0.070	Strong
d_ULS	1.470	Moderate
d_G	0.656	Moderate
Chi-Square	550.469	Moderate
NFI	0.808	Moderate

The findings mentioned in Figure 3 below verify that the constructs have substantial relationships with respect to both path coefficients and bootstrapping outcomes. Eight hypotheses, including both direct and indirect pathways, were examined; this demonstrates that strong positive path coefficients exist for variables in which a shift in the independent variable causes a shift in the dependent variable as well.

Table 7 displays the results of path coefficients and hypotheses for direct relationships. The findings demonstrate that FL and DL positively and significantly impact EC (β = 0.269; *p*-value < 0.001 and β = 0.514; *p*-value < 0.001, respectively), supporting H1 and H2. Moreover, EC has a statistically significant and positive impact on both SP and RESIL (β = 0.316; *p*-value < 0.01 and β = 0.611; *p*-value < 0.001, respectively), supporting H3 and H4. Furthermore, effect size testing, using f^2, was performed to evaluate the impact of each distinct exogenous construct on the endogenous variables. According to Cohen's guidelines (Cohen, 2013), all observed f^2 fall within the small to very large range, from 0.02 to 0.50, passing through the medium 0.15. The results show that FL has a small effect in explaining EC (f^2 = 0.106), suggesting that eliminating the FL from the model marginally reduces the explained variance of EC. The path DL→EC indicates a large effect size (f^2 = 0.387), suggesting that DL has a substantial impact in explaining EC, and its removal leads to a consistent reduction in the explained variance of EC. The finding confirms the important role that digital literacy plays in boosting EC in the Moroccan transformational economy. The path EC→SP shows a small effect size (f^2 = 0.068), which lies within the small–medium range [0.02–0.15], suggesting that EC slightly contributes to the explanation of SP. The path EC→RESIL indicates a tremendous effect (f^2 = 0.569), meaning that EC is a crucial determinant of RESIL. The elimination of EC from the model results in a marginal reduction in the explained variance of SP and an intense drop in the explained variance of RESIL. The finding emphasizes the tremendous role of EC in enabling Moroccan entrepreneurs to build resilience.

Table 7. Path Coefficients of Research Hypotheses.

Hypothesis	Relationship	β	Std Error	T-Value [4]	*p*-Value [4]	f^2	Bias-Corrected Percentile Confidence Intervals (BCa) [3]	Decision
H1	FL→EC	0.269	0.081	3.305	0.000 [2]	0.106	[0.096–0.410]	Accepted
H2	DL→EC	0.514	0.069	7.413	0.000 [2]	0.387	[0.367–0.637]	Accepted
H3	EC→SP	0.316	0.110	2.884	0.002 [1]	0.068	[0.077–0.515]	Accepted
H4	EC→RESIL	0.611	0.095	6.422	0.000 [2]	0.569	[0.394–0.767]	Accepted

[1] *p*-value < 0.01. [2] *p*-value < 0.001. [3] One-tailed significance testing was applied at α = 0.05 (95% confidence interval: 2.5–97.5%). [4] Bootstrapping based on *n* = 10,000 bootstrap samples.

Finally, Table 8 displays the results of the mediating effects of EC on the relationship between FL and both RESIL and SP, as well as the relationship between DL and both RESIL and SP. EC is a central mechanism that has a substantial role in partially mediating the connection between FL and RESIL (β = 0.164; *p*-value < 0.001; VAF = 76%) and the relationship between FL and SP (β = 0.085; *p*-value < 0.05; VAF = 40%), as indicated by the significant indirect effect. EC also partially mediates the relationships between DL and RESIL and between DL and SP (β = 0.314; *p*-value < 0.001; VAF = 58%, and β = 0.163; *p*-value < 0.01; VAF = 66%, respectively). However, direct effects remain significant, indicating partial mediation. These results support hypotheses of indirect effect: H5, H6, H7, and H8.

Table 8. Mediating Effects of Research Hypotheses.

Relationship	Direct Effect (β)	Indirect Effect (β)	Total Effect (β)	VAF [5]	(f^2)	*p*-Value [4] (Direct)	*p*-Value [4] (Indirect)	Decision
FL→EC→RESIL	0.051 [−0.077–0.187]	0.164 [0.074–0.270]	0.216 [0.044–0.355]	76%	0.005	0.223	0.000 [3]	Partial Mediation H5 Accepted
FL→EC→SP	0.128 [−0.078–0.310]	0.085 [0.026–0.172]	0.213 [−0.004–0.388]	40%	0.015	0.100	0.010 [1]	Partial Mediation H6 Accepted
DL→EC→RESIL	0.228 [0.062–0.396]	0.314 [0.199–0.444]	0.542 [0.392–0.676]	58%	0.083	0.004 [2]	0.000 [3]	Partial Mediation H7 Accepted
DL→EC→SP	0.083 [−0.122–0.290]	0.163 [0.046–0.300]	0.246 [0.056–0.413]	66%	0.005	0.214	0.005 [2]	Partial Mediation H8 Accepted

[1] p-value < 0.05. [2] p-value < 0.01. [3] p-value < 0.001. One-tailed significance testing was applied at $\alpha = 0.05$ (95% confidence interval: 2.5–97.5%). [4] Bootstrapping based on n = 10,000 bootstrap samples. [5] VAF = Variance Accounted For (Indirect Effect/Total × 100).

5. Discussion of Results

Financial literacy and entrepreneurial competency are positively and statistically significantly related (β = 0.269; p-value < 0.001). The results corroborate Human Capital Theory and match with scholars Suparno and Saptono (2018) and Seraj et al. (2022), indicating that enhanced entrepreneurial talents and abilities are associated with a higher degree of financial literacy. Financial literacy has often been a close contributor to entrepreneurial success, and a lack of financial literacy might result in serious mistakes. It relies on various financial abilities (Sinha et al., 2018) to understand the credit system and make tough decisions in terms of budgeting, saving, and investing (Lusardi & Mitchell, 2014). The financially literate entrepreneurs with confirmed entrepreneurial competencies perform better when planning, budgeting, allocating resources, and managing businesses as a whole. It is clearly apparent how important financial literacy initiatives and training courses are to boost Moroccan individual entrepreneurs' capabilities. Fostering financial literacy at earlier stages in the national education system could lead to more effective entrepreneurial practices and better prepare prospective entrepreneurs.

The findings reveal that digital literacy positively and significantly impacts entrepreneurial competency (β = 0.514; p-value < 0.001), aligning with the tenets of Human Capital Theory and supporting previous findings (P. Kumar et al., 2023; R. Singh et al., 2024). The advancements in technology have increased the need for specific competencies (P. Kumar et al., 2023), enabling individuals who are digitally literate to improve their career prospects and job readiness (Wardana et al., 2023). Being digitally literate and developing such a meta-skill enables individual entrepreneurs to strengthen their competencies in managing, creating, monitoring, and evaluating information through digital tools.

It is admitted among many scholars, such as Al Mamun et al. (2018), López-Núñez et al. (2022), and Seraj et al. (2022), that entrepreneurial competency is a critical predictor of sustainable performance. The study results show a strong and positive relationship between entrepreneurial competency and sustainable performance (β = 0.316; p-value < 0.01), supporting the Resource-Based View as well as concluding that higher levels of entrepreneurial skills and knowledge are correlated with higher sustainable outcomes (Burchi et al., 2021). The results are consistent with the previous research of Aidara et al. (2021), Mokbel Al Koliby et al. (2022), Maravilla and Flores (2025), and Fazal et al. (2022), suggesting that the enhancement of entrepreneurial abilities and capabilities leads to sustainable performance by allowing better economic outcomes and fostering greater consideration of environmental and societal impacts.

Besides its impact on entrepreneurial performance, entrepreneurial competency is a particular facilitator leading to resilience (B. Ahmad et al., 2019; Hidayat & Purwandari, 2021; López-Núñez et al., 2022). The findings demonstrate that entrepreneurial resilience is positively and significantly influenced by entrepreneurial competency (β = 0.611; *p*-value < 0.001). Accordingly, the findings of previous scholars (B. Ahmad et al., 2019; Fatoki, 2018; Seraj et al., 2022) are entirely consistent with those of the current study. This validates the Resource-Based View, suggesting that entrepreneurs endowed with relevant knowledge and capabilities are better positioned to bounce back from setbacks, navigate uncertainty, and recover from failure.

Additionally, the mediating effect tests were run. The results indicate that entrepreneurial competency partially mediates the linkage between financial literacy and entrepreneurial resilience (β = 0.164; *p*-value < 0.001; VAF = 76%), matching with prior research (B. Ahmad et al., 2019; Seraj et al., 2022; Sumidartini & Muhyi, 2022). Also, entrepreneurial competency mediates the association between financial literacy and sustainable performance (β = 0.085; *p*-value < 0.05; VAF = 40%), supporting earlier research (Burchi et al., 2021; Hussain et al., 2018; Molina-García et al., 2023; Nugraheni et al., 2025; Peter et al., 2025; Zouitini et al., 2024). This suggests that promoting financial literacy can not only sustain performance but also build resilience through improved competencies.

The mediating effect was extended to digital literacy. The findings indicate that entrepreneurial competency partially mediates the indirect connection between digital literacy and entrepreneurial resilience (β = 0.314; *p*-value < 0.001; VAF = 58%), matching with prior studies (Errida & Lotfi, 2021; Imjai et al., 2024; Khalil et al., 2022) and sustainable performance (β = 0.163; *p*-value < 0.01; VAF = 66%), supporting earlier studies (Ye & Kulathunga, 2019; Ratnawati & Soelton, 2022). In the contemporary digital panorama, fostering digital education improves entrepreneurial competencies, thereby leading to the development of a robust framework for sustainable entrepreneurship and resilience.

6. Implications and Limitations

The robust linkage between all research constructs offers a consistent ground for theoretical and practical implications, fostering a combined approach to Moroccan entrepreneurs' sustainability and resilience. The integrated relationship between financial literacy, digital literacy, and entrepreneurial competencies emphasizes their relevance in enhancing both individual and national development. In accordance with international and national programs, Morocco is accelerating its Fintech orientation by fostering the implementation of innovative businesses in the financial and banking sectors (Bank Al-Maghrib, 2019). To support this initiative, since 2017, the Moroccan Capital Market Authority has launched the World Investor Week (WIW), promoting financial literacy, digital literacy, resilience, and sustainable finance (AMMC, 2024).

6.1. Theoretical Implications

The nexus among components perfectly aligns with the Human Capital Theory and Resource-Based View of the Firm, since literacy and competencies enhance entrepreneurial effectiveness. The findings construct a micro-foundational bridge between the two theoretical perspectives, suggesting that individual entrepreneurs who are financially and digitally qualified harness consistent skills that serve as the firm's core strategic resource, that enables it to sustain and resist.

Additionally, the findings add to economic development theories by demonstrating that well-developed entrepreneurial competencies and literacies empower Moroccan individual entrepreneurs in absorbing unemployment, adopting sustainable practices, overcoming challenges, and ultimately promoting economic stability. Thus, nurturing the

business landscape with adequate skills and encouraging adaptability, effectiveness, and innovation leads to greater resilience. Moreover, the findings contribute to sustainability and resilience theories by demonstrating that entrepreneurial competencies, alongside financial and digital literacies, provide individual entrepreneurs with the power required to navigate and thrive in dynamic business environments.

Furthermore, the mediating effect of entrepreneurial competency reinforces the Resource-Based View of the firm's focus on capabilities rather than isolated resources. Financial and digital literacies are important fundamental components, but it is the entrepreneur's competency that brings these components together to boost the firm's sustainable performance and resilience.

6.2. Policy and Practical Implications

Policymakers should further prioritize digital and financial literacy at earlier stages by orienting Moroccan potential entrepreneurs towards entrepreneurship and learning them about financial and digital literacy as crucial tools to enhance competencies for greater sustainability and resilience. Educators are also involved; it is recommended that they incorporate financial and digital literacy into educational and entrepreneurial curricula. In the Moroccan context, entrepreneurs are faced with challenging circumstances and changing environments, which only resilient entrepreneurs can overcome. By providing resources and mentoring, Moroccan authorities can help bridge gaps in financial and digital literacy and strengthen entrepreneurial skills.

Morocco is a pioneer in elaborating policies and developing initiatives to accompany its global strategy in terms of sustainability and financial and technological transformation; conversely, these efforts remain mitigated by the fact that there is no effective and rigorous monitoring of these programs. Moroccan policymakers have to establish metrics to assess the programs' effectiveness and also allocate budgetary resources to support these programs. Accordingly, they may develop public–private collaborations by partnering with tech companies and financial institutions to offer comprehensive training programs dedicated to financial and digital education. Lastly, they may create hubs to host entrepreneurs and accompany them through their journey by assigning mentors from successful entrepreneurs and by focusing on real-world cases.

6.3. Limitations

A major limitation of this study lies in the deficiency related to understanding and selecting the population frame, a challenge widely acknowledged in the literature. This issue is mainly due to the absence of comprehensive and reliable data, which hindered both determining the population framework and enlarging the sample size. Although the sample satisfies and exceeds standard PLS-SEM methodological guidelines, it may restrict the detection of very small effect sizes while detecting high and medium effect sizes. To confirm that the generalizability of the findings is unaffected by the size of the sample, a series of verifications were performed, highlighting that the data is homogeneous and free of outliers.

7. Conclusions

The Moroccan entrepreneurial landscape is driven by a mix of disciplines and challenges, starting with the country's strategic initiatives, going through population shifts towards entrepreneurship, and ending with the growing interest in digital. Morocco has positioned itself as a North African leader fostering sustainable entrepreneurship, where the wide youth population is ever-shifting into entrepreneurship with a nascent interest

in digital. Despite the promising landscape, the ever-evolving environment may confront entrepreneurs with challenging situations that could impede their success.

This research aims to investigate entrepreneurial skills and financial and digital knowledge affecting the sustainability and resilience of Moroccan individual entrepreneurs. PLS-SEM has been utilized to investigate the direct and indirect impacts of constructs along with their indicators and to confirm the observed data. The findings show a statistically significant and strong relationship among constructs. Financial and digital literacies impact competencies ($\beta = 0.269$; p-value < 0.001and $\beta = 0.514$; p-value < 0.001, respectively) necessary for entrepreneurial success. Similarly, entrepreneurial competency positively and significantly impacts sustainable performance ($\beta = 0.316$; p-value < 0.01) and resilience ($\beta = 0.611$; p-value < 0.001). Both financial and digital literacies indirectly impact sustainable performance and resilience through the mediating effect of entrepreneurial competency ($\beta = 0.085$; p-value < 0.05, $\beta = 0.164$; p-value < 0.001, $\beta = 0.163$; p-value < 0.01, and $\beta = 0.314$; p-value < 0.001, respectively). The convergence of financial literacy, digital literacy, entrepreneurial competency, sustainable performance, and resilience constitutes a substantial context holding important implications for all stakeholders. The main strength of this study is the collective interplay that the constructs have proven. It implies integrating these components into the entrepreneur's pathway to an entrepreneurial landscape that is more resilient and sustainable.

While the use of an established and high-quality dataset allows robustness and consistency, it constrains the ability to include constructs that may improve the model. Future research could resolve that by including additional constructs and collecting new data to validate the mediation effect. It can employ mixed-method approaches or combine data sources to alleviate the effect of the determination of the population framework and enhance the validity and reliability of results. A geographic information system is an additional technique that future research can use to identify underrepresented areas for targeted data collection and map population distributions. The evidence provided by this study is relevant and reliable; however, further research can include additional variables that may impact the sustainability and resilience of Moroccan entrepreneurs. Although the study focuses on sustainable entrepreneurship and resilience, it does not explicitly distinguish entrepreneurs by sector. Further research should include a sector-wise analysis to better capture industry dynamics and to understand more about variations in entrepreneurial competencies, literacy levels, performance, and resilience across different sectors. Such an approach would provide policymakers with focused and practical insights for developing sector-specific interventions and support systems.

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Data Availability Statement: Data will be made available on request.

Conflicts of Interest: The authors declare no conflicts of interest.

Appendix A

Dear participant, our study is entitled "Resilience and Sustainable Performance of Individual Entrepreneurs: Nexus with Entrepreneurial Competency and Digital and Financial Literacy". We warmly invite you to fill out the related survey should you want to participate in this study. The following survey will take roughly 15–20 min to answer. Please respond appropriately and with respect to your proper perspective. The collected data will be kept solely for academic uses. There is no known jeopardy, and no incentive is given for participating. Please do not reveal your identity to ensure the confidentiality of the information you deliver. There are no valid or invalid answers. You may decline your participation at your convenience; it is entirely voluntary.

Informed consent: As a participant, I acknowledge that participation in this study is completely voluntary. I understand the purpose of this research and the expectations from my participation in terms of methods and procedures. I am aware of the threats and rewards my contribution may imply. I understand that my privacy is protected through anonymity and confidentiality, and for what purpose the information obtained will be used. Finally, I acknowledge my right not to participate and withdraw my participation without incurring any inconveniences.

Agree ☐
Disagree ☐

Part A: Demographic profile of the respondent

1. Gender

Male ☐
Female ☐

2. Educational qualification

School Certificate ☐
Baccalaureate ☐
Degree/Bachelor ☐
Master's and beyond ☐

3. Age range

Under 20 years old ☐
From 21 to 30 years old ☐
From 31 to 40 years old ☐
From 41 to 50 years old ☐
From 51 to 60 years old ☐
More than 60 years old ☐

Part D: For this part, please rely on the following instruction

Please check the appropriate rating to assess this part, based on a 5-point Likert scale from "Strongly Disagree" to "Strongly Agree".

1. Entrepreneurial Competency

Code	Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
EC1	I have the ability to recognize opportunities	☐	☐	☐	☐	☐
EC2	I have the vision and creative talent	☐	☐	☐	☐	☐
EC3	I have the competency to lead and communicate effectively	☐	☐	☐	☐	☐
EC4	I am able to make tough decisions and deal with uncertainties and risks	☐	☐	☐	☐	☐
EC5	I am able to solve problems	☐	☐	☐	☐	☐

2. Entrepreneurial Resilience

Code	Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
ER1	I am determined to accomplish my goals regardless of hurdles	☐	☐	☐	☐	☐
ER2	I am tenacious despite failure	☐	☐	☐	☐	☐
ER3	Working under tight constraints cannot distract my concentration	☐	☐	☐	☐	☐
ER4	I am adaptable to changes and hardships	☐	☐	☐	☐	☐
ER5	I can manage embarrassing emotions	☐	☐	☐	☐	☐

3. Financial Literacy

Code	Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
FL1	I am familiar with products related to finance, like stocks, treasury bills, bonds, derivative products	☐	☐	☐	☐	☐
FL2	I keep records of all business revenues and expenditure in a cash book	☐	☐	☐	☐	☐
FL3	I annually elaborate the financial plan of my business and monitor it regularly	☐	☐	☐	☐	☐
FL4	I am responsible for preparing the business balance sheet and income statement of my business, which are the most commonly required financial statements	☐	☐	☐	☐	☐
FL5	I understand the financial information in financial statements and use it to manage my business	☐	☐	☐	☐	☐

4. Sustainable Performance

Code	Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
SP1	My business environmental performance is comparatively higher than that of my main competitors	☐	☐	☐	☐	☐
SP2	My business social performance is comparatively higher than that of my main competitors	☐	☐	☐	☐	☐
SP3	My business rate of employee retention is comparatively higher than that of my main competitors	☐	☐	☐	☐	☐

SP4	My business degree of societal investment is comparatively higher than that of my main competitors	☐	☐	☐	☐	☐
SP5	My business's sustainable performance by maintaining the equilibrium between environmental, financial, and social factors, is comparatively higher than that of my main competitors	☐	☐	☐	☐	☐

5. Digital literacy

Code	Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
DL1	Using digital tools makes me at ease	☐	☐	☐	☐	☐
DL2	I know how to describe financial literacy	☐	☐	☐	☐	☐
DL3	Expanding my knowledge in digital age is one of my objectives	☐	☐	☐	☐	☐
DL4	Discussing technological advances makes feel intimidated	☐	☐	☐	☐	☐
DL5	Digital devices and technologies, in my opinion can improve my knowledge	☐	☐	☐	☐	☐

Appendix B. Summary Statistics

Constructs	Indicators of Measurement	Mean	Median	Standard Deviation	Excess Kurtosis	Skewness
Digital Literacy	[DL1]	4.150	4.000	0.921	1.640	−1.257
	[DL2]	4.072	4.000	0.978	1.041	−1.110
	[DL3]	4.272	4.000	0.894	3.156	−1.613
	[DL5]	4.170	4.000	0.871	2.203	−1.289
Entrepreneurial Competency	[EC1]	3.875	4.000	1.018	2.251	−1.485
	[EC2]	3.948	4.000	0.989	1.724	−1.269
	[EC3]	4.045	4.000	0.939	2.064	−1.319
	[EC4]	4.000	4.000	0.873	1.747	−1.118
	[EC5]	4.104	4.000	0.924	3.078	−1.548
Entrepreneurial Resilience	[ER1]	3.923	4.000	0.961	2.278	−1.342
	[ER2]	3.839	4.000	1.086	0.679	−1.045
	[ER3]	3.721	4.000	1.069	0.653	−0.990
	[ER4]	4.110	4.000	0.913	2.094	−1.302
	[ER5]	3.967	4.000	0.905	2.191	−1.255
Financial Literacy	[FL1]	3.619	4.000	1.043	−0.167	−0.529
	[FL2]	3.654	4.000	1.103	−0.365	−0.498
	[FL3]	3.678	4.000	1.026	−0.155	−0.507
	[FL4]	3.573	4.000	1.097	−0.437	−0.411
	[FL5]	3.715	4.000	1.056	−0.092	−0.598
Sustainable Performance	[SP1]	2.849	3.000	0.825	0.879	−0.471
	[SP2]	3.020	3.000	0.799	0.962	−0.497
	[SP3]	3.048	3.000	0.790	1.413	−0.646
	[SP4]	2.866	3.000	0.816	0.541	−0.240
	[SP5]	2.966	3.000	0.853	0.515	−0.625
Observations	155					

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