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Full Length Article

Digital literacy, entrepreneurial networking, and sustainable innovation: Economic and cultural determinants of entrepreneurial success in the Middle East

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ABSTRACT

Purpose: This study investigates the influence of digital literacy, entrepreneurial networking, knowledge sharing, and innovation on entrepreneurial success within emerging Middle Eastern economies. It further examines the moderating role of cultural support, assessing how societal norms and institutional expectations shape digital entrepreneurship, innovative behaviour, and the transition toward sustainable, knowledge-based economic systems.

Design/methodology/approach: A quantitative research design was applied using structured survey data from 305 entrepreneurs across diverse sectors in the Middle East. Validated measurement scales were employed to ensure reliability and construct validity. Structural equation modeling (SEM) was used to test the hypothesized relationships and evaluate the moderating effect of cultural support on the links between digital literacy, networking, knowledge sharing, innovation, and entrepreneurial success.

Findings: The results show that digital literacy and entrepreneurial networking significantly enhance knowledge sharing and innovation, which in turn improve entrepreneurial success. Cultural support, however, negatively moderates several relationships, indicating that traditional norms and institutional rigidities may constrain digitally driven entrepreneurial activity.

Practical implications: The findings highlight the need for policies that strengthen digital literacy, promote open innovation, and support sustainable technology adoption through inclusive and culturally adaptive entrepreneurial ecosystems.

Originality/value: The study contributes to entrepreneurship and digital transformation scholarship by applying Social Capital Theory to explain how digital competencies and networking interact with cultural dynamics, offering new evidence on sustainable entrepreneurship in rapidly modernizing Middle Eastern economies.

Introduction

Entrepreneurship in the Middle East is undergoing a profound transformation shaped by rapid digitalization, economic diversification efforts, and the expanding role of knowledge-based activities. As regional economies transition away from traditional resource-dependent models toward innovation-driven and technology-enabled ecosystems, entrepreneurs increasingly rely on digital competencies, network relationships, knowledge exchange, and innovative behaviour to sustain competitiveness (Masud et al., 2019; Hasan et al., 2024). Digital literacy in particular has become a central capability that determines how entrepreneurs access information, interact with digital markets, and engage in strategic decision-making (Peng & Mao, 2023; Raharjo et al., 2024; Bachmann et al., 2024). Likewise, entrepreneurial networking remains a foundational mechanism through which individuals mobilize resources, obtain market insights, and build trust-based relationships essential for opportunity recognition and business performance (Brüderl & Preisendörfer, 1998; Chen et al., 2015; Adomako et al., 2018; Nieminen & Lemmetyinen, 2015).

Despite the growing global evidence on the role of digital literacy and networking in facilitating innovation, knowledge mobility, and entrepreneurial outcomes (Liu et al., 2021; Sulehri et al., 2024), much of

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this knowledge stems from Western, digitally mature, and institutionally supportive contexts. In contrast, emerging economies—particularly in the Middle East operate under distinct socio-cultural and institutional dynamics that can profoundly shape entrepreneurial behaviour. The region combines rapid modernization with deeply embedded social norms, hierarchical structures, and traditional business practices that may influence how digital competencies and networks are activated (Hasan et al., 2024; Setini et al., 2020). While digital platforms and innovation ecosystems have expanded significantly, institutional voids, risk-averse cultural orientations, and reliance on informal networks continue to characterize much of the entrepreneurial landscape (Nguyen et al., 2024; Al Koliby et al., 2024).

This raises a key theoretical question that the literature has insufficiently addressed: How do cultural norms and institutionalized values typically assumed to support entrepreneurship—shape, or potentially constrain, the translation of digital skills and networking into entrepreneurial success? Cultural support, often conceptualized as societal endorsement, shared values, and institutional encouragement, has been treated in prior research as an enabling factor for entrepreneurial activity (Lukes & Stephan, 2017). However, recent evidence suggests that in some emerging-market settings, strong cultural structures may limit digital experimentation, reinforce conformity, and discourage risk-taking, thereby diminishing the benefits of digital capabilities and innovation (Duong et al., 2024). This paradox challenges conventional assumptions within Social Capital Theory, which posits that networks, shared norms, and trust typically enhance access to resources and entrepreneurial performance (Adomako et al., 2018; Aminullah et al., 2024).

Addressing this gap, the present study investigates the relationships among digital literacy, entrepreneurial networking, knowledge sharing, and innovation, and evaluates how these capabilities collectively influence entrepreneurial success in the Middle East. Additionally, it examines whether cultural support moderates these relationships by either enabling or restricting entrepreneurs' ability to leverage digital and relational resources. By integrating Social Capital Theory with contemporary perspectives on digital transformation and contextual entrepreneurship, the study offers a more nuanced understanding of how resource mobilization unfolds in culturally embedded and institutionally evolving environments. In doing so, it contributes to ongoing discussions on digital entrepreneurship, innovation-led development, and the role of cultural systems in shaping sustainable and knowledge-driven economic growth in the Middle East.

Literature review

Social Capital Theory offers a unifying lens for this study by explaining how networks, trust, and shared norms shape entrepreneurs' access to information and resources, thereby influencing their capacity to learn, innovate, and perform. Social capital enhances entrepreneurs' ability to navigate uncertainty by allowing them to draw on relational ties that facilitate cooperation, reduce information gaps, and support opportunity recognition (Adomako et al., 2018; Ahmed & Rasheed, 2020). Within this framework, digital literacy strengthens social capital by enabling entrepreneurs to participate effectively in digital networks, interpret online information, and engage in faster, broader knowledge exchange (Peng & Mao, 2023; Raharjo et al., 2024). Likewise, entrepreneurial networking represents a direct expression of social capital, offering access to trusted relationships that provide market insights, strategic guidance, and resource mobilization (Brüderl & Preisendörfer, 1998; Chen et al., 2015; Wang et al., 2012). These networks foster knowledge sharing, as trust-based ties reduce the risks associated with exchanging valuable information and promote collaborative learning (Sulehri et al., 2024; Liu et al., 2021). The combination of diverse knowledge flows and strong relational structures further stimulates innovation, since exposure to multiple perspectives enhances entrepreneurs' ability to generate and implement new ideas (Mayanja et al., 2019; Mensah et al., 2024). Through these mechanisms, social capital contributes directly to entrepreneurial success, strengthening adaptability and resilience in evolving markets (Setini et al., 2020; Hasan et al., 2024). At the same time, cultural support influences how social capital operates, because cultural norms can either encourage cooperation and openness or restrict digital experimentation and risk-taking; thus, it moderates how effectively digital literacy, networks, knowledge sharing, and innovation translate into entrepreneurial performance (Lukes & Stephan, 2017; Duong et al., 2024).

Hypothesis development

Digital literacy positively influences entrepreneurial success because it equips entrepreneurs with the ability to navigate digital tools, access timely information, and make informed strategic decisions in increasingly technology-driven markets. Entrepreneurs with strong digital skills can evaluate online resources, leverage data analytics, exploit digital communication platforms, and adopt emerging technologies to improve operational efficiency and market responsiveness (Peng & Mao, 2023; Raharjo et al., 2024). These capabilities enhance opportunity recognition by enabling entrepreneurs to detect market trends earlier, reach broader audiences through digital channels, and optimize value creation through innovative business practices (Aminullah et al., 2024). Moreover, digital literacy reduces information asymmetry and facilitates effective engagement in online networks and knowledge-sharing communities, which strengthens learning, collaboration, and adaptability (Bachmann et al., 2024; Nguyen et al., 2024). As entrepreneurs integrate digital tools into their business processes, they gain competitive advantages such as improved customer outreach, faster decision-making, and enhanced ability to innovate, all of which are essential for sustaining performance in dynamic environments. Thus, digital literacy not only supports day-to-day business operations but also plays a strategic role in enabling entrepreneurs to navigate uncertainty, adopt innovative solutions, and ultimately achieve higher levels of entrepreneurial success (Shatila et al., 2025). This led to the development of the following hypothesis:

H1a. ***There is a positive relationship between digital literacy and entrepreneurial success***

Researchers have shown that networks are essential for venture success and development, according to many research studies (Shaw, 1999; Chen et al., 2015; Adomako et al., 2018). Khodor et al. (2024) have extensively supported network resources, networking activities, and network assistance in launching new initiatives. A more extensive and diverse social network, along with strong support from that network, is associated with tremendous entrepreneurial success (Brüderl & Preisendörfer, 1998). Establishing and strengthening trust, which leads to long-lasting and sustainable collaboration, is a byproduct of robust networks linked to strong positions and economic prospects. Businesses with a solid supplier network are more likely to obtain high-quality goods and services, reduce prices, meet deadlines, and maintain their agreement conditions (Mu, 2013). According to Nieminen and Lemmetyinen (2015) and Shatila et al. (2024), this can help ventures establish themselves as trustworthy, reliable, and knowledgeable. In addition, entrepreneurs may benefit from a robust network, which connects them to influential, dependable, and high-quality relationships across many professional and commercial circles, thereby increasing the attractiveness of their company to prospective employees (Nigam & Shatila, 2024). According to many studies (Ozkazanc-Pan & Clark Muntean, 2018; Piperopoulos, 2012), networking increases the likelihood of success in new endeavors. Networking also opens doors for entrepreneurs to mentorship programs and further training they would not have had access to otherwise. By investing in themselves academically, personally, and professionally, successful entrepreneurs can strengthen their entrepreneurial mindset and ability to launch and grow their businesses (Kariv, 2013; Shatila et al., 2025). In addition,

entrepreneurs may benefit from networking in many ways, including gaining knowledge of the business climate, identifying opportunities, and developing entrepreneurial judgment (Jha et al., 2018; Nigam & Shatila., 2024). This led to the development of the following hypothesis:

H1b. ***There is a positive relationship between entrepreneurial networking and entrepreneurial success***

In the modern digital age, digital literacy has become a key skill determining how people and organizations interact with technology to generate, share, and exploit knowledge (Sulehri et al., 2024). Therefore, the relationship between digital literacy and knowledge-sharing is direct: higher levels of digital literacy enhance one's ability to access and interpret information. In addition, digital literacy enables people to reduce the costs of communication and information retrieval. Furthermore, digital literacy helps reduce digital inequality by allowing a broader audience to share knowledge and experience (Silamut & Petsangsri, 2020). High digital literacy enables people to use collaborative tools, social networks, and electronic libraries to share their insights anytime, facilitating knowledge-sharing regardless of geographical location and time zones (Okeji et al., 2020).

Furthermore, digital literacy promotes critical thinking and problem-solving, which are fundamental for successful knowledge sharing. People with high digital literacy levels are moreover characterized by the assessment and utilization of practical information credibility and the use of background information (Suyanto et al., 2023). The shared nature of information makes all involved knowledgeable, enabling them to share factual and up-to-date information. Sharing a quality- or skill-based problem might lead to high-quality information across all shared information (Keshavarz, 2022). Moreover, digital literacy enables people to communicate effectively through various sources and languages (Shatila et al., 2025). Doing so can help us share knowledge from other information sources and types. A positive effect of digital literacy on knowledge sharing is observed in organizational learning. Organizations that train their employees in digital literacy share more knowledge, increasing the knowledge field (Ahmed & Rasheed, 2020). Nevertheless, despite the improvement in knowledge sharing enabled by digital literacy, the interaction is characterized by various disadvantages (Okeji et al., 2020). This is primarily about promoting digital literacy to increase knowledge, but some disadvantages need to be addressed to make the interrelationship more effective. There is a need to ensure an enabling environment for knowledge sharing. This led to the development of the following hypothesis:

H2a. ***There is a positive relationship between digital literacy and knowledge sharing***

Entrepreneurial networking and knowledge sharing are inherently related, with a strong, positive association between the two constructs that underlies all types of collaboration and innovation among entrepreneurs (Keshavarz, 2022). Indeed, from a fundamental perspective, networking creates a particular environment or an effective system of relationships that ensures knowledge sharing. By actively engaging with stakeholders, peers, and mentors, entrepreneurs foster a collaborative ecosystem of knowledge exchange, enabling access to diverse perspectives, industry insights, and innovative strategies, which are essential for informed business decision-making (Sulehri et al., 2024). In other words, because people within the network have different knowledge that usually does not overlap, an entrepreneur's collaboration can exacerbate their lack of fit (Ahmed & Rasheed, 2020). As a result, entrepreneurs who are open to networking are more likely to share knowledge to establish a loop of positive relationships between networking and the sharing of diverse and rare knowledge (Okeji et al., 2020). This idea aligns with social capital theory, which stresses the importance of a diversified and abundant stock of trust, norms, and reciprocity for successful knowledge sharing. According to Liu et al. (2021), social capital theory can either facilitate or hinder knowledge sharing, depending on the initial investment. Trust eliminates the perceived risk of sharing exclusive, valuable information in a well-developed social network. This led to the development of the following hypothesis:

H2b. ***There is a positive relationship between entrepreneurial networking and knowledge sharing***

Recognizing, locating, studying, evaluating, and using information on entrepreneurship is known as entrepreneurial literacy (Liu et al., 2021). Entrepreneurial literacy aims to provide individuals with the necessary skills to launch, grow, and succeed in the business world (Gupta & Gupta, 2024). According to Barinua et al. (2022), entrepreneurs must have a positive, inventive, and creative mindset to identify business possibilities that may benefit both people and customers. Based on their research, Muthumeena and Yogeswaran (2022) concluded that entrepreneurial literacy influences the capacity to think creatively and undertake innovative activities, fostering the development of new ideas and business prospects. In addition, according to Wen et al. (2024) and Moorthy and Sahid (2022), knowledge of business fundamentals enables innovative product development. That is why entrepreneurs must have high levels of entrepreneurial literacy to foster entrepreneurial innovation. Entrepreneurial literacy significantly affects entrepreneurial creativity, which, in turn, helps build firms.

According to several earlier studies, including those by Raharjo et al. (2024) and Susanti et al. (2023), digital literacy increases entrepreneurial innovation. Entrepreneurial creativity is influenced by digital literacy, which enables people to understand and effectively utilize digital devices, applications, and services. Consequently, MSMEs are more likely to be creative when using data references in their business and entrepreneurial activities (Aminullah et al., 2024; Coco et al., 2024). The ability to effectively use digital technologies for research, critical thinking, and idea generation is an essential skill for entrepreneurs. According to Shatila et al. (2025), digital literacy is a must-have skill for every company player in today's market. According to Shaikh et al. (2020), economic literacy is an essential part of economic behavior, measuring a person's confidence in developing innovative business plans that benefit a firm. This led to the development of the following hypothesis:

H3a. ***There is a positive relationship between digital literacy and innovation***

Entrepreneurial networking is instrumental in promoting innovation because it creates an environment where people discuss different ideas, thereby modifying them into actionable, workable solutions (Sendawula et al., 2023). Good networking connects the entrepreneur to relevant stakeholders, such as peers, mentors, investors, and potential clients, thereby providing access to diverse information, resources, and knowledge that are essential for problem-solving and materializing creativity through innovation (Mensa et al., 2024). Interaction and relatedness within networks foster collaborative innovation, requiring entrepreneurs to combine their skills and expertise to capitalize on new opportunities. Effective entrepreneurial networks help bridge the structural gaps between two entities (Anwar & Ali Shah, 2020). Entrepreneurs who engage in open innovation through their networks are more likely to identify new opportunities, reduce development costs, and accelerate time-to-market for novel products and services (Mayanja et al., 2019). The emergence of digital networking platforms has significantly helped evolve the connection between entrepreneurship, networking, and innovation (Sendawula et al., 2023). Digital platforms have enabled entrepreneurs to quickly connect with global networks and access cutting-edge knowledge. They also help to set up shared innovation projects, as each entrepreneur can showcase their proposal, solicit feedback, and then choose the most appropriate source of support or knowledge (Mensah et al., 2024). This led to the development of the following hypothesis:

H3b. ***There is a positive relationship between entrepreneurial***

networking and innovation

Regarding the expansion of intellectual capital, KMPs are crucial to every company's success (Hussinki et al., 2017). According to Seleim and Khalil (2011), staff expertise and intellectual capital significantly impact all parts of KMP. Acquiring, clearing, authenticating, and sharing knowledge are the main goals of most KMPs. Knowledge acquisition demonstrates the capacity to control, establish, and obtain information from peripheral resources and its dynamic toward success, according to Mehralian et al. (2014). Therefore, the importance of KMPs in enhancing human resources and achieving success is underscored by the modernity and uniqueness of the information available. According to Zorn and Taylor (2004), entrepreneurs are often linked to the success and expansion of ventures. Others have come to the same conclusion, namely that entrepreneurs make all the decisions regarding expanding their businesses (Baumann-Pauly et al., 2016). This suggests that innovativeness may be the most crucial quality for some entrepreneurs. Since knowledge and skills are the bedrock of development and success, entrepreneurs cannot rely just on decision-making. This led to the development of the following hypothesis:

H4. ***There is a positive relationship between knowledge sharing and entrepreneurial success***

Innovation is widely recognized as a key driver of entrepreneurial success because it enables businesses to meet the rapidly changing needs of their customers and formulate new value propositions (Singh et al., 2021). Consequently, entrepreneurs who prioritize innovation tend to outperform those who do not, as this approach leads to the creation of unique, high-demand products, services, or processes (Munawar et al., 2023). Further studies summarize the act of innovation. As a result, innovative entrepreneurs are likely to have a competitive edge because they address clients' unmet needs. The fact that innovation can be enhanced can be explained by the entrepreneur's ability to take advantage of market opportunities that do not yet exist. Innovation can also increase the probability of entrepreneurial success by reducing the entrepreneur's risk and uncertainty (Maziriri et al., 2024). Since entrepreneurial individuals who engage in innovative entrepreneurship operate in a high-risk industry where past operational methods are irrelevant to current decision-making, the ability to think critically gives them a comparative advantage in evaluating new trends and making effective decisions (Yodchai et al., 2022). The final way innovation increases an entrepreneur's probability of success is by enhancing the entrepreneur's reputation and increasing a rising entrepreneur's stake to dislodge established competitors (Munawar et al., 2023). Nonetheless, innovation complements an entrepreneurial approach, as it improves a business's success and makes the company more competitive, as clients need variety. This led to the development of the following hypothesis:

H5. ***There is a positive relationship between innovation and entrepreneurial success***

Moderation effect

The influence of that moderating factor, cultural support, on entrepreneurial success has received substantial attention in recent literature, particularly in relation to digital literacy and networking (Nguyen et al., 2024). Digital literacy is crucial for entrepreneurs' ability to utilize technology to reach global markets, improve efficiency, and implement innovative solutions. Nonetheless, the level at which digital literacy increases entrepreneurial success depends on cultural support. For instance, in areas where adaptation, learning from experience, and technology integration are normative cultural values, digital literacy is more likely to increase entrepreneurial success.

Entrepreneurial networking also contributes to an entrepreneur's success by enabling them to access resources, knowledge, and existing markets through social connections. Through these connections, people can share ideas, secure financing, and even partner on projects, all of which ease the growth process (Al Koliby et al., 2024). Nevertheless, the success of these networks in fostering entrepreneurial growth can be significantly hindered by the level of cultural orientation. Notably, in areas where people are highly collectivist, the tendency to offer mutual assistance and engage in collaborative efforts is also high within networks; hence, they are more likely to succeed (Duong et al., 2024). However, in individualist cultures, the success of entrepreneurial networks can be hindered unless the cultural orientation towards trust and reciprocity is cultivated. This implies that the level of cultural orientation functions as a moderating variable for digital literacy and network social capital in an entrepreneur's success.

Knowledge sharing is a foundational concept of entrepreneurship. It helps people and institutions share information, experience, and expertise, thereby enhancing decision-making, fostering innovation, and enabling companies to operate effectively in a fast-changing market (Nguyen et al., 2024). Nevertheless, the underlying category is the culture of knowledge sharing. The culture of knowledge sharing is closely tied to the level of support, as not everyone is willing or able to share essential information. Knowledge sharing is common in cultures where this principle is valued, driven by a sincere wish to help, often resulting in entrepreneurial success.

There is consensus in the literature that innovation is a common determinant of entrepreneurial success, as it enables businesses to create value, differentiate themselves in the market, and cater to customers' changing needs (Duong et al., 2024). Despite the foregoing, the importance of innovation to entrepreneurial success varies significantly and is heavily determined by the cultural environment. Cultures that foster experimentation, risk-taking, and innovation create an environment that enables innovation and promotes entrepreneurship. Similarly, the value of innovation in achieving overnight success depends on the cultural context (Shatila et al., 2025). Entrepreneurs from cultures with a high degree of uncertainty avoidance may face barriers to applying innovative ideas due to an innate resistance to change and risk. The moderating role of cultural support can also be interpreted through Hofstede (2011) cultural dimensions. In high-collectivism contexts, such as most Middle Eastern societies, strong group affiliation and social harmony often discourage individual risk-taking and digital experimentation. Similarly, high uncertainty avoidance, which prefers predictability and established routines, can limit entrepreneurs' willingness to engage in disruptive innovation or digital transformation (Duong et al., 2024). These cultural traits, while promoting social stability, can inadvertently weaken the positive effects of digital literacy, networking, and innovation on entrepreneurial success. Therefore, cultural support does not always operate as a linear enabler; its moderating role depends on whether institutional and social norms encourage or constrain entrepreneurial freedom and technological adoption. This led to the development of the following hypotheses (Fig. 1):

H6. ***Cultural support moderates the relationship between (a) digital literacy, (b) entrepreneurial networking, and entrepreneurial success***

H7. ***Cultural support moderates the relationship between knowledge sharing and entrepreneurial success***

H8. ***Cultural support moderates the relationship between innovation and entrepreneurial success***

The reviewed literature reveals both convergence and divergence regarding the influence of digital literacy and networking on entrepreneurial outcomes. While most studies confirm that these capabilities enhance innovation and performance (Raharjo et al., 2024; Shatila et al., 2025), conflicting evidence emerges in culturally rigid or institutionally weak contexts. In environments marked by institutional voids, patronage networks, or low generalized trust, entrepreneurial initiatives may face structural and normative barriers that limit their transformative potential (Nguyen et al., 2024). Accordingly, this study theorizes that cultural support—depending on its orientation—can either

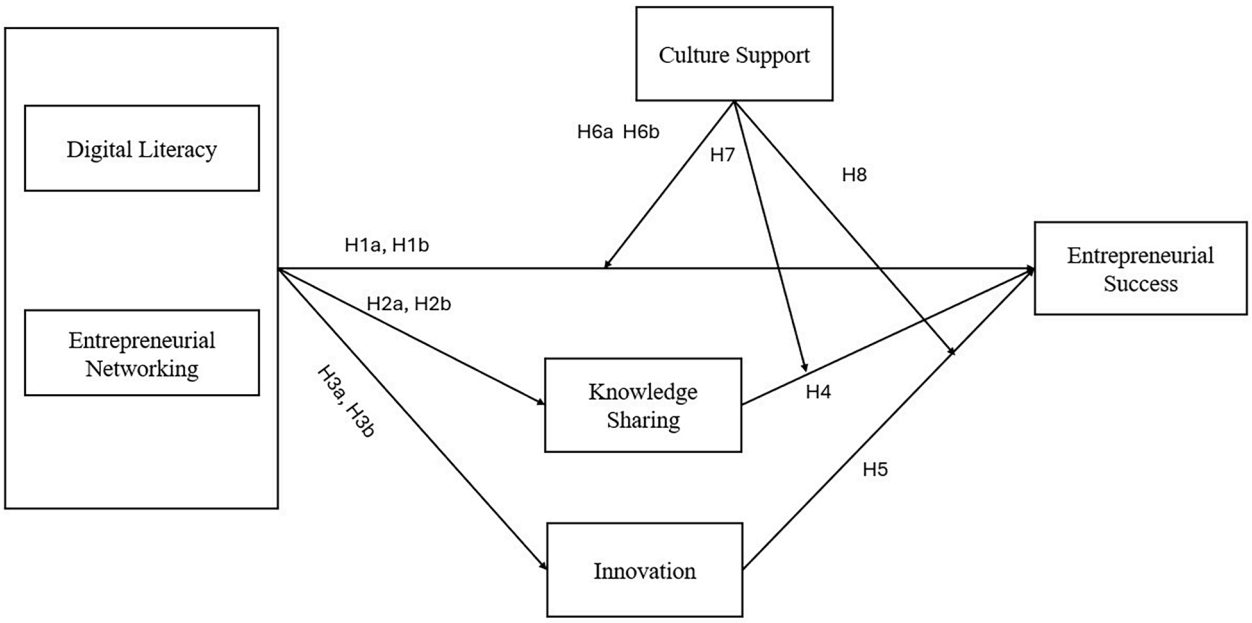

Fig. 1. Research Model.

amplify or diminish the benefits of digital literacy, networking, knowledge sharing, and innovation. This reasoning underpins hypotheses H6–H8, extending Social Capital Theory to explain how cultural rigidity and trust norms shape entrepreneurial performance in emerging economies.

Methodology

This study employed a quantitative research design to explore the relationships between digital literacy, entrepreneurial networking, knowledge sharing, innovation, and entrepreneurial success, with cultural support as a moderating variable. A structured questionnaire was developed based on validated scales from prior research, ensuring reliability and construct validity. The data collection process involved distributing an online questionnaire via Google Forms, which provided a cost-effective, efficient, and accessible platform for reaching a broad audience of entrepreneurs across the Middle East. The questionnaire was distributed to 400 entrepreneurs across various industries and business sectors. Of these, 305 entrepreneurs completed the questionnaire fully, yielding a response rate of approximately 76.25%, which is considered strong for online survey research. The questionnaire was designed to be clear and concise, taking approximately 10–15 minutes to complete. It comprised sections that collected demographic information, including age, gender, industry sector, years of entrepreneurial experience, and company age, alongside questions related to the key study variables. The survey maintained participant anonymity and confidentiality, ensuring ethical standards were upheld throughout the research.

The constructs in the study were measured using items adapted from well-established scales in the literature, enhancing the validity and reliability of the research instrument. Digital literacy was measured using a scale adapted from Avinç and Doğan (2024) that focused on competencies related to solving technological problems, learning new digital tools, cybersecurity awareness, and digital collaboration. Entrepreneurial networking was assessed through items adapted from studies by Xin and Pearce (1996) and Möller and Halinen (2000), capturing the extent of entrepreneurs' relationships across diverse industries, regions, and cultures.

For knowledge sharing, the scale was adapted from the study by Yi (2009), which evaluated behaviors related to exchanging experiences, best practices, and collaborative learning within entrepreneurial networks. Innovation was measured using the scale developed by Lukes and Stephan (2017), which captures the frequency and support for innovative behaviors within entrepreneurial activities, including idea generation, persuasion, and collaboration. Cultural support was also assessed using items from Lukes and Stephan (2017), focusing on how cultural norms, values, and institutional support influence entrepreneurial activities. Finally, entrepreneurial success was measured using a combination of subjective and objective indicators based on frameworks from Buttner and Moore (1997) and Walker and Brown (2004), evaluating dimensions such as personal satisfaction, business growth, and organizational performance. All items were rated on a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), to capture the intensity of respondents' perceptions and experiences.

A non-probability convenience sampling technique was employed to recruit participants for this study. This sampling method was selected for its practicality, efficiency, and accessibility, particularly given the online nature of the data collection process. Convenience sampling enabled the researchers to reach a large, diverse group of entrepreneurs across the Middle East within a limited timeframe. The collected data were analyzed using a combination of SPSS and AMOS. SPSS was used for initial data screening, cleaning, and descriptive statistical analysis, including checking for missing values and outliers and ensuring data normality. Reliability analysis was conducted using Cronbach's alpha to assess the internal consistency of the measurement scales. To evaluate the construct validity of the measurement items, exploratory factor analysis (EFA) was performed, followed by confirmatory factor analysis (CFA) using AMOS to verify the factor structure of the constructs. SEM was employed to test the proposed hypotheses and examine the complex relationships among the study variables. SEM is a comprehensive statistical technique that allows the simultaneous analysis of multiple relationships between independent, dependent, mediating, and moderating variables.

Analysis

Table 1 presents demographic and professional characteristics of the surveyed population, including age distribution, gender, years of experience, company age, and industry. The majority of respondents fall into the 25–29 age group (22.20%), followed by the 30–34 (19.67%) and 35–39 (17.70%) age groups. Older age groups, such as those 50 years

Table 1
Sample Profiling.

Variable	Category	Frequency (n)	Percentage (%)
Age	25–29 years	68	22.20%
	30–34 years	60	19.67%
	35–39 years	54	17.70%
	40–44 years	46	15.08%
	45–49 years	42	13.77%
	50 years and above	35	11.40%
Gender	Male	163	53.45%
	Female	142	46.55%
Years of Experience	Less than 5 years	80	26.22%
	5–10 years	73	23.93%
	11–15 years	60	19.67%
	16–20 years	50	16.39%
	More than 20 years	42	13.77%
Company Age	Less than 1 year	22	7.21%
	1–5 years	73	23.93%
	6–10 years	96	31.48%
	11–15 years	62	20.32%
	More than 15 years	52	17.04%
Field/Industry	Information Technology	70	22.95%
	Manufacturing	50	16.39%
	Education	54	17.70%
	Healthcare	45	14.75%
	Retail	44	14.42%
	Finance	42	13.77%

and above, account for a smaller proportion (11.40%). Gender distribution is relatively balanced, with 53.45% of respondents identifying as male and 46.55% as female. Regarding professional experience, the largest group has less than 5 years (26.22%), while those with 5–10 years and 11–15 years represent 23.93% and 19.67%, respectively. A smaller proportion of respondents have over 20 years of experience (13.77%).

The table also provides insights into company age and industry distribution. Most respondents work in companies that have been operating for 6–10 years (31.48%), followed by those in businesses that have existed for 1–5 years (23.93%) and 11–15 years (20.32%). Only 7.21% of respondents are employed in companies less than a year old, while 17.04% work in organizations over 15 years old. In terms of industry representation, the most significant proportion of respondents work in the Information Technology sector (22.95%), followed by Education (17.70%) and Manufacturing (16.39%). Other industries, such as Healthcare (14.75%), Retail (14.42%), and Finance (13.77%), also have notable representation. These figures provide a comprehensive overview of the sample, reflecting a diverse range of professionals across different industries and levels of experience.

Table 2 presents the factor loadings for various constructs: CS, DL, EN, ES, INN, and KS. Factor loadings represent the correlations between observed items and their underlying latent constructs, indicating how well each item measures its corresponding factor. Typically, loadings above 0.70 are considered strong, those between 0.50 and 0.70 are moderate, and those below 0.50 are generally weak.

For CS, all four items (CS1-CS4) exhibit strong factor loadings ranging from 0.803 to 0.861, indicating high internal consistency and a strong representation of the latent construct. Similarly, KS shows consistently high loadings, ranging from 0.820 to 0.879, suggesting that the items (KS1-KS4) effectively capture the essence of knowledge-sharing behaviors within the sample. INN also demonstrates strong factor loadings, with INN2 (0.843) and INN3 (0.831) being remarkably robust, while INN4 has a slightly lower but acceptable loading of 0.724.

On the other hand, DL shows greater variability, with DL1 having a strong loading of 0.846, while DL2 and DL5 show moderate loadings of 0.620 and 0.642, respectively, while DL3 shows a loading of 0.709. This variation suggests that some items may not adequately represent the construct, indicating measurement issues or varying interpretations among respondents. EN follows a similar pattern, where EN2 (0.812) is the strongest indicator while EN4 has the weakest loading of 0.543.

Table 2
Factor Loadings.

	CS	DL	EN	ES	INN	KS
CS1	0.804					
CS2	0.833					
CS3	0.803					
CS4	0.861					
DL1		0.846				
DL2		0.620				
DL3		0.709				
DL5		0.642				
EN1			0.721			
EN2			0.812			
EN3			0.713			
EN4			0.543			
ES1				0.764		
ES2				0.659		
ES3				0.791		
ES4				0.839		
INN2					0.843	
INN3					0.831	
INN4					0.724	
KS1						0.844
KS2						0.879
KS3						0.866
KS4						0.820

Lastly, ES displays solid loadings overall, with ES4 reaching 0.839 and ES2 at 0.659, still within an acceptable range but slightly weaker than the other items.

Table 3 presents the results of robustness tests evaluating the reliability and validity of the constructs using Cronbach's alpha (CA), composite reliability (rho_a and rho_c), average variance extracted (AVE), and the square root of AVE (SQRT AVE). According to Hair et al. (2012), the recommended thresholds for acceptable reliability and validity are CA $>$ 0.7, CR $>$ 0.7, and AVE $>$ 0.5. CS and KS demonstrate strong reliability and validity, with Cronbach's alphas of 0.845 and 0.875, and composite reliabilities of 0.895 (CS) and 0.914 (KS). Their AVE values (0.682 for CS and 0.727 for KS) exceed the 0.5 threshold, and their SQRT AVE values (0.825 for CS and 0.852 for KS) confirm good discriminant validity. DL and EN show borderline reliability issues, with CA values of 0.707 (DL) and 0.704 (EN). However, their composite reliability values (0.800 for DL and 0.794 for EN) meet the acceptable threshold. Their AVE values (0.504 for DL and 0.501 for EN) suggest moderate convergent validity, as supported by the SQRT-AVE values (0.709 for DL and 0.707 for EN). ES and INN display acceptable reliability and validity, with CA values of 0.762 (ES) and 0.717 (INN). Their composite reliability values (0.849 for ES and 0.842 for INN) and AVE values (0.587 for ES and 0.642 for INN) confirm sufficient internal consistency and convergent validity. SQRT AVE values (0.766 for ES and 0.801 for INN) support discriminant validity.

Table 4 presents the discriminant validity results for the constructs, demonstrating that all inter-construct correlation values are lower than the square roots of the Average Variance Extracted ($\sqrt{\text{AVE}}$) reported in

Table 3
Robustness Tests.

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)	SQRT AVE
CS	0.845	0.847	0.895	0.682	0.825
DL	0.707	0.745	0.800	0.504	0.709
EN	0.704	0.713	0.794	0.501	0.707
ES	0.762	0.770	0.849	0.587	0.766
INN	0.717	0.719	0.842	0.642	0.801
KS	0.875	0.876	0.914	0.727	0.852

Source: CA $>$ 0.7, CR $>$ 0.7, AVE $>$ 0.5, KMO $>$ 0.6.
Hair et al. (2012).

Table 4
Discriminant Validity.

	CS	DL	EN	ES	INN
DL	0.277				
EN	0.673	0.542			
ES	0.632	0.236	0.487		
INN	0.528	0.303	0.618	0.732	
KS	0.526	0.349	0.696	0.532	0.832

Table 3. This confirms that each construct is more strongly associated with its own indicators than with those of other constructs, thereby satisfying the Fornell & Larcker (1981) criterion. Consequently, the measurement model demonstrates adequate discriminant validity, ensuring that the constructs are conceptually distinct and not overlapping.

Table 5 presents the model fit indices, which assess how well the proposed model aligns with the observed data. The CMIN/DF value of 2.5 falls within the acceptable range of <3, indicating a reasonable fit between the model and the data. Additionally, the normed fit index (NFI = 0.95), relative fit index (RFI = 0.93), incremental fit index (IFI = 0.96), Tucker-Lewis index (TLI = 0.94), and comparative fit index (CFI = 0.96) all exceed the recommended threshold of 0.90, signifying strong model fit. These results suggest that the model adequately captures the relationships between the constructs and provides a robust framework for further analysis. The high fit indices indicate that the hypothesized relationships among variables are well-supported by the data, reinforcing the reliability of the structural model used in the study.

Fig. 2 explored the relationships between digital literacy, entrepreneurial networking, knowledge sharing, innovation, and entrepreneurial success, while also analyzing the moderating role of cultural support. The direct relationships indicate that *digital literacy (H1a: 0.180*) and entrepreneurial networking (H1b: 0.170**) positively influence entrepreneurial success. While digital literacy has a strong effect, entrepreneurial networking is a stronger predictor, underscoring the importance of professional relationships for entrepreneurial success. Additionally, *digital literacy (H2a: 0.155*) and entrepreneurial networking (H2b: 0.477**) significantly impact knowledge sharing. This suggests that entrepreneurs with digital literacy and strong networks are more likely to exchange knowledge, leading to better decision-making and innovation.

The model also highlights the role of innovation in entrepreneurial success. *Digital literacy (H3a: 0.179*) and entrepreneurial networking (H3b: 0.433***) positively influence innovation, indicating that access to digital resources and strong professional connections foster the development of new ideas. Furthermore, *innovation significantly impacts entrepreneurial success (H5: 0.346**), reinforcing the idea that businesses that innovate effectively are more likely to succeed. Additionally, *knowledge sharing contributes to entrepreneurial success (H4: 0.159**), supporting the argument that knowledge sharing and expertise enhances entrepreneurial success.

The moderating role of cultural support presents an interesting dynamic in the model. Contrary to the expectation that cultural support would enhance entrepreneurial success, it has adverse moderating effects on multiple relationships. Specifically, cultural support negatively moderates the relationship between digital literacy and entrepreneurial success (H6a: -0.160**) and between entrepreneurial networking and entrepreneurial success (H6b: -0.110*), indicating that in specific cultural environments, digital skills and networking efforts may not translate as effectively into success. This could be due to rigid business norms, market entry barriers, or resistance to digital transformation in some cultural contexts. Similarly, cultural support *negatively moderates the relationship between knowledge sharing and entrepreneurial success (H7: -0.106*)* and between innovation and entrepreneurial success (H8: -0.128*), suggesting that knowledge sharing and innovation do not always guarantee business success in some settings.

Discussions

The research findings support H1a, which indicates that digital literacy significantly influences the success of entrepreneurs. In the Middle East, the region's growing digitization has equipped entrepreneurs with the ability to use digital tools to become more successful. Countries such as the UAE and Saudi Arabia have invested heavily in developing their digital infrastructure, creating new opportunities for digital entrepreneurs. Meanwhile, digital literacy helps increase entrepreneurs' performance through enhanced online market access, use of data for decisions, and better e-marketing. This is consistent with the existing literature on the topic, which indicates that digital literacy is essential for entrepreneurs' success. Additionally, digital entrepreneurs are more innovative and scalable if they have strong digital skills; they are nimble in the use of technology and adapt more rapidly than non-digital entrepreneurs. Integrating digital tools also increases a company's efficiency and customer reach, while enhancing its social media use. The results indicate that digital literacy exerts a positive, albeit modest, effect on entrepreneurial success. Entrepreneurs with stronger digital competencies demonstrate improved ability to access information, utilize technological tools, and manage digital interactions, which collectively support more effective business decision-making and opportunity recognition. However, the influence of digital literacy on success is less pronounced than that of networking or innovation, suggesting that its contribution is primarily enabling rather than independently determinative.

It is important to note that the research findings supported H1b, since entrepreneurial networking is evidence-based and can be a game-changer for entrepreneurial success. In Middle Eastern nations characterized by relationship-based economies, networking always opens a significant window of opportunity. For example, in many Gulf Cooperation Council (GCC) countries, business success is often contingent on waste management, and entrepreneurs who have already established a strong networking framework always succeed (Aminullah et al., 2024). Networking has been fundamental to entrepreneurial success for a long time. Peng and Mao (2023) have consistently proven that entrepreneurial networking is a pathway to business expansion, especially in transactions based on trust and personally integrated relationships. Entrepreneurs who have successfully navigated numerous networking circles always utilize opportunity discovery and retention platforms (Raharjo et al., 2024).

H2a is confirmed, as the findings indicate a phenomenal relationship between digital literacy and knowledge sharing among entrepreneurs. In the MEA region, where digital platforms are rapidly developing, entrepreneurs with higher levels of digital literacy are more likely to access and process information effectively. For example, in today's marketplace, digital tools are commonly used to share knowledge, insights, and market trends (Lestari et al., 2024). In addition, the government introduced a range of digital platforms and resources to facilitate knowledge

Table 5
Model Fit.

Model	CMIN	DF	CMIN/DF	NFI	RFI	IFI	TLI	CFI
Default Model	200	80	2.5	0.95	0.93	0.96	0.94	0.96
Acceptable Threshold	-	-	< 3	≥ 0.90	≥ 0.90	≥ 0.90	≥ 0.90	≥ 0.90

Source: Authors' work.

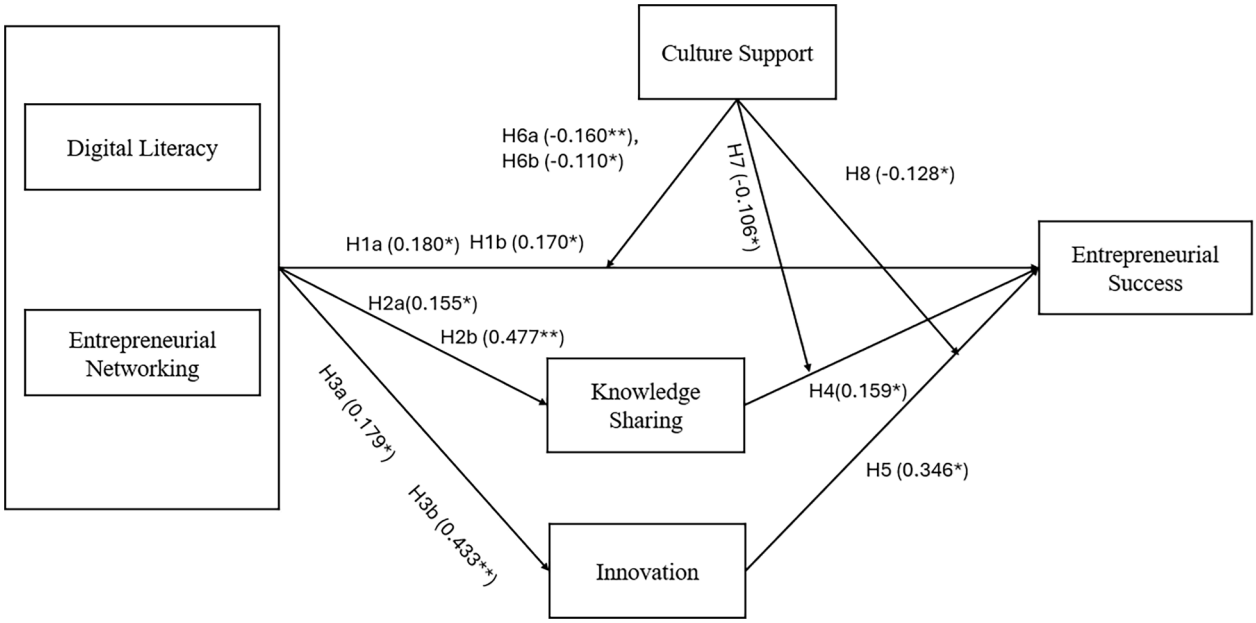

Fig. 2. Mediation-Moderation Model.

sharing among entrepreneurs in the UAE and Saudi Arabia. Furthermore, existing empirical sources have found that digital literacy has vital implications for knowledge sharing among entrepreneurs engaged in learning or working within mentoring relationships (Kang et al., 2024).

The research confirmed that entrepreneurship networking tend to positively affect knowledge sharing which confirms H2b. Entrepreneurship is a popular sector in the Middle East, where personal relationships and trust are crucial to entrepreneurs' networking. As such, entrepreneurs often share insights on the industry, market intelligence, and business processes through informal and formal networks. Thus, individuals often share knowledge through platforms such as face-to-face meetings, industry conferences, and government initiatives to encourage entrepreneurship. Previous studies have consistently supported the close link among entrepreneurship, networking, and knowledge sharing, primarily through the promotion of trust and knowledge sharing (Alhajri et al., 2024; Hasan et al., 2024; Setini et al., 2020). Entrepreneurs within the same network are likely to engage in collective problem-solving, mentorship, and innovation. Additionally, given that entrepreneurs within diverse networks can access wide-ranging knowledge, their strategic decision-making is supported.

The research findings also confirm H3a, as digital literacy positively influences an entrepreneur's promotion of innovative activity. Governments in the Middle East have been striving for digital transformation, which means entrepreneurs well-versed in digital technology are likely to succeed with creative business ideas. Governments in Saudi Arabia and the UAE have rolled out numerous digital platforms, urging businesses to incorporate AI, blockchain, and e-commerce solutions into their daily operations. Essentially, digital literacy enables an entrepreneur to explore new technologies, automate tasks, and use data in decision-making, which are fundamental to effective, scalable business activity. Moreover, as found in Shatila et al., 2025, a successful entrepreneur with digital technology literacy frequently chooses to engage in a disruptive innovation activity since, over the years, digital technology has allowed entrepreneurs to adjust promptly to changing customer behaviors, technological developments, and international market requirements (Duong et al., 2024; Lukes and Stephan, 2017). Additionally, as stated earlier and supported by several studies, digital technology literacy fosters open innovation by enabling businesses to collaborate on the production of industry-specific solutions.

Thus, H3b validates the argument that entrepreneurial networking is a strong driver of innovation. In the Middle East, the importance of networking is more pronounced due to the region's relational business culture. Apart from opportunities to engage in innovation exchanges and receive industry insights, entrepreneurs' active participation in business forums, accelerators, and various network events increases their likelihood of acquiring knowledge on new technologies, investment opportunities, and market trends. Furthermore, the latest trends in the evolution of Gulf countries to smart cities and digital economies underscore the importance of collaborative innovation, driven by the increased prevalence of strategic partnerships and co-creation. The relationship between entrepreneurs' innovation performance has also been investigated before. Previous research has highlighted the value of dynamic networks and shown that entrepreneurs with nonlinear connections tend to be more innovative. Additionally, given the opportunity to exchange information and knowledge, cross-industry innovation and broader professional relations expose businesses to more current knowledge and international best practices (Duong et al., 2024; Lukes and Stephan, 2017).

The findings support H4 and confirm that knowledge sharing promotes the success of entrepreneurship. In the Middle East's rapidly changing environment, entrepreneurs can greatly benefit from sharing and obtaining knowledge from one another. Such platforms, including government-sponsored business incubators, industry mentorship organizations, and online forums for exchanging knowledge and experience, provide entrepreneurs with market information and guidance on the best strategic vision. The more entrepreneurs can learn from each other's expertise and interact with other industry players, the better they can respond to changes in legislation and consumer behavior. Nevertheless, the refusal to share knowledge persists in specific environments involving proprietary information, as openness may cause competitive harm. Previous research has shown that a knowledge-sharing climate contributes to greater innovation and problem-solving, and will help businesses in the future. Entrepreneurs who have participated in joint learning and training make more sustainable decisions and avoid the pitfalls of underestimating their competitors (Duong et al., 2024; Lukes and Stephan, 2017).

Validating H5 implies that entrepreneurship depends highly on innovation as a prerequisite for entrepreneurial success. In Middle Eastern economies seeking diversification, entrepreneurs who develop innovative products, services, or business models achieve greater

market penetration and long-term relevance. For example, through Vision 2030 and Innovation Strategy, Dubai's government promotes innovation-oriented entrepreneurship. Companies operating in technology and fintech, or providing AI-powered solutions, are also successful in international markets. Nevertheless, entrepreneurs face regulatory challenges, financial instability, and consumer resistance to change despite a relatively favorable environment for innovation. In previous literature, innovation has also been shown to impact a business's chances of survival and growth. Continuous innovation enables the generation of new ideas and adaptation to competitive pressures, economic downturns, and changes in the sphere. Therefore, entrepreneurs in technology, healthcare, online retail, and other sectors leverage innovation the most (Duong et al., 2024; Lukes & Stephan, 2017).

The research findings reveal that cultural support negatively moderates the relationship between digital literacy, digital networking, and success. They first suggest that although cultural norms, values, traditions, and institutional support affect entrepreneurial growth, they constrain digital literacy or networking-oriented entrepreneurship. For instance, some Middle Eastern communities with conservative institutions might prioritize traditional networking over digital entrepreneurship. As a result, entrepreneurs with the required digital skills may face limitations in applying them effectively. Additionally, the hierarchical nature of cultural values in networking may be biased in favor of established businesses, potentially at the expense of new ones. From previous studies, culture may either ease or constrain entrepreneurial activities. Research studies demonstrate that increased venture creation, collaboration, and risk-taking are characteristic of high levels of cultural and institutional support in some areas. In contrast, limited cultural support leads to a slow pace of innovation, risk avoidance, and skepticism toward adopting digital technologies and practices.

H7 findings reveal that the negative moderation of cultural support in the KS-Success relationship is justified in many entrepreneurial environments. Entrepreneurs in the tech and finance sectors may be able to avoid needing to understand their peers to gain a competitive advantage. Scholars have written about entrepreneurial entities that apply with belief and tribute, and endure in the face of business development orders, though they require understanding or structure demands; some entrepreneurs abide and perform (Lukes and Stephan, 2017; Duong et al., 2024).

Finally, the findings regarding H8 reveal that cultural support negatively moderates the relationship between innovation and entrepreneurial success. This means that, although the cultural and institutional supporting forces may promote business growth and development, they also generate a threat that the business potential of innovation will not be realized. Government-driven innovation schemes and efforts to diversify the economies of the Middle East have promoted economic development and innovation. This approach has led to the adoption of novel technologies and business models, which entrepreneurs are encouraged to replicate and develop within the region. Nevertheless, deeply rooted cultural norms and business practices may hinder the rapid deployment of disruptive technology, particularly in niches where established business sectors and lobbying activities are substantial. Similarly, in numerous Middle Eastern regions, risk aversion creates barriers that preclude entrepreneurs from embracing highly innovative business ideas, which struggle to obtain financing and market approval.

The adverse moderating effect of cultural support uncovered in this study is particularly revealing. In Western contexts, institutional and cultural backing generally strengthens entrepreneurial outcomes by legitimizing risk-taking and fostering innovation (Lukes & Stephan, 2017). In contrast, within many Middle Eastern settings, such support can take a more prescriptive form, emphasizing conformity, hierarchy, and social cohesion over experimentation. These cultural and institutional dynamics can inadvertently limit digital transformation, constrain entrepreneurial autonomy, and discourage radical innovation. Thus, rather than serving purely as a facilitator, cultural support may act as a stabilizing—but restrictive—force that curtails the disruptive potential of digital entrepreneurship. Prior studies have repeatedly demonstrated the intricate interplay among cultural support, innovation, and business success (Lukes and Stephan, 2017; Duong et al., 2024).

Implications

Policymakers across the Middle East must prioritize developing adaptive, forward-looking regulatory frameworks that balance cultural continuity with incentives for innovation. Traditional institutional structures in the region often favor hierarchy, predictability, and stability, which can unintentionally discourage risk-taking and technological experimentation. To foster entrepreneurship in a digital era, governments should modernize these structures to become more agile, transparent, and innovation-oriented. Establishing supportive infrastructure—such as digital marketplaces, entrepreneurship incubators, and affordable high-speed connectivity—can enhance entrepreneurs' ability to operate efficiently and expand beyond domestic markets. Simplifying business registration processes, reducing bureaucratic barriers, and introducing tax incentives for digital adoption will create a more enabling environment for start-ups and small enterprises. Furthermore, policy frameworks should emphasize inclusivity by ensuring that women, youth, and rural entrepreneurs have equal access to resources, funding, and training opportunities. Public–private partnerships are also essential to bridge the gap between academia, industry, and government institutions. Such collaborations can cultivate innovation clusters, promote cross-sectoral learning, and embed entrepreneurship into national strategies for sustainable economic diversification.

At the practitioner level, entrepreneurs must actively leverage both formal and informal networks to enhance their competitiveness and overcome structural and cultural constraints. In Middle Eastern business ecosystems—where relationships and trust often shape economic transactions—networks function as crucial vehicles for knowledge exchange, collaboration, and strategic growth. Entrepreneurs should cultivate relational and cultural intelligence, learning to navigate complex social expectations while maintaining openness to innovation and cross-border cooperation. By engaging in both local and international partnerships, entrepreneurs can access broader pools of resources, investment, and expertise. Building multi-stakeholder alliances that include investors, universities, technology hubs, and professional associations can strengthen information sharing and co-creation processes. In doing so, entrepreneurs move from isolated business operations toward collective innovation ecosystems. Participation in regional accelerators, trade fairs, and online innovation communities can further expand these networks, facilitating exposure to global market trends and emerging technologies. Equally important is integrating trust and reciprocity into business relations, reinforcing sustainable partnerships in societies where social cohesion and reputation remain vital determinants of success.

Educational institutions and training organizations represent the cornerstone of entrepreneurial development and should play a transformative role in preparing individuals for the challenges of digital-driven economies. Entrepreneurship education must evolve beyond traditional business theories to include practical, interdisciplinary instruction that integrates technology, innovation management, and cultural awareness. Universities, business schools, and technical institutes should incorporate experiential learning, simulations, and project-based activities that allow students to apply digital literacy skills directly to real-world entrepreneurial challenges. Equally, training programs must be culturally contextualized acknowledging family structures, gender roles, and societal values that shape business behavior in Middle Eastern societies. Incorporating regional case studies and success stories can help learners understand how innovation can coexist with cultural heritage, fostering a mindset of adaptation rather than imitation.

Building collaborations between educational institutions,

government agencies, and private-sector actors can strengthen the link between academic learning and entrepreneurial practice. Moreover, entrepreneurship education should embrace the principle of lifelong learning. The rapid evolution of digital technologies necessitates continuous upskilling through online certifications, professional workshops, and innovation hubs. Governments and universities can jointly establish digital academies and e-learning platforms that ensure entrepreneurs remain competitive and technologically literate throughout their careers. Ultimately, embedding entrepreneurship and digital skills across all levels of education will produce a generation of resilient, creative, and globally oriented entrepreneurs who can lead the Middle East toward a more diversified, knowledge-based economy.

Limitations

Despite the study's valuable insights into the impact of digital literacy, entrepreneurial networking, knowledge sharing, and innovation on entrepreneurial success, several limitations remain. The primary limitation of the research is its focus on entrepreneurs from the Middle East. On the one hand, this regional focus aligns with the unique, rapidly developing entrepreneurial ecosystems in many Middle Eastern countries. On the other hand, given differences in economic policies, digital infrastructure, and cross-cultural factors between the Middle East and other parts of the world, the findings may not be universally applicable. The second limitation of the study is its reliance on self-reported data collected through survey questionnaires. This methodology is associated with the risks of social desirability bias and recall bias, as entrepreneurs could have overvalued their networking and innovation activities, thus influencing the credibility of the results. To obtain more reliable data, subsequent researchers could combine survey data with interview data, business case studies, or independent business performance metrics.

Additionally, although the study focuses on the moderating role of cultural support rather than cultural support itself, it should be noted that numerous subcultural variations characterize the Middle East region. For example, the UAE, Saudi Arabia, and Egypt have significantly different entrepreneurial policies, levels of government support, and societal views of business initiatives. Thus, more evidence could be obtained if a more country-specific approach to these cultural support characteristics were applied. Furthermore, while entrepreneurial success is the outcome variable of interest to the present study, success is typically contingent on companies' access to funding and the relative influence of government policies and regulations. Therefore, a more comprehensive model that considers macroeconomic factors affecting entrepreneurship at large should be developed for future research.

Further research

While this study provides valuable insights into how digital literacy, entrepreneurial networking, knowledge sharing, and innovation influence entrepreneurial success, several limitations should be acknowledged. First, the research focuses exclusively on the Middle Eastern context, which limits the generalizability of the findings to other regions with different institutional, economic, and cultural dynamics. Future studies could therefore adopt a comparative, cross-regional design to explore whether the moderating role of cultural support manifests similarly in other emerging economies such as Southeast Asia, Sub-Saharan Africa, and Latin America. Such comparative analyses would determine whether the constraining influence of cultural norms on digital entrepreneurship is region-specific or a more universal phenomenon across developing contexts.

Methodologically, the present study employed SEM, which provides robust testing of linear relationships among latent constructs. However, future research could benefit from combining SEM with Necessary Condition Analysis (NCA) or Fuzzy-set Qualitative Comparative Analysis (fsQCA) to capture the complexity and asymmetry of causal relationships. Integrating these methods would allow researchers to identify not only the strength and direction of effects but also the necessary and sufficient configurations of digital literacy, networking, and cultural factors that lead to entrepreneurial success. Moreover, future inquiries should employ mixed methods designs, blending quantitative surveys with qualitative interviews or focus groups to gain deeper contextual insights into how entrepreneurs negotiate cultural pressures and institutional constraints. Qualitative narratives can reveal micro-level mechanisms—how individuals balance conformity with innovation that statistical models alone may overlook. By expanding the methodological and geographical scope, future studies can further validate and refine the theoretical model proposed here, contributing to a more nuanced understanding of entrepreneurship in culturally embedded environments.

Conclusion

The present study demonstrates how digital literacy, entrepreneurial networking, knowledge sharing, and innovation can affect entrepreneurial success within the Middle Eastern setting. Entrepreneurs who utilize digital tools effectively, possess strong entrepreneurial networks, and are open to innovations are more likely to witness and achieve sustainable business growth. Beyond validating the well-established positive relationships among digital literacy, networking, and entrepreneurial success, this research advances the literature by challenging the universal assumption that cultural support is inherently beneficial. The findings reveal that, in specific institutional contexts, cultural endorsement of traditional norms can inadvertently constrain digital innovation and entrepreneurial experimentation. This dual role of culture as both an enabler and a barrier introduces a more nuanced understanding of entrepreneurship in emerging markets, emphasizing that the same social structures fostering cohesion may simultaneously restrict technological progress and risk-taking.

At the same time, the study is consistent with the double-edged impact of cultural support: while a supportive culture and relevant institutions can spur entrepreneurship development, they might also impede digital strategies, networking, and innovation under certain conditions. The results emphasize the need for multiple interventions to support entrepreneurs, including enhanced digital education, equal networking opportunities, structured knowledge-sharing facilities, and reduced regulatory constraints on innovation. Policymakers, educators, and business community representatives should collaborate to develop an entrepreneurial environment that emphasizes creativity, adaptability, and digital skills. The current study has limitations but provides a foundation for further research and potential policy development. Considering the transformation of Middle Eastern economies toward knowledge-based industries, it is critical to develop an environment that enhances entrepreneurial resilience and digital competency for successful long-term economic sustainability and growth characterized by inclusiveness and equality.

CRediT authorship contribution statement

Khodor Shatila: Writing – original draft. **Ana Beatriz Hernández-Lara:** Validation, Supervision. **Jaroslava Gburová:** Validation, Supervision, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Supplementary materials

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