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Unraveling AI Adoption: The Impact of Strategic Networking and Diverse Skill Sets on Digital Entrepreneurship in Pakistan

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Abstract: *This research paper examines the influence of social and human capital on the intentions of entrepreneurs to adopt Artificial Intelligence (AI) in the backdrop of Pakistan's emerging economy, developing economies, with focus on digital entrepreneurs in Pakistan. A quantitative study was conducted using data collected from 326 Pakistani entrepreneurs across various industries in Pakistan. IBM SPSS v25 was employed to conduct regression analysis to test the proposed relationships. The findings concluded that skill variety has the strongest impact on the Pakistani entrepreneurs' AI adoption intention. Moreover, Strategic networking, conceptualized as Criteria Related to AI Capabilities and Resources (CACR) and Competitive (AI-Centric) Knowledge (CAIK), plays significant role in strengthening their adoption intention, offering valuable insights into deliberately formed partnerships and quality of acquired knowledge. Control variables were employed, providing more detailed view and explaining the heterogeneous adoption tendencies. By incorporating the social and human capital into the conversation, the paper advances the academic understanding of both strategic networking and AI adoption intention, two underexplored research domains. Moreover, the dimensional study of strategic networking, focusing on the AI-based knowledge exchange, from relational and methodological perspectives, contributes a unique perspective to the digital entrepreneurship research domain. This research paper proposes theoretical and practical actions for the researchers and policymakers in terms of focused training, mentorship, and enhanced institutional support, to promote AI adoption in a resource-starved entrepreneurial ecosystem of Pakistan.*

Introduction

In 2017, PricewaterhouseCoopers (PwC) published a study forecasting the impact of AI on global GDP as $15.7 trillion with an increasing growth rate to 14% for the period 2018-2030. During this period, Asia-Pacific is likely to create more value with 26%, followed by North America, expecting 14.5%, and then Europe with 9.9% to 11.5% value creation (Trabelsi, 2024). Nevertheless, the outreach of AI has been

noticeably disproportionate across regions and sectors, as compared to previous GPTs, such as electricity (Dahlke *et al.*, 2024). Lack of universal access to AI and emerging technologies such as these has resulted in only dominant economic actors, mainly the advanced countries such as the United States and China, being able to benefit from AI-fueled innovations, owing to their heavy investment in AI research and infrastructure development, placing them at the forefront of AI innovation and implementations (Torres and Montoya, 2024).

Numerous structural barriers, including limited skills, digital illiteracy, and a lack of necessary resources, have encumbered emerging economies from establishing and fostering AI-driven entrepreneurial ecosystems (Johannesson *et al.*, 2023; Ullah *et al.*, 2024). Although individuals acknowledge the potential disruption of AI for entrepreneurs, new findings suggest that the use of AI is not an issue of technical consideration alone anymore. Apparently, the behavioral intent and decision-making of the founders have a considerable impact on the integration of AI (Alateeg *et al.*, 2024; Cheng *et al.*, 2023). It is therefore really important to comprehend the motivation behind adopting AI, as well as the contextual and relational dynamics in which it is being adopted, particularly in regions with limited infrastructural support in entrepreneurial ventures navigating risks, amplified by external uncertainties.

The radical change to the economic model generated by AI is rather self-evident in the light of the Industry 5.0 era. It has spawned AI-driven business innovations, which led to improved performance, faster productivity, and value creation (Chang *et al.*, 2024a; Gonzales, 2023). However, regional disparities with a lack of national investments, policy frameworks, and supportive infrastructures hinder their progress in this domain (Alateeg *et al.*, 2024; Torres and Montoya, 2024). Although such state policies as SDAIA, or Vision 2030 by countries (Saudi Arabia) have created an environment of enabling factors in the form of infrastructural development and policies, the situation on the ground in Pakistan, on the other hand, is literally the opposite, being entailed by political instability, resource shortage, technological paranoia, and digital illiteracy (Rafique and Mujawinkindi, 2023; Saleem, 2021). So, this leads to an important research question: How do we become stronger in entrepreneurial intention to adopt AI in developing countries?

The existing academic literature groups together a range of enabling factors to AI adoption among entrepreneurs and MSMEs that encompass trust (Aquilino *et al.*, 2023; Cheng *et al.*, 2022), access to tangible and intangible resources (Dryden-Palmer *et al.*, 2020; Milovanovic *et al.*, 2022a), and access to relevant expertise in terms of human capital (Ali *et al.*, 2023; Arroyabe *et al.*, 2024; Krieger, Stuetzer, *et al.*, 2022). In the case of Pakistan, the shortage of these enabling factors has an adverse impact on the entrepreneurs with the desire to utilize the transformative potential of AI (Ullah *et al.*, 2024). Social networks and strategic networking are relevant enabling factors that could be an effective medium of innovation diffusion (Andrei *et al.*, 2021; Sziklai and Lengyel, 2023). Moreover, knowledge exchange, both formal and informal, provides entrepreneurs with technical knowledge and inspiration otherwise inaccessible in their personal capacity (Takacs, 2021a). Establishing clear criteria for selecting such sources and forming strategic alliances with them is, therefore, important.

Entrepreneurs soliciting information about AI must actively connect with stakeholders and partners who provide relevant and practical knowledge of emerging technologies, technical expertise, infrastructure, and financial capacity. Moreover, the kind and quality of knowledge exchanged with allies also help them make informed decisions. Hence, strategic networking, the systematic building of business relationships, becomes quite relevant in the dynamic turf of AI, where the long-term positioning of strategic networking can significantly influence entrepreneurs' intentions to adopt AI.

AI-driven technologies being complex and different from the preceding traditional GPTs (Nascimento

and Meirelles, 2022a), demand rich skill portfolios. The fostering of digital mindsets and the ability to acquire digital skills are consistent with previous research that stipulates that human capital and skill variety contribute to innovation and its outcome (Giuggioli and Pellegrini, 2023; Krieger, Stuetzer, *et al.*, 2022; Lazear, 2004; Putteeraj *et al.*, 2022). Entrepreneurs, having to navigate through a resource-scarce environment, must, by necessity, master diverse tasks, such as operations, marketing, and procurement. Additionally, to be successful in a digital entrepreneurial ecosystem, specifically pertaining to emerging technologies, they need digital skills and technological competence to identify, appraise, and successfully adopt AI solutions. The aim of this study is to investigate the impact of diversity in skills on the intention of Pakistani entrepreneurs to adopt AI, thereby highlighting the theoretical and practical importance of this factor in AI adoption.

Despite its pertinence, strategic networking remains underexplored as a distinct theoretical construct within entrepreneurship studies, often eclipsed by more general conceptions of social capital (Moric Milovanovic *et al.*, 2020; Sydow and Schmidt, 2024). Addressing the theoretical gap in strategic networking becomes important as it becomes necessary to understand the fact that networking is not just about amassing contacts, but it is about intentionally building up high-quality, efficient relationships that align with the specific entrepreneurial goals by overcoming the resource and knowledge gap, which in this case is related to AI-based technologies and their adoption intention. Furthermore, empirical findings regarding the influence of networking on adoption intentions remain inconsistent (Arroyabe *et al.*, 2024), emphasizing the need for further investigation.

Even though there is growing research found on AI adoption by SMEs, much existing scholarship suffers from fragmentation and under-theorization at the micro-level (Bawack and Desveaud, 2022; Bianco, 2021; Chalmers *et al.*, 2021; Dana *et al.*, 2023; Kelly and McAdam, 2023; Sreenivasan and Suresh, 2023). In the context of a developing economy such as Pakistan, addressing this gap will assist in explicating specific individual and organizational factors having an impact on adoption decisions, and the subsequent understanding will enable policymakers to design tailored strategies for entrepreneurial ventures to overcome barriers such as financial constraints, skill scarcity, and infrastructural gaps. A multidisciplinary lens is being adopted in this study to address this gap as well as explain how strategic networking and skill variety collectively shape the intention of Pakistani entrepreneurs to adopt AI within a developing economy context.

Thus, this study is motivated by the following research questions

RQ1: To what extent can entrepreneurs' strategic networking, access to AI-related capabilities, and knowledge predict their intention to adopt AI technologies?

RQ2: How does skill variety impact the intention of an entrepreneur to adopt AI in their entrepreneurial processes?

Entrepreneurs' networks and skill variety redefine how AI is conceptualized and incorporated in a business venture. Strategic networking has the potential to influence what AI can offer entrepreneurs by unlocking a combination of knowledge of stakeholders and collaborators, experimentation possibilities, and the quality of intangible resources attained, and turn scarcity into creative benefit. On the other hand, diversity in skills and competencies broadens entrepreneurs' ability to see AI's potential, reduces their fear of AI, and enables a flexible, ethical, and self-sustaining adoption.

Literature Review and Hypotheses Development

Entrepreneurs' AI Adoption Intent

The world economy, business, and culture have been significantly influenced by the rapid growth of AI. It has assisted innovative startups in dealing with recent global challenges successfully, such as COVID-

19. It transformed their business models, helped them to attract more customers, and became flexible (Sreenivasan and Suresh, 2023). AI helps such businesses to cut down on expenses and enhance the overall efficiency of the company. In addition, it reduces the rate of human error and assists managers in making fast but informed decisions. These benefits have a massive impact on the economies of the countries and translate into an improved socio-economic situation (Aish et al., 2025; Anabtawi et al., 2024; Arroyabe et al., 2024; Sarker et al., 2025; Uriarte et al., 2025).

The technological innovations have brought about tremendous transformations in business models and value creation. Consequently, it has been implemented in approximately 80 percent of large companies (Chang *et al.*, 2024a; Nascimento and Meirelles, 2022b; Rafique and Mujawinkindi, 2023). Nonetheless, the disparity in the adoption and integration of new technologies like AI in various regions is a crucial issue, especially for the underdeveloped and developing nations (Torres and Montoya, 2024). This disparity is due to financial, infrastructural, and technological hurdles that plague third-world countries.

As a matter of fact, the consideration of technology is more than the actual adoption of AI. It also depends on the organizational and individual levels of strategic ambitions, vision, and behavioral intentions of the main stakeholders (Alateeg *et al.*, 2024; Bunjak *et al.*, 2021; Vrain and Wilson, 2021a). Although AI offers immense benefits, a complicated foray of organizational, economic, and contextual conditions still hinders its extensive adoption. Most significantly, the recent studies emphasize the dual role of a) the availability of tangible and intangible resources associated with digital technologies and b) the availability of digitally skilled people promoting innovation-driven startups (Ayinaddis, 2025; Colombelli *et al.*, 2023; Johannesson *et al.*, 2023; Nyári and Kerti, 2024; Rafique and Mujawinkindi, 2023).

Leveraging Strategic Networks for AI Adoption in Emerging Economies

Strategic networking is one of the vital components of relational social networking, which refers to the deliberate development of connections with the ecosystem's key stakeholders, becoming the conduits of essential resources and opportunities in the process. They may be investors, strategic partners, or government agencies (Mamman *et al.*, 2023), mentors, and various focus groups working in the same domain (Woodwark *et al.*, 2021). They may also be early adopters of AI-based technologies who are considered to be role models and opinion leaders, respected by their peers, and are engaged for advice and information (Vrain and Wilson, 2021b), and even competitors who have adopted innovation (Oliveira and Martins, 2011). In emerging economies such as Pakistan, where institutional infrastructures and technological ecosystems are still in a maturing phase, strategic networks become a pivotal conduit for learning and supporting technology adoption, such as AI. Strategic networking can be analyzed as a unidirectional and multidirectional concept (Milovanovic *et al.*, 2022b). Hence, considering the dynamics of this study, the influence of strategic networking on the AI adoption intention will be assessed from a unidirectional perspective.

In today's interconnected world, digital platforms and collaborative networks play a pivotal role in shaping the mechanisms or means that help individuals and organizations to access knowledge, resources, and innovation opportunities. According to Ahamed & Gong, (2022), to eliminate doubts regarding the merits of an innovation, people actively seek out and assess information as part of the innovation decision process. The literacy level of an individual has a significant impact on this process, as it influences their ability to understand and develop attitudes toward innovation. The authors note that social media is one of the primary conduits for promoting adult learning. Similarly, external sources of financing for innovation considerably impact the decision to adopt the innovation (Ober, 2020a; Raman *et al.*, 2022). These financial resources can be made available through strategic networking by

developing connections with government agencies. Furthermore, an upstream and downstream collaboration between various companies, institutions, and partners results in access to knowledge, insights, and technical skills (Takacs, 2021b).

This study aims to assess the impact of strategic networking on the AI adoption intention of an entrepreneur by using only two-dimensional aspects based on relational design and relational methodology, represented by Criteria Related to AI Capabilities and Resources (CACR) and Competitive (AI-Centric) Knowledge (CAIK), respectively, adapting them from the study conducted by Vătămănescu et al., (2020a), considering their relevance to this study. Each of these dimensions of strategic networking will be investigated to understand its impact on the strength of adoption intention of AI.

Innovation, according to Vătămănescu et al., (2020a), is system-based, and isolated organizations or businesses cannot enter the competitive arena without adopting knowledge-sharing practices. This sharing can be done through forming strategic alliances with people/institutions/organizations that have the relevant resources (Kang and Kim, 2023). CACR captures the strategic consideration of entrepreneurs when they are assessing their partners based on their AI implementation experience, technological expertise, and financial strength. These factors become important when entrepreneurs are trying to overcome the resource and capability gaps that are restraining their AI adoption (Colombelli *et al.*, 2023), especially in emerging markets. A qualitative case-based study conducted by Kang & Kim, (2023) concluded: *"The opportunity to collaborate with many MNCs was partly due to the successful collaboration with Nike,' noted a respondent (Firm Y, CEO). The same respondent stated that multi-partner networks allowed the firm "to learn about world-class footwear (Firm Y, CEO)".* Therefore, to ensure a successful implementation of AI-based technologies to grow sustainably and achieve success, entrepreneurs need to grasp a clear vision of the digital ecosystem, among the key stakeholders, pick appropriate partners, and be able to build trusting relationships that will enable them to collaborate and exchange information (Andrei *et al.*, 2021; Vătămănescu *et al.*, 2020).

Based on this evidence, we assume the following hypothesis:

H1: Criteria Related to AI Capabilities and Resources (CACR) positively influence entrepreneurs' intention to adopt AI technologies through enhanced knowledge exchange and access to complementary resources.

Competitive (AI-Centric) Knowledge (CAIK) is the second dimension of strategic networking that we are using to understand the content and quality of knowledge being exchanged (Vătămănescu *et al.*, 2020). CAIK also highlights the dissemination of strategic, technical, and operational knowledge related specifically to the integration of AI and its application. It surpasses the mere exchange of generic information and harbors specific AI-oriented knowledge that ultimately underpins strategic decision-making. Such knowledge acquisition may strengthen entrepreneurs' intention to adopt AI and subsequent improvement in value chain processes (Milovanovic *et al.*, 2022a). This information includes the internal business practices regarding AI integration, discussions on strategic challenges, and learning how the collaborating partners handle technological integrations (Vătămănescu *et al.*, 2020). Such valuable information can help the Pakistani entrepreneurs to make informed decisions regarding the AI integration mechanism, hence reducing their anxiety and fear against its use and strengthening their intention to use AI. CAIK can be provided by industry peers, incubators, government, support institutions, and academia, which can also be the source of confidence to manage technological disruption (Al-Ayed and Al-Tit, 2024; Chang *et al.*, 2024a; Milovanovic *et al.*, 2022a; Vrontis *et al.*, 2020a). These influential role models and knowledge sharing facilitate boosting the visibility and credibility of AI for late adopters, thereby accelerating diffusion (Jahangir and Zia-ul-Haq, 2023; Miller *et*

al., 2007; Putteeraj *et al.*, 2022). Such facilitations will benefit the Pakistani entrepreneurial ecosystem by contributing towards overcoming the AI anxiety and fear of AI-based technologies, fueled mainly by data privacy concerns. Mitigation of such concerns may lead to confidence, strategic alignment, and learning orientation, thus enhancing the intent of Pakistani entrepreneurs to incorporate AI in their entrepreneurial value chain. Consequently:

H2: Competitive (AI-Centric) Knowledge (CAIK) positively influences entrepreneurs' intention to adopt AI technologies.

Skill Variety

The significance of skill variety in the entrepreneurial landscape cannot be denied, as they play a pivotal role in the successful operation of SMEs and entrepreneurial ventures due to their small scale and lack of specialized departments for their distinct value chain functions. Hence, such a diversified skillset becomes a necessity for entrepreneurs to succeed in their entrepreneurial endeavors. They must have basic knowledge of vital functional areas, such as finance, manufacturing, marketing, and procurement, etc. This ensures the successful management and sustainable success of their ventures. Furthermore, digital literacy becomes inevitable for successful navigation through digital entrepreneurship and aspirations of using emerging technologies.

Skill variety, which was originally rooted in the job enrichment theory (Lazear, 2004), is denoted by the technical competence and creative problem solving (Chen *et al.*, 2011). A diverse set of skills is linked to the better performance of firms and higher innovativeness, as well as strong motivation to use new technologies, which may stem from deliberate investment or innate talent (Krieger, Block, *et al.*, 2022; Krieger, Stuetzer, *et al.*, 2022; Masrek *et al.*, 2017; Pandl *et al.*, 2021; Van Phuoc, 2022; Tsamantouridis *et al.*, 2022; Verma and Singh, 2024). It predisposes entrepreneurs to the use of AI by improving their digital skills and openness (Ali *et al.*, 2023; Arroyabe *et al.*, 2024; Krieger, Block, *et al.*, 2022; Luan NGUYEN *et al.*, 2022). Higher digital literacy and a deeper understanding of social media usage empower entrepreneurs to actively seek out, evaluate, and disseminate information critical for successful technology adoption (Ober, 2020b; Raman and Natarajan, 2022). Thus:

H3: Skill variety has a positive impact on an entrepreneur's intention to adopt AI.

The study also incorporates age, experience, and industry as control variables, considering the multifaceted disposition of technology adoption. It will assist in unwinding the perceptions and intentions encompassing AI adoption, which may differ across individuals, experiences, and sectoral landscapes (Gupta, 2024; Maula and Stam, 2020).

Theoretical Background

To understand the mechanisms and reasons behind the willingness of people and organizations to embrace digital disruption, various theoretical frameworks have been devised over time. In this regard, organizational research has, for many years, focused on the diffusion and adoption of innovation (Nyári and Kerti, 2024; Oliveira and Martins, 2011). Theories that have been the most popular include the Theory of Reasoned Action (TRA), the Theory of Planned Behavior (TPB), the Technology Acceptance Model (TAM), the Technology-Organization-Environment (TOE), the Unified Theory of Acceptance and Use of Technology (UTAUT), and the Diffusion of Innovation (DOI) (Oliveira and Martins, 2011). Each theory works on varying analytical levels. For example, TPB, TAM, and UTAUT mainly elaborate on factors that affect the decisions of individuals in technology adoption. TOE, on the other hand, is more apt for organizational analysis (Nyári and Kerti, 2024). It is worth noting that DOI is more flexible and widely applicable since it takes into consideration both personal and organizational viewpoints.

The proliferation of AI and allied technologies has uncovered the inadequacy of the traditional models

that best described the traditional GPTs, including TAM. This is because the use of TAM assumes that users need to learn and interact with the new systems. Conversely, AI technologies continue to be more oriented towards automated decision-making and have minimal user interventions (Gupta, 2024). This paradigm shift in the new technologies requires theoretical models that explain the distinctive features of the adoption of AI, including a reduction in human-to-human interaction and an increase in automated service delivery.

For this research study, the Diffusion of Innovation (DOI) theory has been utilized to address the role of strategic networking and skill variety on the entrepreneurial intentions of AI adoption in Pakistan. The reason to use this theory is two-fold: a) it is able to accommodate both individual and organizational level phenomena, which is in line with the complex nature of AI, and b) DOI focuses on the significance of the communication channels in cultivating awareness, spreading knowledge, and adoption decision regarding innovation (Zhong and Gou, 2023). DOI theory allows conducting a comprehensive investigation of the influence of networking and the variety of skills used by Pakistani entrepreneurs on their desire to use AI to improve their business value chains, partially or entirely, since communication is part of the process of diffusion.

Methodology

This research study employs a quantitative approach that reflects a positivist orientation. Quantitative research method is considered to be suitable in this case as it is aimed at finding patterns and consistencies in the behavior of entrepreneurs. It also provides a systematic method of expressing the Empirical realities in the form of statistical analysis (Creswell, 2009; Sekaran and Bougie, 2016).
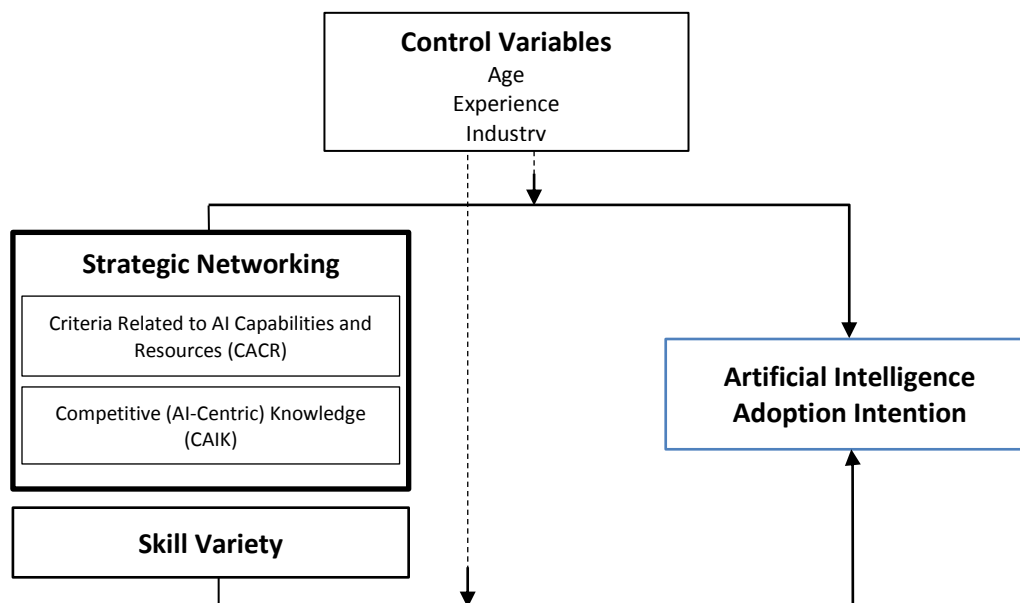
Instrumentation

Fig. 1 Theoretical Model of the Study

The data was collected using a structured questionnaire, encompassing two sections. The first section covers demographic details of the respondents, and the second showcases 5-point Likert scale questions about the study variables.

Table 1 Details the variables and constituent items.

Variables	Dimensions	Items	Reference(s)
1. Strategic Networking	1.1. Criteria Related to AI Capabilities and Resources (CACR)	1.1.1. I engage in strategic collaborations whenever the other firm's resources are complementary to mine, especially in the context of AI adoption. 1.1.2. I engage in strategic collaborations whenever the other firm contributes functional capabilities that enhance our AI adoption. 1.1.3. I develop strategic collaborations with other firms if they have a good knowledge of the AI market conditions. 1.1.4. I develop strategic collaborations with other firms if they have a proven track record in AI implementation. 1.1.5. I develop strategic collaborations with other firms if they have a strong financial capacity to support AI adoption initiatives.	(Vătămănescu *et al.*, 2020b)
	1.2. Competitive (AI-Centric) Knowledge (CAIK)	1.2.1. Sharing knowledge about my business with my collaborators has helped me learn more about how AI can be integrated to improve certain areas. 1.2.2. When discussing different business strategies and practices with my collaborators, I found relevant information on adopting AI technologies. 1.2.3. During discussions with my collaborators about firm issues, new ways to incorporate AI into internal processes/problems came to my mind. 1.2.4. Finding out how my collaborators handle AI integration within their firms helped me rethink some of my business strategies. 1.2.5. The information my collaborators share with me about AI supports me in making decisions related to AI adoption.	(Vătămănescu *et al.*, 2020b)
2. Skill Variety		2.1. The role demands a variety of skills. 2.2. This role requires me to employ a variety of skills to achieve business objectives.	(Morgeson and Humphrey, 2006)

3. AI Adoption Intention		3.1. I am willing to learn and use AI-driven technologies. 3.2. I intend to use AI and associated technologies in the future. 3.3. I would advise people around me to use AI-based technologies.	(Cheng *et al.,* 2022)

Table 1: Scales and Measures

Population and Sample

The population of the study consists of digital Pakistani entrepreneurs from multiple business sectors who either already use AI or intend to employ it for the growth of their businesses. According to the Asian Development Bank, (2023), the total number of entrepreneurs actively engaged in entrepreneurial practices in Pakistan is 25.47 million, whereas the exact number of digital entrepreneurs who use digital platforms for conducting their business is unknown. The major impediment in determining the exact number of digital entrepreneurs is the lack of registered digital entrepreneurial ventures. Therefore, researchers rely on Krejcie & Morgan, (1970) for sample size determination, who suggested using 384 as an ideal sample size for an unknown or infinite population. This size is consistent with the generally observed medium to large effect sizes in entrepreneurship research, where respondent access is restricted (Ali Memon *et al.*, 2020; Pietschnig *et al.*, 2023).

The sample for this study comprises Pakistani entrepreneurs who are using digital technologies in either a) their entrepreneurial value chain or b) are selling digital products and services. Additionally, they are either already using AI or are planning its adoption. Convenience and purposive sampling, as a type of non-probability sampling approach was applied as the method of access to the respondents because of the specificity of the research context. Convenience sampling is beneficial to reach easily accessible respondents, whereas purposive sampling will guarantee the involvement of individuals having the related knowledge and practical exposure to the AI adoption processes.

Data Analysis

A total of 326 Pakistani entrepreneurs participated in this study. The regression was done to empirically evaluate the relationship between the variables. The analysis was performed with the help of IBM SPSS v25 that enabled the researchers to identify the significant patterns and make evidence-based conclusions on the basis of the data.

Findings of the Study

The sample comprised 326 participants and, according to the descriptive analysis shown in Table 2, most of the respondents are between 25-35 years old, constituting 42.3%. It is closely succeeded by those who are 35-40 years old, with 33.4%. Regarding education, the respondents had a master's degree or a bachelor's degree; therefore, the higher level of education might affect the familiarity of the respondents with AI and related technologies.

Age		
	Frequency	Percent
Less than 25	32	9.8
25 - 35	138	42.3
35 - 40	109	33.4
40 and above	47	14.4

Total	326	100.0
Province/Administrative Region		
	Frequency	**Percent**
Punjab	103	31.6
Sindh	34	10.4
Khayber Pakhtunkhwa	153	46.9
Baluchistan	1	.3
Gilgit/Baltistan	3	.9
Azad Kashmir	2	.6
Federal Capital Islamabad	30	9.2
Total	326	100.0
Education		
	Frequency	**Percent**
Intermediate	1	.3
Bachelors	123	37.7
Masters	138	42.3
M.Phil.	42	12.9
Ph.D.	14	4.3
Vocational Education	8	2.5
Total	326	100.0
Experience		
	Frequency	**Percent**
Less than 1 year	27	8.3
1 - 5 years	169	51.8
More than 5 years	130	39.9
Total	326	100.0
Grouped Industry Category		
	Frequency	**Percent**
Technology (e.g., Software, AI,	85	26.1
E-commerce (e.g., online retail,	106	32.5
Digital Media and content creation	65	19.9
Agriculture	5	1.5
Social Sector	6	1.8
All other sectors	59	18.1
Total	326	100.0

Table 2: Descriptive Statistics

It is interesting to note that the data collection showcased a variety of industry sectors that became part of this study. Apart from the provided options of Technology (e.g., Software, AI, cybersecurity), E-commerce (e.g., online retail, marketplaces), and Digital Media and content creation, around 21% of

respondents selected the 'Other' category. Upon closer examination of the open-test response, agriculture, the social sector, real estate, and the manufacturing industry emerged as prominent sectors classified under the 'Other' category.

This pattern implies that interest in AI adoption is not just limited to digitally focused sectors but is widespread among entrepreneurs operating in transitioning industries. Their participation manifests a wider acceptance of AI's relevance, reaching outside core digital spheres. This provides a positive outlook on an emerging transition in the entrepreneurial mindset in Pakistan. Such cross-sectional engagement presents an opportunity for inclusive digital transformation strategies designed for different levels of AI readiness in the Pakistani entrepreneurial landscape.

Reliability and Construct Validity

The reliability of the scale for this study was gauged by measuring Cronbach's alpha for the 17 survey items, composed of three constructs. As depicted in Table 3, overall reliability was excellent with α = 0.950. This indicates that the measures employed for the strategic networking with two dimensions, such as CACR and CAIK, skill variety, and AI adoption intention, showed internal consistency. The results support the instrument's internal validity and justify its use in regression modeling.

Variable		Cronbach α	Number of Items
Model		0.950	17
Skill Variety		0.959	4
Strategic Networking	CACR	0.936	5
	CAIK	0.943	5
AI Adoption Intention		0.978	3

Table 3: Reliability Analysis

Regression Analysis: Testing the Conceptual Model

Multiple linear regression was used to test the theoretical framework. The model, with strategic networking and skill variety as predictors, was statistically significant, $F_{(2, 323)}$ = 130.51, and $p < .001$, and explained 44.7% of the variance in AI adoption intention.

Model Summary				
Model	**R**	**R Square**	**Adjusted R-Square**	**Std. Error of the Estimate**
1	.669a	.447	.442	.79918
a. Predictors: (Constant), Skill_Variety, CAIK, CACR				
ANOVAa				
Model	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Regression	166.258	3	55.419	86.771	.000b
Residual	205.657	322	.639		
Total	371.914	325			
a. Dependent Variable: AI_Adoption_Intention					
b. Predictors: (Constant), Skill_Variety, CAIK, CACR					

Table 4: Regression Summary for Predicting AI Adoption Intention

In the process of examining how strategic networking and skill variety influence the intention to adopt

AI among Pakistani entrepreneurs, the following results are exhibited in the analysis, as depicted in Table 4: The combination of CACR and CAIK as strategic networking significantly predicts the intention of entrepreneurs to adopt an AI (F (2, 323) = 33.385, p < .001), which explains intentions to adopt AI by 17.1 percent (R2 =.171). It means that the more active entrepreneurs are in establishing and utilizing strategic alliances founded on AI-related capabilities and participating in AI-focused knowledge sharing, the greater their intention to use AI-driven technologies and innovations.

With that being said, when analyzed through a lens of dimensions, the CACR has a positive and statistically significant impact on the intention to adopt AI (β 0.322, p = 0.005). This implies that entrepreneurs who use their AI-related knowledge, functional abilities, and financial capacity in determining their partners/alliances would adopt AI more. Conversely, CAIK: (β = 0.100, p = 0.382), although correlated with the intention of AI adoption positively, does not indicate a statistically significant influence. These results propose that the exchange of knowledge cannot be a sufficient condition to reinforce the intention to adopt AI among the group of entrepreneurs; they must have a base of robust capability-based partnerships to achieve desirable results.

The strongest predictor was skill variety (β =.574, p <.001) when it comes to entrepreneurs with a variety of skills as well as a stronger attitude towards learning, showing a significantly higher intention to use AI. Control variables do not attenuate this primary relationship, though mid-career experience and technology-intensive ecosystems appear to amplify the positive effect of skill variety on AI readiness.

Regression analysis confirms that skill variety is a robust determinant of Pakistani entrepreneurs' intention to adopt AI, thereby supporting H3. Strategic networking, when deconstructed into CACR and CAIK, networking based on capability-driven criteria (CACR) plays a more direct role in fostering AI adoption intentions than the knowledge-based networking (CAIK). This implies that Pakistani entrepreneurs appear to prioritize alliances that offer practical technological advantages and implementation support over mere information exchange.

Correlations				
	CACR	CAIK	Skill Variety	AI Adoption Intention
SN1. CACR	1			
SN2. CAIK	.896	1		
Skill Variety	.401	.368	1	
AI Adoption Intention	.412	.388	.647	1

Table 5: Correlations

The correlation, as depicted in Table 5, provides a useful and intriguing understanding of how various elements of networking and skills relate to AI adoption intention. The correlations demonstrate that CACR and CAIK are closely related (r =.896), which means that those companies and individuals choosing partners according to the capabilities and resources associated with AI are also likely to be more active in sharing knowledge about AI. Nonetheless, skill variety has the highest positive correlation (r =.647). It concludes that various abilities are significantly more influential in determining the readiness of entrepreneurs to AI than networking aspects.

The moderation analysis of the control variables presented conflicting patterns of skill variety and strategic networking. There is a strong correlation between skill variety and AI adoption intention that is

influenced by age and experience. The analysis shows that the variety in skills is negatively influenced by advancing age and working experience. There is not much influence of industry on strategic networking or skill variety.

Discussion

The research study also contributes to the field of entrepreneurial research in that it explores the role of social and human capital, conceptualized as strategic networking and skill variety, on the intention of Pakistani entrepreneurs to adopt AI. It views strategic networking as a domain-specific, intentional activity and not merely an enhancement of social capital, which gives this particular networking activity a subtle sense of meaning. The results of the analysis indicate that both CACR and CAIK have a positive impact on the intention to adopt AI; nevertheless, hypothesis testing proves that H1 is supported, whereas H2 is not. Nevertheless, upon taking the unsupported H2 into consideration, it is significant when CACR is involved. This confirms the findings of the study by Vătămănescu et al., (2020a), Kang & Kim, (2023), and Azevedo et al., (2023). As the results showed, Pakistani entrepreneurs focus on having partnerships with practical technological advantages and integration support rather than solely on knowledge exchange. The findings indicate that the relational design and methodology play a crucial role in empowering the entrepreneurs to make sound decisions about the integration of AI, therefore, enhancing their intentions in the process (Al-Ayed and Al-Tit, 2024; Azevedo *et al.*, 2023; Chang *et al.*, 2024a; Colombelli *et al.*, 2023; Gupta, 2024; Vătămănescu *et al.*, 2020; Vrontis *et al.*, 2020b).

Most importantly, skill variety was found to be the highest and the most predictive variable of intention to use AI, which verifies H3. This shows how a skillset that is varied can be instrumental in giving entrepreneurs the power to evaluate, comprehend, and absorb technologies that are cross-disciplinary, like AI. These results therefore support the Human Capital Theory and suggest that in an emerging economy like Pakistan, the multi-skill profile can also offset the weaker institutional support (Abulail *et al.*, 2025; González-Anleo *et al.*, 2024; Nisula and Olander, 2025).

Analysis of the control variables, age, experience, and industry, suggests some interesting trends. The discussion shows that age undermines the correlation between skill variety and AI adoption intention. On the basis of this analysis, one can conclude that younger entrepreneurs use a broader range of skills more advantageously than their older peers to reinforce their will to use AI. Such results are consistent with the findings of earlier research that younger people tend to be more accommodating of new technologies because of their openness and capacity to learn (Chang *et al.*, 2024b). On the same note, the robust influence of experience on skill variety means that more experienced entrepreneurs are better placed to use their multifaceted skills, thus reinforcing their desire to adopt AI. It means that experience and strategic judgment increase their capacity to determine the value and feasibility of AI, which supports the conclusions of Gupta, (2024). On the other hand, age and experience do not exhibit a significant moderating effect on strategic networking, indicating that the benefits of strategic networking are universal at both age and experience levels. There has been no effect on the industry of skill variety or strategic networking.

With the theoretical framework of DOI theory, the findings indicate that those people with strong AI capabilities and resources (CACR) are in a better position to embrace AI as helpful and in line with the current systems (Andrei *et al.*, 2021; Kang and Kim, 2023; Vătămănescu *et al.*, 2020). They include technological infrastructure and data readiness, managerial support, and mitigating the perceived complexity, and thus, trialability, therefore, reinforcing the intention of entrepreneurs to adopt AI. Similarly, AI-focused Knowledge assists in improving the understanding of AI-oriented technology and its possible advantages and use, making AI more visible and reducing the uncertainty surrounding it.

Conversely, individual-level capability, which takes the form of skill variety, is a strong universal facilitator of adoption in situations where institutional and infrastructural facilitators are weak or scarce. Therefore, in volatile economic and political environments, like those in Pakistan, skill variety is an essential source of resilience and the determinant of the intention of Pakistani entrepreneurs to implement AI-based technologies.

When applied to the context of Pakistani entrepreneurs competing in a developing economy, the study findings suggest that relational design and methodology, such as information exchange and inter-firm collaboration, respectively, through the use of AI-based knowledge, capabilities, and resources, can be instrumental in enhancing their intention to implement AI in their value chain of entrepreneurship. Moreover, entrepreneurial decision-making in the ecosystems where the institutional support and cooperative networks are yet to be fully formed is more prone to the greater role of personal competencies. It means that although the need to establish AI-powered partnerships and knowledge sharing is prioritized, the variety of skills among Pakistani entrepreneurs could increase their confidence in using AI-powered technologies in the absence of any or minimal external supporting mechanisms (John, 2024).

Implications of the Study

Theoretical Implications

Theoretically, this study advances understanding of entrepreneurial technology adoption by conceptualizing strategic networking as a purposive construct that interacts with human capital, specifically skill variety, to shape AI adoption intentions, thereby extending Diffusion of Innovation and Human Capital frameworks to account for capability heterogeneity and networking through strategic alliances. Although DOI conventionally implies a personal perception of relative advantage and compatibility, network-related mechanisms are incorporated in this research as the facilitators of innovation spread. The paper provides empirical evidence that strategic alliances serve as social channels, which facilitate knowledge transfer, curb uncertainty, and enhance perceived benefits of innovation by using AI-based technologies, thereby broadening the scope of the DOI explanatory approach to entrepreneurial and resource-constrained views.

Practical Implications

Companies must find ways to invest their capital and energies in developing their own human resources when institutions cannot offer significant support, and economic and political instability are the order of the day. This involves developing targeted training programs that employees can address in bits, as well as ensuring that they acquire a balance between technical and managerial skills. Such actions will bolster the ability of entrepreneurs to assess and implement AI. When the resources are limited, the policymakers, incubators, and other ecosystem stakeholders should concentrate on special and adaptable training programs, which help to develop skills in many areas. Entrepreneurs ought to be proactive in developing strategic relationships with stakeholders and partners having expertise and resources in AI. They must also support collaboration platforms, which assist startups and entrepreneurs in meeting AI-oriented companies, research laboratories, and service providers of technologies. These triple helix collaborations between governments-academia-industry can expedite the acquisition of AI, reduce integration costs, and achieve sustainable adoption of innovation throughout the Pakistani digital entrepreneurship (John, 2024). The programs must be designed to meet industry-specific requirements and demographic groups, and interventions must be measured longitudinally by methods capable of demonstrating actual outcomes where experimental techniques are used to determine causal effectiveness and applicability across settings.

Conclusion and Future Research Directions

A number of studies have examined social networks as a general phenomenon, in which strategic networking has generally been viewed as a sub-dimension. This study has classified strategic networking and evaluated it bi-dimensionally, as it is reflected in CACR and CAIK. Furthermore, the study built on the body of literature on the adoption of AI by evaluating the role of social and human capital variables and sought to enrich the research on the behavioral intention of Pakistani entrepreneurs in the context of integrating AI in their value chain to provide them with an opportunity to strengthen their competitive position in the digital world we currently exist in. This research finds that in the case of Pakistani digital entrepreneurs, it is important to establish partnerships with individuals, organizations, or companies that are well-endowed with AI-based capabilities.

Partners have to contribute technical know-how and infrastructure in order to offer integration support. Moreover, sharing of knowledge connected with AI is beneficial; however, Pakistani businessmen give preference to partnerships that are supported by material and feasible resources. Additionally, the development of human capital (aimed at up skilling and multiskilling training) and sector-specific policy tailoring to reinforce the networking and institutional backing should be at the center of the menu to hasten the adoption of AI in emerging economies such as Pakistan. Moreover, the younger entrepreneurs are better served by skill variety, and the experienced entrepreneurs take advantage of the accumulated expertise. This requires specific capacity-building initiatives that consider the age and the level of experience of the entrepreneurs in facilitating the adoption of AI (Kang and Kim, 2023). Government bodies, policymakers, and education institutions can streamline this process by introducing state-wide measures like webinars, workshops, and mentorship programs. These would assist existing and potential entrepreneurs to overcome fear and anxiety towards AI technologies, thereby boosting their confidence and desire to integrate AI.

Recent studies were based on cross-sectional data in order to derive interesting results on AI intention antecedents of Pakistani entrepreneurs, which opens the way forward to future researchers to use longitudinal and mixed-method designs to track causal dynamics of skill accumulation and network effects over time, and multi-dimensional works to disaggregate strategic networking. It may be used to address the issue of multicollinearity and intervention-based research (pilot up skilling initiatives and network-strengthening initiatives) in diverse industries to determine scalable approaches to promote the adoption of AI in resource-limited settings. Moreover, exploring strategic networking as a latent factor would contribute to the academic understanding of social networking since it would include the overall effect of the construct on the intention to adopt AI, which would provide a more holistic and combined view. Moreover, given that there are very few academic studies conducted on strategic networking and its influence on AI adoption intention, it offers a strong field of research in the future to gain a deeper insight into the framework of digital entrepreneurship.

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