



The Impact of AI Adoption Intensity on Entrepreneurial Performance: The Mediating Role of Digital Capability in Online Businesses in Sri Lanka

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Received: 20.03.2026 | Accepted: 06.04.2026 | Published: 13.04.2026

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DOI: [10.5281/zenodo.19549649](https://doi.org/10.5281/zenodo.19549649)

Abstract

Original Research Article

The expansion of digital technologies has reshaped business operations, especially within online enterprises, where artificial intelligence plays an increasingly important role. This study analyzes how the intensity of AI adoption affects entrepreneurial performance among online enterprises in Sri Lanka, while investigating the mediating role of digital competence. The study, grounded in the Resource-Based View and Dynamic Capability Theory, contends that AI alone does not guarantee superior outcomes unless organisations have the capacity to successfully implement and integrate digital technologies into their operations. A quantitative approach was employed, and primary data were collected through a structured online survey of 280 e-commerce enterprises in Sri Lanka. The analysis utilized Partial Least Squares Structural Equation Modelling via SmartPLS. The empirical findings reveal that the intensity of AI adoption significantly strengthens digital capability and enhances entrepreneurial performance. Furthermore, digital capability positively influences performance and partially mediates the relationship between AI adoption intensity and entrepreneurial outcomes. The findings reveal that both direct advantages and capabilities drive AI performance. Firms that enhance AI adoption through robust digital capabilities are more likely to achieve superior results, particularly in operational efficiency, customer satisfaction, and innovation outcomes. This study enhances the existing knowledge base by providing evidence from a developing economy and elucidating the mechanism by which AI adoption leads to performance improvements. It offers practical advice to entrepreneurs and policymakers, highlighting the need to invest in both AI technologies and the digital skills essential for their effective utilization.

Keywords: AI Adoption Intensity, Digital Capability, Entrepreneurial Performance, Online Business.

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1. Introduction

The rising prevalence of digitalization has transformed corporate operations, particularly in digital contexts. Recently, technologies such as AI,

data analytics, automation, and cloud-based systems have allowed firms to optimize operations, enhance decision-making, and give novel value to customers in competitive digital markets (Nambisan, 2017).



Among these technologies, artificial intelligence has attained significant prominence owing to its capacity to analyze extensive datasets, facilitate prompt decision-making, and customize client experiences. The degree to which organizations use AI in their operations has emerged as a major indicator of entrepreneurial success (Nawaz et al., 2024).

Notwithstanding these benefits, the results of AI implementation vary among nations and commercial environments. While organizations in developed economies have made considerable progress in adopting AI-driven solutions, many developing economies still face challenges in achieving similar levels of digital integration. In Sri Lanka, although the SME sector plays a key role in employment generation and economic contribution, many firms encounter barriers when adopting advanced technologies. These limitations generally result from restricted infrastructure, financial constraints, and a lack of technical experience, which hamper the efficient use of AI in commercial operations (UNCTAD, 2021; Sri Lanka Export Development Board, 2022). Consequently, a large number of online businesses are unable to fully benefit from AI, which affects their performance in areas such as growth, innovation, and market competitiveness.

Previous research demonstrates that the mere adoption of new technologies does not inherently result in enhanced performance. Firms must possess the requisite internal competencies to effectively utilize these technologies. In this sense, digital competence denotes a firm's proficiency in employing, integrating, and adapting digital tools and resources within its operations. These qualities allow firms to transform technological investments into significant business results. Empirical research indicates that companies with robust digital skills are more adept at seeing possibilities, innovating, and adjusting to market volatility, therefore improving entrepreneurial performance (Kim & Jin, 2024). Furthermore, digital capability enhances performance both directly and via transformation processes that redefine corporate models and operations, underscoring its significance in attaining persistent competitive advantage (Prakasa & Jumani, 2024). For instance, organizations that embrace digital tools can streamline their processes, boost

client engagement, and respond more promptly to changes in consumer demand.

The Resource-Based View (RBV) can conceptually elucidate the connection between AI adoption and entrepreneurial performance. Per the Resource-Based View (RBV), AI technologies are valuable and strategic assets capable of producing competitive advantage when employed successfully (Barney, 1991). Dynamic Capability Theory (DCT) underscores that companies must have the requisite capacities to adapt and rearrange resources in response to evolving environmental conditions (Teece, Pisano, & Shuen, 1997), which includes not only the ability to integrate AI technologies but also to develop the necessary digital skills among employees to leverage these resources effectively. In this context, the intensity of AI adoption enhances a firm's capacity to identify opportunities, process information, and react to market fluctuations, while digital skills serve as the conduit via which these technological resources are converted into performance results.

Empirical research further substantiates the mediation function of capabilities in the technology–performance nexus. Research indicates that digital capabilities markedly enhance entrepreneurial success by allowing organizations to leverage digital technology more efficiently and strategically (Kim & Jin, 2024). Research on small business performance indicates that digital transformation processes, facilitated by digital capabilities, influence the relationship between technological adoption and performance results (Prakasa & Jumani, 2024). The results indicate that the advantages of the adoption of artificial intelligence depend on the organization's capacity to cultivate and utilize digital competencies, which include skills in data analysis, software development, and digital marketing strategies.

However, notwithstanding these discoveries, a large vacuum continues in the literature concerning the function of AI adoption intensity as a unique construct determining entrepreneurial performance, especially among small and medium enterprises in emerging economies like Sri Lanka. Most previous research has been on overall digital transformation or digital capacity, with insufficient emphasis on the

depth and intensity of AI utilization. Furthermore, the Sri Lankan context lacks empirical evidence investigating the mediating function of digital skills in this relationship.

The current study outlines the following research objectives to bridge this gap and provide a comprehensive understanding of the interrelations among these constructs.

1. To assess the impact of AI Adoption Intensity on Entrepreneurial Performance.
2. To examine the effect of AI Adoption Intensity on Digital Capabilities
3. To evaluate the impact of Digital Capabilities on Entrepreneurial Performance
4. To investigate the mediating role of Digital Capabilities in the relationship between AI Adoption Intensity and Entrepreneurial Performance.

2. Literature Review

2.1 AI Adoption Intensity

AI adoption intensity describes the level to which artificial intelligence technologies are integrated into an organization's processes, including internal processes, managerial decision-making, and interactions with customers. In today's digital business landscape, organizations are increasingly making use of advanced technologies such as AI, big data analytics, cloud systems, and automation to improve efficiency and sustain competitiveness (Elia et al., 2020; Hanelt et al., 2021; Nambisan, 2017). However, simply introducing these technologies is not sufficient to achieve superior outcomes. Firms need to embed them within their core activities in a structured and purposeful manner to realize their full potential (Cannas, 2021; Ghobakhloo & Iranmanesh, 2021; Ramdani et al., 2021).

AI adoption intensity focuses on how extensively and consistently AI is used across different functional areas of a business. Organizations with higher levels of AI integration are more likely to streamline operations, make more accurate decisions, and strengthen customer relationships

through tailored services and real-time data analysis (Haenlein & Kaplan, 2019; Khin & Ho, 2019). This is particularly relevant in online business settings, where activities rely heavily on digital platforms, continuous data flows, and customer interaction channels. In such environments, stronger AI adoption supports firms in refining marketing efforts, enhancing customer satisfaction, and adapting more effectively to changing market conditions.

From a strategic perspective, AI adoption intensity reflects not only technological investment but also organizational commitment to digital transformation. Firms that intensively adopt AI are more likely to develop adaptive processes, improve operational agility, and gain competitive advantages in rapidly evolving digital markets (Nambisan, 2017; Levallet & Chan, 2019). Therefore, AI adoption intensity is conceptualized in this study as the extent to which online businesses integrate and utilize AI technologies across their operations to enhance value creation and performance.

2.2 Entrepreneurial Performance

Entrepreneurial performance is widely recognized as a multidimensional construct that captures the overall success and effectiveness of entrepreneurial ventures. Rather than focusing solely on financial outcomes, contemporary research emphasizes broader dimensions such as innovation, market performance, and business growth (Ardito et al., 2021; Khin & Ho, 2019). Entrepreneurial performance refers to the overall effectiveness of a venture in achieving its strategic and operational objectives within a dynamic and competitive environment. It reflects the extent to which firms are able to create value, sustain growth, and maintain competitiveness by effectively utilizing their resources and capabilities. In today's digital world, a company's ability to adapt to new technologies, use digital tools, and meet changing customer needs is becoming more and more important for its success. Research in digital entrepreneurship highlights that firms operating in technology-driven environments must continuously integrate digital innovations into their business models to enhance performance outcomes (Nambisan, 2017; Li et al., 2018).

Moreover, studies on digital capability and firm performance indicate that organizations that effectively utilize digital technologies tend to achieve superior performance through improved efficiency, innovation, and market responsiveness (Khin & Ho, 2019; Elia et al., 2020).

Empirical studies show the relevance of digital and technology capabilities in affecting entrepreneurial effectiveness. Evidence indicates that organizations with stronger digital skills are better equipped to detect new possibilities and preserve strategic flexibility, which supports superior performance outcomes (Kim & Jin, 2024; Prakasa & Jumani, 2024). From the perspective of dynamic capability theory, firm performance depends on the ability to effectively combine, adapt, and renew resources in response to changing external conditions (Teece et al., 1997). In line with this notion, Zhang et al. demonstrate that technopreneurs' capabilities, notably their power to deploy and manage strategic resources, contribute significantly to entrepreneurial success through dynamic capability processes. Similarly, Ardito et al. observe that organizations obtain better results when technology resources are linked with organizational competencies, which boosts their ability to innovate and respond to market changes efficiently.

Taken together, these data imply that entrepreneurial performance reflects a firm's ability to effectively mix digital technologies with internal capabilities and strategic initiatives. Such integration enables organizations to achieve continuous growth and preserve competitiveness in rapidly altering business contexts.

2.3 Digital Capability

Digital competence denotes the organizational proficiency in efficiently acquiring, integrating, and employing digital technologies to enhance corporate operations and achieve strategic goals. It includes a broad spectrum of competencies, such as digital literacy, technical proficiency, information management, and adaptability to technology advancements (Khin & Ho, 2019; Levallet & Chan, 2018). In the digital age, these competencies are crucial for companies aiming to exploit technology

innovations and sustain competitiveness. Digital competence is frequently regarded as a dynamic capability that empowers organizations to identify possibilities, capitalize on them, and adapt their operations accordingly (Teece et al., 1997), which is essential for navigating the rapidly changing technological landscape and responding to market demands effectively.

It includes basic things like digital infrastructure and technical skills, as well as more advanced abilities like digital innovation, integration, and strategic alignment. Firms with strong digital capabilities are better equipped to process and analyze information, respond to market changes, and optimize their business processes. Moreover, digital capability is crucial in closing the gap between technology adoption and performance outcomes. While digital technologies provide the tools for innovation and efficiency, it is the firm's capability to use them effectively that determines their impact on performance (Khin & Ho, 2019). In online business environments, digital capability is particularly important, as firms rely heavily on digital platforms, data analytics, and customer interaction systems to operate and grow. Accordingly, digital capability is conceptualized in this study as the ability of online businesses to effectively integrate, manage, and utilize digital technologies to enhance innovation, responsiveness, and overall performance.

2.4 Theoretical Background

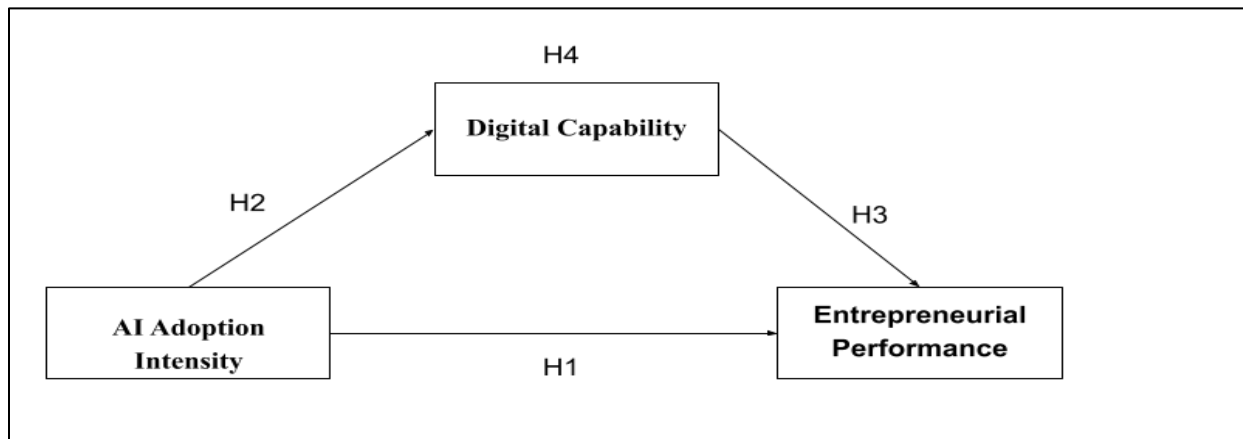
This study draws on the Resource-Based View (RBV) and Dynamic Capability Theory (DCT) to explain the relationships among AI adoption intensity, digital capability, and entrepreneurial performance. RBV suggests that firms gain a lasting competitive advantage when they possess and effectively use resources that are valuable, rare, difficult to imitate, and not easily replaced (Barney, 1991). This study views AI technologies and digital infrastructure as strategic assets that enhance business performance. However, RBV does not provide a comprehensive understanding of the practical application of these resources to generate outcomes.

Dynamic Capability Theory addresses this constraint by emphasizing a firm's capacity to integrate, modify, and reorganize its resources in reaction to environmental shifts (Teece et al., 1997). This perspective highlights the importance of organizational capabilities in enabling firms to adjust to technological developments, support continuous innovation, and respond to evolving market conditions. In digital business settings, AI adoption represents the availability of advanced technological resources, while digital capability reflects the firm's capacity to use these resources effectively. The interaction among these elements explains how technological investments translate into performance outcomes, positioning digital capability as a key mechanism linking AI adoption to entrepreneurial success.

Based on these theoretical arguments and supporting empirical evidence, the present study proposes a conceptual framework that includes AI adoption intensity, digital capability, and entrepreneurial performance. The relationships among these constructs form the basis for developing the study's hypotheses.

1. **H1:** AI Adoption Intensity has a positive effect on Digital Capability.
2. **H2:** Digital Capability has a positive effect on Entrepreneurial Performance.
3. **H3:** AI Adoption Intensity has a positive effect on Entrepreneurial Performance.
4. **H4:** Digital Capability mediates the relationship between AI Adoption Intensity and Entrepreneurial Performance.

Figure 1: Conceptual Framework



Source: Developed by the Author (2026)

3. Methodology

3.1 Research Design

This study's research design is guided by the Research Onion framework proposed by Saunders et al. (2019), providing a systematic technique for organizing methodological selections. The study adopts a positivist research philosophy, reflecting the view that relationships between variables can be

measured objectively and examined through empirical testing. In line with this perspective, a deductive approach is followed, where hypotheses are formulated based on established theories and prior empirical findings and then tested using quantitative techniques. A quantitative research strategy is employed to investigate the relationships among AI adoption intensity, digital capability, and entrepreneurial performance. Primary data were

collected via a structured online questionnaire aimed at eliciting standardized responses for the principal constructs. This strategy facilitates statistical assessment of the claimed links and enhances the capacity to generalize the findings within the study's context.

3.2 Population, Sampling, and Data Collection.

The target population of this study consists of online business entrepreneurs and SME owners operating in Sri Lanka, particularly those engaged in digitally enabled business activities across sectors such as trade, services, and e-commerce. The population of this study comprises e-commerce businesses operating in Sri Lanka. According to the Department of Census and Statistics (2024), there were approximately 948,900 active SMEs in the country in 2022, employing between 5 and 199 individuals, depending on the sector. Although an exact number of e-commerce businesses is not formally documented, industry estimates indicate that a considerable proportion of these SMEs have adopted digital platforms for commercial activities. It is estimated that between 50,000 and 150,000 businesses engage in e-commerce through websites, online marketplaces, and social media channels. This includes formally registered online businesses as well as a large number of informal social commerce entrepreneurs who sell via platforms such as Facebook, Instagram, and online marketplaces like Daraz Sri Lanka. Therefore, the e-commerce sector in Sri Lanka represents a diverse and rapidly expanding business population, making it an appropriate context for examining entrepreneurial performance in digital business environments.

A convenience sampling method was used to collect data from e-commerce businesses while ensuring representation across different industry categories, such as retail, services, and technology, to provide a comprehensive overview of the sector. Since the population of online businesses in Sri Lanka exceeds 50,000, this group can be considered large. Krejcie and Morgan (1970) recommend a minimum sample size of around 382 to 385 respondents for such populations. In addition, Hair et al. (2019) suggest that a sample exceeding 200 is adequate for

Structural Equation Modeling, with larger samples improving statistical strength and reliability. Considering these recommendations, this study targeted a sample size in the range of 300 to 400 respondents to enhance the robustness and general applicability of the results.

3.3 Measurement Instruments

The variables in this study were measured using established scales that have been validated in prior research. A three-item scale based on Badghish and Soomro (2024) was used to measure a company's readiness and willingness to use AI in its operations. The items capture the extent to which firms are willing to adopt AI for performance improvement, actively engage in new technology adoption, and their capability to utilize AI effectively, with one negatively worded item included to improve response consistency.

Digital capability was measured using a seven-item scale adapted from Baker et al. (2015). This scale evaluates how firms apply digital tools and platforms in their operations. It includes aspects such as digital devices, software systems, online data sources, and digital platforms like social media and e-commerce channels. It also captures the firm's ability to create, manage, and update digital platforms, including websites, which are essential for online business activities.

Entrepreneurial performance was measured using the scale developed by Chandler and Hanks (1993), which captures both objective and subjective dimensions of firm performance. The indicators include financial outcomes such as profit levels, return on investment, revenue growth, and earnings growth, as well as non-financial aspects such as employee expansion, innovation speed, and market share growth. In addition, the scale considers the entrepreneur's satisfaction with the business, providing a broader assessment of performance. Overall, these measurement approaches are appropriate for examining the relationships among AI adoption intensity, digital capability, and entrepreneurial performance within online business settings.

4. DATA ANALYSIS AND RESULTS

The data were examined utilizing Structural Equation Modeling (SEM) through SmartPLS software. PLS-SEM is suitable for this investigation as it facilitates the analysis of intricate interactions, including mediation effects, with fewer stringent assumptions about data distribution (Hair et al., 2019). The analysis was conducted in two phases. The measuring methodology was evaluated to verify the reliability and validity of the constructs. The structural model was subsequently assessed using path coefficients, and bootstrapping was employed to evaluate the significance of the hypotheses. The questionnaire had a screening question to guarantee that only participants actively engaged in e-commerce or online company operations were included in the final study. This measure enhanced the pertinence and precision of the data utilized in the research.

4.1 Descriptive Statistics for demographics

The demographic profile of the 280 businesses included in the analysis indicates that most online businesses in Sri Lanka are relatively young and small-scale. In terms of firm age, approximately 42% of businesses have been operating for less than 3 years, while around 36% have been operating for 3–5 years. A smaller proportion, about 15%, have been operating for 5–10 years, and only 7% have more than 10 years of experience. This distribution shows that nearly 78% of the sampled businesses are in their early stages, reflecting the rapid growth of new ventures in the e-commerce sector.

With regard to industry type, the majority of businesses are concentrated in the retail sector (38%), followed by service-based businesses (26%) and food and beverage enterprises (18%). Additionally, about 12% of respondents fall into the “other” category, indicating diverse and niche online business activities, while the remaining 6% are manufacturing-related businesses engaging in e-commerce. Overall, the demographic findings suggest that Sri Lanka’s online business environment is dominated by young and emerging ventures, primarily operating in retail, services, and food-related sectors, highlighting the expanding and

diversified nature of digital entrepreneurship in the country.

4.2 Model Analysis

Partial Least Squares Structural Equation Modelling (PLS-SEM) served as the principal analytical technique utilizing SmartPLS software. This method is appropriate for examining intricate interactions among latent variables and is extensively utilized in research relying on survey data for both predictive and theoretical validation. This study is particularly suitable as it facilitates the analysis of mediation effects and accommodates data that do not adhere closely to normal distribution assumptions (Hair et al., 2021).

The analysis was conducted in two phases. The initial phase involved evaluating the measurement model to determine the reliability and validity of the constructs. This encompassed the evaluation of indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. In the second phase, the structural model was analyzed to evaluate the predicted links among the intensity of AI adoption, digital competence, and entrepreneurial performance. Path coefficients and bootstrapping methods were employed to ascertain the importance of the proposed associations.

4.2.1 Measurement Model Assessment

The measuring methodology was assessed to verify the reliability and validity of the constructs: AI Adoption Intensity (AIA), Digital Capability (DC), and Entrepreneurial Performance (EP). The evaluation adhered to recognized criteria, encompassing indicator reliability, internal consistency, convergent validity, and discriminant validity (Hair et al., 2021).

As presented in Table 1, the results indicate strong internal consistency across all constructs. Cronbach’s alpha values range from 0.855 to 0.940, which exceed the recommended threshold of 0.70. Composite reliability values (ρ_a and ρ_c) are also above 0.70, indicating satisfactory reliability. Convergent validity is supported by the Average

Variance Extracted (AVE) values, which range from 0.693 to 0.775 and are above the minimum acceptable level of 0.50. These findings demonstrate

that the measurement model meets the required reliability and convergent validity criteria.

Table 1: Internal Consistency Reliability and Convergent Validity

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
AIA	0.855	0.855	0.912	0.775
DC	0.926	0.927	0.941	0.693
EP	0.940	0.942	0.950	0.705

Source: Survey Data, 2026

Discriminant validity was originally examined using the Heterotrait–Monotrait ratio (HTMT). As shown in Table 2, all HTMT values are below the conservative threshold of 0.90, ranging from 0.515

to 0.535. This suggests that the constructs are empirically distinct from each other and satisfy the HTMT requirement

Table 2: Discriminant Validity—HTMT Criterion

	AIA	DC
AIA		
DC	0.535	
EP	0.515	0.535

Source: Survey Data, 2026

The Fornell–Larcker criterion was also utilized to measure discriminant validity. As demonstrated in Table 3, the square root of AVE for each construct (diagonal values) is higher than the equivalent inter-

construct correlations. This indicates that each construct shares more variance with its indicators than with other constructs, hence confirming discriminant validity.

Table 3: Discriminant Validity—Fornell–Larcker Criterion

	AIA	DC	EP
AIA	0.880		
DC	0.477	0.833	
EP	0.464	0.503	0.840

Source: Survey Data, 2026

Indicator reliability was investigated by cross-loadings, as reported in Table 4. All measurement items load highest on their particular constructs, with loadings exceeding 0.80, while cross-loadings on

other constructs remain much lower. This illustrates that each indication is highly associated with its intended construct, further validating the reliability and validity of the measurement model.

Table 4: Indicator Reliability—Cross Loadings

	AIA	DC	EP
AIA1	0.878	0.421	0.408
AIA2	0.868	0.417	0.393
AIA3	0.895	0.422	0.423
DC1	0.432	0.829	0.447
DC2	0.409	0.846	0.424
DC3	0.411	0.843	0.416
DC4	0.343	0.809	0.436
DC5	0.429	0.849	0.426
DC6	0.390	0.831	0.390
DC7	0.357	0.820	0.388
EP1	0.368	0.375	0.824
EP2	0.349	0.375	0.830
EP3	0.414	0.485	0.836
EP4	0.381	0.435	0.840
EP5	0.379	0.388	0.848

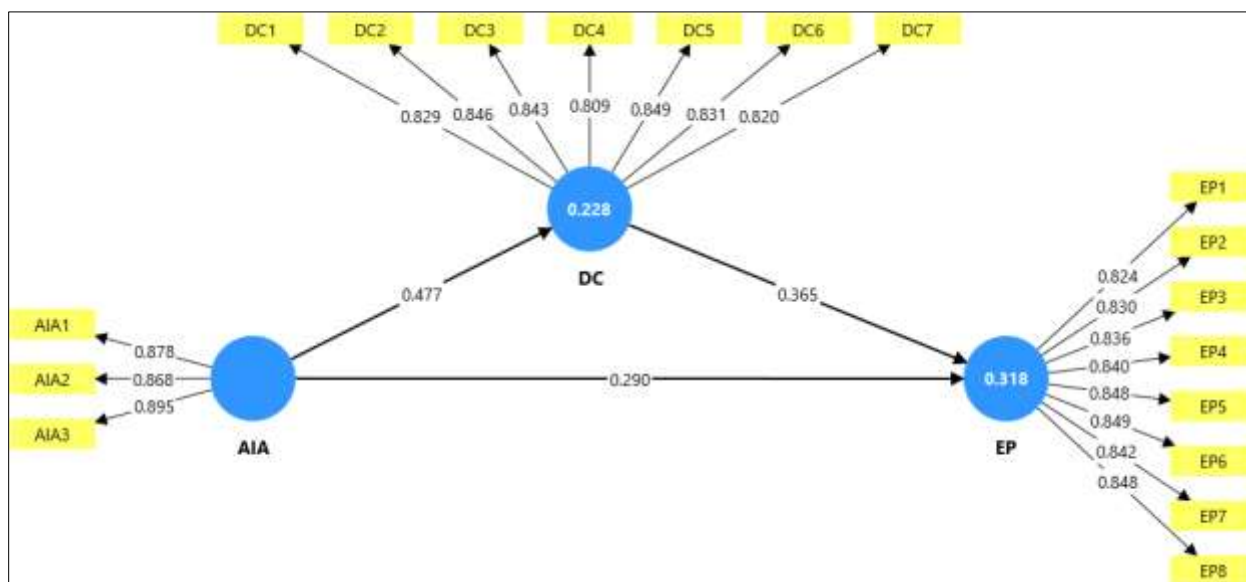
EP6	0.419	0.439	0.849
EP7	0.403	0.448	0.842
EP8	0.390	0.415	0.848

Source: Survey Data, 2026

Overall, the measurement model assessment confirms that all constructs meet the required criteria for reliability and validity. The overall measurement

model is illustrated in Figure 2. Therefore, the model is deemed suitable for proceeding to the structural model analysis.

Figure 2: Measurement Model



Source: Survey Data, 2026

4.2.1 Structural Model

The structural model was assessed based on essential parameters, including model fit indices, coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2). The evaluation of model fit demonstrates a satisfactory degree of alignment. The standardized root mean square residual (SRMR) is 0.041, far below the recommended threshold of 0.08, signifying a robust model fit. The normed fit index

(NFI) score of 0.933 indicates an adequate model fit. The discrepancy metrics ($d_{ULS} = 0.282$ and $d_G = 0.146$) do not suggest any model misspecification, hence affirming the structural model's adequacy.

The model's explanatory power is evaluated by R^2 values. The findings indicate that AI Adoption Intensity accounts for 22.8% ($R^2 = 0.228$) of the variance in Digital Capability, reflecting a modest degree of explanatory power. Likewise, the

combined effect of AI Adoption Intensity and Digital Capability accounts for 31.8% ($R^2 = 0.318$) of the variance in Entrepreneurial Performance, indicating a moderate relationship. The effect size (f^2) findings demonstrate that AI Adoption Intensity exerts a moderate influence on Digital Capability ($f^2 = 0.295$) and a minor influence on Entrepreneurial Performance ($f^2 = 0.095$). Furthermore, Digital Capability exerts a minor to moderate influence on Entrepreneurial Performance ($f^2 = 0.151$), underscoring its significant significance in shaping performance outcomes, especially in facilitating enterprises' successful utilization of AI technology for enhanced results.

The model's predictive significance was evaluated using the Q^2 values derived from the PLS predict process. The findings indicate that Digital Capability ($Q^2 = 0.222$) and Entrepreneurial Performance ($Q^2 = 0.208$) exhibit positive Q^2 values. This indicates that the model excels in generating predictions. The structural model exhibits adequate fit, moderate explanatory power, significant effect sizes, and acceptable predictive relevance, signifying its robustness and appropriateness for hypothesis testing.

4.2.3 Hypothesis Testing

The results of hypothesis testing are presented in Table 5, which includes the path coefficients, t-statistics, and p-values obtained through the bootstrapping procedure.

The findings indicate that AI Adoption Intensity has a significant positive effect on Digital Capability (β

$= 0.477$, $t = 10.695$, $p < 0.05$). Therefore, H1 is supported, suggesting that higher levels of AI adoption contribute to the development of digital capabilities in online businesses. Further, the results indicate that AI Adoption Intensity has a significant positive effect on Entrepreneurial Performance ($\beta = 0.290$, $t = 4.992$, $p < 0.05$). Thus, H3 is supported, indicating that AI adoption directly enhances business performance.

In addition, Digital Capability has a significant positive effect on Entrepreneurial Performance ($\beta = 0.365$, $t = 7.444$, $p < 0.05$). Hence, H2 is supported, confirming that firms with stronger digital capabilities achieve better entrepreneurial outcomes. Regarding the mediating effect, the indirect relationship between AI Adoption Intensity and Entrepreneurial Performance through Digital Capability is also significant ($\beta = 0.174$, $t = 5.950$, $p < 0.05$). Therefore, H4 is supported, indicating that Digital Capability mediates the relationship between AI Adoption Intensity and Entrepreneurial Performance.

Since both the direct effect (AIA \rightarrow EP) and indirect effect (AIA \rightarrow DC \rightarrow EP) are significant, the results confirm the presence of partial mediation. This suggests that AI Adoption Intensity influences Entrepreneurial Performance both directly and indirectly through Digital Capability.

Overall, all hypothesized relationships are supported, demonstrating the critical role of AI adoption and digital capabilities in enhancing entrepreneurial performance in online businesses.

Table 5. Hypothesis Testing

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
AIA -> DC	0.477	0.479	0.045	10.695	0.011

AIA -> EP	0.290	0.290	0.058	4.992	0.023
DC -> EP	0.365	0.367	0.049	7.444	0.000
AIA -> DC -> EP	0.174	0.176	0.029	5.950	0.012

Source: Survey Data, 2026

5. Findings and Discussion

This study's results provide unequivocal empirical evidence of the predicted correlations among AI adoption intensity, digital competency, and entrepreneurial performance in Sri Lanka's online enterprises. The results indicate that the intensity of AI deployment significantly enhances digital capacity. This suggests that companies that aggressively integrate AI into their operations are likely to cultivate enhanced digital competencies. This result aligns with previous research indicating that the implementation of advanced technologies improves organizations' capacity to handle data, integrate systems, and respond adeptly in digital contexts (Khin & Ho, 2019; Elia et al., 2020). This also indicates that the adoption of technology enhances the development of dynamic capacities in organizations (Teece et al., 1997), which are crucial for adjusting to swiftly evolving market conditions and promoting innovation.

The investigation indicates that digital competence markedly enhances entrepreneurial performance, underscoring its importance to corporate success. Companies possessing advanced digital capabilities are more adept at utilizing digital tools to improve operational efficiency, foster innovation, and swiftly adapt to market fluctuations. This discovery corresponds with previous studies indicating that digital competence allows organizations to recognize and leverage opportunities, enhance competitiveness, and attain superior performance results (Prakasa & Jumani, 2024; Ardito et al., 2021). In online business environments, where operations are intricately connected to digital platforms, the significance of these competencies intensifies,

enabling organizations to respond swiftly to market fluctuations, enhance consumer interactions, and utilise data analytics for strategic decision-making.

The data demonstrate that the intensity of AI adoption has a direct positive impact on entrepreneurial performance. This indicates that companies gain advantages from AI via enhanced automation, more educated decision-making, and superior consumer engagement. The findings align with prior research highlighting the direct impact of AI and associated technologies on operational efficiency and strategic decision-making (Nambisan, 2017; Nawaz et al., 2024). The findings affirm that AI serves both as a supportive resource and as a direct catalyst for corporate performance in digital contexts.

The findings indicate that digital capacity partially mediates the association between the intensity of AI adoption and entrepreneurial performance. This signifies that while AI adoption directly enhances performance, a significant portion of its impact is mediated by advances in digital capabilities. This result aligns with Dynamic Capability Theory, which posits that resources alone do not yield greater performance unless they are adeptly transformed into organizational skills (Teece et al., 1997). Previous empirical research corroborates this perspective by demonstrating that digital competencies serve as a crucial conduit via which technology adoption enhances company outcomes (Khin & Ho, 2019; Prakasa & Jumani, 2024).

The findings indicate that integrating AI adoption with digital capabilities enhances entrepreneurial performance. In the realm of online enterprises in Sri Lanka, the conclusion suggests that the mere use of



AI technologies is inadequate. Companies must enhance their digital competencies to fully leverage these technologies. These findings enhance the current understanding by providing evidence from a developing economy and underscoring the significance of capability development in explaining how technical investments yield performance improvements.

6. Conclusion

The findings indicate that integrating AI adoption with digital capabilities enhances entrepreneurial performance. In the realm of online enterprises in Sri Lanka, the conclusion suggests that the mere use of AI technologies is inadequate. Companies must enhance their digital competencies to fully leverage these technologies. These findings enhance current understanding by offering evidence from a developing economy and by emphasising the significance of skill development in elucidating how technical investments lead to performance improvements.

The results indicate that while AI provides strategic advantages to companies, its efficacy is contingent upon the organization's capacity to develop and implement digital competencies. The findings underscore that integrating AI adoption with robust digital skills is crucial for enhancing entrepreneurial performance in online business environments.

6.1 Theoretical Implications

This research enriches the existing literature by integrating the Resource-Based View (RBV) and Dynamic Capability Theory (DCT) to elucidate the relationship among AI adoption intensity, digital capability, and entrepreneurial performance. This study builds upon previous research by treating AI adoption intensity as an independent variable and examining its impact in a developing nation. The results substantiate the perspective that technology resources alone do not enhance performance without the backing of suitable organizational capabilities (Barney, 1991; Teece et al., 1997).

By identifying the mediating role of digital capability, the research underlines the relevance of

capability development in transforming technology investments into meaningful outcomes. In addition, the data suggest that AI adoption effects entrepreneurial performance both directly and indirectly through digital capacity, giving empirical support for partial mediation. This helps clarify existing theoretical models by presenting a deeper understanding of how digital technologies contribute to firm performance, particularly in online business environments.

6.2 Managerial Implications

This study's findings have numerous practical implications for entrepreneurs, managers, and governments in Sri Lanka. Initially, online business proprietors must acknowledge that merely integrating AI technology is insufficient to achieve exceptional performance. They must concentrate on developing robust digital competencies, including technological skills, data analytics proficiency, and the efficient utilization of digital platforms. Secondly, managers must prioritize employee training and the enhancement of digital competencies to guarantee the proper implementation of AI technology within the firm. Augmenting digital capabilities can enhance decision-making, customer engagement, and operational efficiency, resulting in superior business outcomes. Third, enterprises should proactively incorporate AI into fundamental activities such as marketing, customer service, and supply chain management to optimize its advantages. Policymakers may facilitate this process by offering infrastructure, training initiatives, and incentives to promote AI use and digital transformation within SMEs. The study indicates that a balanced strategy integrating technology adoption and capability enhancement is crucial for improving entrepreneurial performance in digital business contexts.

6.3 Limitations and Future Research Directions

This study offers fascinating insights; however, it is necessary to consider several limitations. The utilization of cross-sectional data limits the capacity to develop unambiguous causal linkages among the

variables. Future research may employ longitudinal methodologies to more effectively document the evolution of AI usage and digital capabilities. The emphasis on e-commerce enterprises in Sri Lanka may restrict the relevance of the findings to other nations or industrial contexts, especially in sectors like retail, manufacturing, or services, where the adoption of AI may vary considerably. Subsequent research could investigate various industries or perform cross-national comparisons to augment the broad applicability of the findings.

This study investigates digital competence as the exclusive mediating variable. Future research may incorporate additional mediators, including innovation capability, organizational learning, or digital transformation, to enhance comprehension of the underlying dynamics. The study also fails to consider other moderating factors, including technology preparedness, organizational culture, or environmental uncertainty. Incorporating these variables in future research would elucidate how various conditions affect the influence of AI adoption on performance.

Future research can expand upon this work by integrating a broader array of variables, investigating varied scenarios, and employing more sophisticated research methodologies to enhance comprehension of AI-driven entrepreneurial performance.

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