

AI Entrepreneurship Integration and Firm Financial Performance: The Mediating Role of Entrepreneurial Creativity / Innovation Capability (A Quantitative Mediation Analysis)

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ABSTRACT

This study investigates whether the relationship between AI entrepreneurship integration and firm financial success is mediated by entrepreneurial creativity and innovative capability. During the quantitative study, 200 questionnaires were distributed; however, 195 employees in Pakistan's manufacturing industry responded. The data were analyzed using ordinary least squares regression in Hayes' (2022) PROCESS macro (Model 4). The findings demonstrate a substantial, statistically significant direct impact of AI entrepreneurship integration on firm financial performance ($b = .833, p < .001$) and a strong correlation between the two variables ($r = .803, p < .001$). However, after controlling for AI integration, there was no significant correlation between entrepreneurial creativity/innovation capability and financial performance ($b = .005, p = .932$) or between AI entrepreneurship integration and entrepreneurial creativity/innovation capability ($b = .083, p = .125$). There was no statistical support for mediation because the bootstrapped indirect impact was small and its confidence interval covered zero (effect = .0004, 95% CI [-.0100, .0108]). In light of the resource-based approach and dynamic capabilities

theory, the results indicate that AI's contribution to company financial performance in this sample acts through a direct pathway rather than through a creativity/innovation-capability mechanism. Future research directions, constraints, and theoretical and managerial implications are examined.

Keywords: *artificial intelligence; AI entrepreneurship integration; entrepreneurial creativity; innovation capability; firm financial performance; mediation analysis*

INTRODUCTION

Artificial intelligence (AI) has evolved from a supplementary efficiency tool to a strategic resource that entrepreneurial organizations actively incorporate into their processes for identifying opportunities, making decisions, and creating value. According to industry polls, AI-led businesses outperform their competitors in terms of revenue growth, margin, and shareholder return. Additionally, there is a growing correlation between AI adoption and key financial performance metrics (as evidenced, for instance, by recent enterprise-AI industry reporting). However, nothing is known about how integrating AI improves a company's financial success. The argument that AI improves performance more by enhancing entrepreneurial creativity and innovation capability—a company's ability to develop, assess, and market new ideas—occurs frequently in the literature on entrepreneurship (Alsharah, 2025).

A formal statistical mediation model that distinguishes the direct impact of AI integration on financial performance from an indirect influence that functions through creativity/innovation capability has rarely been used to evaluate this creativity-mediated explanation, despite its intuitive attractiveness. This distinction is important both theoretically and practically: if AI has a primarily direct impact on financial performance, managerial and policy attention should be directed toward the operational and financial-process channels (such as forecasting, automation, and resource allocation) through which AI acts, rather than just on interventions that foster creativity.

In order to close that gap, this study tests a mediation model that postulates that AI entrepreneurship integration (X) influences firm financial performance (Y) both directly and indirectly through entrepreneurial creativity/innovation capability (M). The article provides an empirical test of this mechanism using survey data from 195 firms and Hayes' (2022) PROCESS macro (Model 4) with bootstrapped confidence intervals. It also explores the implications of the pattern of results for theory and practice.

Research Objectives

- To investigate how integrating AI entrepreneurship directly affects the financial performance of businesses.
- To investigate how entrepreneurial creativity and innovation capacity are affected by AI entrepreneurship integration.
- To investigate how business financial performance is impacted by entrepreneurial creativity and innovative capacity.
- To determine whether the relationship between AI entrepreneurship integration and company financial performance is mediated by entrepreneurial creativity/innovation capability.

REVIEW OF LITERATURE AND THEORETICAL STRUCTURE

Integration of AI Entrepreneurship

The degree to which a company incorporates AI-based tools and capabilities—like predictive analytics, automated decision support, and machine-learning-driven customer or market intelligence—into its entrepreneurial processes, such as opportunity identification, resource allocation, and venture decision-making, is referred to as AI entrepreneurship integration. While natural-experiment evidence from knowledge-intensive startup ecosystems demonstrates that AI-era firms differ structurally from pre-AI cohorts in scale and efficiency (Ganuthula & Kuruva, 2025), recent studies frame AI as a resource that reshapes both the operational efficiency and the creative capacity of entrepreneurial firms (Alsharah, 2025).

Entrepreneurial Creativity and Innovation Capability

A company's ability to come up with original ideas and turn them into new goods, services, or procedures is known as entrepreneurial creativity/innovation capability. According to the dynamic capabilities tradition, this capability enables a company to adapt its resource base to a changing environment (Teece, Pisano, & Shuen, 1997). Entrepreneurial creativity/innovation skill is often suggested as the mechanism by which AI resources are transformed into competitive advantage and, eventually, financial success since AI tools can enhance idea generation, pattern detection, and experimentation.

Financial Performance of the Firm

Firm financial performance, which is typically operationalized through metrics like profitability, revenue growth, and return on assets, or, as in this study, by a composite perceptual measure filled out by firm respondents, represents the extent to which a firm accomplishes its financial objectives. Since financial performance is the standard by which the usefulness of AI investment is evaluated, it is the final result of interest in the majority of entrepreneurship-AI research.

Conceptual Structure

Two complementary theoretical frameworks are used in this investigation. First, according to the resource-based view (RBV), businesses can maintain a competitive edge by having resources that are rare, valuable, unique, and non-replaceable (Barney, 1991). This article discusses AI entrepreneurial integration as a resource. Second, according to dynamic capabilities theory (Teece et al., 1997), having a valuable resource alone is insufficient; businesses also need to be able to recognize opportunities, take advantage of them, and rearrange resources appropriately. This study positions entrepreneurial creativity/innovation capability as a transformational capability; the conceptual model investigates whether AI can either directly improve performance, mostly independent of the creativity/innovation-capacity mechanism, or it can operate as a resource whose financial advantage is released through this capability (an indirect, capability-mediated method).

Hypotheses Development

The following theories are put out in light of the aforementioned theoretical framework:

H1: Firm financial performance is significantly improved by integrating AI entrepreneurship.

H2: Entrepreneurial creativity and innovative capability are significantly enhanced by AI entrepreneurship integration.

H3: The financial performance of a company is significantly improved by entrepreneurial creativity and innovation.

H4: The association between AI entrepreneurship integration and firm financial performance is mediated by entrepreneurial creativity/innovation capability.

CONCEPTUAL STRUCTURE

The proposed mediation model is shown in Figure 1. Through the product of routes a ($X \rightarrow M$) and b ($M \rightarrow Y$), AI entrepreneurship integration (X) is modeled as predicting firm financial success (Y) both directly (path c') and indirectly through entrepreneurial creativity/innovation capabilities (M). The study's own empirical estimations are shown here for orientation along with each path in Figure 1; complete statistical information is provided in Section 5.

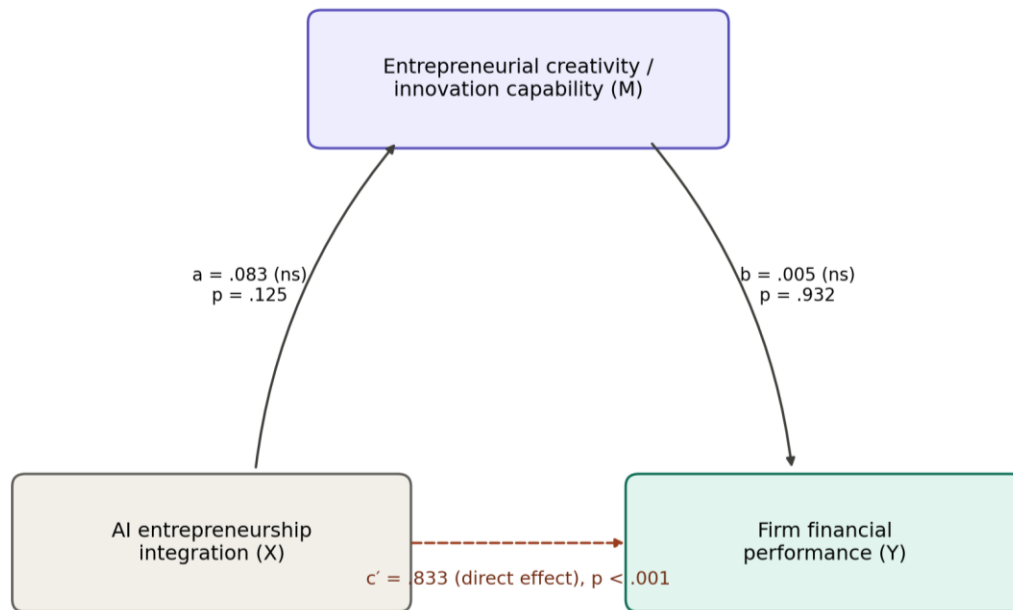


Figure 1. Hypothesized mediation model with empirical path estimates

METHODOLOGY

Sample and Research Design

A quantitative, cross-sectional survey design is used in this investigation. There are 195 firm-level observations ($N = 195$) in the analytic sample, all of which include complete data on the three main variables. The data were processed in IBM SPSS Statistics 25 under a Pakistan locale (en-PK), according to metadata embedded in the analysis file, indicating that the sample was taken from businesses operating in that context. This is noted as an inference from file metadata rather than an explicitly documented sampling frame.

Measures

Three variables are examined: company financial performance (FFP, the dependent variable, Y), entrepreneurial creativity/innovation capability (EntpC, the mediator, M), and AI entrepreneurship integration (AIEnterp, the independent variable, X). As is customary in this literature, each was operationalized as a composite (summed or averaged) score obtained from several Likert-type items. The statistical output provided for this analysis lacked item-level wording and response-scale anchors; researchers reporting this study in a manuscript that is ready for submission should include the complete item wording, response scale, and reliability (such as Cronbach's alpha) for each construct.

Method of Analysis

For every study variable, descriptive statistics and Pearson correlations were calculated. Hayes' (2022) PROCESS macro for SPSS (version 4.2), Model 4, which estimates the direct effect of X on Y, the effect of X on M (path a), the effect of M on Y controlling for X (path b), and the indirect effect ($a \times b$) using a percentile bootstrap procedure with 5,000 resamples and 95% confidence intervals, was used to test the mediation hypotheses (H1–H4). An indirect effect is considered statistically significant when its bootstrap confidence interval does not contain zero.

RESULTS

Descriptive Statistics

Descriptive statistics for the three research variables are shown in Table 1. The means of all the variables are quite comparable (around 22 out of a possible range extending to 25) with moderate standard deviations, and they were all assessed on the same underlying scale range. All of the skewness values were small and negative. The entrepreneurial creativity/innovation capability kurtosis (4.66) was significantly greater than that of the other two variables, suggesting a more peaked distribution; this is noted as a data attribute pertinent to the interpretation of later regression results.

Table 1: Descriptive Statistics (N = 195)

Variable	N	Min	Max	Mean	SD	Skewness (SE)	Kurtosis (SE)
AI entrepreneurship integration (AIEnterp)	195	15	25	22.05	2.83	-1.04 (.17)	0.39 (.35)
Entrepreneurial creativity/innovation capability (EntpC)	195	10	25	22.35	2.12	-1.27 (.17)	4.66 (.35)
Firm financial performance (FFP)	195	11	25	22.14	2.94	-0.95 (.17)	0.61 (.35)

Note. SE = standard error. Scale minima/maxima reflect the empirical range observed in this sample, not necessarily the theoretical scale range.

Correlation Analysis

Pearson correlations between the three research variables are shown in **Table 2**. AI entrepreneurship integration was only slightly and non-significantly connected with entrepreneurial creativity/innovation

capability ($r = .110$, $p = .125$), but it was very highly and significantly correlated with firm financial performance ($r = .803$, $p < .001$). Additionally, there was a modest, non-significant correlation between business financial success and entrepreneurial creativity/innovation capability ($r = .092$, $p = .200$).

Table 2: Pearson Correlations Among Study Variables (N = 195)

Variable	1	2	3
1. AI entrepreneurship integration	1		
2. Entrepreneurial creativity / innovation capability	.110	1	
3. Firm financial performance	.803**	.092	1

Note. ** Correlation is significant at the 0.01 level (2-tailed).

Mediation Analysis (PROCESS Model 4)

Path a: AI entrepreneurship integration's impact on entrepreneurs' capacity for innovation and creativity. With $R = .110$, $R^2 = .012$, $F(1, 193) = 2.373$, $p = .125$, the overall model predicting entrepreneurial creativity/innovation capability from AI entrepreneurship integration was not statistically significant (Table 3).

Table 3: Path a — Outcome Variable: Entrepreneurial Creativity/Innovation Capability

Predictor	Coeff.	SE	t	p	LLCI	ULCI
Constant	20.530	1.193	17.204	<.001	18.177	22.884
AI entrepreneurship integration	.083	.054	1.541	.125	-.023	.189

Note. Model summary: $R = .110$, $R^2 = .012$, $MSE = 4.477$, $F(1, 193) = 2.373$, $p = .125$.

Paths b and c': how AI entrepreneurship integration and entrepreneurial creativity/innovation capacity affect a company's financial performance. With $R = .803$, $R^2 = .645$, $F(2, 192) = 174.264$, and $p < .001$, the model as a whole was very significant. When entrepreneurial creativity/innovation capability was incorporated into the model, AI entrepreneurship integration continued to be a strong, significant predictor of business financial performance (path c'). After controlling for AI entrepreneurship integration (path b), entrepreneurial creativity/innovation capability did not significantly predict firm financial performance; a formal test of the X×M interaction was likewise non-significant, $F(1, 191) = .022$, $p = .882$, indicating no evidence of moderated mediation (Table 4).

Table 4: Paths b and c' — Outcome Variable: Firm Financial Performance

Predictor	Coeff.	SE	t	p	LLCI	ULCI
Constant	3.657	1.580	2.315	.022	.542	6.773
AI entrepreneurship integration (c')	.833	.045	18.546	<.001	.744	.922

Predictor	Coeff.	SE	t	p	LLCI	ULCI
Entrepreneurial creativity / innovation capability (b)	.005	.060	.085	.932	-.113	.123

Note. Model summary: $R = .803$, $R^2 = .645$, $MSE = 3.096$, $F(2, 192) = 174.264$, $p < .001$.

effects, both direct and indirect. AI entrepreneurial integration had a direct impact on business financial performance of .833 (SE = .045, $t = 18.546$, $p < .001$, 95% CI [.744,.922]). With a 95% bootstrap confidence range of [-.0100,.0108] that encompassed zero, the bootstrapped indirect impact through entrepreneurial creativity/innovation capability was .0004 (BootSE = .0048), suggesting a non-significant indirect effect (Table 5). 5,000 bootstrap samples with a 95% confidence level were used.

Table 5: Indirect Effect of AI Entrepreneurship Integration on Firm Financial Performance via Entrepreneurial Creativity/Innovation Capability

Path	Effect	BootSE	BootLLCI	BootULCI
AIEnterp → EntpC → FFP	.0004	.0048	-.0100	.0108

Note. Bootstrap sample size = 5,000; CI = bias-corrected bootstrap confidence interval. Direct effect (c') = .833, SE = .045, $t = 18.546$, $p < .001$, 95% CI [.744, .922].

Summary of Hypothesis Testing

Table 6: Summary of Hypothesis Testing

	Hypothesis	Estimate	p	Decision
H1	AI entrepreneurship integration → firm financial performance (direct)	$b = .833$	$< .001$	Supported
H2	AI entrepreneurship integration → entrepreneurial creativity/innovation capability	$b = .083$	.125	Not supported
H3	Entrepreneurial creativity/innovation capability → firm financial performance	$b = .005$	.932	Not supported
H4	Entrepreneurial creativity/innovation capability mediates $X \rightarrow Y$	$a \times b = .0004$	CI [-.0100, .0108]	Not supported

DISCUSSION

The findings clearly support a direct-effects explanation of the relationship between AI entrepreneurship integration and company financial performance, but they do not support a creativity/innovation-capability-mediated explanation. Both in simple correlation ($r = .803$) and in the multivariate model that controlled for entrepreneurial creativity/innovation capability ($b = .833$, $p < .001$), H1 was substantially supported: AI entrepreneurship integration was a strong, very significant predictor of firm financial performance. AI entrepreneurship integration was unrelated to entrepreneurial creativity/innovation capability, and once AI integration was taken into consideration, entrepreneurial creativity/innovation

capability was unrelated to company financial performance. In contrast, H2 and H3 were not supported. According to this pattern, H4 was not supported because its confidence interval encompassed zero and the bootstrapped indirect effect was very small.

This pattern indicates that, at least in this sample, AI entrepreneurship integration behaves more like a resource whose financial value is realized directly—for instance, through efficiency gains, quicker or better-informed decision-making, or improved forecasting and resource allocation—rather than through the particular transformational mechanism of entrepreneurial creativity or innovation capability, when interpreted through the resource-based view and dynamic capabilities lens introduced in Section 2. This shows that, in the connection being modeled here, creativity and innovative capability are not the means by which AI integration translates into financial performance, not that they are unimportant to organizations in general.

It is also possible that the relationship between AI integration and creativity requires a longer time horizon, greater AI-use maturity, or specific boundary conditions (e.g., firm size, digital transformation maturity, or top-management support) to emerge, or that entrepreneurial creativity/innovation capability mediates AI's effect on other, non-financial outcomes (e.g., new-product output, patenting, or qualitative innovation measures) that were not modeled in this study.

A more peaked-than-normal distribution can attenuate observed relationships involving that variable, which may partially explain the non-significant a and b paths, independent of the true underlying relationship in the population. This is another reason for caution regarding the relatively high kurtosis observed for entrepreneurial creativity/innovation capability (4.66).

THEORETICAL AND MANAGERIAL IMPLICATIONS

Theoretical Implications

By experimentally investigating, as opposed to assuming, a creativity/innovation-capability mechanism connecting AI integration to financial performance, this study adds to the literature on entrepreneurship and strategic management. Dynamic capabilities theory's application to AI is improved by the lack of a significant indirect effect and a strong direct effect. This suggests that AI can serve as a resource with direct performance implications, independent of the particular dynamic capability studied here, and it emphasizes the importance of testing rather than assuming suggested mediating mechanisms in AI-entrepreneurship research.

Implications for Management

For practitioners, the results imply that companies looking to profit from AI integration do not have to wait for improvements in creativity or innovation capacity to become apparent; in this sample, the direct operational and decision-making advantages of AI integration seem to be the main source of financial gain. Managers should not expect that this is the main way that AI investment will pay off financially in the short to medium term, even though they may still want to invest in creativity and innovation capabilities for its own sake—for product creation, differentiation, or long-term adaptation.

LIMITATIONS AND FUTURE RESEARCH

Cross-sectional design: Longitudinal or experimental designs would support causal claims regarding AI integration, creativity, and financial performance; the data do not allow for causal inference.

Single mediator: The high direct effect seen here may be explained by other conceivable processes (such as operational efficiency, decision-making speed, and digital finance competence) that were not modeled. Only entrepreneurial creativity/innovation capability was examined as a mediator.

Common method variance: shared-method variance may exaggerate some correlations (such as the strong X-Y correlation) if all three variables were gathered simultaneously from the same respondents using a self-report survey, whereas shared-source effects are unable to account for the non-significant a and b paths.

Measurement details: The analysis output supporting this article does not include item-level phrasing, response scales, and reliability coefficients for each construct; these should be included in full in any submission-ready version.

Generalizability: Results may not apply to other institutional or economic situations because metadata points to a single-country (Pakistan) sample.

Future studies should examine potential moderators (firm size, industry, digital maturity, top-management support), alternative and multiple mediators (e.g., decision-making agility, digital financial capability), and objective financial performance data in addition to perceptual measures..

CONCLUSION

Using survey data from 195 organizations using Hayes' (2022) PROCESS macro (Model 4), this study investigated if entrepreneurial creativity/innovation capability mediates the link between AI entrepreneurship integration and company financial performance. There was no evidence of mediation through entrepreneurial creativity/innovation capability; neither the effect of AI integration on creativity/innovation capability nor the effect of creativity/innovation capability on financial performance, nor the bootstrapped indirect effect, reached statistical significance. However, AI entrepreneurship integration had a strong, significant direct effect on firm financial performance. These results support a direct-effects model of AI's financial contribution to entrepreneurial enterprises in this sample and suggest that other mechanisms, rather than just entrepreneurial creativity/innovation capability, are more attractive candidates for further mediation research in this area.

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