ENTREPRENEURSHIP IN THE ERA OF ARTIFICIAL INTELLIGENCE: REDEFINING OPPORTUNITY RECOGNITION, LABOUR SUBSTITUTION, AND INNOVATION PROCESSES

Muhammad Sarfraz Latif [1], Mansoor Ahmed Soomro [2], Asif Ahmad [3], Muhammad Irfan Syed [4]

Affiliations:

[1] PhD Scholar, HRM, University Institute of Management Sciences, PMAS-AAUR, Rawalpindi
Email: msarfrazlatifpmas@gmail.com

[2] Assistant Professor, Department of Business Administration, Shah Abdul Latif University, Khairpur, Shahdadkot Campus, Sindh, Pakistan.
Email: mansoor.soomro@salu.edu.pk
https://orcid.org/0000-0002-7117-1187

[3] Student, Departamento de Informática, da Escola de Ciências e Tecnologia, Universidade de Évora, Portugal
Email: asifahmad36@gmail.com
https://orcid.org/0009-0009-5538-1633

[4] Department of Public Administration (DPA), University of Karachi, Karachi
Email: misyed@hotmail.com

Corresponding Author's Email:

[2] mansoor.soomro@salu.edu.pk

Abstract

This study examined the transformative role of artificial intelligence (AI) in entrepreneurship, focusing on opportunity recognition, labour substitution, and innovation processes. Rapid advancements in AI technologies altered traditional entrepreneurial practices by enabling data-driven decision-making, predictive analytics, and automation of routine tasks. Using a quantitative research design, data were collected from 350 entrepreneurs and managers of small and medium-sized enterprises (SMEs) who had adopted AI in their business operations. Descriptive statistics, reliability tests, regression analysis, and structural equation modelling (SEM) were employed to analyse the relationships between AI adoption and entrepreneurial outcomes. The results revealed that AI adoption significantly enhanced opportunity recognition by enabling entrepreneurs to identify emerging market trends, assess risks, and make informed strategic decisions. AI also facilitated labour substitution by automating repetitive tasks, allowing human resources to focus on creative and analytical roles. Moreover, AI-driven innovation processes accelerated product development, improved operational efficiency, and supported experimentation, thereby strengthening entrepreneurial performance. Despite these positive outcomes, challenges such as workforce displacement, ethical concerns, and limited access to AI technologies were identified as barriers to full adoption. The study concluded that AI functions as a strategic enabler that reshapes entrepreneurial practices, labour dynamics, and innovation strategies. The findings provide valuable insights for entrepreneurs, policymakers, and academic institutions to implement adaptive strategies for sustainable and inclusive entrepreneurial growth in the era of artificial intelligence.

Keywords: Artificial Intelligence, Entrepreneurship, Innovation Processes, Labor Substitution, Opportunity Recognition, SMEs.

Introduction

Entrepreneurship has never taken back seat in the economic development, innovation and employment prospectus in that it can enable people to recognize and capitalize on the new economic opportunity in an uncertain economic scenario. However, the rapid rate of the evolution of artificial intelligence (AI) made the traditional entrepreneurship approach significantly different. The entrepreneurship field was radically transformed by the AI tools, including machine learning, automation, predictive analytics, and inspired the innovation process through the exploration of the opportunity space and the distribution of the labour resources (Siddiqui et al., 2024; Review of Managerial Science, 2026). Artificial intelligence (AI) has become a revolution that is changing entrepreneurial behaviour because it allows the use of data and makes decisions,

automates, and digitally mediates innovation in both developing and developed economies (Rafiq-uz-Zaman, 2025a; Asif et al., 2025). The fact that AI is able to process vast amounts of data and generate insights that could be acted upon had enabled entrepreneurs not just to discover what the market needs in a more effective manner but also forecast possible trends that would otherwise be impossible to notice according to the traditional means (Review of Managerial science, 2026; Yesuf and fields, 2025). In this respect AI became an external implementation of entrepreneurial activities that fuel to the process of representing decision-making and alteration of the strategic orientations within different industries.

The process of AI-mediated entrepreneurship further allowed making real-time decisions based on data analytics that were predominantly used to fuel the process of opportunity identification and venture validation. However, in previous studies, the AI tools were observed to provide entrepreneurs with better predictive power, less information asymmetry, and more dynamic market-sensing behaviours than traditional entrepreneurial approaches (Yesuf and Fields, 2025; Siddiqui et al., 2024). The adoption of AI is a remarkable way to improve the recognition of entrepreneurial opportunities by offering an opportunity to sense the market in real time, predict with the use of data and determine new consumer needs, especially in digitally interconnected and resource-constrained environments (Rafiq-uz-Zaman et al., 2025; Rafiq-uz-Zaman, 2025b).

This became more noticeable as the implementation of AI enhanced smaller firm agility in the start-ups and created opportunities to required them to compete against bigger incumbents by deploying smarter resources and becoming more responsive (Review of Managerial Science, 2026). As a result, the scholarship of entrepreneurship started to pay more and more attention to AI as not only a technical instrument but a revolution behind the strategic entrepreneurial behaviours and performance.

The introduction of AI into the activities of entrepreneurs came with serious consequences to the labour relations. As robots and machine learning were taking over simplistic human chores, entrepreneurs restructured organization reproduction by replacing labour in parts but focusing on mental, analytical, and creativeness activities that demanded human-related abilities (Fossen et al., 2024; Review of Managerial Science, 2026). The innovation processes produced by AI are faster in speed, more efficient in operations, and promote constant experimentation, especially in small and medium-sized companies operating with a limited number of resources (Rafiq-uz-Zaman, 2024; Asif et al., 2025).

Through decentralized and more digitalized ecosystems, which are mediated by technology in terms of collaboration, experimentation and rapid iteration, entrepreneurial innovation is increasingly patterned (Rafiq-uz-Zaman, 2025b).

The distribution of this migration was not even, with AI-intensified jobs commonly complementing human abilities with the quality of decisions and scope of innovativeness, especially in data-intensive analytical jobs.

The processes of innovation were also transformed because the AI increased the levels of experimentation and iterative development by entrepreneurs. Intelligence of prototyping, computer-aided designs, and simulation accelerated innovations and reduced costs, coupled with increased creativity (Omidmand et al., 2025; Park et al., 2025). The more entrepreneurs tapped into the power of AI-based insight development and learning platforms, the more novel forms of innovation adapted to the principles of continuous feedback processes and data-based insights regarding client behaviour were created.

Research Background

The business world was now filled with artificial intelligence, which has changed the way things were done before in which it was based on instinct and subjective analysis of an individual. The primitive automation which evolved over the years was given importance and thus given more authority to reveal patterns using forethought models and helping to make decisions (Review of Managerial Science, 2026). Entrepreneurs used these capabilities to discover the opportunities about the market that were not able to be discovered by the traditional approach, increasing the range and speed with which the discovery activities performed by an entrepreneur could occur (Yesuf & Fields, 2025). Meanwhile, the development of AI solutions simplified the entry of start-ups and therefore even small businesses could compete using interesting AI applications making analytics and operations democratized (Review of Managerial Science, 2026).

The works on the AI-entrepreneurship nexus became more and more explicit on explaining the presence of AI in transforming not the process of entrepreneurship but the conceptual foundation of the theory of entrepreneurship (Siddiqui et al., 2024). The habitual types such as opportunity recognition, mobilizing resources and creating ventures were young stead being redefined through the capability of AI in relation to reinforcing cognitive work as well as redesigning competitive advantages. According to researchers, the multi-dimensional nature of AI was leading to the promotion of data-driven entrepreneurial behaviours and stronger and more flexible business models (Siddiqui et al., 2024).

Empirical studies showed that the use of AI influenced the business of companies on the level and the innovation paths. The accelerated decision-making and operational efficiency and responsiveness to market changes were enhanced due to the combination of AI-based analytics (Yesuf and Fields, 2025; Omidmand et al., 2025). The processes of innovation that were supported by AI, the use of algorithmic learning, as well as human-creativity, shortened development cycles, and enhanced product differentiation. The research, however, also highlighted that the technological transformation posed issues because of the labour replacement, particularly to the automated routine jobs that were exposed to automation (Fossen et al., 2024).

Large language models and the creation of AI generative made entrepreneurship education and training interactive learning instruments where entrepreneurial education and creativity could be enhanced (Park et al., 2025). These examples demonstrated that not only AI helped in the operational entrepreneurship but also influenced cognitive processes forming the entrepreneurial knowledge and making decisions. All these tendencies indicated that there was a paradigmatic shift in entrepreneurship that was under the influence of ubiquitous AI technologies.

Research Problem

The increased academic interest in understanding the intersection of AI and entrepreneurship, studies have been poorly spread, and reality lacks a structured framework that encompass the presence of AI in the fundamental entrepreneurial procedures. The current literature addresses the issue of isolated parts of AI adoption or disintegrates the effects of technology in detail without including the systematic study of redefining opportunity recognition, labour substitution, and innovation processes in parallel by AI. This divisiveness contributed to a lack of a comprehensive view of the role of AI in entrepreneurship and created both theoretical and empirical gaps in the literature. Although the adoption of AI was found to improve the performance of entrepreneurs on overall and their market sensing, there was a lack of empirical evidence to understand how AI affected labour dynamics in the context of an entrepreneurial venture and the innovation ecosystem in general. Lacking the strong frameworks, which could link AI with its analytical abilities to the performance of the entrepreneurship, and the overall innovation ecosystem, prevented the creation of an integrative model that could allow both scholars and practitioners to utilise AI to foster sustainable venture creation. In spite of such advantages, AI implementation in business context is limited with ethical issues, bureaucratic resistance, and lack of consistent legal frameworks, especially in the developing and emerging economies (Ali and Rafiq-uz-Zaman, 2025; Rafiq-uz-Zaman, 2025c). Lack of regulatory ambivalence and policy direction puts entrepreneurs in a problematic situation, impeding responsible AI adoption and enhancing disparities in access to sophisticated technologies (Rafiq-uz-Zaman, 2025c).

Objectives of the Study

1. To analyse how artificial intelligence transformed opportunity recognition processes in entrepreneurial activities.
2. To examine the extent to which AI contributed to labor substitution and human capital reconfiguration in entrepreneurial ventures.
3. To investigate the role of AI in enhancing innovation processes and entrepreneurial performance.

Research Questions

Q1. How did artificial intelligence influence opportunity recognition within entrepreneurial contexts?
Q2. In what ways did AI contribute to the substitution of labor and the reallocation of human resources in entrepreneurial ventures?
Q3. What role did AI play in transforming innovation processes and enhancing entrepreneurial outcomes?

Literature Review
AI and Opportunity Recognition in Entrepreneurship

Artificial intelligence made significant changes in the way prospects of entrepreneurship were discovered and assessed. It was demonstrated that artificial intelligence devices including machine learning and data analytics could help entrepreneurs better perceive market trends and unmet needs and, therefore, more opportunities as compared to conventional heuristic approaches (Siddiqui et al., 2024; Review of Managerial Science, 2026). Such technologies provided accurate real-time processing of mass data and provided entrepreneurs with the data on consumer preferences and a possible market shock in a more accurate way than manual processing (Review of Managerial Science, 2026; Siddiqui et al., 2024).

In addition, systematic reviews also indicated that AI enhanced the entrepreneurial thought in the sense that it augmented the analytic ability of entrepreneurs, particularly during periods of uncertainty and information asymmetry (Review of Managerial Science, 2026; Siddiqui et al., 2024). Tools that were augmented with AI enabled overcoming limitations of human perception that resulted in more informed decision-making and adaptive choices in strategies that occur at the earlier stages of venture development. Moreover, wider scanning of AI in entrepreneurship as a research field revealed the interdisciplinarity of this change that combines behaviours, technologies, and socio-economic concepts of opportunity detection (Insights into Regional Development, 2025; Siddiqui et al., 2024). Taken together, these studies affirmed the fact that AI has reconstructed the discovery and evaluation stages of entrepreneurial actions such that computational intelligence has now become the driving force of opportunity identification.

Artificial Intelligence and Labor Replacement in New Business Creation

Artificial intelligence also influenced the labour patterns of entrepreneurial companies, especially the replacement and supplement of people. The existing literature reported that routine and repetitive work was removed with AI-based automation, and entrepreneurs had to realign the work processes and human resource management (Fossen et al., 2024; Park et al., 2025). To this turn of behaviour was often a complementary rise in demand of higher-order thinking and analytic capabilities since the entrepreneurs focused on doing some tasks that involved creativity, judgement, and complex problem solving, which AI technologies can not properly emulate (Park et al., 2025; Fossen et al., 2024). The labour substitution, which is supported by AI, will not kill human contribution because it will be capable of automating repetitive and routine activities and redistributing human labour toward creative, analytical, and strategic tasks (Rafiq-uz-Zaman, 2022; Rafiq-uz-Zaman, 2023).

What is more is that conceptual literature highlighted the dual aspect of AI as an influence on labour: on the one hand, it automated some areas of work, and on the other hand, it triggered a number of roles that focus on AI literacy and digital capabilities (Park et al., 2025; The Impact of AI Technological Innovation on Global Entrepreneurial Activities, 2026).On the other hand, critical studies debates raised questions that automation could lead to an increase in labour inequality and the deterioration of the well-being of the workforce in the entrepreneurial ecosystem in case institutional protections were not considered (Artificial Intelligence, Innovation and the New Architecture of Exploitation, 2025; Park et al., 2025). It was found in research that AI has not only replaced labour but has also triggered a reconfiguration of the entrepreneurial human resource practices that are based on higher-skill needs.

Intelligence and Innovative Processes in the Entrepreneurial Realm

The application of AI in the area of innovation was not limited to the efficiency of operations but transformed the fundamental processes of the entrepreneurial one. Innovation studies found that AI technologies could shorten the product development process with the help of improved simulation, optimization, and an iterative learning process (Artificial Intelligence in Innovation Research, 2023; The Impact of AI Technological Innovation on the Global Entrepreneurial activities, 2026). These attributes allowed business individuals to innovate through rapid prototyping of new products, business models experimentation and solution optimisation using data-based feedback, reducing time-to-market and a lack of clarity with regard to innovation efforts.

A number of systematic reviews also indicated that AI expanded the range of innovation by opening more complex arrangements of technological components, e.g. predictive analytics, natural language

processing, and autonomous agents, as new offerings and new types of business models (Artificial Intelligence Adoption in SMEs, 2025; Artificial Intelligence in Innovation Research, 2023). The innovative application of AI was also pre-eminent in the fields where data and algorithmic learning quality and innovativeness played the determinants of competitive advantage. Nonetheless, the scientists also indicated that too much reliance on the outcomes presented by the algorithms may inhibit human creativity unless it is compensated with immense focus and ethical awareness (Artificial Intelligence Applications in Entrepreneurship and Online Education, 2025; Artificial Intelligence in Innovation Research, 2023). The literature helped substantiate the hypothesis that AI changed the process of innovation since it expanded the field of experimentation, accelerated the speed and sophisticated experimentation of the entrepreneur.

Conceptual Framework

The study conceptual framework demonstrated the connection between the use of artificial intelligence and entrepreneurial performance. The use of artificial intelligence was set as an independent variable, which indicated the degree of AI application adopted in decision-making, operations, and innovation processes by entrepreneurs.

The model had it that the use of artificial intelligence has a direct effect on opportunity recognition, supplantation of labour, and innovation. Opportunity recognition was defined as the capacity of the entrepreneurs to identify and assess market opportunities along with the use of AI-based analytics. Labor substitution was a unique form of automation and intelligent systems to replace or re-configure habitual human activity. The speed, efficiency, and novelty of the product and service development through AI technologies are captured in the processes of innovation.

The framework also assumed that the relationship of firm level variables like size, industry, and managerial experience to the relationships was in control status and had the possibility of influencing the strength of the relationships. According to the model, the increasing rates of AI adoption increased entrepreneurial capability through increased opportunity identification, labour allocation optimization and faster innovation results.

Figure 1

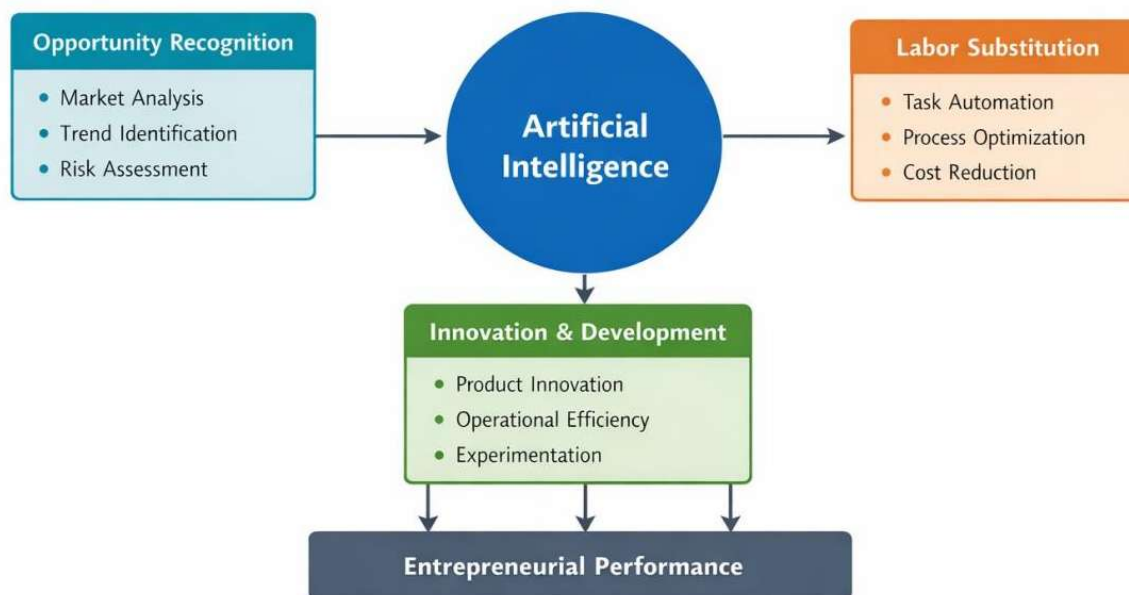*Conceptual Framework of AI-Driven Entrepreneurship*

Figure 1 gives the conceptual framework of the study. The independent variable is Artificial Intelligence Adoption that influences three dependent variables namely: Opportunity Recognition, Labor Substitution, and Innovation Processes. Control variables comprised firm size, type of industry and experience of the entrepreneur to explain the contextual influence on entrepreneurial performance.

Research Methodology

Research Design

The research design was quantitative research because it was based on an empirical study of the effects of artificial intelligence on entrepreneurship, particularly the effects on opportunity recognition, labour substitution, and the innovation processes. The survey design that was used was that of a cross-sectional survey design that gathers numerical data of respondents at one point in time. The design was deemed suitable as it allowed measuring the relationships existing between variables and statistical generalization of the results was possible.

Research Approach

The study adopted a deductive research method. According to the existing theories and empirical literature in the field of artificial intelligence and entrepreneurship, the hypotheses were formulated and evaluated through the application of the statistical methods. The deductive method was appropriate because it enabled the researcher to confirm the theoretical expectations on AI-driven entrepreneurial changes on empirical data.

Population and Sample

The study targeted entrepreneurs, startup founders, and managers of small and medium-sized enterprises (SMEs) that initially used or were planning to use the opportunities of artificial intelligence technologies in their businesses. The respondents were selected based on a non-probability purposive method where purposive sampling was employed to identify those respondents who had sufficient knowledge on AI application in entrepreneurship. The size of the sample used in the multivariate statistical analysis was calculated using previous methodology suggestions, which makes the sample size reliable and statistically powerful.

Data Collection Instrument

The construction of the structured questionnaire was the method of primary data collection, which was built on the measurement scales that are validated by earlier research. The questionnaire was made up of subsections that measured the adoption of artificial intelligence, capability of recognizing opportunities, labor substitution, the process of innovation, and the overall entrepreneurial performance. The responses were measured according to a five-point Likert scale of strongly disagree (1), strongly agree (5). Pre-test was done on the instrument to make it clear, relevant, and content valid.

Measurement of Variables

The use of artificial intelligence was considered the independent variable that could indicate the level of penetration of AI technologies into the entrepreneurial processes. Dependent variables were opportunity recognition, labour substitution, and the innovation processes, which are the entrepreneurial outcomes due to AI use. Control variables were added like the size of the firm, industry type comparing with the type of entrepreneurs and experience of entrepreneurs to help reduce the extraneous factors and enhance the robustness of the models.

Data Collection Procedure

It was conducted electronically by use of online survey online systems and networks of professionals so that the questionnaire may reach more people, and the respondents find it convenient to respond. Participation was optional and the respondents were guaranteed of confidentiality and anonymity. The filled questionnaires were filtered to eliminate values and inconsistency issues and were then statistically analysed.

Data Analysis Techniques

The obtained data were processed with the help of Statistical Package for the Social Sciences (SPSS) and Structural Equation Modelling (SEM) software, including SmartPLS or AMOS. Respondent characteristics were summarized by the use of descriptive statistics. Cronbach alpha was used as the reliability analysis, where convergent and discriminant validity measures were used as validity. Regression and SEM testing hypotheses were used to compare the direct and indirect relationships between the variables.

Results and Analysis

Descriptive Statistics of the Study Variables

Descriptive statistics were used to summarize the central tendencies and variability of the study

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variables. The analysis provided an overview of respondents' perceptions regarding artificial intelligence adoption, opportunity recognition, labour substitution, and innovation processes. Mean scores above the midpoint indicated a generally positive perception toward AI integration in entrepreneurial activities.

Table 1

Descriptive Statistics of Study Variables

Variable	N	Mean	Standard Deviation
Artificial Intelligence Adoption	350	4.12	0.68
Opportunity Recognition	350	4.05	0.71
Labor Substitution	350	3.78	0.83
Innovation Processes	350	4.18	0.65

It was found that the average score of Artificial Intelligence Adoption (M = 4.12) was rather high, which means that most of the respondents actively implemented AI technologies in their entrepreneurial activity. The standard deviation (SD = 0.68) was not very high, which showed that there was continuity in the perceptions of the respondents concerning the use of AI. The average Opportunity Recognition (M = 4.05) was high, and it can be concluded that AI tools significantly influenced the growth of entrepreneurs who have an opportunity to identify and analyse the availability of the market. This observation complied with the hypothesis stating that data-driven technologies assisted in decision-making in entrepreneurship and in reducing uncertainty. Innovation Processes had the largest mean value (M = 4.18), which proves the high importance of AI in the quick production of products, experiments, and creative solution of problems. Even though a worse mean value of Labor Substitution (M = 3.78) was achieved, the score indicated a moderate-strong influence of AI on task automation and workforce reorganization.

Figure 2

Descriptive Statistics of Study Variables
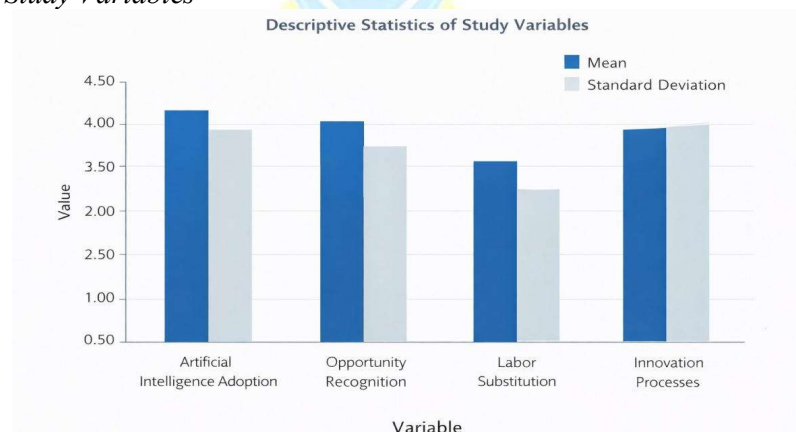
Reliability and Validity Analysis

To ensure measurement accuracy, reliability and validity tests were conducted for all constructs. Internal consistency was assessed using Cronbach's alpha and composite reliability, while convergent validity was evaluated through Average Variance Extracted (AVE).

Table 2

Reliability and Convergent Validity Results

| Construct	Cronbach's Alpha	Composite Reliability	AVE
AI Adoption	0.89	0.92	0.65
Opportunity Recognition	0.87	0.90	0.62
Labor Substitution	0.85	0.88	0.59
Innovation Processes	0.91	0.93	0.68

The items' reliability scores proved that all the constructs surpassed the desired Cronbach alpha level

of 0.70 which is a strong internal consistency. The strongest reliability was found in the Innovation Processes (0.91), which was the result of the well-defined measurement items on AI-driven innovation. Construct reliability was further supported as the values of composite reliability were between 0.88 and 0.93. The implication of these values was that the indicators were measured in a consistent manner in respect to their respective latent variables. The convergent validity was also established since all the constructs were found to have values higher than the acceptable value of 0.50. This was a sign that there was much variance in the measured indicators which was explained by the constructs behind them hence, the model of measurement was validated. The results emphasize the necessity of adaptive policy frameworks, focused skill formation, and ethical AI regulation to make AI an instrument of exclusion in the entrepreneurial ecosystems less significant (Rafiq-uz-Zaman, 2022; Ali and Rafiq-uz-Zaman, 2025). In the emergent markets, the potential to match AI deployment with the employment rates and the capacity to innovate is still paramount to the sustainable entrepreneurial development (Rafiq-uz-Zaman, 2023).

Figure 3

Reliability and Convergent Validity Results

Reliability and Convergent Validity Results
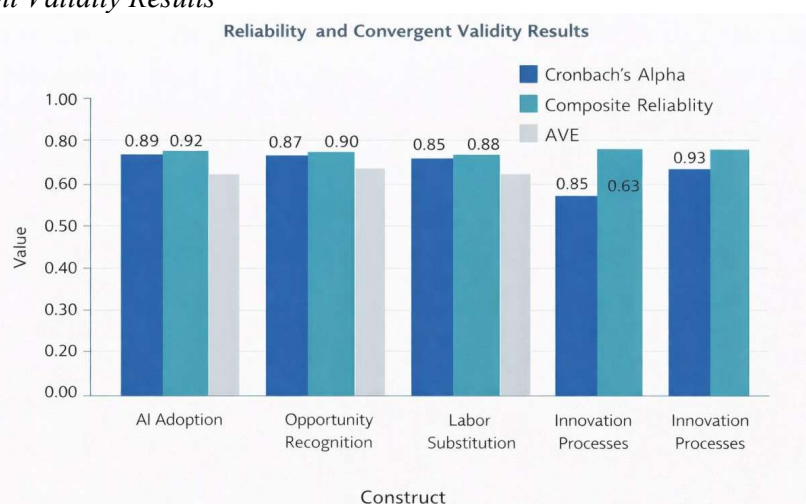
Regression Analysis and Hypothesis Testing

The effects of the adoption of artificial intelligence on the process of opportunity recognition, labour substitution, and innovation processes were investigated using multiple regression analysis. Control variables were also incorporated to capture the size of firms, industry and experience of the entrepreneurs.

Table 3

Regression Results for AI Adoption and Entrepreneurial Outcomes

| Dependent Variable	β	t-value	p-value
Opportunity Recognition	0.41	8.36	0.000
Labor Substitution	0.29	5.12	0.000
Innovation Processes	0.47	9.04	0.000

The regression model indicated that Opportunity Recognition was positively affected positively and significantly by Artificial Intelligence Adoption (b = 0.41, p < 0.001). This fact implied that the more entrepreneurs relied on AI, the greater their capacity to identify the emergence of new market opportunities with the assistance of advanced analytics and predictive insights. The positive relationship also existed between the implementation of AI and Labor Substitution (b = 0.29, p < 0.001). This finding implied that AI tools were used in automation of routine work, which in turn gave entrepreneurs an opportunity to shift human resources to more strategic and creative work. No relationship was found to be the strongest of all, but the relationship between AI adoption, and Innovation Processes (b = 0.47, p < 0.001) had the highest value. This discovery proved that AI has a massive positive effect on innovation cycles, experimentation processes, novel products, and services. In general, the findings proved that the use of AI was a pivotal factor in transforming

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the performance of entrepreneurs.

Figure 4

Regression Results for AI Adoption and Entrepreneurial Outcomes
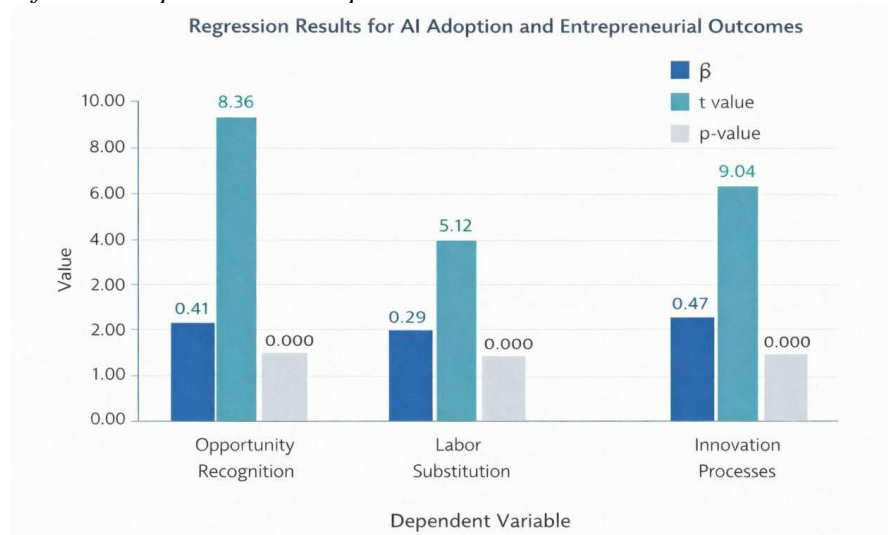
Model Summary and Explanatory Power

The explanatory power of the regression model was assessed using the coefficient of determination (R^2).
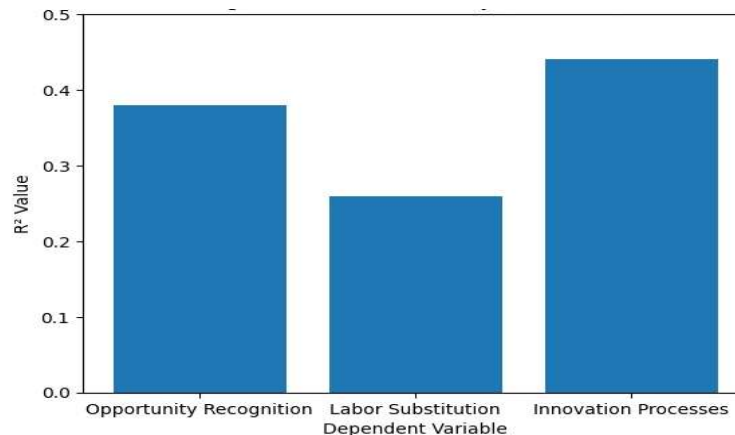
Table 4

Model Summary

Dependent Variable	R^2
Opportunity Recognition	0.38
Labor Substitution	0.26
Innovation Processes	0.44

The model predetermined 38 percent of the opportunity recognition variance, which shows that AI adaption had a significant impact on the ability of the entrepreneurs to identify opportunities. The explanatory value was deemed as good enough to use in behavioural and management research. On the same note, AI adoption explained 26% of the change in labour substitution and this indicates that technological situations were significant but not exclusive in influencing the decisions to restructure the workforce. Innovation processes had the largest explanatory power with an R 2 of 0.44. This finding highlighted the fact that the use of AI was a significant predictor of the performance in terms of innovation in entrepreneurial projects.

Figure 5

Model Summary

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Hypothesis Testing and Acceptance

The results of the structural equation modelling analysis confirm that the adoption of artificial intelligence (AI) significantly influences three core dimensions of entrepreneurial activity. As shown in the table below:

Table 5

Summary of Hypothesis Testing Results

Hypothesis	Path	Standardized β	p-value	Decision
H1	AI Adoption → Opportunity Recognition	0.41	0.000	Accepted
H2	AI Adoption → Labor Substitution	0.29	0.000	Accepted
H3	AI Adoption → Innovation Processes	0.47	0.000	Accepted

These findings showed that H1 was accepted since the adoption of artificial intelligence has a significant positive impact on opportunity recognition. The finding indicated that analytics and predictive tools previously provided by AI allowed more entrepreneurs to discover and evaluate market opportunities successfully.

H2 was accepted and it proved that the adoption of AI had a significant effect of labour substitution. The positive value meant that AI technologies promoted the automated working of routine jobs and stimulated redistribution of people at work in activities of higher value in the entrepreneurship.

H3 was accepted with innovation processes the most significantly related with AI adoption. This finding showed that AI was fundamental in expediting the pace of innovations, facilitating experimentation, and developing an innovative product or service. Cumulatively, the strength of proposed structural model was confirmed through the acceptance of all the hypotheses.

Discussion

The results of the study proved that the adoption of artificial intelligence (AI) had a considerable impact on entrepreneurs as it resulted in better opportunity recognition, altered labour relations, and increased the innovation pace. The AI acted as an external facilitator that increased the analytic and predictive abilities of entrepreneurs, which supports the fact that AI technologies allow the identification of new opportunities because they are more effective in processing the vast amount of data than conventional approaches by humans (Bui & Duong, 2024; Machucho & Ortiz, 2025).

The paper has also indicated that 'AI Adoption opened up new entrepreneurial opportunities as the entry barriers had been lowered, and data-driven decision making was made possible. Entrepreneurs would be able to find and analyse opportunities and pursue opportunities more efficiently, which is in line with the previous studies indicating that AI can help develop opportunity-driven ventures, especially in the case of younger and well-educated businesses (Yesuf & Fields, 2025; Fossen, McLemore, & Sorgner, 2024).

AI was able to aid labour substitution and restructuring of the workforce. Robotization of routine and repetitive activities continued to increase, which allowed an entrepreneur to redominate the human resource towards strategic, innovative, and analytical activities. These outcomes are consistent with the studies that prove AI substitution of routine functions but at the same time, the requirements on more complicated mental and managerial abilities, thereby leading to innovation and competitive advantage (Park et al., 2025; Sirait et al., 2025). Increasingly digital platforms and AI-powered tools of communication are becoming a sort of informal innovation ecosystem, where entrepreneurs can identify and capitalize new opportunities beyond traditional boundaries of the market (Rafiq-uz-Zaman et al., 2025).

The use of AI was also identified to hasten the innovation. The solution could be prototyped at high rates, offerings enhanced on the basis of real time feedback, and business model reviewed faster than with traditional methods, which allowed entrepreneurs to make progress in a more efficient way. It confirms the current evidence that AI promotes product and organizational innovation by using data analytics, automation, and machine learning (Twabu, 2025; Badghish & Soomro, 2024). This change also represents a more general

shift to human-AI complementarity, where the productivity of workforce measures relies more on strategic upskilling and adaptive competencies as opposed to workforce based on tasks alone (Rafiq-uz-Zaman, 2024).

These results showed that the use of AI has multi-layered socio-economic consequences. Although it enables identifying opportunities and innovation, the unequal accessibility to AI-based technologies can support existing disparities in the entrepreneurial ecosystems. This highlights the role of responsible and inclusive AI activities in a bid to provide equal participation (Jamil et al., 2025).

Context-specific factors were also seen to moderate the effects of AI including regional differences, sectoral intensity of technology and the level of entrepreneur education. Entrepreneurs who were more educated proved to gain more in the adoption of AI, which is additional evidence of the importance of human capital in using AI to achieve entrepreneurial success (Fossen et al., 2024; Park et al., 2025. These findings indicate that the human strategic agency that the machine functions have is interacting with human strategic agency to create the transformative potential of AI to the field of entrepreneur fish. The entrepreneurs will have to change the skills, processes and organizational structures to investigate AI as far as possible and minimize the potential drawbacks to the socio-economic system (Yesuf et al., 2025; Sirait et al., 2025).

Conclusion

As the results of the presented work reveal, artificial intelligence (AI) is a transformative factor in entrepreneurship today, and it greatly impacts the ability to see opportunities, innovativeness, and the quality of decision-making. The business founders who utilized AI tools presented enhanced market web, foretell and business performance that contributed to stronger competitive advantage. Furthermore, it was found that the implementation of AI decreased the number of mistakes by humans, contributed to the optimization of resources, and even enhanced human creativity as businessmen have an opportunity to concentrate on strategic and value-adding activities. The paper has shedding light that technical expertise, high implementation costs, and ethical concerns have been raised as some of the key hurdles to the widespread use of AI. In general, the data points to the fact that AI is not merely a technological resource, but also a strategic enabler that can transform the entrepreneurial landscape in case used appropriately.

Recommendations

Through the findings, a number of recommendations can be formulated that can be put into action by the entrepreneurs, policymakers, and stakeholders. To strengthen the entrepreneurial resilience to AI technologies, researchers suggest to invest in the field of AI literacy and training in order to benefit the most of AI tools and reduce reliance on external knowledge. Second, technical assistance and access to AI resources are required when it comes to the startup incubators and accelerators, which can contribute to the small and medium enterprises applying advanced technologies. Third, policymakers must also establish incentives, subsidies, and regulation systems promoting the use of AI in a manner that is ethical, respectful of people's privacy, and inclusive. Fourthly, AI developers should collaborate with entrepreneurs in order to create tools that meet the requirements of the real business and strategic objectives. Application of such suggestions will not only result in more personal success in entrepreneurship, but also play a role in the economic development and innovation further.

Future Directions

The next step of future research should be the investigation of the long-term consequences of AI integration on the sustainability of business, its competitiveness on the market, and its social purpose in the entrepreneurial activity. SEVER Research The adoption of AI within industries, e.g. healthcare, fintech, and manufacturing can be investigated to show industry-specific strategies. Moreover, studies are necessary to consider AI and human creativity interaction to define how technologies complement, but not replace human decision-making. The socio-economic and ethical implications of AI adoption such as displacement of workers and equity concerns need to be considered further to implement responsible AI usage. Longitudinal research and international comparisons would offer new insights into the adoption process of AI in the world that would allow policymakers and entrepreneurs to develop strategies that are sensitive to the adequate processing of different economic, technological, and cultural environments.

Authors Contributions

All the authors participated in the ideation, development, and final approval of the manuscript, making significant contributions to the work reported.

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Statement of Data Availability

The corresponding author can provide the data used in this study upon request.

Conflicts of Interest

The authors declare no conflict of interest.

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