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ORIGINAL CONTRIBUTION

Influence of Artificial Intelligence and Business Sustainability on Social Impact Entrepreneurship Among University Students

Mg. Milton Ricardo Calderon Pizango[1]*, Dr. Patrick Michael Villamizar Morales[2], Dr. Oscar Nestor Espinoza Paucar[3], Dr. Daniel Amadeo Robles-Fabián[4]

[1]Universidad Privada del Norte, Trujillo, Perú

[2]Universidad San Ignacio de Loyola, Lima, Perú

[3]Universidad Tecnológica del Perú, Lima, Peru

[4]Universidad Nacional Mayor de San Marcos, Lima, Perú

Abstract— In recent decades, technological transformation and the growing concern for sustainability have redefined the business and educational landscape, positioning Artificial Intelligence (AI) and Business Sustainability (BS) as key factors for the development of Social Impact Entrepreneurship (SIE). To analyze the influence of AI and SE on social impact entrepreneurship (EM) among university students in Peru. A quantitative approach was employed, with an explanatory scope and a non-experimental cross-sectional design. A Likert scale questionnaire was administered to 472 university students from five private universities in North Lima, selected through convenience sampling. The data were analyzed using ordinal logistic regression. The statistically relevant associations between artificial intelligence and social impact entrepreneurship ($\chi^2 = 168.702$; df = 2; $p < 0.001$) and between business sustainability and social impact entrepreneurship ($\chi^2 = 333.040$; df = 2; $p < 0.001$) were revealed by the inferential results. The combined model was also significant ($\chi^2 = 339.764$; df = 4; $p < 0.001$), and the Nagelkerke R^2 was 0.588. Taking the high category as a reference, the analysis of the coefficients revealed a consistent pattern with a higher probability of achieving higher levels of social impact entrepreneurship as the degrees of artificial intelligence and business sustainability increase. Artificial intelligence and sustainability in companies have an important relationship with social impact entrepreneurship in the analyzed university students, as concluded. The individual business sustainability model exhibited a higher predictive ability, but the combined model had the best fit. However, the results show predictive correlations and do not allow for establishing causal relationships, due to the non-experimental and cross-sectional design.

Index Terms— Artificial intelligence, Business sustainability, Social entrepreneurship, University education, Peru.

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Introduction

The global landscape has been shaped in recent decades by the rapid advancement of technology and an increasing interest in sustainability at the economic, social, and environmental levels. The United Nations (UN) and the Organization for Economic Co-operation and Development (OECD) highlight that Artificial Intelligence (AI), as a cross-cutting technology, has the potential to transform educational, organizational, and

*Corresponding Author: oscar.espinoza@upn.edu.pe

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productive systems. Thus, it has a direct impact on the generation of social and economic values (Calvino et al., 2025; Nations, 2023). The United Nations (UN) and the United Nations Development Program (UNDP) have, at the same time, emphasized the importance of linking the principles of sustainable development with technological progress. This is mentioned in the 2030 Agenda and its Sustainable Development Goals (SDGs), which promote socially responsible, inclusive, and innovative development (Agenda, 2015; UNDP, 2024).

Globally, the United Nations Educational, Scientific and Cultural Organization (UNESCO) and other organizations agree that AI can be a fundamental driver for sustainable development as long as it is employed within ethical, inclusive, and socially welfare-oriented frameworks (Bank, 2023; Unesco, 2022). Specifically, its potential to improve the decision-making process, optimize business procedures, and propose creative solutions to complex social and environmental challenges is highlighted (Dwivedi et al., 2021). However, the application of these technologies must be accompanied by public policies, appropriate regulation, and the training of human capital, in order to avoid digital divides and negative consequences in employment and social cohesion, as also pointed out the International Labor Organization (ILO) and the Organization of American States (OAS) (Organization, 2021; Ros, 2025).

In the business environment, Corporate Sustainability (CS) has evolved from being considered a secondary component to becoming a strategic pillar of competitiveness and organizational legitimacy. The need to place Corporate Sustainability (CS) at the center of modern entrepreneurship (EM) and business management through models such as the triple bottom line; social, environmental, and economic dimensions (Elkington & Rowlands, 1999) is emphasized. In this line, scientific evidence confirms that digital transformation and the adoption of advanced technologies reinforce organizational sustainability and entrepreneurship, generating competitive advantages and social value for corporations (AlQershi et al., 2023; Gupta et al., 2023; Tekala et al., 2024; Zhao & Niu, 2024). Recent studies demonstrate that the combination of advanced digital technologies (such as artificial intelligence) with sustainable business practices promotes the development of innovative initiatives capable of positively impacting society and generating shared value (Bickley et al., 2025; Kraus et al., 2019; Vares et al., 2024).

In this sense, Social Impact Entrepreneurship (SIE) is particularly relevant, as its goal is not only to obtain economic benefits but also to solve social and environmental problems through innovative methods (Zeyen et al., 2025). According to academic literature, digital technologies and AI can foster this type of social impact entrepreneurship by improving access to information, optimizing resources, and expanding the reach of social initiatives (Di Vaio et al., 2020; Dwivedi et al., 2021; Hager et al., 2019; Qiu et al., 2025). Likewise, companies in the tech sector such as Intel, Microsoft, and Google have highlighted the role of AI as a tool to drive sustainable solutions and social innovation projects worldwide (Forum, 2021; Intel, 2025).

In this sense, universities play a crucial role, constituting strategic spaces for the development of digital skills, entrepreneurial capacities with a focus on sustainability, and ethical values (Chen et al., 2024; Lans et al., 2014; UNESCO, 2025). Previous studies suggest that university education can have a considerable impact on students' sustainable entrepreneurial intention, particularly when aspects related to social responsibility, technological innovation, and sustainable development are addressed (Aleryani, 2024; D'Armas Regnault et al., 2022; Gamarra-Chávez et al., 2026).

In Latin America and, especially, in Peru, it has been found that ME in universities represents an important stimulus for social and economic development, in an environment marked by high informality, inequality, and structural challenges (Davila et al., 2022). The most recent national studies have shown that university students are increasingly interested in entrepreneurship projects with an environmental and social vision, although they face limitations in terms of access to technology, specialized training, and institutional support (Cruz Salinas et al., 2025; Dionisio et al., 2021). In this sense, the integration of AI and SE principles in higher education represents a strategic opportunity to promote entrepreneurial initiatives with social impact and aligned with the demands of sustainable development (Solórzano Solórzano et al., 2024).

It is important to investigate because it provides empirical evidence of how AI and SE reinforce EM with social impact among Peruvian university students, which guides political, academic, and educational decisions to promote innovative and responsible actions at the social level. Although these variables are being studied increasingly, there are gaps regarding how these variables interact in the Peruvian university environment. Specifically, there is little empirical evidence examining how AI and SE jointly influence EM with social impact among university students.

Therefore, the objective of this study is to examine how AI and SE influence EM with social impact on university students in Peru, thus helping to reinforce academic knowledge and design educational and corporate policies aimed at more sustainable, innovative, and inclusive progress.

Theoretical foundations and research background

Artificial Intelligence (AI) has established itself as a cross-cutting element that significantly impacts technological, organizational, digital, and educational fields, directly influencing the way organizations incorporate innovations and conduct their strategic processes (Climent et al., 2024; Kulkarni et al., 2024). In line with this, various studies indicate that the adoption of AI not only drives process innovation but also contributes to strengthening corporate social responsibility by promoting more efficient and sustainable practices within organizations (Tian et al., 2025; Yang et al., 2025). Likewise, the agents that promote the use of AI act as catalysts for entrepreneurial activity, fostering digital transformation and the development of innovative capabilities that are key to organizational competitiveness (Duong, Nguyen, et al., 2025).

In this context of accelerated change, AI also redefines leadership styles and decision-making processes, incorporating new ethical considerations that challenge traditional management frameworks (Contreras & Sanchez, 2025; Ros, 2025). Complementarily, its application in the educational field, particularly in university entrepreneurial education, contributes to the strengthening of innovative competencies, preparing students to face increasingly complex and digitalized business environments (Fox et al., 2025; Zhang & Li, 2025). Likewise, AI is transforming SE by integrating technological innovation with responsible practices aimed at environmental care and community strengthening (Li et al., 2025; Yang et al., 2025). Together, these findings allow us to understand artificial intelligence as a multidimensional phenomenon, the result of the interaction between technological, strategic, digital, educational, and ethical factors, which redefines both organizational performance and its commitment to sustainable development.

SE is conceived as the ability of organizations to integrate economic, social, and environmental dimensions in a balanced manner, directing their strategies toward the creation of long-term value that transcends strictly financial profitability (Aguirre Benalczar et al., 2025). In this regard, it not only seeks to ensure business continuity but also to stimulate organizational innovation and promote responsible performance of internal processes, aligned with ethical and social principles (Asad et al., 2025). Complementary, various studies highlight that the adoption of emerging technologies, including AI, acts as a driving factor for operational efficiency and strengthens business resilience in the face of changing and highly competitive environments (Badghish & Soomro, 2024; Khan et al., 2024).

Likewise, social innovation capital is configured as a strategic resource that promotes the creation of sustainable value by articulating the internal capabilities of the organization with the demands of the social environment, consolidating sustainability as a central axis of modern business management (Scuotto et al., 2026). Consequently, sustainability in business positions itself as a key component that drives competitiveness, stimulates creativity, and strengthens the ability of organizations to adapt over time.

Contemporary entrepreneurship is significantly strengthened by the incorporation of generative AI, which fosters trust, collaborative work, and co-creation of knowledge, especially in the university environment (Bell & Bell, 2023; Xie & Wang, 2025. In this same vein, the adoption of digital technologies and AI-based solutions contributes to strengthening entrepreneurial capacities, facilitating the achievement of goals linked to sustainability and the responsible development of business projects Farmanesh et al., 2025. Likewise, the integration of EM with environmental dynamism is configured as a key factor to increase organizational resilience and strengthen business competitiveness in contexts characterized by uncertainty and constant change Tekala et al., 2024.

In this context, the articulation of circular economy practices along with appropriate institutional policies promotes the maximization of positive social impact and the consolidation of sustainable and socially responsible business models (Mamash et al., 2025). Consequently, the convergence between AI and sustainable practices emerges as a strategic element capable of strengthening the EM oriented toward both social impact and the enhancement of business competitiveness (Ojong, 2025).

Some theories considered as the foundation of AI support this research. The Intelligent Agent Theory by Russell and Norvig states that AI is based on rational agents that perceive their environment and act to achieve goals; a system is intelligent if it makes optimal decisions considering information, learning, and uncertainty (Stuart & Peter, 2010). Likewise, the Theory of Machine Learning posits that machines learn from experience and improve their performance without specific programming, being key in modern AI (Mitchell & Mitchell, 1997). For its part, the Weak Artificial Intelligence Theory, proposed by Searle, distinguishes between weak AI and strong AI: weak AI focuses on specific tasks and lacks consciousness, being relevant for research in business, education, and organizations (Searle, 1980). These theories consider AI as a system that automates processes and predicts behaviors, applicable in multiple contexts, including business.

Complementing the above, the for Economic Co-operation and Development (2019) defines AI as a system that makes predictions and decisions based on human objectives. For McCarthy et al. (2007), AI is the science that involves creating machines that perform intelligent human tasks, while for Kaplan and Haenlein (2019), AI is the ability to interpret external data, learn, and adapt. In summary, AI is the ability of computer systems to replicate human processes, such as reasoning, learning, and decision-making, through the use of data and algorithms to solve problems and adapt to different situations.

Regarding corporate sustainability, the Triple Bottom Line Theory proposes that sustainability is achieved by balancing the economic, social, and environmental dimensions, evaluating performance through profitability, social well-being, and environmental protection (Elkington & Rowlands, 1999). The Stakeholder Theory states that sustainable companies must consider the interests of all groups, not just the shareholders (Freeman & McVea, 2005). The Theory of Sustainable Development applied to the company suggests that organizations should grow economically and be socially responsible (Kim, 2020). These theories allow for the analysis and support of sustainability from the perspective of corporate governance with social responsibility.

In conceptual terms, Dyllick and Hockerts (2002) point out that SE involves meeting present and future needs while considering economic, social, and environmental aspects. The ISO (2010), states that corporate sustainability involves an ethical commitment to society and the environment, while the Wced (1987) defines it as achieving economic goals while respecting the environment and social justice.

Regarding entrepreneurship, the Theory of AI-Powered Individual Entrepreneurship explains how AI helps entrepreneurs overcome barriers and expand business opportunities without the need for large structures, identifying mechanisms such as the democratization of knowledge and changes in the risk profile (Ganuthula, 2025). The Digital Entrepreneurship Ecosystem Model describes a four-layer framework on digital entrepreneurship in current economies: Co-evolution for digital capabilities, individual agency, human capital, and systemic contexts (Camps et al.,

2026). For its part, the Integrated Theory of Entrepreneurial Opportunities connects the creation and discovery of opportunities with uncertainty, especially in dynamic or technological markets (Wang & Zhang, 2025). These theories suggest that AI redefines digital entrepreneurship in contexts of change.

Prince et al. (2021) point out that, regarding the definitions of entrepreneurship, EM is the combination of creativity, innovation, and risk management. According to Pedroza and Barboza (2024), EM pursues economic growth, human development, and social well-being through job creation and transformations. Likewise, Hernández Navarro et al. (2023) point out that EM is a complex process that integrates human, technological, and social factors to innovate. These paradigm shifts brought about by the theories and definitions reviewed in the understanding of EM, especially in digital transformation scenarios.

Based on the above, the following research hypotheses are proposed:

H1: AI influences EM with social impact on university students in Peru.

H2: SE influences EM with social impact on university students in Peru.

H3: AI and SE influence EM with social impact on university students in Peru.

Methodology

The research was conducted with a quantitative perspective because it focused on objectively measuring the variables and statistically examining the causal relationships proposed in the theoretical model. This method is appropriate when one wants to compare hypotheses and explain events using numerical data obtained from a specific population (Hernández-Sampieri, Mendoza, et al., 2018; Torres, 2010). Moreover, this approach employs systematic procedures for data collection, analysis, and interpretation to examine causal effects between variables (Gregar, 1994).

The research was non-experimental and cross-sectional, as the variables were not intentionally manipulated and the information was collected at a single point in time (Arias, 2012). This design is appropriate for educational and social research in which attitudes, behaviors, or perceptions are examined within their natural context (Gregar, 1994; Hernández-Sampieri, Mendoza, et al., 2018; Kerlinger, 1966).

Regarding its scope, the study was explanatory because it sought to determine and examine the influence connections between AI, SE, and EM with social impact. This level of research enables an explanation beyond mere description, alluding to the causal connections between the variables through rigorous statistical models (Ato et al., 2013; Cohen et al., 2013; Field et al., 2018).

The population was composed of students from five private universities located in North Lima. A non-probability convenience sampling method was used, in which 472 students who met the inclusion criteria and were available to respond to the questionnaire participated. In convenience sampling, individuals are chosen based on their accessibility; however, it is feasible to use direct methods within the available set to reduce biases (Babbie, 2020; Hernández-Sampieri, Mendoza, et al., 2018; Otzen & Manterola, 2017).

The survey was applied as a data collection method, as it is effective for gathering standardized information about perceptions and attitudes in large populations. The instrument consisted of three structured questionnaires, each related to a variable: AI, SE, and EM. All the questionnaires employed a five-point Likert scale (Never = 1, Almost never = 2, Sometimes = 3, Almost always = 4, Always = 5), frequently used in social studies for its simplicity of analysis and interpretation (Boone Jr & Boone, 2012; Likert, 1932).

With the help of expert judgment, the content validity of the tools was determined. This procedure allows for the evaluation of whether the items are relevant, clear, and coherent in relation to the proposed theoretical dimensions, being essential to ensure the conceptual quality of the measurement instruments (Escobar-Pérez & Cuervo-Martínez, 2008; Hernández-Sampieri, Mendoza, et al., 2018).

Additionally, a pilot test was conducted with a group of 23 participants with characteristics, similar those of the final sample, to ensure the reliability of the questionnaires and verify the understanding of the items before their final implementation (Taherdoost, 2021). The results of Cronbach's alpha coefficient were high: 0.852 for the AI variable, 0.932 for the SE variable, and 0.972 for the EM variable, making the instruments applicable.

For the processing and analysis of the data, the statistical program SPSS V.29 was used for inferential analysis, and Microsoft Excel was used for cleaning and organizing the database. Ordinal logistic regression was the method used to test the theoretical model and the proposed hypotheses, a method particularly suitable for explanatory research in the fields of social sciences and education, as it allows for the simultaneous analysis of relationships between multiple variables (Hair et al., 2021; Kline et al., 1998).

The ethical aspects of this research were taken care of through data confidentiality, informed consent, and the voluntary participation of the respondents, protecting anonymity and using the information only for academic purposes. Similarly, efforts were made to prevent algorithmic biases stemming from artificial intelligence tools, transparency in the methodology was ensured, and potential conflicts of interest were declared.

Data analysis

The descriptive results of the data analysis show that out of a total of 472 participating university students, 58.5% were female and 41.5% were male. Regarding age, the majority were between 18 and 21 years old (65.0%), followed by those between 22 and 26 years old (27.8%) and those

over 26 years old (7.5%).

When descriptively evaluating the students' perception in Table I, regarding AI, 34.1% presented a low level, 33.5% a medium level, and 32.4% a high level; additionally, the perception of the AI dimensions was low in technological capability (39.0%), and very low in operational integration (56.4%) and analytical competencies (59.7%). This indicates that there is a great opportunity to promote the use and application of AI in the evaluated universities.

Regarding SE, the perception was mostly at a low level (55.7%), followed by a high level (31.1%) and only 13.1% at a medium level; in its economic, social, and environmental sustainability dimensions, the perception was at a very low level with 66.3%, 59.1%, and 60.8%, respectively. This reading shows that students' perception of SE, in all its dimensions, is low and should be addressed as a university curricular policy.

Table I
Perception of respondents on variables and dimensions

Variable/Dimension	Level	n (%)
IA	High	153 (32.4)
	Medium	158 (33.5)
	Low	161 (34.1)
	Total	472 (100)
Technological capacity	High	127 (26.9)
	Medium	161 (34.1)
	Low	184 (39.0)
	Total	472 (100)
Operational integration	High	134 (28.4)
	Medium	72 (15.3)
	Low	266 (56.4)
	Total	472 (100)
Analytical competencies	High	133 (28.2)
	Medium	57 (12.1)
	Low	282 (59.7)
	Total	472 (100)
SE	High	147 (31.1)
	Medium	62 (13.1)
	Low	263 (55.7)
	Total	472 (100)
Economic sustainability	High	126 (26.7)
	Medium	33 (7.0)
	Low	313 (66.3)
	Total	472 (100)
Social sustainability	High	132 (28.0)
	Medium	61 (12.9)
	Low	279 (59.1)
	Total	472 (100)
Environmental sustainability	High	137 (29.0)
	Medium	48 (10.2)
	Low	287 (60.8)
	Total	472 (100)
EM	High	150 (31.8)
	Medium	90 (19.1)
	Low	232 (49.2)
	Total	472 (100)
Entrepreneurial orientation	High	152 (32.2)
	Medium	54 (11.4)
	Low	266 (56.4)
	Total	472 (100)
Entrepreneurial competencies	High	154 (32.6)
	Medium	61 (12.9)
	Low	257 (54.4)
	Total	472 (100)
Social impact	High	138 (29.2)
	Medium	69 (14.6)
	Low	265 (56.1)
	Total	472 (100)

Regarding SE with social impact, a very low level was perceived in 49.2% of the evaluated students, medium in 19.1%, and high in 31.8%. Similarly, the perception of its dimensions (entrepreneurial orientation, entrepreneurial competencies, and social impact) was at a very low level in 56.4%, 54.4%, and 56.1%, respectively. These results highlight the need to promote entrepreneurial spirit among university students.

Meanwhile, inferential results, it was evaluated whether the obtained data had a normal distribution, for which the Kolmogorov-Smirnov test was applied, given that the sample used was 472. The results showed non-normal distribution data ($p < 0.05$) for all variables, as seen in Table II. Therefore, for an explanatory scope investigation, the non-parametric statistical test of ordinal logistic regression was applied.

Table II
Kolmogorov-Smirnov normality test)

Variable	Statistic	Df	*p*-value
IA	0.115	472	0.000
SE	0.154	472	0.000
EM	0.159	472	0.000

For the hypothesis testing, ordinal logistic regression was applied. From Table III, the results of the model fit information show that the inclusion of the AI and SE variables significantly improves the predictive capacity of the EM with social impact.

The final model showed a reduction in the −2 log-likelihood value compared to the model that contains only the constant, with a statistically significant difference observed for H1, H2, and H3 (χ^2; df = 2 and 4; $p < 0.05$). Consequently, it is accepted that the independent variables significantly contribute to explaining the levels of EM with social impact among university students in Peru.

Table III
Model fitting information for the hypotheses

Hypothesis	Model	−2 Log likelihood	Chi-square	df	*p*-value
H1	Intercept only	198.621			
H1	Final	29.920	168.702	2	0.000
H2	Intercept only	363.894			
H2	Final	30.854	333.040	2	0.000
H3	Intercept only	414.788			
H3	Final	75.023	339.764	4	0.000

Based on the findings shown in Table IV, the goodness-of-fit evaluation using Pearson and Deviance statistics allowed for the verification of the adequacy of the ordinal logistic regression model. The results obtained showed *p*-values > 0.05 (Pearson and Deviation), indicating that there are no statistically significant differences between the observed data and those predicted by the model. Consequently, it is concluded that the model presents a satisfactory fit and is appropriate for explaining H1, H2, and H3.

Table IV
Goodness-of-fit for the hypotheses

Hypothesis	Test	Chi-square	df	*p*-value
H1	Pearson	0.695	2	0.707
H1	Deviance	0.696	2	0.706
H2	Pearson	4.226	2	0.121
H2	Deviance	4.060	2	0.131
H3	Pearson	18.714	2	0.096
H3	Deviance	18.738	2	0.095

According to the results shown in Table V, in an explanatory scope study, the Nagelkerke coefficient is usually the most useful for discussing the joint influence level of AI and SE on EM with social impact. However, it should be avoided to claim that the model 'exactly explains' that percentage of the dependent variable, as the Nagelkerke pseudo-R^2 indicates an approximate explanatory capacity. Therefore, it is more rigorous to indicate that the model presents a low explanatory capacity (34.4%) for H1, and a high explanatory capacity for H2 (58.0%) and H3 (58.8%).

Table V
Pseudo R-squared for the hypotheses

Test	H1	H2	H3
Cox and Snell	0.301	0.506	0.513
Nagelkerke	0.344	0.580	0.588
McFadden	0.174	0.343	0.350

According to Table IV, for H1, in the parameter estimation, the high IA category was set as the reference, while the low (B = -2.788; $p < 0.001$) and medium (B = -2.485; $p < 0.001$) levels showed coefficients significantly different from this category. Due to the parameterization used by SPSS PLUM, these negative values are not directly interpreted as an inverse relationship; the progressive pattern of the parameters toward zero as the level of AI increases is consistent with a higher probability of being in higher categories of social impact entrepreneurship. For H2, in the location parameters, the high level of SE was used as the reference category; the low (B = -4.432; $p < 0.001$) and medium (B = -2.137; $p < 0.001$)

levels showed statistically significant differences compared to this reference. The progression of the coefficients toward zero as SE increases is consistently with a higher probability of reaching higher levels of social impact entrepreneurship.

But for H3, which integrates two variables, in this model, the parameters corresponding to IA were significant for the low (B = -0.779; p = 0.015) and medium (B = -0.747; p = 0.015) levels, while those corresponding to SE were significant for the low (B = -3.940; p < 0.001) and medium (B = -1.786; p < 0.001) levels, taking the high level as a reference in both cases. Consequently, the results show a statistically significant association between IA, SE, and EM with social impact, and the pattern of the parameters is consistent with a higher probability of reaching higher categories of entrepreneurship as the levels of IA and SE increase.

Table VI
Parameter estimates for the hypotheses

Hypothesis	Parameter	B	SE	Wald	df	*p*-value
H1	Threshold [EM = 1]	-1.954	0.198	97.754	1	0.000
H1	Threshold [EM = 2]	-0.823	0.174	22.442	1	0.000
H1	Location [IA = 1]	-2.788	0.254	120.328	1	0.000
H1	Location [IA = 2]	-2.485	0.247	101.324	1	0.000
H1	Location [IA = 3]	0[a]			0	
H2	Threshold [EM = 1]	-3.053	0.263	135.066	1	0.000
H2	Threshold [EM = 2]	-1.367	0.204	44.749	1	0.000
H2	Location [SE = 1]	-4.432	0.299	219.492	1	0.000
H2	Location [SE = 2]	-2.137	0.319	44.823	1	0.000
H2	Location [SE = 3]	0[a]			0	
H3	Threshold [EM = 1]	-3.268	0.281	135.003	1	0.000
H3	Threshold [EM = 2]	-1.563	0.222	49.510	1	0.000
H3	Location [IA = 1]	-0.779	0.320	5.913	1	0.015
H3	Location [IA = 2]	-0.747	0.309	5.860	1	0.015
H3	Location [IA = 3]	0[a]			0	
H3	Location [SE = 1]	-3.940	0.343	131.882	1	0.000
H3	Location [SE = 2]	-1.786	0.340	27.556	1	0.000
H3	Location [SE = 3]	0[a]			0	

Overall, the results support H1, H2, and H3. However, because the predictors were previously categorized into three levels, these results should be interpreted as differences between categories and not as estimates of a linear increase in the original scores.

Discussion and Conclusion

The findings related to the first objective showed a statistically significant association between AI and EM with social impact (χ^2 = 168.702; p < 0.001), with a Nagelkerke pseudo-R^2 of 0.344. Similarly, the model fit quality was satisfactory because the Deviance and Pearson statistics showed "p" values exceeding 0.05. The parameter estimation revealed significant discrepancies between the low and medium levels of AI compared to the high level used as the reference category. Therefore, negative coefficients should not be understood in isolation as indications of an inverse association, due to the parameterization of the ordinal logistic regression in SPSS PLUM.

The observed model, in which the parameters tend to zero as the level of AI increases, aligns with a higher probability of reaching higher categories of social impact entrepreneurship.

These results are partially consistent with those of Duong, Nguyen, et al. (2025), who state that AI enhances business skills through digitalization, and with those of Xie and Wang (2025), who demonstrated that generative AI improves confidence and entrepreneurial skills in university students. However, the negative nature of the coefficients obtained in this study indicates that the mere existence of AI tools does not ensure the development of initiatives with social impact unless accompanied by digital skills and ethical orientation.

This finding is consistent with Stuart and Peter (2010) Intelligent Agent Theory, which considers AI as a system that can contribute to the rational decision-making process only when there is sufficient information and learning, and with Mitchell and Mitchell (1997) Machine Learning Theory, which holds that the value of AI depends on the learning and correct use of data. Therefore, the data show that AI is a strategic resource whose impact on EM varies according to training and the university environment.

Regarding the second objective, the findings revealed a statistically significant correlation between the relationship of SE and EM with social impact (χ^2 = 333.040; p < 0.001), achieving a Nagelkerke pseudo-R^2 of 0.580. Moreover, the model showed an appropriate fit according to the Deviance and Pearson statistics. The location parameters showed notable differences between the low and medium sustainability levels compared to the high level used as a reference. Consequently, it is likely that those with higher levels of corporate sustainability have a greater probability of achieving higher levels of social impact entrepreneurship, which aligns with the pattern of the coefficients.

These findings partially align with those of Aguirre Benalczar et al. (2025), who determined that sustainability, combined with strategic planning and innovation, strengthens EM in emerging economies. Similarly, AlQershi et al. (2023) showed that sustainable practices favor competitiveness and business performance, while Tekala et al. (2024) indicated that sustainable EM improves organizational resilience. However, the inverse relationship observed in this study suggests that the perception of sustainability, by itself, does not automatically translate into greater social entrepreneurship among the evaluated students.

These findings are supported, from a theoretical perspective, by Freeman and McVea's Stakeholder Theory (2001), which establishes that companies must create value for all stakeholders, and by Elkington's Triple Bottom Line Theory (1999), which proposes a balance between the economic, social, and environmental spheres. Therefore, SE is a fundamental component for strengthening ventures with social impact, as long as it is effectively integrated into higher education and accompanied by concrete training strategies.

Regarding the third objective, the findings indicated that the combination of AI and SE is significantly related to entrepreneurship that has a social impact ($\chi^2 = 339.764$; $p < 0.001$), achieving a Nagelkerke pseudo-R^2 of 0.588. The combined model showed a good fit and an explanatory power close to what was seen in the individual models, but slightly higher. The parameters of AI and SE were statistically significant, taking the high level of each predictor as a reference. It can be stated that high levels of AI and SE are linked to a higher probability of achieving higher categories of social impact entrepreneurship, according to the observed model.

The results of Asad et al. (2025) partially coincide with ours, as they demonstrate that AI fosters sustainable entrepreneurial intention in university students when they have adequate formative mentoring. Also, Mamash et al. (2025) noted that institutional policies and the circular economy expand the social impact of enterprises, and Farmanesh et al. (2025) pointed out that the combination of green innovation and artificial intelligence improves competitiveness and sustainable development, provided that institutional conditions facilitate their application.

These results are based on the Theory of AI-Powered Individual Entrepreneurship (Ganuthula, 2025) and the Digital Entrepreneurship Ecosystem Model (Camps et al., 2026). The first explains how AI can generate more entrepreneurial opportunities when the right conditions are met; the second combines digital skills, human capital, and the institutional environment to drive innovative projects. These theories, considered together, argue that the intersection of artificial intelligence with business sustainability is a strategic aspect for promoting entrepreneurship with social impact, if universities strengthen digital skills and sustainability training.

The results of the discussion corroborate, with empirical data, that both AI and SE are relevant elements for understanding social EM in university students, although their relationship with high levels of entrepreneurship turned out to be the opposite of what was expected in this sample. This provides useful evidence for the design of educational policies and training programs in sustainability and innovation. However, there are limitations to consider: the non-experimental and cross-sectional design, the convenience sample of private university students located in North Lima, and the perception-based measurements, which limit the generalization of the results and the establishment of definitive relationships.

The results confirm that both AI and SE are significantly associated with EM with social impact among university students in Peru ($p < 0.001$), with an appropriate joint explanatory capacity (Nagelkerke = 0.588). However, the combined model showed an adequate fit and an explanatory capacity close to what was seen in the individual models, but slightly higher. The parameters of AI and SE were statistically significant, taking the high level of each predictor as a reference. The observed pattern allows us to affirm that higher levels of AI and SE are linked to a higher probability of achieving higher categories of entrepreneurship with social impact. This finding suggests that mere exposure to our perception of these capabilities does not guarantee greater entrepreneurial development if it is not accompanied by adequately structured digital and sustainability training, as well as institutional support that translates knowledge into action. Consequently, it is recommended that Peruvian universities strengthen the practical teaching of AI and sustainability principles within their entrepreneurship programs, to bridge the gap between the perception of these competencies and their effective application in projects with social impact. Future research could explore these relationships with longitudinal designs and probabilistic samples that allow for the generalization of the findings and delving into the mechanisms that explain this inverse relationship.

References

Agenda, U. N. (2015). *2030 for Sustainable Development*. https://shorturl.fm/z7XDt

Aguirre Benalczar, M. C., Jaramillo Paredes, M. F., & Romero Hidalgo, O. M. (2025). Sustainable entrepreneurship in emerging economies: The role of financial planning, environmental consciousness, and artificial intelligence in Ecuador—A cross-sectional study. *Sustainability*, *17*(14), 6533. https://doi.org/10.3390/su17146533

Aleryani, A. Y. (2024). Digital transformation in higher education in developing countries to promote sustainable development. *International Journal of Scientific and Research Publications*, *14*(2), 128–141. https://doi.org/10.29322/ijsrp.14.02.2023.p14615

AlQershi, N. A., Saufi, R. B. A., Yaziz, M. F. B. A., Ramayah, T., Muhammad, N. M. N., & Yusoff, M. N. H. B. (2023). The relationship between green entrepreneurship, human capital and business sustainability in Malaysian large manufacturing firms: An empirical study. *Technological Forecasting and Social Change*, *192*, 122529. https://doi.org/10.1016/j.techfore.2023.122529

Arias, F. G. (2012). *El proyecto de investigación. introducción a la metodología científica. 6ta*. Fidias G. Arias Odón. https://shorturl.fm/ZaQRx

Asad, M., Fryan, L. H. A., & Shomo, M. I. (2025). Sustainable entrepreneurial intention among university students: Synergetic moderation of entrepreneurial fear and use of artificial intelligence in teaching. *Sustainability*, *17*(1), 290. https://doi.org/10.3390/su17010290

Ato, M., López-García, J. J., & Benavente, A. (2013). Un sistema de clasificación de los diseños de investigación en psicología. *Anales de Psicología*, *29*(3), 1038–1059. https://doi.org/10.6018/analesps.29.3.178511

Babbie, E. R. (2020). *The practice of social research*. Cengage Au. https://shorturl.fm/dzDKQ

Badghish, S., & Soomro, Y. A. (2024). Artificial intelligence adoption by SMEs to achieve sustainable business performance: Application of technology-organization-environment framework. *Sustainability*, *16*(5), 1864. https://doi.org/10.3390/su16051864

Bank, W. (2023). *Artificial intelligence and the future of work* (tech. rep.). World Bank. https://shorturl.fm/PBXvA

Bell, R., & Bell, H. (2023). Entrepreneurship education in the era of generative artificial intelligence. *Entrepreneurship Education*, *6*(3), 229–244. https://doi.org/10.1007/s41959-023-00099-x

Bickley, S. J., Macintyre, A., & Torgler, B. (2025). Artificial intelligence and big data in sustainable entrepreneurship. *Journal of Economic Surveys*, *39*(1), 103–145. https://doi.org/10.1111/joes.12611

Boone Jr, H. N., & Boone, D. A. (2012). Analyzing likert data. *The Journal of extension*, *50*(2), 48. https://doi.org/10.34068/joe.50.02.48

Calvino, F., Reijerink, J., & Samek, L. (2025). *The effects of generative AI on productivity, innovation and entrepreneurship*. https://doi.org/10.1787/b21df222-en

Camps, C., Kraus, S., Thomas, A., Tiberius, V., & Jones, P. (2026). Digital entrepreneurship: A review, research synthesis, and development of a framework. *Technology in Society*, *84*, 103124. https://doi.org/10.1016/j.techsoc.2025.103124

Chen, L., Ifenthaler, D., Yau, J. Y.-K., & Sun, W. (2024). Artificial intelligence in entrepreneurship education: A scoping review. *Education + Training*, *66*(6), 589–608. https://doi.org/10.1108/et-05-2023-0169

Climent, R. C., Haftor, D. M., & Staniewski, M. W. (2024). AI-enabled business models for competitive advantage. *Journal of Innovation and Knowledge*, *9*(3), 100532. https://doi.org/10.1016/j.jik.2024.100532

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2013). *Applied multiple regression/correlation analysis for the behavioral sciences*. Routledge. https://doi.org/10.4324/9781410606266

Contreras, M. M., & Sanchez, A. C. (2025). Effects of Artificial Intelligence on Corporate Social Responsibility: Proposal and validation of a measurement instrument. *Repository of the International Network of Researchers in Competitiveness*, *19*. https://shorturl.fm/paHnk

Cruz Salinas, L. E., Arbulú Ballesteros, M. A., Flores Lezama, M. T., García Juárez, H. D., Otiniano León, M. Y., & Vera Calmet, V. G. (2025). Determinants of sustainable entrepreneurial intention: A multigroup analysis between public and private universities in industrial engineering. *Sustainability*, *17*(7), 2824. https://doi.org/10.3390/su17072824

D'Armas Regnault, M., Mejías Acosta, A., Fajardo Vaca, L., D'Armas Regnault, H., Álvarez Baque, W., & Noboa Romero, P. (2022). Self-efficacy and entrepreneurial intention in university students: A systematic review of literature. *Proceedings of the 20th LACCEI International Multi-Conference for Engineering, Education and Technology: "Education, Research and Leadership in Post-pandemic Engineering: Resilient, Inclusive and Sustainable Actions"*. https://doi.org/10.18687/laccei2022.1.1.553

Davila, X., Gebbie, G., Brakstad, A., Lauvset, S. K., McDonagh, E. L., Schwinger, J., & Olsen, A. (2022). How is the ocean Anthropogenic carbon reservoir filled? *Global Biogeochemical Cycles*, *36*(5). https://doi.org/10.1029/2021gb007055

Di Vaio, A., Palladino, R., Hassan, R., & Escobar, O. (2020). Artificial intelligence and business models in the sustainable development goals perspective: A systematic literature review. *Journal of Business Research*, *121*, 283–314. https://doi.org/10.1016/j.jbusres.2020.08.019

Dionisio, E. A., Inácio Júnior, E., & Fischer, B. B. (2021). Country-level efficiency and the index of dynamic entrepreneurship: Contributions from an efficiency approach. *Technological Forecasting and Social Change*, *162*, 120406. https://doi.org/10.1016/j.techfore.2020.120406

Duong, C. D., Nguyen, T. H., et al. (2025). How AI-related drivers stimulate digital social entrepreneurship: An integrated framework of entrepreneurial event model within stimulus-organism-response theory. *Digital Business*, *5*, 100142. https://doi.org/10.1016/j.digbus.2025.100142

Dwivedi, Y. K., Hughes, L., Ismagilova, E., Aarts, G., Coombs, C., Crick, T., Duan, Y., Dwivedi, R., Edwards, J., Eirug, A., et al. (2021). Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. *International Journal of Information Management*, *57*, 101994. https://doi.org/10.1016/j.ijinfomgt.2019.08.002

Dyllick, T., & Hockerts, K. (2002). Beyond the business case for corporate sustainability. *Business Strategy and the Environment*, *11*(2), 130–141. https://doi.org/10.1002/bse.323

Elkington, J., & Rowlands, I. H. (1999). Cannibals with forks: The triple bottom line of 21st century business. *Alternatives Journal*, *25*(4), 42. https://doi.org/10.5860/choice.36-3997

Escobar-Pérez, J., & Cuervo-Martínez, Á. (2008). Content validity and expert judgment: An approach to its use. *Advances in Medicineón*, *6*(1), 27–36. https://shorturl.fm/lLvOL

Farmanesh, P., Solati Dehkordi, N., Vehbi, A., & Chavali, K. (2025). Artificial intelligence and green innovation in small and medium-sized enterprises and competitive-advantage drive toward achieving sustainable development goals. *Sustainability*, *17*(5), 2162. https://doi.org/10.3390/su17052162

Field, A., et al. (2018). *Discovering statistics using IBM SPSS statistics* (Vol. 5). sage London. https://shorturl.fm/tf8dc

for Economic Co-operation, O., & Development. (2019). *Artificial intelligence in society* (tech. rep.). Springer-Verlag. https://doi.org/10.1007/springerreference_75881

Forum, W. E. (2021). *Harnessing artificial intelligence for the earth* (tech. rep.). World Economic Forum. https://shorturl.fm/8kDUC

Fox, J. D., Pittaway, L., & Uzuegbunam, I. (2025). Artificial intelligence as a dynamic copilot in entrepreneurship education. *Entrepreneurship Education and Pedagogy*, *8*(2), 329–344. https://doi.org/10.1177/25151274241256307

Freeman, R. E., & McVea, J. (2005). A stakeholder approach to strategic management. *The Blackwell Handbook of Strategic Management*, 183–201. https://doi.org/10.1111/b.9780631218616.2006.00007.x

Gamarra-Chávez, C. A., Fernández-Pérez, V., & Fernández-Pascual, R. (2026). Is sustainable entrepreneurship education effective in encouraging sustainable entrepreneurial intentions? the role of university students' prior experience. *The International Journal of Management Education*, *24*(2), 101419. https://doi.org/10.1016/j.ijme.2026.101419

Ganuthula, V. R. R. (2025). AI-enabled individual entrepreneurship theory: Redefining scale, capability, and sustainability in the digital age. *Journal of Innovation and Entrepreneurship*, *14*(1), 85. https://doi.org/10.1186/s13731-025-00521-9

Gregar, J. (1994). Research design (qualitative, quantitative and mixed methods approaches). *Book published by SAGE Publications*, *228*, 21. https://shorturl.fm/dgiaW

Gupta, B. B., Gaurav, A., Panigrahi, P. K., & Arya, V. (2023). Analysis of artificial intelligence-based technologies and approaches on sustainable entrepreneurship. *Technological Forecasting and Social Change*, *186*, 122152. https://doi.org/10.1016/j.techfore.2022.122152

Hager, G. D., Drobnis, A., Fang, F., Ghani, R., Greenwald, A., Lyons, T., Parkes, D. C., Schultz, J., Saria, S., Smith, S. F., et al. (2019). *Artificial intelligence for social good* (tech. rep.). Computer Community Consortium (CCC). https://doi.org/10.48550/arXiv.1901.05406

Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). *Partial Least Squares Structural Equation Modeling (PLS-SEM) using R: A workbook*. Springer International Publishing. https://doi.org/10.1007/978-3-030-80519-7

Hernández Navarro, H., Barboza Hernández, J. L., Gándara Molino, M., & Hernández Flórez, N. (2023). *La sostenibilidad ambiental y los desafíos en educación en el siglo XXI: Una revisión sistemática de la literatura*. Editorial CECAR. https://doi.org/10.21892/9786287515413.1

Hernández-Sampieri, R., Mendoza, C., et al. (2018). Metodología de la investigación: Las rutas cuantitativa, cualitativa y mixta. https://shorturl.fm/wLFPb

Intel. (2025). *AI for sustainability: Artificial intelligence (AI) for sustainability*. https://shorturl.fm/BI9Ot

ISO. (2010). *ISO 26000: Guidance on social responsibility* (tech. rep.). International Organization for Standardization (ISO). https://shorturl.fm/MIhro

Kaplan, A., & Haenlein, M. (2019). Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence. *Business Horizons*, *62*(1), 15–25. https://doi.org/10.1016/j.bushor.2018.08.004

Kerlinger, F. N. (1966). *Foundations of behavioral research* (tech. rep.). New York. https://doi.org/10.2307/1162206

Khan, A. N., Mehmood, K., & Ali, A. (2024). Maximizing CSR impact: Leveraging artificial intelligence and process optimization for sustainability performance management. *Corporate Social Responsibility and Environmental Management*, *31*(5), 4849–4861. https://doi.org/10.1002/csr.2832

Kim, C.-K. (2020). Jeffrey D. Sachs (2015). The Age of Sustainable Development (Foreword by Ban Ki-moon). New York, NY: Columbia University Press. *Asian Communication Research*, *17*(3), 166–174. https://doi.org/10.20879/acr.2020.17.3.166

Kline, R. B., et al. (1998). Structural equation modeling. *New York: Guilford*, *33*, 9780203108550–9. https://shorturl.fm/eV0wK

Kraus, S., Palmer, C., Kailer, N., Kallinger, F. L., & Spitzer, J. (2019). Digital entrepreneurship: A research agenda on new business models for the twenty-first century. *International Journal of Entrepreneurial Behavior and Research*, *25*(2), 353–375. https://doi.org/10.1108/ijebr-06-2018-0425

Kulkarni, A. V., Joseph, S., & Patil, K. P. (2024). Artificial intelligence technology readiness for social sustainability and business ethics: Evidence from MSMEs in developing nations. *International Journal of Information Management Data Insights*, *4*(2), 100250. https://doi.org/10.1016/j.jjimei.2024.100250

Lans, T., Blok, V., & Wesselink, R. (2014). Learning apart and together: Towards an integrated competence framework for sustainable entrepreneurship in higher education. *Journal of Cleaner Production*, *62*, 37–47. https://doi.org/10.1016/j.jclepro.2013.03.036

Li, J., Wu, T., Hu, B., Pan, D., & Zhou, Y. (2025). Artificial intelligence and corporate ESG performance. *International Review of Financial Analysis*, *102*, 104036. https://doi.org/10.1016/j.irfa.2025.104036

Likert, R. (1932). *A technique for the measurement of attitudes.* https://shorturl.fm/cm7E5

Mamash, A., Iyiola, K., & Aljuhmani, H. Y. (2025). The role of circular economy entrepreneurship, cleaner production, and green government subsidy for achieving sustainability goals in business performance. *Sustainability*, *17*(9), 3990. https://doi.org/10.3390/su17093990

McCarthy, J., et al. (2007). *What is artificial intelligence* (tech. rep.). Computer Science Department. Stanford University. https://shorturl.fm/cYosj

Mitchell, T. M., & Mitchell, T. M. (1997). *Machine learning* (Vol. 1). McGraw-hill New York. https://shorturl.fm/wdi5o

Nations, U. (2023). *Artificial intelligence and sustainable development*. https://shorturl.fm/GExwo

Ojong, N. (2025). Interrogating the economic, environmental, and social impact of artificial intelligence and big data in sustainable entrepreneurship. *Business Strategy and the Environment*, *34*(7), 8305–8320. https://doi.org/10.1002/bse.70031

Organization, I. L. (2021). *The role of digital labour platforms in transforming the world of work*. https://shorturl.fm/mclK9

Otzen, T., & Manterola, C. (2017). Sampling techniques on a population study. *International Journal of Morphology*, *35*(1), 227–232. https://doi.org/10.4067/s0717-95022017000100037

Pedroza, A. P., & Barboza, F. Y. A. (2024). Entrepreneurship at the service of economic growth, human development and social happiness. *Económicas CUC*, *45*(1), e24610. https://doi.org/10.17981/econcuc.org.4610

Prince, S., Chapman, S., & Cassey, P. (2021). The definition of entrepreneurship: Is it less complex than we think? *International Journal of Entrepreneurial Behavior and Research*, *27*(9), 26–47. https://doi.org/10.1108/ijebr-11-2019-0634

Qiu, S., Li, B., & Duan, Z. (2025). How AI shapes entrepreneurial processes in social enterprises: A model of augmented and centric pathways. *Technology in Society*, *85*, 103181. https://doi.org/10.1016/j.techsoc.2025.103181

Ros, M. C. (2025). *Inteligencia artificial y polticas pblicas en Amrica Latina y el Caribe*.

Scuotto, V., Di Taranto, E., & Della Corte, V. (2026). Social innovation capital in the digital social enterprise context. *Journal of Intellectual Capital*, *27*(3), 674–689. https://doi.org/10.1108/jic-08-2025-0322

Searle, J. R. (1980). Minds, brains, and programs. *Behavioral and Brain Sciences*, *3*(3), 417–424. https://doi.org/10.1017/s0140525x00005756

Solórzano Solórzano, S. S., Pizarro Romero, J. M., Díaz Cueva, J. G., Arias Montero, J. E., Zamora Campoverde, M. A., Lozzelli Valarezo, M. M., Montes Ninaquispe, J. C., Acosta Enriquez, B. G., & Arbulú Ballesteros, M. A. (2024). Acceptance of artificial intelligence and its effect on entrepreneurial intention in foreign trade students: A mirror analysis. *Journal of Innovation and Entrepreneurship*, *13*(1), 59. https://doi.org/10.1186/s13731-024-00412-5

Stuart, J. R., & Peter, N. (2010). *Artificial intelligence: A modern approach*. Pearson Education. https://shorturl.fm/lNyBF

Taherdoost, H. (2021). Data collection methods and tools for research; a step-by-step guide to choose data collection technique for academic and business research projects. *International Journal of Academic Research in Management (IJARM)*, *10*(1), 10–38. https://shorturl.fm/GNXRl

Tekala, K., Baradarani, S., Alzubi, A., & Berberoğlu, A. (2024). Green entrepreneurship for business sustainability: Do environmental dynamism and green structural capital matter? *Sustainability*, *16*(13), 5291. https://doi.org/10.3390/su16135291

Tian, H., Wang, J., & Cai, Y. (2025). Artificial intelligence adoption and corporate ESG performance. *Business Strategy and the Environment*, *34*(7), 8922–8945. https://doi.org/10.1002/bse.70032

Torres, C. A. B. (2010). *Metodologa de la investigacin para administracin, economa, humanidades y ciencias sociales* (tech. rep.). Universedad de La Sabana. Pearson Prentice Hall. https://shorturl.fm/HaUWr

UNDP. (2024). *Human development report 2023-2024* (tech. rep.). United Nations Development Programme. United Nations. https://doi.org/10.18356/9789213588703

UNESCO. (2025). *Artificial intelligence in higher education: A strategic agenda for institutional transformation*. https://shorturl.fm/gad8n

Unesco. (2022). *Recommendation on the ethics of artificial intelligence*. United Nations Educational, Scientific; Cultural Organization. https://doi.org/10.54676/ESXP7847

Vares, H., Shouraki, M. K., & Yazdi, N. (2024). Sustainable entrepreneurship in the age of digital transformation. *Journal of Management and Sustainability*, *14*(2), 155. https://doi.org/10.5539/jms.v14n2p155

Wang, M., C. Chen, & Zhang, X. (2025). Integration of entrepreneurial opportunity theories in uncertain scenarios. *Journal of Organizational Change*, *17*(1), 1. https://doi.org/10.7441/joc.2025.01.01

Wced, S. W. S. (1987). World commission on environment and development. *Our Common Future*, *17*(1), 1–91. https://shorturl.fm/VwCro

Xie, Y., & Wang, S. (2025). Generative artificial intelligence in entrepreneurship education enhances entrepreneurial intention through self-efficacy and university support. *Scientific Reports*, *15*(1). https://doi.org/10.1038/s41598-025-09545-3

Yang, Y., An, R., & Song, J. (2025). Impact of enterprise artificial intelligence on social responsibility: Evidence from text analysis. *Finance Research Letters*, *75*, 106868. https://doi.org/10.1016/j.frl.2025.106868

Zeyen, A., Beckmann, M., Müller, S., Khanin, D., Krueger, N., Murphy, P. J., Santos, F., Scarlata, M., Walske, J., & Zacharakis, A. (2025). Social entrepreneurship and broader theories: A critical reassessment and future agenda. *Journal of Social Entrepreneurship*, 1–37. https://doi.org/10.1080/19420676.2025.2492851

Zhang, Y., & Li, H. (2025). Artificial intelligence technology empowering innovation and entrepreneurship education in university: Paths and practices — A case study of materials science specialties. *Proceedings of the 2025 2nd International Symposium on Artificial Intelligence for Education*, 887–894. https://doi.org/10.1145/3775073.3775212

Zhao, R., & Niu, L. (2024). Unraveling the mystery of sustainable-oriented innovation: The role of big data knowledge management, resource orchestration capacity, and competitive strategy. *Journal of the Knowledge Economy*, *16*(3), 11117–11137. https://doi.org/10.1007/s13132-024-02259-3