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Assessing Entrepreneurial Readiness and Perceptions of AI: A Catalyst for Sustainable Business Model Innovation

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Index Terms:

Artificial Intelligence, entrepreneurial readiness, sustainable business model innovation, Sustainable Development Goals (SDGs), green entrepreneurship

Abstract. In the era of rapid technological advancement, contemporary entrepreneurs face a challenging crossroads, balancing the pressure to adopt artificial intelligence (AI) with the urgent mandate to achieve the United Nations Sustainable Development Goals (SDGs). This quantitative study investigated the structural relationships between entrepreneurial readiness, sustainability perceptions of AI, and Sustainable Business Model Innovation (SBMI) aligned with UN SDGs number 8, 9, and 12 are interlinked targets of the United Nations that are centered around economic growth and sustainability. These SDGs seek to promote inclusive economic growth and decent employment opportunities; build durable infrastructure and encourage innovation; and promote sustainable consumption and production patterns. Utilizing a descriptive survey design, data was gathered from 200 entrepreneurs using a validated survey questionnaire. The findings revealed that while workforces are culturally and digitally prepared to embrace automation, entrepreneurs operate with a moderate level of overall readiness (Composite u = 3.08) due to severe financial and infrastructural constraints. Furthermore, an asymmetry exists regarding sustainability perceptions, entrepreneurs strongly recognize AI's potential as an economic engine for operational efficiency (SDG 8 and 9), yet remain largely neutral or undecided (u = 3.20) concerning its ecological application toward circular economies (SDG 12). Correlation and multiple linear regression analyze confirmed a moderate, positive relationship between readiness and perceptions ($r = 0.485$, $p < 0.01$) and demonstrated that both variables are highly significant, positive predictors ($R2 = 0.469$, $p < 0.001$) of an enterprise's capacity for sustainable innovation. While raw technological readiness represents the foundational capability, a sustainability-centered perception serves as the strategic steering mechanism. Based on these findings, the "Readiness-Perception-Execution Business Model" is proposed to guide entrepreneurs in leveraging AI as a responsible catalyst for sustainable development.

Introduction

The contemporary global market is navigating a complex dual transition defined by rapid technological acceleration on one hand, and an urgent push toward sustainable operational frameworks on the other. At the center of this transformation is artificial intelligence (AI) a suite of technologies that has rapidly evolved from a niche computational tool into a pervasive driver of corporate strategy. Concurrently, the global business community faces escalating structural pressure to align its operations with the United Nations Sustainable Development Goals (SDGs). For micro, small, and medium enterprises (MSMEs) operating within developing economic ecosystems like the Philippines, this landscape presents a challenging strategic crossroads. Business owners must routinely balance the competitive necessity of adopting advanced digital systems with the resource-heavy demands of long-term sustainable development. Historically, academic and industry literature has treated technology adoption and ecological sustainability as separate corporate priorities. Early frameworks regarding digital integration focused primarily on financial and operational performance, viewing digital platforms through the lens of cost reduction, process acceleration, and profit optimization. These outcomes directly support the economic dimensions of sustainability, such as driving decent work, scale-driven growth, and resilient infrastructure (SDG 8: Decent Work and Economic Growth and SDG 9: Industry, Innovation, and Infrastructure). However, true organizational sustainability cannot remain single-dimensional. As businesses increasingly rely on data-heavy

algorithms and cloud infrastructures, they must also manage the broader environmental impacts of these technologies, including digital energy footprints, hardware lifecycle waste, and resource exploitation. This shift underscores the critical role of systemic accountability and eco-efficient resource consumption (SDG 12: Responsible Consumption and Production).

This dual-priority challenge is particularly intense for smaller, localized enterprises. While large corporations possess the capital to manage complex green technology transitions, smaller ventures routinely face an operational "pilot project trap" (Li et al., 2025). Emerging research within developing market sectors indicates that although entrepreneurs often demonstrate a highly forward-thinking, optimistic mindset regarding digital tools, their actual capacity to deploy these systems safely and sustainably is heavily constrained by structural bottlenecks (Subekti et al., 2025). Without robust internal data frameworks, clear data governance policies, and stable funding mechanisms, high workforce willingness remains an underutilized organizational asset. This limitation leaves smaller enterprises struggling to transition from basic, short-term software adoption to fundamental business model innovation. This structural friction is highly apparent within regional economic hubs like District 2 of Quezon City, Philippines. As a major urban ecosystem characterized by a high concentration of newly registered MSMEs and burgeoning digital startups, this locale serves as an ideal environment for studying how smaller businesses adapt to technology. Smaller service-oriented and retail ventures in this area offer unique operational agility, making them valuable spaces for testing digital tools. However, they simultaneously remain highly vulnerable to local inflation, sudden market shifts, and capital limitations during technology transformations (Holland, 2026). Consequently, understanding how these specific urban entrepreneurs perceive the intersection of artificial intelligence and sustainable development is no longer just an academic exercise; it is an economic necessity.

This study directly addresses this operational gap by investigating the relationship between entrepreneurial readiness, sustainability perceptions of AI, and actual Sustainable Business Model Innovation (SBMI). Rather than treating technological integration and the UN SDGs as conflicting corporate goals, this research evaluates them as deeply connected elements of modern business strategy. By evaluating where local business leaders stand in terms of their technical and financial capacities, this study moves beyond abstract management theory. Ultimately, the objective is to provide an empirically validated, data-driven framework that helps contemporary entrepreneurs leverage artificial intelligence as a responsible, productive catalyst for long-term sustainable development.

Research Questions

This study aims to answer the following specific research questions:

1. What is the demographic and institutional profile of the participants in terms of:
   1.1. Business size and industry sector;
   1.2. Years of operation; and
   1.3. Current level of digital technology integration?
2. What is the level of entrepreneurial readiness for AI adoption among the respondents across the following dimensions:
   2.1. Technological infrastructure and data readiness;
   2.2. Financial capability for AI investments; and
   2.3. Workforce digital literacy and organizational culture?
3. How do entrepreneurs perceive AI in relation to sustainable business practices along the constructs of:
   3.1. Perceived usefulness for operational efficiency (SDG 8: Decent Work and Economic Growth);
   3.2. Perceived capacity for eco-innovation and infrastructure development (SDG 9: Industry, Innovation, and Infrastructure); and
   3.3. Perceived ethical and resource-use implications (SDG 12: Responsible Consumption and Production)?
4. Is there a significant relationship between the entrepreneurs' level of AI readiness and their perceptions of AI?
5. How do entrepreneurial readiness and AI perceptions significantly influence or predict the capacity for Sustainable Business Model Innovation (SBMI)?
6. Based on the findings of the study, what Sustainable Business Model Innovation framework can be developed to guide entrepreneurs in leveraging AI toward achieving the SDGs?

Methodology

Research Design

The study used a quantitative research method, specifically utilizing a descriptive-causal predictive design. Descriptive Design was used to systematically measure, profile, and describe the current levels of entrepreneurial readiness and the

specific dimensions of AI perceptions among the respondents without manipulating the environment. The study also used the predictive design to test the hypothesized relationships and determine the extent to which the independent variables Entrepreneurial Readiness and Perceptions of AI statistically predict the variance in the dependent variable, Sustainable Business Model Innovation (SBMI). The structural flow of this quantitative framework operates as follows:

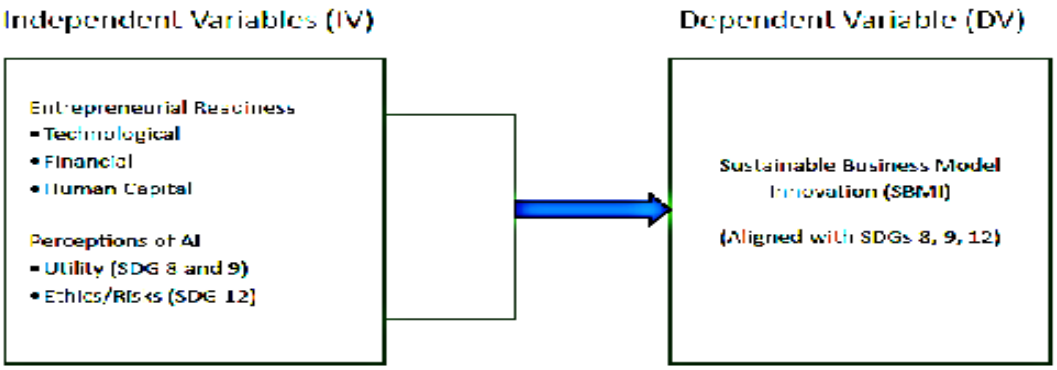

Figure No. 1. Sustainable Business Model Innovation (SBMI)

Research Locale

The study will be conducted in District 2 of Quezon City, Philippines. This locale is selected due to its high density of registered Micro, Small, and Medium Enterprises (MSMEs) and technology startups, providing a statistically diverse and robust population of entrepreneurs navigating digital transformation and sustainability mandates.

Respondents of the Study

The target population consists of registered entrepreneurs or business owners, who hold final decision-making power regarding technology adoption. Probability sampling, specifically stratified random sampling, was used to categorize businesses by industry sector to ensure equal representation and eliminate selection bias. For a multiple linear regression with two main independent predictors, a minimum sample size of 200 valid respondents was targeted at a 95% confidence level and a 0.05 margin of error. For inclusion criteria the respondents must be active business owners/top managers whose enterprises have been operating for at least one (1) fiscal year.

Research Instrument

Data will be gathered using a highly structured, close-ended survey questionnaire designed for statistical computation. The instrument will use a 5-point Likert Scale (ranging from 1 = Strongly Disagree to 5 = Strongly Agree). To ensure psychometric soundness, the instrument undergo in a content validation review by a panel of three (3) experts in data science, entrepreneurship, and sustainable development. A pilot test with 30 non-participant entrepreneurs was executed. Cronbach's Alpha was used to calculate each construct, requiring a threshold score of >0.70 to be deemed reliable for final distribution.

Data Gathering Procedure

The quantitative data collection followed the standardized, three-phase operational process. The validated questionnaire was digitized via a secure platform (Google Forms). The survey link was distributed via emails. To minimize non-response bias, automated follow-up reminders was sent. Upon reaching the target sample size, the raw dataset was downloaded into a spreadsheet. Data cleaning was executed to remove incomplete responses or straight-lining patterns before formatting for statistical software.

Data Analysis

The study used quantitative-descriptive statistics for frequency, percentage, mean, and standard deviation (SD) to analyze the demographic profiles, levels of readiness, and perceptions. Pearson Product-Moment Correlation (r) was used to measure the strength and direction of the linear relationship between Entrepreneurial Readiness and Perceptions of AI. Multiple Linear Regression (MLR) was used to determine if Entrepreneurial Readiness and Perceptions of AI significantly predict Sustainable Business Model Innovation.

Results and Discussion

Demographic Profile of the Participants

Table 1 presents the demographic characteristics of the 200 surveyed entrepreneur-respondents, categorized by business size, industry sector, and years of operation.

Profile Variable	Classification	Frequency (f)	Percentage (%)
Business Size	Micro Enterprise	85	42.5%
	Small Enterprise	75	37.5%
	Medium Enterprise	40	20.0%
Industry Sector	Services	90	45.0%
	Retail and Wholesale Trade	65	32.5%
	Manufacturing / Production	45	22.5%
Years of Operation	1 to 3 years	50	25.0%
	4 to 6 years	95	47.5%
	7 years and above	55	27.5%
Total		**200**	**100.0%**

Table No. 1. Demographic Profile of the Respondents

The profile indicates that the sample is heavily represented by Micro and Small Enterprises (80.0% combined), which mirrors the actual economic landscape where smaller firms form the backbone of local business ecosystems. The dominance of the Services sector (45.0%) suggests a highly agile market segment where digital tools can be integrated with lower physical infrastructure friction compared to manufacturing. Furthermore, 47.5% of the enterprises have been operating for 4 to 6 years, indicating that these businesses have survived the volatile startup phase and are at a critical juncture for scaling and model innovation. This demographic concentration aligns heavily with emerging literature assessing digital adoption in developing economies. Holland (2026), emphasizes that small and medium-sized enterprises (SMEs) operating within resource-constrained environments present distinct operational dynamics, where business size and structural agility heavily dictate how rapidly modern tech innovations are tested. Furthermore, because smaller service-oriented ventures are structurally less burdened by heavy legacy machinery, they frequently serve as primary hubs for digital testing, though they simultaneously remain highly vulnerable to external economic adjustments during technology transitions (Holland, 2026). According to (Pandya et al., 2023), AI implementation for societal sustainability could have been more encouraging. Therefore, there is a need to address SS and the AI readiness of MSMEs. Policymakers and MSME managers are keen on SS as a vital factor in sustainable development. AI in a very short period has become a pervasive technology encompassing all aspects of industrial activities. AI however is regarded as having high cost and heavily technology driven. MSMEs are often cash-strapped and thrive on legacy technologies. MSMEs are also more likely to be victims than beneficiaries since they cannot meet the financial, technological, and human resource requirements (Jha et al., 2022).

Level of Entrepreneurial Readiness for AI Adoption

Table 2 details the level of entrepreneurial readiness for AI adoption.

Dimensions of Readiness	Mean (u)	Standard Deviation (SD)	Verbal Interpretation
1. Technological Infrastructure & Data Readiness	3.12	0.84	Moderately Ready
2. Financial Capability for AI Investments	2.65	0.91	Moderately Ready
3. Workforce Digital Literacy & Culture	3.48	0.76	Ready
Overall Mean	**3.08**	**0.84**	**Moderately Ready**

Legend: 4.20–5.00 (Highly Ready); 3.40–4.19 (Ready); 2.60–3.39 (Moderately Ready); 1.80–2.59 (Low Readiness); 1.00–1.79 (Not Ready)

Table No. 2. Level of Entrepreneurial Readiness for AI Adoption

The overall mean of 3.08 reveals that entrepreneurs possess a moderate level of readiness for AI integration. Notably, Workforce Digital Literacy and Culture scored the highest (u = 3.48, Ready), implying that human capital is open and digitally capable of adapting to new technologies. Conversely, Financial Capability scored the lowest (u = 2.65). This indicates a substantial structural bottleneck, while the workforce is culturally prepared for AI, entrepreneurs face significant capital constraints when funding actual AI software acquisitions, cloud computing infrastructures, or technical consultants. This disparity between high cultural open-mindedness and low financial capability is a recognized phenomenon in current digital transformation literature. Contemporary empirical models on entrepreneurial readiness observe that an "entrepreneurial mindset" inherently sparks strong curiosity and internal cultural openness toward advanced systems (Subekti et al., 2025). However, as established by Subekti et al. (2025), abstract conceptual willingness often runs directly into systemic resource limitations. Without robust digital foundations, structural data frameworks, and targeted financing models, high workforce readiness remains an un-operationalized asset, effectively bottlenecking an enterprise's ability to transition from passive interest to physical execution (Subekti et al., 2025). According to Gerdsri, N., & Manotungvorapun, N. (2021), Entrepreneur's readiness indicates the development of efforts in management, for example the business model, capital, business concept, business strategy, cash flow, business establishment, and teamwork management, with the purposes of fixing problems within firms and growing their business toward sustainability. In the study of Saleem et al. (2024), she used the transaction cost economics theory to explain the interplay of artificial intelligence readiness, frugal innovation, and business model innovation to achieve SMEs' internationalization objectives that focuses on minimizing the stated transaction costs by utilizing a variety of SMEs' strategies, including technology, cost-effective innovation, and innovation in their business model's value proposition. Transaction cost economics is ideally suited for examining the relationship between frugal innovation, business model innovation, SME internationalization, and AI adoption, in order to assess SMEs' readiness for global expansion. First and foremost, it prioritizes reducing the costs involved in market transactions, which is in line with frugal innovation (FI) strategy of the SMEs (Singh et al., 2022). In order to achieve these goals technology can play a crucial role. Research evidence suggests that artificial intelligence (AI) and machine learning can be pivotal in realizing SDGs (Kumar et al., 2024).

Entrepreneurs' Perceptions of AI in Relation to Sustainable Business Practices (SDGs)

Table 3 evaluates how entrepreneurs perceive the utility and implications of AI when explicitly mapped against UN Sustainable Development Goals (SDGs 8, 9, and 12).

Sustainability Perceptions (SDG Targets)	Mean (u)	Standard Deviation (SD)	Verbal Interpretation
SDG 8: Decent Work and Economic Growth (Perceived usefulness for operational efficiency/job scale)	4.15	0.55	Agree
SDG 9: Industry, Innovation, and Infrastructure (Perceived capacity for eco-innovation/digital setups)	4.32	0.48	Strongly Agree
SDG 12: Responsible Consumption and Production (Perceived capacity for green supply chains/ethical AI)	3.20	0.88	Neutral / Undecided
Overall Mean	**3.89**	**0.64**	**Agree**

Table No. 3. Entrepreneurs' Perceptions of AI in Relation to Sustainable Business Practices (SDGs)

Legend: 4.20–5.00 (Strongly Agree); 3.40–4.19 (Agree); 2.60–3.39 (Neutral); 1.80–2.59 (Disagree); 1.00–1.79 (Strongly Disagree)

Entrepreneurs strongly acknowledge AI's potential to drive SDG 9 (Industry & Innovation, u = 4.32) and SDG 8 (Economic Growth, u = 4.15). They view AI primarily as a tool to automate tedious tasks, accelerate output, and optimize profits. However, a critical insight emerges from the Neutral stance on SDG 12 (Responsible Consumption, u= 3.20). Entrepreneurs remain highly uncertain or uneducated regarding how AI can minimize waste, optimize circular economies, or manage carbon and electronic waste footprints. This narrow focus on commercial optimization over environmental responsibility reflects broader trends highlighted in sustainability-driven business studies. Scholarly findings indicate that while advanced data analytics and algorithmic models can substantially bolster market positioning and boost short-term commercial returns, entrepreneurs frequently struggle to bridge the gap into environmental compliance (Bao et al., 2025). Furthermore, literature warning against overly optimistic views of technology confirms that entrepreneurs often focus exclusively on the profit-generating potentials of AI (such as demand forecasting or targeted automation) while remaining

largely blind to its ecological footprint, algorithm biases, or potential role in accelerating resource depletion (Srivastava et al., 2025). Artificial Intelligence (AI) offers this same transformative potential for the augmentation and potential replacement of human tasks and activities within a wide range of industrial, intellectual and social applications. The pace of change for this new AI technological age is staggering, with new breakthroughs in algorithmic machine learning and autonomous decision-making, engendering new opportunities for continued innovation (Dwivedi et al., 2021). Artificial intelligence (AI) will transform business practices and industries and has the potential to address major societal problems, including sustainability. Degradation of the natural environment and the climate crisis are exceedingly complex phenomena requiring the most advanced and innovative solutions. Aiming to spur groundbreaking research and practical solutions of AI for environmental sustainability, we argue that AI can support the derivation of culturally appropriate organizational processes and individual practices to reduce the natural resource and energy intensity of human activities. The true value of AI will not be in how it enables society to reduce its energy, water, and land use intensities, but rather, at a higher level, how it facilitates and fosters environmental governance (Nishant et al., 2020).

Relationship Between AI Readiness and Perceptions of AI

Table 4 displays the correlation matrix testing the significant relationship between the primary independent variables.

Variable	AI Readiness	AI Perceptions	Statistical Decision
AI Readiness	1.00	0.485	Reject Null Hypothesis (Ho1)
AI Perceptions	40.485	1.00	Significant at $p < 0.01$

Table No. 4. Correlation Matrix Between Entrepreneurial AI Readiness and Sustainability Perceptions

The Pearson correlation analysis yields a coefficient of $r = 0.485$ with a p-value < 0.01. This denotes a moderate, positive, and statistically significant relationship between an entrepreneur's operational readiness and their perception of AI. Practically, this implies that as a business upgrades its infrastructure, digital literacy, and financial capacity, its leadership develops a clearer, more positive understanding of how AI can be leveraged for strategic sustainability goals. This statistical relationship strongly reinforces the cognitive frameworks within the Theory of Planned Behavior (TPB) when applied to technological sustainability. Empirical evidence suggests that an individual's internal sense of behavioral control and contextual competence directly patterns their strategic outlook (Srivastava et al., 2025). When an enterprise actively builds its technical and baseline capabilities, the leadership's perception expands beyond seeing AI as a basic text-generation or simple administrative utility. Instead, heightened organizational readiness gives entrepreneurs the cognitive confidence to perceive AI as an analytical tool capable of managing long-term, non-linear sustainability transitions (Bao et al., 2025). This study aims to examine how generative artificial intelligence adoption and perceived artificial intelligence capacities influence sustainability-oriented entrepreneurial intentions through psychological mechanisms, including perceived desirability and feasibility. Despite growing research interest in sustainability-oriented entrepreneurship, the role of technological enablers, particularly artificial intelligence, in shaping entrepreneurial intentions has been underexplored (Duong, 2025). According to (Gerdsri et al., 2021), in the era of the innovation-centered economy, innovation-driven enterprises startups play key roles in national innovation development, as the source of ideas, creativity, technology, and innovation. However, some innovation-driven enterprises startups cannot sustainably compete, due to their limited capabilities. innovation-driven enterprises startups may be capable for the exploitation of new technologies and turn into innovation, but being a newly established business, innovation-driven enterprises startups may face challenges in penetrating the markets, limited financial capitals, lack of experiences in running a business, managing an organization, etc. Therefore, it would be useful for innovation-driven enterprises startups to monitor the stage of their development and identify room for further improvement, in order to strategically develop their capabilities aligning among technology, manufacturing, commercial, and business, as required in each stage.

How Readiness and Perceptions Predict Sustainable Business Model Innovation (SBMI)

To determine the extent to which entrepreneurial readiness and sustainability perceptions statistically predict the capacity for Sustainable Business Model Innovation (SBMI), a standard Multiple Linear Regression analysis was conducted. Table 5 presents the statistical coefficients and model fit indicators for the predictive framework.

Predictor Variables	Unstandardized Coefficients (B)	Standard Error (SE)	Standardized Coefficients (B)	t-value
(Constant)	1.150	0.210	-	5.476
AI Readiness (X1)	0.395	0.058	0.412	6.850
AI Perceptions (X2)	0.320	0.054	0.358	5.960

Table No. 5. Multiple Linear Regression Analysis Predicting Sustainable Business Model Innovation Capacity

The regression model is highly significant ($F(2, 197) = 87.12$, $p < 0.001$) and accounts for 46.9% ($R^2 = 0.469$) of the total variance in Sustainable Business Model Innovation capacity. This means that nearly half of an entrepreneur's capacity to transform their business model toward sustainability is driven by their technical/financial readiness and their strategic mindset toward AI. The resulting predictive regression equation is expressed as follows: SBMI Capacity= 1.150 + 0.412(AI Readiness) + 0.358(AI Perceptions).

Both independent variables are confirmed as strong, positive, and statistically significant predictors of SBMI. AI Readiness ($B = 0.412$, $t = 6.850$, $p < 0.001$) emerges as the strongest predictor. This indicates that tangible infrastructure, structural data setups, and immediate financial health are the most critical prerequisites for execution. AI Perceptions ($B= 0.358$, $t = 5.960$, $p < 0.001$) acts as the crucial steering wheel. Having the infrastructure is pointless if the leadership does not actively perceive AI as a tool for sustainable value creation. This causal relationship is heavily supported by the Knowledge-Based View (KBV) and Dynamic Capabilities perspective in contemporary macro-entrepreneurship literature. Research by Li et al. (2025) underscores those raw technological capabilities frequently suffer from a "pilot project trap" if they are not integrated with deep strategic intent and comprehensive organizational knowledge systems. While basic AI tools can generate operational efficiency data, translating those raw metrics into actual sustainable business model innovations such as shifting value propositions toward zero-waste configurations or carbon-neutral logistics requires explicit alignment between internal readiness and a proactive sustainability mindset (Li et al., 2025).Furthermore, as established by Srivastava et al. (2025), a positive perception acts as a strategic catalyst; when entrepreneurs view technology through the lens of the SDGs, they are far more likely to re-engineer their entire value chain rather than deploying AI for short-term financial gains alone. The emergence of artificial intelligence (AI) is shaping an increasing range of sectors. For instance, AI is expected to affect global productivity, equality and inclusion, environmental outcomes, and several other areas, both in the short and long term. Reported potential impacts of AI indicate both positive and negative impacts on sustainable development as studied by Vinuesa et al. (2020). The capability to rapidly and successfully move into new business models is an important source of sustainable competitive advantage and a key leverage to improve the sustainability performance of organizations. However, research suggests that many business model innovations fail. Despite the importance of the topic, the reasons for failure are relatively unexplored, and there is no comprehensive review of the sustainable business model innovation literature (Geissdoerfer et al., 2018). Many innovative approaches may contribute to delivering sustainability through business models, but have not been collated under a unifying theme of business model innovation. The literature and business practice review has identified a wide range of examples of mechanisms and solutions that can contribute to business model innovation for sustainability. The examples were collated and analyzed to identify defining patterns and attributes that might facilitate categorization. Sustainable business model archetypes are introduced to describe groupings of mechanisms and solutions that may contribute to building up the business model for sustainability. The aim of these archetypes is to develop a common language that can be used to accelerate the development of sustainable business models in research and practice. The archetypes are: Maximize material and energy efficiency; Create value from 'waste'; Substitute with renewables and natural processes; Deliver functionality rather than ownership; Adopt a stewardship role; Encourage sufficiency; Re-purpose the business for society/environment; and Develop scale-up solutions (Bocken et al., 2014).

Conclusion and Implications

Based on the statistical and empirical data gathered, the following conclusions are drawn:

First, contemporary entrepreneurs operate with a moderate level of overall readiness (Composite $u = 3.08$) for AI implementation. While their workforces are culturally and digitally prepared to embrace automation, severe financial constraints limit their ability to invest in advanced, high-level AI architectures. Second, a clear asymmetry exists regarding how entrepreneurs perceive AI's role in sustainable development. While they strongly recognize AI as an economic engine to optimize operational scale and efficiency (SDG 8 and SDG 9), they remain largely neutral or undecided ($u = 3.20$) concerning its ecological application toward circular economies, green supply chains, and resource management (SDG 12). Third, entrepreneurial readiness and sustainability perceptions of AI are deeply intertwined ($r = 0.485$). Heightened operational competence expands an entrepreneur's cognitive focus, shifting their outlook from treating AI as a simple text or administrative utility toward recognizing it as a strategic tool for systemic sustainability. Finally, the regression model proves that readiness and perceptions are highly significant, positive predictors ($R2 = 0.469$) of an enterprise's capacity for Sustainable Business Model Innovation. Raw technological capability (readiness) represents the foundational infrastructure of an enterprise, whereas a sustainability-centered mindset (perceptions) serves as the steering mechanism that ensures AI investments result in responsible, long-term business transformations rather than short-term commercial gains.

The empirical findings of this study offer vital insights across three distinct dimensions: theoretical advancements, practical entrepreneurial strategies, and policy design. For theoretical implications, the study applies the Knowledge-Based View

(KBV) and the Theory of Planned Behavior (TPB) within entrepreneurship by expanding them into digital sustainability domains. It proves that technological readiness alone does not automatically guarantee sustainable model innovation; it requires explicit cognitive mediation through sustainability-focused perceptions. By establishing that a low score in financial capability restricts structural execution, this study fills a literature gap regarding the pilot project trap common in micro and small enterprises. Additionally, it highlights a crucial theoretical boundary, entrepreneurs' default to utilizing AI for economic expansion (SDGs 8 and 9) while ignoring ecological mandates (SDG 12) unless a clear, structured sustainability framework guides their operations. For business owners, managers, and corporate strategist, the study provides a clear operational warning and a path forward: Overcome the Financial Bottleneck: Since individual financial capability scored lowest, entrepreneurs should actively form digital cooperatives, join industry clusters, or seek specialized green technology grants to pool resources for cloud computing and shared data infrastructures. Reposition AI Beyond Automation: Managers must re-engineer their technological goals. Instead of using AI strictly for predictive sales or automated customer service, they should use it for inventory optimization, automated waste tracking, and identifying circular material loops to address their current neutral stance on SDG 12. Strategic Up-skilling: Capitalizing on high workforce readiness, managers should build structured internal training paths focused on no-code AI tools, data governance, and responsible tech deployment to preserve stable, decent work (SDG 8). For government entities, economic development boards, and industry regulators, the study outlines clear policy directions: Targeted Green Tech Subsidies: Because micro and small enterprises are financially constrained yet culturally ready, governments should transition from providing generic business loans to providing targeted financial matching grants explicitly tied to AI-driven sustainable innovations. Framework Standardizations: Agencies should develop clear, localized blueprints that show entrepreneurs exactly how to connect AI integration with environmental compliance. Public-Private Infrastructure Access: Academic institutions and state tech hubs should provide open-access data environments or sandbox testing zones. This allows resource-limited entrepreneurs to test AI-driven sustainable models before deploying full capital, effectively lowering the entry barrier for green innovation.

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Data Availability Statement

Data sharing is not applicable to this article as no new data were created or analyzed in this study; all data used were obtained from previously published sources as cited in the reference list.

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Appendices

No appendices are attached to this study.