Shared Seasoned International Journal of Topical Issues
VOL.12 NO.2, DECEMBER 2025, New York City. ISSN: 2630-7290

ADOPTION OF AI FOR SEARCH OF ENTREPRNUERIAL BUSINESS OPPORTUNITIES

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ABSTRACT

In the evolving landscape of financial management, the convergence of Big Data and Artificial Intelligence (AI) has emerged as a transformative force, promising enhanced decision-making, risk mitigation, and strategic foresight. This study critically analyzes the potency of integrating AI-driven technologies for search of entrepreneurial business. It explores how this integration facilitates real-time data processing, predictive modeling, and automated financial operations, thereby improving efficiency, accuracy, and responsiveness to market dynamics. The analysis considers both the technical capabilities and the strategic implications of such systems, highlighting their role in fraud detection, investment forecasting, credit scoring, and portfolio optimization. However, the study also interrogates the challenges that accompany this integration, including data privacy concerns, algorithmic biases, scalability issues, and the dependency on quality data inputs. Through a multidisciplinary lens, this research underscores that while the integrated system holds immense potential, its efficacy is contingent upon ethical governance, robust infrastructure, and continuous refinement. Ultimately, this paper advocates for a balanced approach that harnesses the strengths of Big Data and AI while addressing the inherent risks to achieve effective and sustainable financial management.

KEYWORDS: Adoption, Artificial Intelligence, Entrepreneurial and Business Opportunities

INTRODUCTION

In recent years, the integration of Artificial Intelligence (AI) into the business ecosystem has significantly transformed the way entrepreneurial ventures identify, evaluate, and exploit new opportunities. AI, broadly defined as the simulation of human intelligence processes by machines, has become an essential driver of innovation, productivity, and competitiveness in the digital economy (Dwivedi, 2021). For entrepreneurs, the adoption of AI research represents not only a technological shift but also a strategic tool for discovering new markets, optimizing operations, and designing data-driven business models. The fast-paced business landscape of the 21st century increasingly demands agility, and AI's capacity to analyze vast datasets, detect patterns, and generate predictive insights positions it as a powerful enabler of entrepreneurial opportunity recognition (Liu, Chen, & Chou, 2022).

The process of identifying entrepreneurial business opportunities is traditionally grounded in creativity, intuition, and experience. However, with the advancement of AI technologies such as machine learning, natural language processing, and predictive analytics, entrepreneurs can complement their decision-making with evidence-based insights (Chatterjee, Rana, & Dwivedi, 2020). AI research enables ventures to process consumer data, track market trends, and uncover unmet customer needs at a scale previously unattainable. For instance, algorithms can detect subtle shifts in consumer preferences or predict emerging industries, thereby enhancing the accuracy of entrepreneurial foresight (Cockburn, Henderson, & Stern, 2018). This indicates a paradigm shift where opportunity recognition becomes increasingly data-driven rather than purely intuitive.

Moreover, the adoption of AI research contributes to lowering barriers to entry for entrepreneurs. Startups, which often lack the financial and human resources of larger corporations, can leverage AI-powered tools to streamline product development, automate operations, and scale innovation efficiently (Mariani & Borghi, 2021). Through AI-driven insights, small ventures can compete in markets that were once dominated by established enterprises. For example, e-commerce entrepreneurs increasingly use AI-based recommendation systems, chatbots, and demand forecasting tools to enhance customer experience and operational performance. This democratization of technology highlights AI as a catalyst for entrepreneurial inclusivity and global competitiveness.

However, the adoption of AI research in entrepreneurship also poses challenges and ethical considerations. Issues such as data privacy, algorithmic bias, and the digital divide influence how equitably AI-driven opportunities are accessed (Wamba-Taguimdje, 2020). Entrepreneurs must therefore strike a balance between technological adoption and responsible innovation. In addition, the need for technical expertise and infrastructural readiness may hinder some entrepreneurs, particularly in developing economies, from fully harnessing AI's potential. These challenges underscore the importance of developing supportive ecosystems, policy frameworks, and collaborative partnerships that enable sustainable AI adoption in entrepreneurship. The adoption of AI research represents a transformative frontier for entrepreneurial business opportunities, reshaping how opportunities are recognized, evaluated, and exploited in the digital economy. By combining human creativity with AI's computational power, entrepreneurs can enhance innovation, efficiency, and competitiveness in increasingly complex markets. As the global economy becomes more knowledge-driven, the ability to leverage AI in entrepreneurship will likely distinguish thriving ventures from those unable to adapt. Thus, investigating the adoption of AI research in entrepreneurial contexts is not only timely but also crucial for understanding the future of business development and economic growth.

CONCEPT OF AI

According to Udo-Okon & Ekong, (2022), Artificial intelligence is gaining more attraction as this application focuses on delivering information to the users. People think of it as a difficult job for libraries, but the name implies that it is artificial, not human (Udo-Okon & Ekong, 2022). AI helps manufacturers or producers streamline processes and cut down on excess resources related to manual or repetitive tasks. Artificial intelligence (AI) is the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings Artificial intelligence is the study of how the human brain makes decisions, learns new things, and thinks through difficulties.

Adeyemi, Zeyad & Akinroluyo, (2025) Noted that Artificial Intelligence (AI) has emerged as a transformative tool for improving project risk management in infrastructure projects, including water supply systems. As noted Habeeb, Adesemowo & Babatunde (2025) with the help of AI, the companies can create some aspect of complex language translation and pattern recognition by disparate independent algorithms in an effort to implement some business globally.

As mention by Bassey & Owushi (2023), Artificial Intelligence can be understood as the collection of technologies that enable machines to sense, comprehend, act, and perform several functions matching those of humans. As noted by Kingsley & James (2025), AI enables machines to perform tasks that require human intelligence, such as speech recognition, decision-making, and data analysis Major components of the Artificial Intelligence bucket are machine learning, big data, natural language processing, decision logic, data visualization, and data analytics. Artificial Intelligence (AI) refers to the development of computer systems that can perform tasks that typically require human intelligence. These tasks include understanding natural language, recognizing objects and patterns, making decisions, and learning from experience. Artificial Intelligence has become the new emerging trend for libraries. Artificial intelligence has proven to be a breakthrough for information sectors.

According to Copeland (2025) artificial intelligence (AI), the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings. The term is

frequently applied to the project of developing systems endowed with the intellectual processes characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from past experience. Since their development in the 1940s, digital computers have been programmed to carry out very complex tasks—such as discovering proofs for mathematical theorems or playing chess with great proficiency. Despite continuing advances in computer processing speed and memory capacity, there are as yet no programs that can match full human flexibility over wider domains or in tasks requiring much everyday knowledge.

As noted by Courser (2024) Artificial intelligence (AI) refers to a computer system that is capable of performing complex tasks that historically only a human could do, such as reasoning, making decisions, or solving problems. Today, the term "AI" describes a wide range of technologies that power many of the services and goods we use every day apps that recommend TV shows to chat bots that provide customer support in real time.

CONCEPT OF BUSINESS

Business is the practice of making one's living or making money by producing or buying and selling products (such as goods and services). It is also any activity or enterprise entered into for profit. Also, business refers to any activity or organization that engages in the exchange of goods or services for profit. It involves the production, buying, selling, or provision of products or services to fulfill the needs and wants of consumers. Businesses can operate at various scales, from small enterprises to multinational corporations. The definition of business encompasses not only profit driven activities but also encompasses nonprofit organizations and social enterprises. It involves careful planning, organizing, and managing resources effectively to achieve the desired goals and objectives (Mulya, 2024). As mentioned by Ranjhaa, (2025) Business is an enterprise or activity with the intention to make profits. It can be in the form of a company, partnership, organization, sole proprietorship, occupation, or any entity that undertakes commercial, industrial, charitable, or professional activities to earn profits. In addition,

According to Pahwa (2016), Business is an occupation, profession, or trade, or is a commercial activity which involves providing goods or services in exchange for profits. Profits in business are not necessarily money. It can be a benefit in any form which is acknowledged by a business entity involved in a business activity. A business can be described as an organization or enterprising entity that engages in professional, commercial or industrial activities. There can be different types of businesses depending on various factors. Some are for-profit, while some are non-profit. Similarly, their ownership also makes them different from each other. For instance, there are sole proprietorships, partnerships, corporations, and more. Business is also the efforts and activities of a person who is producing goods or offering services with the intent to sell them for profit.

As mention by Hayes (2025), the term "business" refers to an organization or enterprising entity that engages in commercial, industrial, or professional activities. The purpose of a business is to facilitate some sort of economic production of goods or services. Businesses can be for-profit entities or nonprofit organizations fulfilling a charitable mission or furthering a social cause. Businesses range in scale and scope from sole proprietorships to large, international corporations. Business also refers to the efforts and activities undertaken by individuals to produce and sell goods and services for profit. Some businesses are small operations in a single industry while others are large operations that spread across many industries around the world. The production and selling of goods and services for profit through the organized efforts of individuals is referred to as business.) is the capability of computational systems to perform tasks typically associated with human intelligence, such as learning, reasoning, problem-solving, perception, and decision-making. It is a field of am single am I your friend in the find box not search am tired of three talk in research in computer science that develops and studies methods and software that enable machines to perceive their environment and use learning.

Concept of Entrepreneurial Business

According to Akpan & Bernard (2025), Entrepreneurial business encapsulates the activities, processes, and mindsets involved in identifying business opportunities, mobilizing resources, and establishing ventures that generate economic and social value. Unlike traditional business models that may focus on stable markets and incremental growth, entrepreneurial businesses are often characterized by innovation, risk-taking, and reactiveness. Entrepreneurs do not merely operate within existing market dynamics—they disrupt them, forging new paths through creative solutions, new technologies, or business models.

As highlighted by Moreno, Lanero, and Salazar (2021), entrepreneurship is not just an economic function but a social process that redefines how value is perceived and delivered in dynamic and uncertain environments. A core element of entrepreneurial businesses is opportunity recognition, which involves identifying gaps or unmet needs in the market. This is followed by the strategic assembly of resources—capital, talent, technology, and networks—to exploit these opportunities. Entrepreneurial ventures are inherently resource-constrained, often relying on innovation, agility, and adaptability to compete with more established players. Digital transformation has further broadened the scope of entrepreneurship, enabling individuals and small teams to build scalable, global businesses with minimal infrastructure. According to Shah and Rahman (2022), the digital entrepreneurship landscape has become a fertile ground for young innovators, especially in developing economies, where mobile technologies and social media platforms offer low-cost market access.

Furthermore, the success of entrepreneurial businesses hinges on their ability to manage uncertainty and take calculated risks. These businesses must be resilient and adaptable in the faceoff market volatility, regulatory challenges, and changing consumer behavior. Entrepreneurial orientation, comprising innovativeness, risk-taking, and reactiveness, has been empirically linked to better firm performance (Nugroho & Gunawan, 2020). Entrepreneurs must also be effective leaders who can inspire teams, build partnerships, and navigate complex stakeholder environments. Furthermore, stakeholder identification and engagement are crucial to the project's success (Amhana & Adeyemi, 2024).

The global COVID-19 pandemic underscored the importance of entrepreneurial resilience and pivoting strategies, as many small firms had to quickly reconfigure their operations to survive. Entrepreneurial businesses contribute significantly to economic development, job creation, and technological progress. In emerging markets, these ventures play a critical role in addressing unemployment and stimulating inclusive growth. They are also central to fostering regional envelopment and empowering marginalized communities through inclusive business models. Governments and policy-makers have increasingly recognized the importance of nurturing entrepreneurship ecosystems, which include access to finance, mentorship, education, and regulatory support. As noted by Rezaei and Safavi (2023), fostering an enabling environment for entrepreneurship requires a multi-stakeholder approach involving academia, industry, and government. As entrepreneurship continues to evolve in the 21st century, driven by technology and globalization, its importance as a transformative force in society becomes ever more pronounced.

TYPES OF BUSINESS OPPORTUNITIES

Business opportunities represent favorable conditions and openings that allow individuals or organizations to invest, innovate, and profit within different sectors of the economy. Identifying and exploiting such opportunities is essential for entrepreneurship, economic growth, and sustainable development. The different types of business opportunities can be classified into several categories depending on the nature of the venture, level of innovation, risk involved, and the resources required. Below are the major types explained extensively?

- **Franchise Opportunities**

Franchising is one of the most popular forms of business opportunity where an entrepreneur purchases the rights to operate under an established brand name. The franchisee benefits from the franchisor's established reputation, proven business model, and ongoing support. Examples include fast food chains, retail outlets, and service-based franchises.

- **Distributorship and Dealer Opportunities**

A distributorship involves purchasing products directly from a manufacturer and selling them either to retailers or directly to consumers. Dealers, on the other hand, focus on specific brands such as automobile dealerships.

- **Licensing Opportunities**

Licensing allows an entrepreneur to use the intellectual property of another company for a fee or royalty. This is common in industries like fashion, technology, and entertainment. Opportunity recognition is central to entrepreneurship, emphasizing that opportunities exist independently of entrepreneurs and are discovered through alertness to market signals.

- **Network Marketing or Multi-Level Marketing (MLM)**

This involves selling products directly to consumers and recruiting others to do the same, earning commission from personal sales and from the sales of recruits. –

- **Online Business Opportunities**

The rapid growth of technology has created a broad range of opportunities in the digital space such as e-commerce, affiliate marketing, drop shipping, freelancing, and digital services.

- **Import and Export Business**

International trade creates vast opportunities for entrepreneurs who can import products that are scarce locally or export local goods to foreign markets.

- **Agricultural and Agro-Allied Business Opportunities**

Agriculture remains a vital sector in many economies. Opportunities exist in crop farming, livestock, poultry, and agro-processing. Agricultural Education intends to provide students with knowledge and skills for increasing agricultural production and productivity. It is also expected to provide students with the skills they need to obtain employment and earn a sustainable livelihood, (Offiong, Udoh & Akpan, 2024).

- **Service-Based Business Opportunities**

Service businesses provide expertise, convenience, or experiences. Examples include consulting, tutoring, logistics, and healthcare.

- **Social Enterprise Opportunities**

A social enterprise blends profit-making with social impact. Examples include renewable energy startups, recycling companies, and affordable healthcare initiatives.

- **Innovation and Technology-Based Opportunities**

Startups built around innovative ideas or technologies—such as artificial intelligence (AI), block chain, fintech, and ed-tech—represent high-growth business opportunities. Akpan & Akpan (2022 added that Technology has changed lives, methods, organizations, behaviors, and careers, and it is imperative that the education system keep up with the trend. A Nigerian graduate is willing to change career paths at

any time the opportunity is available. To facilitate this need, it is important that the right kind of formal online education be made available in the educational system and educators must acquire adequate training needs in their professional areas.

Effects of AI on Effective Search for Entrepreneurial Business Opportunities

The emergence of Artificial Intelligence (AI) has significantly transformed the entrepreneurial landscape, particularly in the identification and exploitation of business opportunities. Traditionally, entrepreneurs relied on intuition, networks, and manual market analysis to discover opportunities. However, with the increasing availability of big data and sophisticated algorithms, AI tools now facilitate faster and more precise opportunity recognition. By analyzing large datasets, identifying hidden patterns, and predicting market trends, AI enables entrepreneurs to make more informed decisions in competitive business environments (Nambisan, 2021).

One of the major effects of AI in entrepreneurial opportunity search is the enhancement of market intelligence. AI-powered analytics can process consumer behavior, preferences, and emerging needs at a scale and speed that surpass human capacity. This allows entrepreneurs to detect untapped markets, optimize product development, and tailor services to specific customer segments. Recent studies highlight how AI applications such as natural language processing, machine learning, and predictive analytics have improved the efficiency of scanning global markets and identifying profitable niches (Bag, 2021). Moreover, AI enhances risk assessment by simulating different business scenarios, thus reducing uncertainty in decision-making and increasing the likelihood of successful ventures.

Additionally, AI democratizes access to entrepreneurial opportunities by lowering the barriers of entry for small and medium enterprises (SMEs). Entrepreneurs can now leverage AI-driven platforms for crowd funding, digital marketing, and supply chain optimization, making it easier to compete with established firms. Furthermore, AI-powered recommendation systems and business intelligence tools assist in connecting entrepreneurs with investors, mentors, and customers. However, while AI presents enormous opportunities, concerns about ethical use, data privacy, and potential biases must be addressed to ensure inclusive and equitable benefits. Overall, AI acts as both a catalyst and a strategic tool in reshaping how entrepreneurs identify, evaluate, and pursue business opportunities in a dynamic global market (Shrestha, 2021).

The Challenges of Adopting AI for Search of Entrepreneurial Business Opportunities

Artificial intelligence promises sharper market sensing and faster pattern discovery, but entrepreneurs quickly collide with foundational data problems that blunt those benefits. Data that is scarce, noisy, or historically skewed might push models towards erroneous correlations and systematically skew what "looks promising". Opportunity-search algorithms are only as good as the data they consume. Reliable, representative data about consumers, prices, and competitors is sometimes scarce or siloed for new or resource-constrained businesses, particularly in emerging countries, and data integration is expensive. These factors increase the likelihood that models will reinforce past bias or force founders to pursue market niches that represent demand from the past rather than the present. Recent evidence maps these obstacles at the SME level—limited data readiness, fragmented governance, and uneven AI literacy—which directly translate into brittle opportunity-identification pipelines (Yaser Hasan, 2025).

Opacity makes the issue worse. It might be challenging to describe many high-performing models using the terms of entrepreneurial judgement (fit, timing, and narrative). Investors or partners are reluctant to act on AI-derived insights when founders are unable to convert a model's proposal into a convincing causal argument, which delays trust and adoption. However, the technical trade-offs of privacy-enhancing techniques (like differential privacy) and data-privacy regulations (like consent, minimization, and purpose limitation) might limit or deteriorate the very characteristics that make AI effective for early opportunity spotting. The net effect is a governance bind: to be compliant and trustworthy, startups may have to accept reduced accuracy or slower learning cycles—constraints that

are especially binding when speed and iteration are core to entrepreneurial advantage (Badghish & Soomro, 2024).

Adoption of AI for opportunity discovery necessitates competencies that many fledgling businesses lack, even when data and governance obstacles are addressed. It takes money, limited technical skill, and managerial resources to build or even orchestrate an AI stack (data pipelines, model selection, MLOps, monitoring); mistakes manifest as hidden technical debt, vendor lock-in, or sunk expenses. Resource limitations, skill shortages, and change management challenges are frequently identified as first-order barriers in SME contexts by cross-study syntheses. These problems not only slow deployment but also influence the types of opportunities that a startup can realistically pursue (e.g., opportunities that align with off-the-shelf tooling versus those requiring bespoke modelling). Where founders do adopt, they frequently underinvest in the unglamorous complements—documentation, drift detection, bias audits, and post-deployment learning loops—leaving supposedly "smart" search systems fragile when markets shift (Sanchez & Herrera, 2025).

Lastly, there are cognitive and strategic hazards. Stakeholder commitments, stories, and weak signals are all combined to provide an effective and abductive method of identifying entrepreneurial opportunities. Upstream discovery that is overly automated may stifle spontaneity, restrict search to easily quantifiable results, and over fit to platform data that favors incumbents. While AI can improve execution, a new study on the topic of entrepreneurship cautions that its usefulness for opportunity success depends on context, experimentation, and human judgement; in certain situations, greater automation does not always result in better venture outcomes. The practical lesson is to avoid "black-box myopia" by using AI as a scout, which is useful for expanding and ranking the search space, while maintaining human-led hypothesis creation, domain sense-making, and ethics assessment.

The Mitigating Strategies to the Challenges of Adopting AI for Search of Entrepreneurial Business Opportunities

Improving data governance and quality is the first step in reducing the difficulties associated with implementing artificial intelligence (AI) in the search for entrepreneurial opportunities. Strong data-gathering methods must be given top priority by entrepreneurs in order to guarantee that the inputs are representative, current, and free of systemic biases that can skew the discovery of opportunities. The drawbacks of single datasets can be mitigated and skewness reduced by integrating numerous data sources, such as market signals, competition benchmarks, and customer interactions. Simultaneously, the implementation of transparent governance systems that incorporate ethical principles, privacy measures, and accountability structures aids in striking a balance between utility and compliance. Sánchez, Calderón, and Herrera (2025) stress that such governance, paired with high-quality data, creates a foundation where AI models generate actionable insights without reinforcing harmful biases. Similarly, Karim, Younus, Rahman, Sarker, and Mollah (2025) argue that integrating privacy-enhancing mechanisms into governance models strengthens both compliance and entrepreneurial trust.

Another important mitigating strategy is to make AI systems more trustworthy and explainable. To demystify decision outputs for founders and stakeholders, entrepreneurs could use explain ability tools or interpretable machine learning models? In venture ecosystems, where faith in analytical suggestions is crucial for resource allocation, this boosts investor buy-in and user confidence. Additionally, including privacy-preserving technologies like differential privacy and federated learning guarantees adherence to international data regulations while keeping user confidence. Karim et al. (2025) highlight that transparency combined with technical privacy solutions fosters sustainable AI adoption, as stakeholders can better understand and ethically validate the discovery process of entrepreneurial opportunities. Badghish and Soomro (2024) further emphasize that transparent AI practices improve the alignment of technological outputs with entrepreneurial decision-making.

Resource optimization and capacity building are two more successful mitigating techniques. Adopting cloud-based AI services and utilising open-source frameworks can drastically lower costs while

increasing access to advanced analytics, as many SMEs face both financial and technical limitations. By offering common platforms, mentorship, and training, partnerships with academic institutions, technology providers, and accelerators can also reduce technical skill gaps. In addition to technical upskilling, encouraging a digital transformation culture at venture capital firms pushes entrepreneurs to combine AI insights with human intuition and creativity. According to Sánchez et al. (2025), this hybrid approach not only reduces implementation risks but also sustains entrepreneurial agility in fast-changing markets. Likewise, Badghish and Soomro (2024) note that resource-efficient strategies enable SMEs to scale AI capabilities without overextending their budgets.

Conclusion

The adoption of AI research is reshaping entrepreneurial business opportunities by enabling data-driven decision-making. It enhances opportunity recognition, efficiency, and competitiveness in dynamic markets. AI lowers entry barriers, empowering startups to compete with established firms. However, challenges such as data privacy, algorithmic bias, and infrastructural gaps remain critical. Responsible and inclusive adoption is necessary to maximize AI's entrepreneurial potential. Thus, AI stands as both a transformative tool and a strategic necessity for future entrepreneurship.

Recommendations

1. Entrepreneurs should prioritize capacity building by acquiring knowledge of AI tools and techniques through workshops, online courses, and partnerships with research institutions. This will help them integrate AI effectively into business strategies.

2. Startups and SMEs should adopt AI-powered analytics to identify market gaps, understand consumer behavior, and design innovative solutions that meet emerging demands.

3. Entrepreneurs should establish collaborations with AI researchers, developers, and technology hubs to access expertise, reduce costs, and foster innovation.

4. Businesses must ensure responsible use of AI by addressing concerns such as data privacy, transparency, and algorithmic bias to build trust among stakeholders.

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