Artificial Intelligence and Entrepreneurship: Implications for Sustainable Venture Creation in Nigeria

Nnamdi Nnabuihe Onyenandu; Timothy Oladele Ishola; Ama Udu

Department of Business Administration,
National Open University of Nigeria, Abuja, Nigeria.

Abstract

Research Objective: This paper explored the impact of artificial intelligence (AI) on entrepreneurship and its implications for sustainable venture creation in Nigeria, focusing on how AI enhances the sustainability of new venture processes and outcomes.

Methodology: A qualitative research approach was adopted, drawing data from various documents, journals, and artefacts to assess the influence of AI on entrepreneurial processes.

Findings: The study revealed that advancements in AI technologies facilitated the identification and exploitation of market opportunities, significantly impacting how entrepreneurs develop, design, and scale their organisations. AI led to promising innovations, accelerated production, enhanced work processes, and improved efficiency.

Conclusion: As a key driver of the Fourth Industrial Revolution, AI has transformed entrepreneurial practices, albeit with implications for job displacement.

Recommendations: The study recommends that the Nigerian government implement a policy framework to establish AI-based entrepreneurial grants and provide low-interest loans to support existing and potential entrepreneurs utilising AI technology.

Keywords: *Artificial Intelligence, Entrepreneurship, Sustainable Venture Creation, Nigeria.*

1.0   INTRODUCTION

Artificial Intelligence (AI) is a rapidly evolving technology that is transforming various sectors of business by automating tasks that previously required human intelligence (Russell & Norvig, 2016). It has led to a paradigm shift in operational methods, assuming tasks previously carried out by humans (Silver, 2016). One of the notable applications of AI in healthcare is the utilisation of machines like Magnetic Resonance Imaging (MRI) for diagnosing disorders (Katti, Ara & Shireen, 2011). AI's presence is also evident in security and surveillance, as AI-powered Closed-Circuit Television (CCTV) cameras can detect intrusions in real-time, offering remote monitoring capabilities (Choudhury *et al.,* 2018). This is possible by adapting the CCTV camera technology to mobile phones, so that with one's mobile phone, one can be monitoring his home or office even if he is in a faraway city or state (Smith *et al*., 2020). Choudhury *et al.* (2018) corroborated this fact by asserting that technological improvements on AI has enabled the use of machines to perform complex tasks

that require human intelligence, even in a far more efficient way. The areas of application of artificial intelligence cut across entrepreneurship, sales and marketing, customer care management, e-commerce, administration, finance, social media, surveillance, healthcare, automobile engineering, agriculture, manufacturing, to mention but a few. Because of its wide applicability, artificial intelligence can be adapted into the creation of new businesses that are yet unknown and consequently contribute to economic growth, lessen social problems, alleviate poverty and improve living standards, as it paves way for business innovations (Amabile (2019). Cockburn *et al.* (2018) asserted that AI brings fundamental innovations to the tools that help us to innovate.

Seeing that AI application covers a wide spectrum of human activities, this paper explores extant literature to identify how AI can be used to create new and sustainable ventures. The paper synthesises leading theoretical underpinnings that link artificial intelligence to new venture creation with the aim of giving direction to the lines of thought of existing and potential entrepreneurs on what to consider in applying AI to business innovations. It ruminates on both the benefits and the demerits of AI application in business (Smith & Johnson, 2021). It also hinges on challenges to AI application.

The study shall be significant to government policymakers in the formulation of policies on small and medium scale enterprises, education, and economic growth and development. It will guide present and future entrepreneurs on how to create new ventures, as well as how to sustain existing businesses. It will also set the pace for further research into how potential and existing entrepreneurs can tap into the benefits that abound in artificial intelligence (Brown et al., 2023).

The advancement of AI technologies has facilitated the recognition of market opportunities and their exploitation and also has profound implications for how entrepreneurs develop, design and scale their organisations. This ultimately leads to promising new venture innovations and accelerates production, enhances work processes and improves efficiency. As a formidable technological engine, AI has become a key source of the Fourth Industrial Revolution (e.g., Daemmrich, 2017). Nevertheless, there are so many factors affecting the business world as a result of the deployment of AI technology. One of them is Job displacements as they have been a subject of numerous business cases. An Oxford Study stated that more than 47% of American jobs will be under threat due to automation by the mid-2030s. Also, the World Economic Forum asserted that Artificial Intelligence automation will replace more than 75 million jobs by 2022. Some of the figures are even more intimidating. Another Mckinsey report, AI-based robots could replace 30% of the current global workforce. Furthermore, AI also brings several trust-related issues on its ability to make decisions that are fair and for the betterment of humankind. There have been various instances where Artificial Intelligence has gone wrong when Twitter Chabot started spewing abusive.

However, as AI is changing business landscape all over the world and as it is identifiable that AI cuts across several fields of endeavour (including entrepreneurship, agriculture,

e-commerce, engineering, healthcare, business, etc.), there is need to know how the application of AI can translate to the development of new ideas for new venture creation. Moreover, since artificial intelligence is a budding topic in business as it relates to Nigeria, only very few studies have been previously conducted on the subject. It is based on these foundations that this paper is proposed.

The main purpose of this study is to explore the impact of artificial intelligence on entrepreneurship and its implications on sustainable venture creation in Nigeria. Additionally, the specific objectives are to determine how AI technology causes reduction of operational time of entrepreneurial processes in Nigeria, to find out how AI technology influences operational efficiency of entrepreneurial processes in Nigeria, to determine how deployment of AI technology eliminates mistakes and human errors in entrepreneurial processes in Nigeria, and to investigate how the use of AI technology on entrepreneurial processes causes labour displacement and job destruction in Nigeria.

2.0 LITERATURE REVIEW

Ahmed (2015) defined artificial intelligence as the art of making machines mimic human intelligence. Palanivelu (2020) defined it as a course which involves the use of computers to produce intelligent automated systems. AI technology helps to perform tasks that could have otherwise been carried out by humans, yet AI is used to perform those tasks in a more efficient way and at a higher success rate. For instance, it can be used for voice recognition, image recognition, search suggestions, virtual assistants, and so forth (Palanivelu, 2020).

Kaput (2016) sees it as a collection of various technologies, with each technology having its own functionality. That is why artificial intelligence can be found to be useful in marketing, healthcare, sales, manufacturing, teaching, and so many more. Moreover, AI technological innovations can pave the way to new venture creation.

New venture creation is an offshoot of entrepreneurship. Meanwhile, entrepreneurship is the establishment and management of a business venture. It is also defined as an activity that involves the discovery, evaluation and exploitation of opportunities to introduce new goods and services, ways of organising, markets, processes and raw materials through organising efforts that previously had not existed (Venkataraman, 1997; Shane & Venkataraman, 2000). Entrepreneurship involves uncertainty and risk, complementary managerial competence, and creative opportunism (Long, 1983). The basic characteristics of entrepreneurship include risk-taking, innovation, and exploitation of opportunities.

Considering the various entrepreneurial opportunities that are in artificial intelligence and the fact that new venture creation is about taking advantage of opportunities, let us therefore consider the factors that affect a business. Using Strengths, Weaknesses, Opportunities and Strengths (SWOT) analysis, these factors can be broken down into internal and external factors. While external factors are opportunities (positive factors) and threats (negative factors), the internal factors are strengths (positive factors) and weaknesses (negative factors) (Leigh, 2009). Among the mentioned factors, the ability to apply artificial intelligence to a

particular business solution is an opportunity for a new venture. AI creates an opportunity for a potential entrepreneur who is privileged to discover a business solution that is yet unknown. It is both an opportunity for new venture creation and a medium for the sustainability of the venture, as shall be seen in the practical applications part of this paper.AI technology can proffer solutions to previously unsolved socioeconomic problems and, as well, provide economic success to the entrepreneur. On the other hand, it can result in the loss of jobs, since its innovations involve the use of machines to perform complex tasks that could be performed by humans (Choudhury *et al.*, 2018).

The theoretical underpinnings of AI as applicable to entrepreneurship and new venture creation can be discussed in the light of generativity theory and entrepreneurial cognition theory.

This refers to the capacity of technology (for example AI technology) to allow for adaptation to various applications (Zittrain, 2006). It is the ability of digital platforms to permit recombination of its elements for the extension and redistribution of functionality (Yoo *et al.*, 2010). Generativity shapes the boundary between technology and entrepreneurship. According to Nambisan (2016), a good example of generativity can be deduced from a situation where Apple introduces more functionalities and capabilities to IOS (their digital platform). This creates entrepreneurial opportunities for IT savvy youths, e.g., application development on iPhones. Another example could be in the area of how to connect to or use data from other devices like personal computers, smart televisions, to mention but few. Parker *et al.* (2016) opines that technological generativity expands the opportunity space of entrepreneurs. The generativity theory suggests that business opportunities and ideas would increase if a technological platform is malleable enough to convert a device or its applications into various uses. This implies that an entrepreneur should pay attention to the adaptability of artificial intelligence to various technologies, devices and business ideas in the process of creating new ventures.

This theory states that for an entrepreneur to grab a business opportunity, he should be able to process information about his business environment, identify potential opportunities and strategize on how to take advantage of the opportunities. George *et al* (2016) asserts that entrepreneurial recognition is a major problem to be solved in the process of growing a new venture. The theory is linked to the social cognition theory which asserts that individuals have varying propensities of motivation to take on a business opportunity. The theory also suggests that people with entrepreneurial characteristics are able to easily perceive an opportunity compared to non-entrepreneurs (Baum and Lock, 2004). Thus, potential businessmen with low entrepreneurial characteristics have more work to do in continuously searching for business opportunities with the help of the Internet and other information sources. Arbussa *et al.* (2017) further extend entrepreneurial cognition to strategic sensitivity which refers to an entrepreneur's ability to notice changes in the internal and external environment of his business.

Entrepreneurial cognition theory implies that starting up a sustainable venture requires an entrepreneur to be intentional about continually searching for marketing opportunities, new technologies and other environmental factors that have implications on the success of their business. It also suggests the need to be sensitive to changes in the business environment.

For several decades, the traditional marketing practices of product promotion using the print media which covers magazines, newspaper, flyers, handbills, calendars, gifts, etc. and electronic media (i.e., radio and television) is taking backstage due to decline in customer attention. As the world is going global, more attention is paid to the use of computers and mobile phones than on radio, television and physical newspapers (Vishnoi & Bagga, 2019). People prefer to listen to visual or audio news, read electronic newspapers, and surf information on their areas of interest through their Android phones, iPhones or personal computers, since these gadgets are portable and user-friendly. Thus, online or digital marketing is becoming more prominent all over the world (Mahadevan, 2000). Online marketing comes in various forms which include social media optimization (the use of social media communities to generate publicity for a product/service), social media marketing (the use of social media platforms to promote a product/service), content marketing (the creation and distribution of content to a target audience), search engine optimization (the improvement of the quality and quantity of traffic from a search engine to a website), etc. (Vishnoi & Bagga, 2019).

In the mentioned areas wherein, technology is applied to marketing, artificial intelligence plays a big role in ensuring that the technology fits into the marketing/business purpose.Specific examples of artificial intelligence in marketing include recommendations and content curation which means to discover, gather, and present digital content on a particular area of interest; personalization of news feeds which is the provision of news or information access from various platforms to a network user whenever news/information is available; ad targeting which means to advertise online to audience with specific traits or characteristics(Thurman, 2018).

Asides from the mentioned points, AI systems have the capabilities of providing information about the customers' buying habits and consumption patterns, thereby providing a useful guide to customer satisfaction which is quintessential to business success (Vishnoi & Bagga, 2019).

Artificial intelligence is a potent tool for promoting campaigns through New Media (social media, websites, apps and mobile phone technologies). Opportunities abound in the use of AI-driven tools to provide marketing solutions to businesses, governments and non-governmental organisations (NGO). Firms likeIBM, Google, Facebook, Jiji and Amazon are using artificial intelligence technology to create wonderful products/services (Kumar & Trakru, 2019). It is important to mention that the Generativity theory and the Entrepreneurial Cognition theory, in conjunction with AI, are both applicable in shaping the entrepreneur's thoughts in the process of new venture creation and sustainability.

IMPLICATIONS OF ARTIFICIAL INTELLIGENCE FOR SUSTAINABLE VENTURE CREATION IN NIGERIA

The application of artificial intelligence technology is also phenomenal in electronic commerce. Some of the available AI solutions include: Artificial Intelligence Assistant (Chatbot), Recommendation Engine, Optimal Pricing, etc. (Song *et al.* (2019).

One thing is to offer sales services and another is to deliver a real-time customer service, which is very important for the retention of customers. This suggests the need for a robot-like system that can assume human intelligence by way of dialoguing with customers and attending to their needs. That system is called Artificial Intelligence Assistant or Chatbot. A Chatbot is a technology that uses a natural language processing device to respond to consumers' requests. They reply to voice commands and provide product suggestions. Using machine learning algorithms, Chatbots connect with consumers via chat dialogues on electronic commerce sites and mobile pages (Gururaj, 2021). The functionalities of Chatbots include: Assisting consumers to select their preferred products, confirming the availability of a product, comparing products, paying for the products, contacting customer support personnel for enquiries, among others.

Recommendation Engines are used to provide reliable real-time shopping experiences to consumers. It recommends products or services to consumers based on user needs. It helps businesses to understand customer behaviours via personalization and analysis of search requests and purchase history. With artificial intelligence algorithms embedded in Recommendation Engines, companies are able to predict which goods/services are likely to attract customers (Gururaj, 2021). With an appropriate understanding of the functionality of this technology, an entrepreneur can strategize on how to incorporate it into his business ideas to improve his/her competitive status in the market.

Optimal price determination is a major obstacle to the success of most businesses. Going by the price theory in Economics, the higher the price, the lower the quantity demanded for normal goods. However, that may not always be the case for abnormal goods (goods that do not obey the law of demand) (Franco, 2013). Also, the dynamism in human nature goes further to pose difficulties in optimal price determination (i.e., fixing a price that will result in the highest net sales). While determining the optimal price may be a challenge, especially where large consumer data is involved, artificial intelligence technology solves the problem of automated pricing for a wide range of commodities. The technology uses product rating, logistics costs, service quality and price trends to make forecasts. It eases the manual work involved in monitoring the competitor's costs and prices (Gururaj, 2021).

Artificial intelligence is also applicable to warehouse operations. AI-powered robotic systems help to run automated pick and pack operations in a warehouse. It has the capabilities of operating on a 24-hour per day and 7 days per week basis (Gururaj, 2021). The system is advantageous in the sense that it reduces errors in the packing and retrieval of goods. The robots can take on highly risky tasks, thereby ensuring the safety of warehouse workers. It is however, expensive to install and may require huge financial outlay if applied to large warehouses.

For the advantages, as it relates to entrepreneurship, AI systems come with financial rewards (Cagetti& De Nardi, 2006), non-commercial benefits (Blanchflower, 2004), satisfaction (Binder & Coad, 2016), earnings (Astebro & Chen, 2014), wellbeing (Wiklund *et al.*, 2019); autonomy, independence and flexibility (Carter, 2011).

At the same time, the disadvantages of AI include growing inequality and an unhealthily competitive business environment created by a skewed application of the AI technology. Another disadvantage is in the area of labour displacement (Wiklund *et al.,* 2019).

The lack of or inadequacy of the required technical skills to man an AI-enabled system remains the biggest challenge to its functionality in an organisation. Another challenge is the dearth of data needed to process information about the business solution intended by an entrepreneur (Palanivelu, 2020). Other challenges include lack of awareness of the availability or applicability of an AI technology, due to poor knowledge about trends in the AI technology environment.

Framework for new Venture Creation

AI can be considered as a digital external enabler of new venture ideas (Briel *et al.,* 2018).

The overall impacts of AI on the antecedents of venture formation, the firm-level activities, and the potential implications for entrepreneurial outcomes are shown in the figure below.
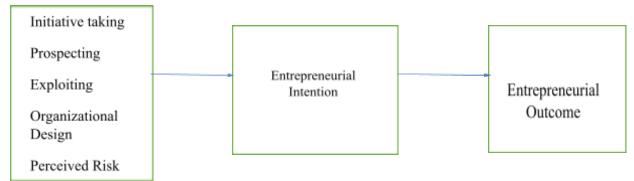

Figure 1: Framework for the Study

Initiative of New Venture Creation

In Vogel's (2017) framework for understanding the new venture formation, he points to triggers and idea generation as early stages of this process. Such activities can be affected by both individual and external system-level factors (McMullen & Shepherd, 2006) and therefore AI deployed either selectively or ubiquitously has the potential to impact on both the likelihood of an individual deciding to start a venture and the type of venture that they start.

Prospecting of New Venture Ideas

Turning now to venture-level activities, Cockburn *et al.* (2018) suggest that AI is leading to a new "innovation playbook" that leverages large datasets and learning algorithms to precisely predict phenomena. It's therefore logical to assume that such datasets and algorithms could be

turned towards entrepreneurial opportunity identification and exploitation. The originality of these AI systems for innovation search processes lies in the ability to see patterns or detail in data that are difficult to perceive by humans. In a medical science context this might involve applications that can recognize cancer at an earlier stage than human experts (Leachman & Merlino, 2017; Miller & Brown, 2018) or new technology firms such as Atomwise (Agrawal *et al.*, 2019) who use AI to predict the outcome of chemical interactions, removing the need to manually test hundreds to thousands of compounds and in doing so reducing discovery and optimization processes that take years to a matter of weeks. This superhuman information search and prediction is also being applied to a range of commercial contexts. The real estate company Skyline2 collects millions of data points on property trends such as yield levels and default rates to predict where investors should buy. Scoop Markets3 meanwhile analyses the content of Twitter messages to predict which breaking news stories may influence exchange prices, thus enabling equity traders to act before markets move.

Organisational Design of New Venture Creation

Thus far, AI has only had a moderate impact on the venture's structure (Brock & von Wangenheim, 2019). Surveys of business executives confirm that AI has typically been used for discrete local problems (Fountaine *et al.*, 2019), or in an experimental manner and has not yet been widely used "at scale" in organisations (Ransbotham *et al.*, 2018). Of the limited empirical research that has examined the impact of AI on organisational structure, Davenport and Ronanki (2018) suggests an emerging division of labour in some firms for routine tasks to be automated with higher-value, customer-facing tasks performed by humans. While AI may destroy jobs, new roles will be created too (Daugherty *et al.*, 2019). Wilson *et al.* (2017) anticipates three new employee categories that will be required as firms adjust to the wide diffusion of AI. They include trainers, who improve algorithms by adding nuance to decision-making and interpretation; explainers who bridge the technical gap between AI systems and business managers; and finally, sustainers who will manage ethics and the ongoing management of the system.

Exploiting New Venture Ideas

The final firm-level activity are the tasks associated with exploiting new venture ideas as may be impacted by AI. Opportunity exploitation is a multidimensional construct within entrepreneurial activities and is taken by some to constitute mobilising resources and building capabilities (Sarason *et al.*, 2006) while others focus on market selection (Hsieh et al., 2007) or market exchange (Dimov, 2011). However, for this study, the focus is on two AI-relevant exploiting activities: selling and scaling the venture. Selling has been underexplored by entrepreneurship scholars, despite the fundamental importance of the activity to the sustainability and growth of new ventures (Gimmon& Levie, 2020; Matthews et al., 2018). It is an area that entrepreneurs promoting innovative market offerings identify as a challenge (Renko, 2013) and is one of the main skill deficits that restrict venture growth (Fogel et al., 2012). In short, many entrepreneurial ventures fail or underperform, not because of weak

product-market fit, but because they have insufficient sales capabilities to capitalise on the venture idea.

Perceived Risk

Perceived risk has long been a factor in entrepreneurial studies. Scholars have emphasised the critical role of risk in venture selection and creation. Das and Teng (1997, p.70) emphasised that "risk taking appears to be one of the most distinctive features of entrepreneurial behaviour, since creating new ventures is by definition a risky business". Keh *et al*. (2002) further stressed that entrepreneurs are likely to evaluate a business idea more favourably when they perceive less risk in the execution of the idea.

Entrepreneurial Intention

A small segment of entrepreneurs is guided by an entrepreneurial spirit at birth while others need to be led, trained, and educated to initiate entrepreneurial intention. Bird (1988) emphasised the notion of entrepreneurial intention, which he clarified as the entrepreneur's state of mind that directs his attention, experience, and action toward a business concept. According to the author, entrepreneurial intention sets the form and direction of the business venture at its inception. He also indicated that intention is a psychological process aimed at either creating a new venture or creating new values in existing ventures. Basically, the quintessence of the entrepreneurial intention is the entrepreneur's mindset that is directed toward innovation and wealth creation. The subject of entrepreneurs' intention has long been an important field of research and investigation in entrepreneurship literature. Busenitz and Lou (1996) observed that the way one thinks could have a significant impact on the intention to start a new venture, while Zhang and Cain (2017) declared that entrepreneurial intention is considered a valuable and practical approach to understanding entrepreneurial behaviour. Boukamcha (2015) studied the linkage mechanism by which training influences intentions. Quan (2012) makes a distinction between two levels of entrepreneurial intention: (a) impulsive entrepreneurial intention and (b) deliberate entrepreneurial intention. Impulsive intention, according to the author, is swayed by the individual's cultural background and personal characteristics, while deliberate entrepreneurial intention is influenced by prior experience and social networks of the individual. The creation of a new venture to pursue an opportunity is labelled the *entrepreneurial event*, while the individual who perceives an opportunity is called an *entrepreneur* (Bygrave and Hofer, 1991). Some scholars (e.g., Low and MacMillan, 1988) use the term *entrepreneurship* to mean the creation of new ventures. Sarason *et al*. (2006), asserted that the act of entrepreneurship occurs as the entrepreneur specifies, integrates, and acts upon the sources of opportunity.

Entrepreneurial Outcome

With the foregoing discussion on entrepreneurial antecedent, prospecting, organisational design, exploiting and risk taking, it is important to consider what potential outcomes in terms of how entrepreneurial rewards may be derived from AI-enabled entrepreneurship. Entrepreneurial rewards have been analysed by a number of scholars who have identified

different constituent parts of rewards including financial rewards (Cagetti& De Nardi, 2006), nonpecuniary benefits (Blanchflower, 2004), satisfaction (Binder & Coad, 2016), earnings (Astebro& Chen, 2014), and wellbeing (Wiklund et al., 2019). Being autonomous, independent, and having some levels of flexibility have also been stressed as benefits of being one's own boss but are often overly simplistic in their explanation of the reasons for pursuing entrepreneurship (Carter, 2011). Consistent within such characterizations is seeking to understand the outcomes that entrepreneurs achieve in their efforts, which can unveil motivations and behaviours across the wider entrepreneurial process. The nature and role of such differentials may change when AI-enabled entrepreneurship starts to become more commonplace.

3.0   METHODOLOGY

The research approach adopted for this paper is qualitative. Qualitative research relies on data obtained by the researcher from first-hand observation, focus groups, recordings made in natural settings, documents, and artefacts. The data are generally nonnumerical (Creswell, 2017). Contemporary qualitative data analyses can be supported by computer programs (termed computer-assisted qualitative data analysis software). A central issue in qualitative research is trustworthiness (also known as credibility or, in quantitative studies, validity). There are many ways of establishing trustworthiness, including member check, interviewer corroboration, peer debriefing, negative case analysis, auditability, confirmability Lincoln et al (2015). The limitations of qualitative research include participant reactivity, the potential for a qualitative investigator to over-identify with one or more study participants etc. Consequently, the researcher did a review of extant literature of both artificial intelligence and entrepreneurship, so as to incorporate both constructs and come up with practical implications of AI technology to both existing and potential entrepreneurs. A review was preferred for this paper because of its ability to provide sufficient information on past studies on the subject matter. Ten (10) journal articles on artificial intelligence and ten on entrepreneurship with a focus on new venture creation were reviewed. Information linkage of both categories to the constructs of the paper was done together with analysis of both the advantages and disadvantages of artificial intelligence. The factors to be considered in applying artificial intelligence to venture creation were explored and finally the information about the challenges of artificial intelligence implementation in business was articulated.

4.0   RESULTS AND DISCUSSION

The study revealed that AI technology influenced the reduction of operational time through automation and optimization of entrepreneurial routine processes and tasks. It was established that AI technology significantly influenced the productivity and operational efficiency of entrepreneurial processes

It was also revealed that deployment of AI technology eliminated mistakes and human error in entrepreneurial processes

The study showed that AI technology deployment on entrepreneurial processes caused labour displacement and job destruction.

The integration of Artificial Intelligence (AI) into the realm of entrepreneurship has brought forth significant implications for sustainable venture creation in Nigeria

The findings of this study highlight the transformative potential of AI in shaping traditional business models. AI-driven automation and data-driven decision-making enable entrepreneurs in Nigeria to optimise processes, reduce operational costs, and enhance the quality of their products and services.

The integration of AI technologies, such as chatbots and personalised recommendation systems, enhances customer engagement and provides a more tailored experience. Nigerian entrepreneurs can leverage AI-powered customer analytics to understand consumer behaviour, thereby enabling them to develop targeted marketing strategies and build stronger customer relationships.

Nigeria's entrepreneurial ecosystem often grapples with resource constraints, inhibiting growth and innovation. The study underscores how AI can serve as a catalyst for overcoming these challenges. By automating repetitive tasks and streamlining operations, AI enables entrepreneurs to focus on strategic decision-making and innovation, even in resource-constrained environments.

As AI systems gain autonomy, concerns arise regarding data privacy, algorithmic bias, and potential job displacement. In the Nigerian context, these concerns are intertwined with socioeconomic factors. Policymakers and entrepreneurs alike must collaborate to develop frameworks that address these challenges and ensure that AI-driven entrepreneurship contributes to equitable economic growth.

The study sheds light on the evolving skill requirements within the Nigerian entrepreneurial landscape. Entrepreneurs need to acquire new skills to effectively harness AI technologies. This has implications for education and training programs, which must adapt to equip aspiring entrepreneurs with the necessary technical and analytical skills.

The findings underscore the importance of fostering collaborative ecosystems that bring together entrepreneurs, AI experts, policymakers, and academia. These collaborations can facilitate knowledge exchange, technology transfer, and the co-creation of innovative AI-driven ventures.

As AI continues to evolve, several avenues for future research and practice emerge. Longitudinal studies tracking the long-term impact of AI integration on venture sustainability and economic growth in Nigeria could provide valuable insights. Additionally, exploring the role of AI in social entrepreneurship and its potential to address pressing societal challenges remains an uncharted territory worthy of exploration.

5.0 CONCLUSION AND RECOMMENDATIONS

Conclusion

This paper is intended to raise the awareness of entrepreneurs, especially would-be entrepreneurs, of AI-based entrepreneurial opportunities. The advancement of AI technologies has facilitated the recognition of market opportunities and their exploitation and also has profound implications for how entrepreneurs develop, design and scale their organisations. This ultimately leads to promising new venture innovations and accelerates production, enhances work processes and improves efficiency. As a formidable technological engine, AI has become a key source of the Fourth Industrial Revolution (e.g., Daemmrich, 2017). The paper reveals that despite the numerous benefits of AI-based entrepreneurial opportunities, there are still pitfalls such as labour displacement and job destruction.

Recommendations

Government should put in place a policy framework that would establish AI-based entrepreneurial business grants and provide low-interest loans to existing entrepreneurs and potential entrepreneurs with AI technology-based business ventures. Government should also intensify efforts towards organising AI Technology Competition programmes for young Nigerians with enticing prizes for winners, as that would encourage our young talents to invent new technologies that will offer solutions to several economic problems of the country, ranging from agriculture to manufacturing and so forth.

The paper also suggests the need for further research into the link between artificial intelligence and entrepreneurship particularly in the areas of application of artificial intelligence to tackle business challenges and taking balanced business decisions.

References

Ahmed, K. (2015). Google's Demis Hassabis – Misuse of artificial intelligence 'could do harm′. http://www.bbc.com/news/business-34266 425 Accessed: 6 November 2018.

Amabile, T. (2019). GUIDEPOST: Creativity, artificial intelligence, and a world of surprises Guidepost letter for Academy of management discoveries. Academy of Management Discoveries, 0(ja), null. https://doi.org/10.5465/amd.2019.0075

Arbussa, A., Bikfalvi, A.,& Marquès, P. (2017). *St*rategic agility-driven business   model renewal: the case of an SME. *Manag. Decis.* 55, 271–293. doi: 10.1108/MD-05-2016-0355

Astebro, T., & Chen, J. (2014). *The entrepreneurial earnings puzzle: Mismeasurement or real? Journal of Business Venturing, 29*(1), 88–105.

Baum, J. R.,& Locke, E. A. (2004). *T*he relationship of entrepreneurial traits,   skill,   and motivation to subsequent venture growth. *J. Appl. Psychol.* 89, 587–598. doi: 10.1037/0021-9010.89.4.587

Binder, M., & Coad, A. (2016). *How satisfied are the self-employed? A life domain view*. Journal of Happiness Studies, 17(4), 1409–1433.

Blanchflower, D. G. (2004). Self-employment: More may not be better. *Swedish Economic Policy Review, 11*(2), 15–74.

Cagetti, M., & De Nardi, M. (2006). Entrepreneurship, frictions, and wealth. *Journal of Political Economy*, 114(5), 835–870.

IMPLICATIONS OF ARTIFICIAL INTELLIGENCE FOR SUSTAINABLE VENTURE CREATION IN NIGERIA

Carter, S. (2011). *T*he rewards of entrepreneurship: Exploring the incomes, wealth, and economic wellbeing of entrepreneurial household*s. Entrepreneurship Theory and Practice, 35*(1), 39–55. https://doi. org/10.1111/j.1540-6520.2010. 00422.x

Choudhury, P., Starr, E., & Agarwal, R. (2018). *Machine learning and human capital: experimental evidence on productivity complementarities*. Harvard Business School.

Cockburn, I. M., Henderson, R., & Stern, S. (2018). *The impact of artificial intelligence on innovation*. National Bureau of Economic Research.

Leigh, D. (2009). *SWOT Analysis*. Handbook of Improving Performance in the Work Place, Vol. 1. https://doi.org/10.1002/9780470592663.ch24

Ekbia, H.R. (2009). Digital artifacts as quasi-objects: Qualification, mediation, and materiality. *Journal of the American Society for Information Science and Technology, 60*(12), 2554–2566.

Franco, J. Agustín (2013). Principles of Econometrics from the Giffen Demand. T*echnological and economic development of economy,* 21(4), 557–576

Gaskin, J., Berente, N., Lyytinen, K., &Yoo, Y. (2014). Toward generalizable sociomaterial inquiry: A computational approach for zooming in and out of sociomaterial routines. *MIS Quarterly, 38*(3), 849–871.

George et al (2016). Toward the development of a big data analytics capability. *Information &Management 53*(8),1049-1064.

Girish K, Syeda A & Ayesha S (2011). *M*agnetic Resonance Imaging (MRI) –A Review. *International Journal of Dental Clinics* 2011:3(1):65-70.

Gururaj, P. (2021). Artificial intelligence-application in the field of e-commerce. *International Journal of Research - 9*(4), 170–177.

Kaput, M. (2016). *The Marketer's Guide to Artificial Intelligence Terminology*. https://www.marketingaiinstitute.com/blog/themarketers-guidetoartificialintelligenceterminology.

Kumar, V., Rajan, B., Venkatesan, R., &Lecinski, J. (2019). Understanding the role of intelligence in personalized engagement marketing. California *Management Review, 61*(4),135–155. https://doi. org/10.1177/0008125619859317

Lincoln, Y. & Guba, E. G. (1985) *Naturalistic Inquiry*. Newbury Park, CA: Sage Publications.

Mahadevan, B. (2000). *Business Models for Internet-Based E-Commerce: An Anatomy.*California Management Review, 55-69.

Majchrzak, A. & Malhotra, A. (2013). Towards an information systems perspective and research agenda on crowdsourcing for innovation. J*ournal of Strategic Information Systems, 22*, 257–268.

Majchrzak, A. & Markus, M. (2013). *Technology affordances and constraints theory (of MIS)*. In E. Kessler (Ed.), Encyclopedia of management theory (pp. 832–836). Thousand Oaks, CA: SAGE Publications.

Nambisan, S. & Zahra, S.A. (2016). *T*he role of demand-side narratives in opportunity formation and enactment. *Journal of Business Venturing Insights, 5,* 70–75.

Palanivelu, V. R. & Vasanthi, B. (2020) *Role of artificial intelligence in business transformation*. *International Journal of Advanced Science and Technology 29*(4), 392-400.

Parker, G., Van Alstyne, M., & Choudary, S.P. (2016). *Platform revolution: How networked markets are transforming the economy–and how to make them work for you*. New York: W.W. Norton Publishing.

Shane, S., & Venkataraman, S. (2000). *T*he promise of entrepreneurship as a field of research. *Academy of   Management Review, 25*(1), 217–226. https://doi.org/10.5465/amr.2000.2791611(Long, 1983).

Song, X., Yang, S., Huang, Z., & Huang, T. (2019). *T*he Application of Artificial Intelligence in Electronic Commerce. Journal of Physics: Conference Series (3), 1302–1302.

Thurman, N. (2018). Personalization of News. In: Vos, T. P., Hanusch, F., Dimitrakopoulou, D., Geertsema-Sligh, M. and Sehl, A. (Eds.), *The International Encyclopedia of Journalism Studies*. Massachusetts, USA: Wiley-Blackwell.

Vishnoi, S. K. & Bagga, T. (2019). Artificial intelligence enabled marketing solutions: a review. *Indian Journal of Artificial Intelligence Economics & Business, Vo Enabled Marketing 17(4),*67-17

Wiklund, J., Wright, M., & Zahra, S. A. (2019). Conquering relevance: Entrepreneurship research's grand challenge. Entrepreneurship *Theory and Practice, 43*(3), 419–436.

Yoo *et al.* (2010). The new organizing logic of digital innovation: An agenda for information systems research. *Information Systems Research, 21*(4), 724–735

Zittrain, J. (2006). *The generative Internet*. Harvard Law Review, 119(7), 1975–2040.