THE IMPACT OF ARTIFICIAL INTELLIGENCE AND BLOCKCHAIN ON ENTREPRENUERSHIP PERFORMANCE AND SUCCESS IN NIGERIA
(Study of Kassy Block chain and Technology Agency)

BY

Kehinde Taofeek OLAIDE [1][**]
Doctoral Candidate
Business Administration and Marketing
National open university of Nigeria, Abuja, Nigeria
+2348022657023, Kehindeolaide@ymail.com

Mande SAMAILA [2]
National Open University of Nigeria, Abuja, Nigeria
Department of Business Administration and Marketing
smande@noun.edu.ng

Eunice Abimbola ADEGBOLA [3]
National Open University of Nigeria, Abuja, Nigeria
eadegbola@noun.edu.ng

Abstract
The study examined the impact of artificial intelligence and block chain technology on entrepreneurship performance and success in Nigeria. This study adopted a survey research method and primary and secondary sources of data. A total of 70 employee of Kassy Block chain and technology agency, Lagos, Nigeria were chosen for the study using purposive sampling with 60 returned questionnaires administered .The data was analyzed using least square to test the formulated hypothesis in line with the objective .The findings showed that, there is significant relationship between artificial intelligence and block chain technology on entrepreneurship performance and success in Nigeria. The authors recommend that block chain and artificial intelligence should be adopted by entrepreneurs for future business sustainability, and government's policy on block chain and artificial intelligence should be monitored and made to be complied with by business enterprises and entrepreneurship, more investments, research and development on artificial intelligence and block chain technology are needed on entrepreneurship and business. The study concluded that, digital technology of artificial intelligence and block chain are the order of the day in the global entrepreneurship business in the world which Nigerian entrepreneurs should key into it.

Keywords: Artificial Intelligence, Block chain, Technology, Entrepreneurship, performance.

Introduction

The importance of new technology in this 21st century and new era of industrial revolutions cannot be over-stated in the survival of entrepreneurship and business enterprises in Nigeria and globally.

According to Muhuri et al., (2019), computer has been introduced all areas of human fields including entrepreneurship and business enterprises, as it ensures smart and intelligent decisions, production and successful entrepreneurship globally.

Further support from Oztemel and Gursev, (2018), captured that, there had been a total change in the way production process is done using digitalized machines to carry out routine manufacturing activities and operations.

This 21st century present revolution in entrepreneurship and business enterprises demands efficient production with high quality of customized products via the adoption of new and highly sophisticated artificial intelligence, robotics and block chain technology, Schuck, (2014).

Manesa et al, (2021), opined that, there had been change in organization operations through the infusion of artificial intelligence and block chain technology in entrepreneurship and business enterprises, thus, this ensures automated work place, creativity and innovation in the way businesses and entrepreneurship businesses are run, Daugherty and Wilson, (2018).

According to Chalmers et al, (2021), artificial intelligence and block chain technology makes business and entrepreneurs compete favourably and be more productive and this through the new digital innovations. It is of the view that, artificial intelligence and block chain technology relevance cannot be over-emphasized in the world of entrepreneurship and business enterprises as both the technologies ensure survival and success of entrepreneurial process.

Ratten (2020), agreed to the fact that, covid-19 pandemic outbreak in 2019 led to the rapid digitalization of all business organizations in the world as most businesses key into the adoption of artificial intelligence and block chain in the operations including the entrepreneurs.

Amankwah-Amoah et al. (2021), generalized the fact that, new approach of artificial intelligence and block chain technology contributes significantly to the success and survival of entrepreneurship in terms of creating opportunities, robust decisions, creativity and productivity. The objective of this study is to examine the impact of artificial intelligence and block chain technology on entrepreneurship performance and success in Nigeria.

Hypothesis

Ho: There is no positive relationship between artificial and block chain on

entrepreneurship performance and success in Nigeria.

Review of the Related Literature
Artificial Intelligence and Block Chain Technology in Entrepreneurship
Block Chain and Artificial technology are relatively new technology in the space of the business and entrepreneurship world. It is affirmed that, block chain and artificial intelligence technology ensures successful transactions in terms of been easily saved and traceable when situation calls for that, as the transaction are recorded in the public and private keys.

According to Novillo et al, (2022), the adoption of block chain and artificial intelligence technology opens opportunities for businesses including small and medium enterprises, (Deebak et al., 2021).

Akhavin, Islam and Namvar, (2021), uses block chain technology to develop a theoretical framework for supply chain management knowledge on production, storing ,sharing and application in the small and medium enterprises business process ,ensuring trust ,monitoring and distribution of information regarding business enterprises and products information (Wong et al., 2020).

The adoption of new technology into entrepreneurship is a trend and revolution in the entrepreneurial and business world. Kagermann et al, (2011), coined the industry 4.0 as the combination of virtual and real world through artificial intelligence, block chain, robotics as well as digitalization and customization of the industrial sectors. Furthermore, many studies were carried out automation technology mostly on artificial intelligence in 1950 with machine learning models until recent trends of revolution 4.0, (French et al., 2021).

In the world of entrepreneurship, the new technology involves robotics, artificial intelligence, and block chain as they are the revolution alongside human intelligence, Oztemel and Gursev, (2018). Kraws et al, (2020), emphasized that, these technologies improves decision making and efficiency of the entrepreneurs, solutions to entrepreneurial problems as well creates opportunities for entrepreneurs, Lansiti and Lakhani,(2020).

It is of the opinion that, new technology change the operations and process of entrepreneur bringing about innovations and creativity of new products and services, Elia et al, (2020), Chalmers et al,(2021) and obschonnka and Audretch,(2020).
According to Treilmaier, (2018), Azuma et al (,2021)) and Ahmad, et al. (2021),artificial intelligence and block chain ensures quality decision making ,trust credible outcome of operations as big data ,internet of things ,augmented reality technologies are fully connected to manufacturing systems ,workflow ,scheduling as this ensures effective control and monitoring of entrepreneurship activities and production through a secured ,human –computer interactions and signed distributed

data (Meziame, et al. 2014; Murray et al. 1999; Dinhand & Thai, 2018).

Artificial intelligence is a software technology that mimics human intelligence of visual insights, speech recognition, making quality decisions and given recommendations, Huang and Rust, (2018). The term artificial intelligence is propounded by John Mccarthy in 1956 as a science and engineering technology solving human problems intelligently. Hence, artificial intelligence is a programmed machine for making decision mimicking human intelligence, Syam and Sharma, (2019).

Elements OF Artificial Intelligence

According to Huang and Rus, (2018), the following comprise the elements of artificial intelligence:
  (1) Expert system (2) Heuristic Problem solving (3) Natural Language processing (4) Vision

Natural Language Processing:

Is the interaction between machine and people in the natural language.

Expert System: is a mechanical system where human knowledge is combined with machine memory to give an intelligent solutions and decision makings to a problem through a dataset.

Heuristic Problem Solving: is a software system that measure unlimited area of human activities in proffering a best solution to a certain problem.

Vision: is the ability to predict the future problems to ensure a proactive preventions, Huang and Rust, (2018) and Guibao, (2016).

According to Akinyemi and Adejumo, (2018), in contributing to change in the economic situations of all countries, entrepreneurs needs the right technology in experiencing his survival and success in this 21st century as the importance of artificial intelligence and block chain technology cannot be over-emphasized to gain competitive advantage, Wirz and Zethalm,(2018).

Furthermore, data is a critical element for entrepreneurial survival as this enable them to be quality decisions, discovering opportunities in uncertain business environment as well understands the behavior of customers and their business operations, George et al,(2014), Agrawal et al ,(2018) and Levesque et al, (2020).

Big Data: Data is very important in this present digital world as it is used to gather customer information to enhance the growth and development of businesses and entrepreneurs adopted them to identify new opportunities in the environment, (Obschonki & Audretsch, 2020). Big data is essential for gathering customers information using data storage technology with cost effectiveness and innovative information processing (Di-Domenko, 2019; Bey and Lancy, 2012).

Cloud Computing: Cloud computing ensures data are shared via the cloud from the relevant artificial intelligence to store, manage and process data, Kumar, (2016).Cloud computing deliver quality information services to reduce the cost of computing through execution of several sophisticated technology ,Mir Zayi and Rafe (2015).

Machine Learning: According to Brynjolfisson et al,(2018).machine learning enhances the performance of automating knowledge acquisition from experience. Furthermore, in line with Jordan and Mitchel,(2015), observed that deep learning algorithms open new approaches for better decision making and also understand customer preferences and identify new products that satisfies customer needs.

Data Mining: involves the collecting, learning, processing, evaluating and acquiring valuable knowledge from data, Chung and Gray, (1999). Data mining helps the entrepreneurs to focus on quality customers, who buy a specific product, retain customers for more profits.

Benefits of Artificial Intelligence and Block Chain Technology in Entrepreneurship

Block chain and artificial intelligence technology ensures effective and efficient supply chain procedures are readily integrated into demand, inventories management and creates back up are there is a change in market demand, Markopoulous, (2019). Furthermore, it is of the benefits to the business enterprises and entrepreneurship that, there is rapid change of designs and this enhances the decision making on entrepreneur's supply and logistics.

In line with Vasiljeva et al, (202 and (Mccue, 2018), infusion of artificial intelligence and block chain technology has contributed significantly to the change in the behavior of consumer, ensure better entrepreneurial decision, reduces cost of operations as well increase the performance and competitiveness of entrepreneurial market environment.

Block change technology is very important to the entrepreneurs and business enterprises as its ensures enabled - global position system installed in vehicle as it is used for tracking supply chain and logistics as data entered into the system cannot be tampered with, Faella and Romano, (2019).

On the other hand, artificial intelligence ensures successful sharing of data which helps to identify the new market trends and also ensures corrective measures on outsourcing and switch suppliers (Uford, 2018). According to Kusuma et al, (2022), supply chain is made possible by artificial intelligence as it allows supply chain parties to share documents and trade on reliable and accurate way.

Furthermore, Singh et al, (2020), declared that, internet of things, big data are integrated into block chain to examine the data of the activities of the organizations, entrepreneurs and business enterprises.

Theoretical Framework

The appropriate theory relevant to this study is Digital Space Exponential Growth theory and this was propounded by George et al in 2014.The theory is all about entrepreneur's knowledge of digital technologies in identifying business opportunities and future markets.

For entrepreneurs to achieve entrepreneurial success, performance and survive in the environment of business, the adoption of digital technologies of artificial intelligence, block chain and robotic technologies are very essential.

The Digital Space Exponential Growth theory for organization success is through the data generated by technology from the society. Artificial intelligence, robotics and block chain technology are knowledge information-based technology suitable for entrepreneurial better decision making in a complex business environment to predict customers behaviours and attitude for entrepreneurial optimal and quality decisions. According to Saiz –Alvarez, (2020), circular economy depends on artificial intelligence and block chain technology for societal and human supports as this stops resources depletion, close energy and ensure the acceleration and achievement of United Nations SDGs by 2030 via micro (enterprises and customers, meso, (economic agents), and macro, (city regions and governments).

Changes in digital space enhances entrepreneurial innovations and decision in business enterprise process by adopting strategy to meet up with the environment and customer demands and needs. Technology system of block chain and artificial intelligence and robotic system are all digital innovations for better and quality entrepreneurial decision making (Uford, 2022).

According to Nusair et al, (2021), research organizations with capabilities satisfies the customers more and this is achieved through employee engagement and better decision making. Kassa and Raju, (2015), buttressed the above points that, employee involvement in decision making ensures innovations. In addition, Dwivedi et al, (2019) opined that, artificial intelligence and algorithms ensures trust, security, and ethical considerations.

Methodology

The study adopted survey research design using primary and secondary sources of data .A total of 60 employees of Kassy Block chain and technology agency, Lagos were chosen for the study using purposive sampling .The data were analyzed using ordinary least square to test the formulated hypothesis in line with the objectives in order to establish a significant relationship the variables .Also ,it is proper to develop a justifiable model on the expected relationship that exists between the variables .Hence ,the below model were formulated thus :

EPS= f(AIBT)

Test of Hypothesis

There is no positive and significant relationship between artificial intelligence and block chain on entrepreneurship performance and success in Nigeria.

TABLE 1: OLS Result

Dependent Variable: EPS

Method: Least Squares

Date: 08/10/23 Time: 1:.05

Sample: 60

Included observations: 60

Variable	Coefficient	Std.Error		t-statistical Probability
C	2.147377	1.128253	1.903277	0.0646
AIBT	0.106819	0.089130	1.198467	0.2382
R-squared	0.036421	Mean dependent	Var	3.026225
Adjusted R-squared	0.011064	S.D dependent	Var	5.453205
S.E of regression	5.422954	Akaike info	criterion	6.267865
Sum Squared resid.	1117.520	Schwarz	Criterion	6.352309
Log likelihood	-123.3573	Hannan- Quinn	Criterion	6.298397
F-statistic	1.436324	Durbin –Watson	Statistic	0.777654
Prob.(F-statistic)	0.238156			

Results and Discussion

The ordinary least square analysis was conducted and presented in table 1 above is the results of the effect of the artificial intelligence and block chain technology on entrepreneurship performance and business success. Also, F-statistic (1.436324) shows that, there is a slight or no variation between the variables in the model, and this can be seen from probability value. The R^2(R-squared) which measures the overall goodness of fit of the whole regression shows the value as (0.036421) which 36 percent. This revealed that, the independent variable (AIBT) accounts for about 36 percent of the variation in the independent variable, (SSEB).

The adjusted R-squared of (0.011064) shows that, input variable is not adding value to the models. The S.D dependent variable of 5.453205 shows the deviation from the average value of (EPS) in the data.

Finding of The Study

The findings showed that, there is a positive and significant relationship between artificial intelligence and block chain technology on entrepreneurship performance and success in Nigeria.

Conclusion

The study concluded that, artificial intelligence and block chain technology are important and the order of the day technology in entrepreneurship and SMEs business in the world.

Recommendations

(1) Block chain and artificial intelligence should made as a policy to be adopted entrepreneurship

(2) National policy and framework on artificial intelligence and block chain by government should be monitored to achieve its objectives.

(3) Conducive environment for technology to thrive must be created by Federal government of Nigeria.

(4) More investments in research and development on entrepreneurship for artificial intelligence and block chain technology.

(5) Government should ensure capacity buildings are given to people on artificial intelligence and block chain

(6) Government policy on entrepreneurship should also made to be centered on overcoming problems of entrepreneurial development.

References

Ahmad, I., Shahabudelin, S., Sauter, T., Harjula, E., Kumar, T., Meisel, M., Juntiti, M. (2021). The challenges of Artificial Intelligence in Wireless Networks for the internet of Things: Exploring Opportunities for growth, *IEEE Industrial Electronics Magazines,* 15(1), 16-29.

Akinyemi. F. & Adejumo, O. (2018). Government Policies and Entrepreneurship Phase in Emerging Economies. *Nigeria and South Africa Journal of Global Entrepreneur Research*, pp. 81-18.

Aliyu, A. (2019). Effect of Employee Participation in Decision Making. In Organization Performance, *International Journal of Economic and Business,* 3, 225-255.

AMA (2020). American Marketing Association, available online,https://www.ama.org.

Amanewah-Annoah, J, Khan, Z.,Wood,G.and Knight, G.(2021).Covid-19 and Digitalization: The Great Accelerating, Journal of Business Research, Vol., 136, 602-611.

Amankwah-Amoah, J, and Yaw, A. (2010).The protracted Collapse of Ghana Airways: Lessons in Organization Failure, Group and Organization Management, 35, 636-651.

Azuma, R., Ballot, Y., Behringer, R, Feiner, S., Julier, S. and Macintyre, B. (2021). Recent Advances in Augmented Reality, IEEE, Computer Grpahics and Applications, 21(6), 34.

Agrawal, A., Joshua, G., and Avi, G. (2018). Prediction Machines: The Simple Economics of Artificial Intelligence, Boston, Harvard Business Press.

Agrawal, A., Joshua, G. and Avi, G. (2019). Economic Policy for Artificial Intelligence, Innovation policy and Economy, 19, 139-591.

Baiyere, A.,Salimela. H., and Tommi, T. (2020). Digital Transformation and The New Logics of Business Process Management, European Journal Of Information Systems, 29, 238-59.

Battagello, F, Livio, C, and Michele, G. (2016).Benchmarking Strategic Resources and Business Via An Open Framework ,International Journal of productivity and performance Management, 65, 324-50.

Beyer, M. and Lancey, D. (2012).The importance of Big Data: A Definition Gartner, Available online: https://www.gartner.com/doc/2057415(Accessed on 23 November, 2021).

Brynjolfsson, E., Tom, M. and Daniel, K. (2018).What can Machines Learn and What Does It Mean for Occupation and The Economy? American Economic Association Papers and Proceedings, 108, 43-47.

Chalmers, D., Maekeenzie, N. and Carter, S. (2021). AI and Entrepreneurship Implications for Venture Creation :The fourth Industrial Revolution, Entrepreneurship Theory and Practice,Vol.45,No 5,PP,1028-1053.

Chung, H., and Paul, G. (1999). Special section: Data Mining. *Journal of Management Information Ststems*, 16,11-17.

Darwish, S., Darwish, A. and Bunegan, V. (2020). New Aspects of Using Future of Entrepreneurs Information, *Sciences Letters*, 9(1), 39-50.

Daugherty, P, and Wilson, J. (2018). Human Machine :Re-imaging Work in The Age of AI, Harvard Business Review Press, Boston, MA.

Deebat, B., Fadi, A. (2021). Privacy preserving in Smart Contracts Using Block Chain and Artificial Intelligence for Cyber Risk Measurement. *Journal of Information Security and Application*, 58, 102749.

Dinhand,T. and Thai, M.(2018).AI and Block Chain: A disruptive Integration, Computer, 51(9), 48-53.

Elia, G., Margherita, A. and Passiante,G. (2020). Digital Entrepreneurship Eco-system on How Digital Technologies and Collective Intelligence Are Reshaping the Entrepreneurial Process, Technological Forecasting and Social Change, Vol, 150.

Faella, G,. and Romano ,V. (2019). Artificial Intelligence and Block chain: An Introduction to Competition Issues, Cooperative Law Policy, *Debak*, 5, 19-25.

Falirlie, R. and Frank, M. (2018).Opportunity Versus Necessity Entrepreneurship: Two Components, Business Creation in IZA (Institute of Labour Economics, Discussion Paper, Munich: CESIFO, GMBH.

French, A., Shim, P., Risius, M and Jain, H. (2021). The 4th Industrial Revolution Powered by The Integration of 5G, AI and Block chain. *Communication of the Association for Information Systems,* 49(6).

Huang, M. and Rosset, J. (2018). Artificial Intelligence in Service. *Journal of Services Research,* 21:155-72.

Islam, A., Rahim, T, Masuduzzaman, M., Shin, S. (2021). Block Chain Based Artificial Intelligence Empowered Contagious Pandemic Situation Supervision Scheme Using Internet of Drone Things, *IEEE, Wireless Communication*, 128, 166-173.

Jordan, M. and Mitchell, T. (2015). Machine Learning, Trends, Perspectives and Prospects Science, 349, 250-60.

Kaplan,A. andHaenlein, T. (2019). Siri, Siri in My Hand: Who Is The Fairest in The Land? On the Interpretations, Illustrations and Implications of Artificial Intelligence. *Business Horizons*, 62, 15-25.

Kraus, M., Feueerriicapel, S. and Oztekin, A. (2020). Deep Learning In Business Analytics and Operations Research, Models, Applications and Managerial

Implications. *European Journal of Operational Research*, 281(3), 62-641.

Kumar, M. (2016). An Incorporation of Artificial Intelligence Capabilities in Cloud Computing, *International Journal of Engineering and Computer Science*.

Kusuma, I. Tahu, G. Wilyani, A.,Langeng,M.(2022).When A New Product Innovation Negatively Impacts Marketing Performance. APMBA 2022,11-41-60. Levesque, M.,

Martin,O. and Satisch, N, (2020). Pursuing Impactful Entrepreneurship Research Using Artificial Intelligence. Entrepreneurship Theory and Practice,1- 30,available at https://www.cln.org/10.11771042258720927369

Levin, D. (2019).Automation As Part of The Solution, Journal of Management Inquiry,28,316

Markopolous, E .Kirone,I.,Balcy,D., Vanharanta, H.(2019). Artificial Intelligence   and Block Chain Technology Adaptation For Human Resources Democratic Ergonomization on Team Management .In International Conference On Human Systems Engineering and Design Future Trends and Applications Springer.Cham, Switzerland,pp,445-455.

Manesh, M, Pellegrini,M.,Marzi,G, and Dabil, M.(2021).Knowledge Management in The Fourt Industrial Revolution Mapping The Literature and Scoping Future Avenues, IEEE Transactions on Engineering Management , Vol.68.NO 1,PP,289-300.

Mccarthy, J. (2000).Approximate Objects and Approximate Theories in KR2000: Principles of Knowledge Representation and Reasoning. Proceedings of The Seventh International Conference, New York :Morgan Kaufman, 519- 26. https://www.jmc.stanford.edu.

Mccue, T. (2018). Okay Google voice Search Technology and The Rise of Voice Commerce Forbes, https: www.forbes.com/sites/fjmccu/2018/08/28/okay-google-voicesearchtechnology-and-the-risk-fvoicecommerce/#57eca91242e2a

Meziane, F, Vadera, D., Kobbacy, K and Proulove, N. (2014). Intelligent Systems In Manufacturing Current Developments and Future Prospects, Integrated Manufactring systems, 11(4), 218-238.

Mirzayi, Sand Lancey, D. (2012). A Hybrid Heuristic Workflow Scheduling Algorithm For Cloud Computing Environments, Journal of Experimental and Theoretical Artificial Intelligence, 27, 271-35.

Muhuri, P., Shukla,A. and Abraham,A.(2019).Industry 4.0 Bibliometric Analysis and Detailed Overview, Engineering Applications of Artificial Intelligence, 78, 28-235.

Murray, T, (1999). Authoring Intelligent Tutoring Systems: An Analysis of The State of The Art, International Journal of Artificial Intelligence In Education, Vol., 10, 98-129.

NITDA (2023). National Block Chain Policy For Nigeria. Available at: https:www.nitda,gov,ng

Novillo-Vilegas, S., Ayala-Andrade, R., Lopezcox, J., Salazar Oyaneder, J., Acostavargas (2022). Roadmap for Innovation Capacity in Developing Countries. *Sustainability*, 14, 66-86.

Nunan, D. and Mariallaura, D. (2019). Rethinking the Market Research Curriculum.

International Journal of Market Research, 61, 22-32.

Obschonka, M, Neil, L., Andres, R. Johanne, C. and Tobias, E. (2020). Big Data Methods Social Media and The Psychology of Entrepreneurial Regions: Capturing Cross County Personality Traits and Their Impact on Entrepreneurship in the USA .Small Business Economics, 55,567-88.

Obschonka, M. and David, B. (2021). Artificial Intelligence and Big Data In Entrepreneurship: A New Era Has Begun, Small Business Economics, 55, 529-39.

Oztemel, E. and Gursev, S. (2018). Literture Review of Industry 4.0 and Related Technologies, Journal of Intelligent Manufacturing, 31(1), 127-182.

Rai, A. (2019). Experience AI: From Black Box to Glass Box .Journal of The Academy of Marketing Science, 48:137-41.

Ratten, V. (2020). Corona Virus (Covid-19) and The Entrepreneurship Education Community, Journal of Enterprising Communities, people and Places In The Global Economy, 14, 5, 753-764.

Shancy, S. and Sankaran V., (2000).The Promise of Entrepreneurship as a Field of Research, Academy of Management Review, 25, 217-26.

Schlick, J. (2014). Industry In Production, Automatisierung und Logistik., Anwenung, Technlogien and Migration, Sprnger Viewes, Wiesbciden.

Singh, S., Sharma, P., Yoon, B, Shojafar, M.,Cho, G., Ra, I, (2020). Convergence of Block Chain and Artificial Intelligence in I.O.T Network for The Sustainable Smart City.Sustain. Cities. Soc, 2020, 63, 102364.

Sofijanova, E. and Zabiglkin, C. (2013). Employee involvement and Organizational Performaance: Evidence From The Manufacturing Sector In The Republic Of Macedonia Trakia .Journal Of Sciences,11:31-36.

Uford, I. C. (2022). Technology and Entrepreneurship. In Akpan, A. and Etuk, A. (Eds.), *Basics for entrepreneurship for tertiary institutions*. Uyo: Robertminder Int'l. Ltd., 71-87.

Uford, I. C. (2018). E-Banking Application and Sterling Bank Customers' Adoption: Issues, Challenges and Benefits. *Business and Social Sciences Journal (BSSJ)*, 3(2), 1-12.