



UNIVERSITY OF THE GAMBIA (UTG)

International Journal of Entrepreneurship in Africa

ISSN: 2276-7290

IJEA, Vol. 2, Issue 2
November 2025

UNIVERSITY OF THE GAMBIA

International Journal of Entrepreneurship in Africa (IJEA)

IJEA Vol. 2, Issue 2, Nov. 2025

ISSN: 2276-7290

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Published by:
The International Researchers Association,
University of The Gambia

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ENHANCING PERFORMANCE OF FAMILY BUSINESS THROUGH INNOVATION AND CREATIVITY IN ILORIN, KWARA STATE, NIGERIA

Prof. Aremu Mukaila Ayanda[a]

Abstract

The significance of family businesses on the development an economy cannot be overemphasized as it helps to reduce unemployment rate. Despite this importance, their sustainability in recent times has been a concern for managers of entrepreneurship business, these therefore call for innovation and creativity in order to sustain and enhance its management and performance. The objective of this study is to examine how to enhance family performance through innovation and creativity. The survey research method was used through the distribution of 150 questionnaires to 30 family businesses in Ilorin metropolis of Kwara State, Nigeria. The study used primary data to collect information for the investigation. ANOVA test statistics was used. The study findings revealed that variables under each construct shown positive relationship which is a pointer for enhanced performance of family businesses. Product quality was found to increase profitability, new technology positively enhance productivity, and new product development brings about a high sales turnover and performance. The study concluded that it is essential that family businesses to adopt innovation and creativity in their daily operations in order enhance their management and performance. The study recommended that the managers of family businesses should use modern technology in order to improve the quality of their product so as not only sustain their entrepreneurship business but also enhance its performance.

Keywords: Entrepreneurship Management, Innovation, Creativity, Family Business and Performance.

Introduction

Innovation is one of the characteristics of a company's economic success and is an essential element in achieving customer satisfaction and fulfilling their wishes. This means finding new ideas to achieve the company's competitive advantage as it has the opportunity to showcase their products at low cost (Reguia, 2014). Innovation and creativity are considered important aspects in the case of including new strategies in any business organization. Along with this entrepreneur also be able to improve the already existing and followed strategy in the organization. Moreover,

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the environment that has been observed in the internal work sector is also improved by the inclusion of creativity and innovation in the workplace. In this research article adverse effect of innovation and creativity has been observed which directly influences all the aspects that are present in a business organization. When the overall business performance of an organization improved then it also affects the individual performance of the entrepreneurs in that organization.

Sternberg and Lubart, (1999) posited that creativity is the capacity to produce work that is both novel (original and unexpected) and appropriate (useful). In organizations, creativity has been defined as "coming up with fresh ideas for changing products, services, and processes so as to better achieve the organization's goals" (Amabile et al., 2005). Thus, creativity can be analysed at the individual, group and organizational levels (Dampérat et al., 2016; Woodman et al., 1993). In the family business context, creativity is associated with attractiveness as it is known for being a source of innovation (Amabile et al., 1996). While innovation includes concrete applications of new ideas, methods or processes of production, creativity situates at the step of generating new ideas and is described as what precedes or generates innovation (Amabile, 1988; Hauser et al., 2006).

In recent time, with the change of market environment and upgradation of the new products, to adapt to the fiercely changing market environment, the role of family business will change from inheritor to innovator. Therefore, how to improve the creativity of the family business is a quite important issue. With the development and expansion of family business, the research on family business has become an important topic. In terms of the family business, its survival and development are closely related to sustainability. One of the main objectives of family businesses is to seek sustainable development over time.

Statement of Research Problems

A major concern of companies in general, and family businesses in particular, is achieving and maintaining a level of competitiveness that enables them to compete in dynamic, hostile, uncertain, and everchanging environments (Stieglitz et al., 2016). Among other factors, a company's competitiveness depends on its ability to develop new products and processes to face and adapt to environmental changes (Caseiro & Coelho, 2019; Helfat et al., 2007; Teece et al., 1997). In particular, innovation helps family firms respond effectively to changes outside the firm (Chrisman et al., 2015; De Massis et al., 2016).

In recent years, with the acceleration of globalization and the increasingly frequent knowledge and technology innovation, family businesses are facing new challenges and competitive environment. It is important to turn to specialization and internationalization to step out of domestic market boundaries. As a result, nowadays family businesses must be competitive globally while trying to accelerate their transformation and form a unique competitiveness by enhancing their creativity (Carney et al., 2017; Hennart et al., 2019). Moreover, for China and other developing countries, due to the late development of family businesses, innovation

is more prominent for them than ever before during the period of inheritance and promotion (Bennedsen et al., 2015; Xu et al., 2015). Therefore, the objective of this study is to examine how to enhance family business performance through innovation and creativity.

Literature Review

Conceptual Review

Entrepreneurial management and innovation are another competitive instrument that is essential for family business' survival, success and performance. Innovation involves the deliberate application of information, imagination, and initiative to extract greater value from resources. Creativity helps to improve the work patterns that are followed by the employees of an organization (Bujan, 2020). When the work pattern is changed then the quality of the ultimate outcome from those are also become better than before.

Entrepreneurs came to the business with a whole new idea of including different types of strategies in the work sector. These strategies also help to increase employee engagement and employee retention in the internal work sector of the organization. This above-discussed situation helps to motivate the employees and this kind of increasing motivation among the employees help to improve the performance of the employees. Moreover, the better strategies that are proposed by the employees are also helping to develop better working conditions for the employees (Alonso-Dos-Santos & Llanos-Contreras, 2019). This betterment of working conditions is help to increase the attention of the employees while they are engaging in performing any kind of work.

Entrepreneurship Management and Family Business

Entrepreneurship management according to Barbara, et al. (1995), must focus on quality management practices made up of: top family management commitment, employee involvement, and customer focus (Flynn, Schroeder, & Sakakibara, 1995).

Top family management commitment: it is expected that top management of the family business must have support for innovation which is embodied in three levels-namely, tangible support, instrumental support, and social affection support (Amabile, Conti, Coon, Lazenby & Herron,1996). Tangible support—which includes people, capital, laboratory equipment, and other inputs—arises when it is required during the innovation process.

Moreover, instrumental support is needed when employees or family members formulate new ideas. Top family managers should thus put forward constructive feedback to ensure that the innovation process is on the right track, following a thorough evaluation. Even if there are criticisms, top family managers need to play the role of advocate to protect employees' ideas. With respect to social affection support, according to social cognition theory (Dweck & Leggett, 1988), employees normally respond with positive psychological and emotional reactions when they

perceive that they have emotional support from leaders. This will enhance their implicit motivation and desire for innovation; in turn, employees' creativity capability will be improved.

Employee involvement: it is commonly accepted that employees play a major role in generating, fostering, and achieving innovation. Particularly when the innovation process is faced with high levels of uncertainty and changeability, employees need to become involved extensively. This is because involvement allows employees to be open minded, free to think, and with less worries of being blamed, thus encouraging new thinking and ideas to emerge. Furthermore, as organizational behavior theory outlines, employee involvement helps to improve working attitudes, to enhance the sense of identity toward innovation, to maintain positive emotions, to promote self-identification as a member of an innovative process, and others (Luthans, 2002, Wang, Tsui, & Xin, 2011). From there, employees' innovation psychology is likely to evolve "I am" to "I will", and then to "I can" (Yang, Yang, Zhao, Jiang, & Qin, 2011). Eventually, family business' innovation performance will be enhanced.

Customer focus: it is necessary that family business owners acquire innovative ideas from the market, or else identify new but unsatisfied customer needs. This can help firms to develop new products to satisfy customer needs, and to create value that results from innovation efforts for customers (Hult, Hurley & Knight, 2004). Hold that customer focus is a key driver for organizational innovation, and that the needs or requirements of the customer are valuable inputs that enable new products to be developed and innovated. In addition, María Leticia Santos-Vijande and Álvarez-González (2007) show that customer focus, through aggressive and proactive behavior, can also help firms develop new products and services and to respond to changing customer needs, which also brings benefits for product and process innovation (Santos-Vijande, M.L. & Álvarez-González (2007).

Identification and Family Business

In the development of the family business, the identification plays an important role. With regard to identification, literally, it means that identity of oneself and a kind of cognition and description of the subject itself. Besides, self-identification has a creative effect on self. If people think about their identities, they always like to propose a serious question, such as how we see ourselves, who we think we are, what role did we play? (Farmer et al., 2003). In family business, the staff may have two identities, the family and business. On the one hand, the staff consider that they belong to a family, they must pay due responsibilities for the development and inheritance of the family. On the other hand, the staff also consider that the business is the status symbol of their identities. Therefore, identification in family business is a rich concept, if the staff recognized identities, the identification can arouse the cohesiveness between employees. Once the employees do not recognize their identities, this will cause identity conflict and affect enterprise performance (Shepherd and Haynie, 2009; Schmidts, 2013).

Entrepreneurial Inclination

Entrepreneurial inclination has three dimensions: creativity, initiative, and risk-taking. These proportions of entrepreneurial propensity have been empirically examined in earlier research. Risk-taking, inventive, and proactive management qualities are referred to as entrepreneurial orientation. Aggressiveness and autonomy as additional aspects in the concept of entrepreneurial attitude. These factors are often used to determine entrepreneurial inclination. Risk-taking behaviors, such as making substantial resource commitments to achieve high performance, are aspects of entrepreneurial organizational behavior (Zehir, Can, & Karaboga, 2015, Aremu & Aremu, 2024). Proactivity is the technology used in the business environment, including the market, to grasp the expectations and changes in the game before the event occurs, and to make the necessary organizational adjustments to cope with it. According to Hughes & Morgan (2007) proactiveness attempts to identify and utilize possibilities as well as take preventive actions/measures against prospective issues and risks. As a result, proactive enterprises outperform their rivals in terms of calculation because they can respond swiftly to changing market circumstances (Zehir, Can, & Karaboga, 2015). Competitive aggressiveness is defined as an organization's proclivity to frequently and aggressively confront its rivals in order to acquire a high-entry position in a market environment (Lumpkin, Brigham, & Moss, (2010). According to some experts, competitive aggressiveness is an organization's reaction to gaining a significant competitive advantage over its rivals in a market context.

Entrepreneurial Creativity and Innovation

Innovation is critical in business rivalry (Sucipto & Natsir,2022). Schumpeter posited the following linear triangle of phases in the invention process: 1) create, 2) innovate, and 3) mimic (Wach, 2019). An innovation is a knowledge product that may be defined as an idea, a creative act, or a finding. In turn, innovation entails making new ideas and innovations a reality, also known as invention implementation. In contrast, imitation entails the spread of innovations. Companies create new items and become market leaders as a result of innovation and imitation. Offering new items will assist improve internal customer performance by increasing customer satisfaction. Integrating consumers into the innovation process from the start may turn them into key users, allowing businesses to better address customer demands while increasing revenues The idea of innovation refers to the availability of new techniques, methods, and innovations at different stages of development (Wahyu, Hana, Troena, Nimran, & Rahayu, 2013). Innovations often emerge when businesses use ideas to better satisfy the requirements and expectations of end users (Madhoushi, Sadati, Delavari, Mehdivand, & Mihandost, 2011). In its original sense, innovation relates to novelty, but its economic value in terms of applicability is far greater. During economic downturns, like as the current Covid-19 epidemic, innovation is extremely vital (Kaszowska-Mojsa, 2020). Different types of innovations may be classed and divided. We should not consider any of these sorts of innovation to be the sole options for others. Innovation is often associated with a related container system (Rubalcaba, Gago & Gallego, (2010), Wach, Maciejewski,

& Głodowska, A. (2022)). A business's productivity and long-term growth need technical advances that govern its long-term operations. This is true not just for new goods, but also for innovation management. In other words, new items will have a positive marketing impact. There are five different sorts of innovations: 1) the introduction of new goods or improvements in the quality of current products, 2) new process innovations in the industry, 3) the opening of new markets, 4) the creation of new sources of raw materials or other inputs, and 5) changes in industrial structure.

Innovation involves improving existing products, services, and instituting new administrative systems so that a source of competitive advantage emerges (Martins & Terbalanche, 2003; Chen & Huang, 2009). The family business owner can use their creative ability to leverage innovation (Subramaniam & Youndt, 2005). Family business requires a certain level of entrepreneurial creativity. They need to improve their ability to respond, change, and develop creative concepts and innovations (Scarbrough, 2003). Entrepreneurial creativity facilitates communication and improves innovation (Gumusluoglu & Ilsev, 2009).

Entrepreneurial management and Business model innovation

Entrepreneurial management has a considerably important because of its influence on business model innovation. Product innovation and business model innovation are two types of innovation. Business model innovation, in addition to operational and product/service innovation, is the most basic innovation behavior in the development of corporate innovation skills. The aspects of entrepreneurial-oriented innovation, foresight, and risk-taking had a strong beneficial influence on breakthrough innovation. Business model innovation is fundamentally a kind of breakthrough innovation that may have a significant influence on the family business. Dhliwayo et al. (2021), investigated the influence of external variables on the link between entrepreneurial attitude and business model innovation, such as market vitality and competitive intensity. The effect of organizational elements like strategic vision and top-level support in fostering the link between entrepreneurial orientation and business model innovation.

Entrepreneurial performance and Family business

Performance is a concept that is subject to open and wide variability of meanings as it is somewhat an imprecise word when it functions as a place holder in research (Folan, Braume & Jegede, 2007). The lack of consensus on the definition of the concept creates confusion and clearly limits the potential for a clear generalisability and comparability of research in this area (Franco-Santos, et.al 2007). To accurately assess how well a business is performing.

Every serious business must ensure that its practices evolve to continue enhancing its performance. The performance of a firm can be viewed from several different perspectives, and various aspects can jointly be considered to define firm performance. Studies relating to both large firms and Small and Medium Enterprises (SMEs) constantly emphasize a positive relationship between

businesses practices, management activities and performance, as it is often articulated that best business practices produce superlative business performance (Arsalan, Naveed and Muhammad 2011).

Family business always provides an opportunity to showcase the talent they have in their business. Moreover, entrepreneurs also have the capability to think in a new way as their thinking process includes different types of innovativeness (Ahmed *et al.* 2018). Therefore, innovativeness helps to change the strategy that is used in the family business. The strategies that are followed in the business organization are used for a long period of time and due to an increasing amount of competitiveness in the market the family business is experiencing losses. The main reason for experiencing such a bad situation is because of the usage of old business strategies (Wibowo & Saptono, 2018).

Methodology

It is very important to determine the choice of research approach because it determines how the necessary data will be obtained. Hence, survey research is adopted for this study. According to Blaxter, Hughes and Tight (2001), survey research is a method of obtaining research information by asking a set of pre-determined questions from a given sample of individuals drawn from a defined population. Also, primary source of data is adopted for this study which is in line with the survey research design. The target population for the study was family businesses in Ilorin Metropolis.

The sample size is defined as the number of family businesses sampled for the study. For the purpose of conducting this study, one hundred and fifty (150) family businesses were given questionnaires. These family businesses were selected due to the fact that they were located in Ilorin metropolis and nearness to the researcher and very active transactions day in and day out with minimum of 5 employees and not less than five years of establish. Purposive sampling technique as a non-probability sampling was used as the technique for the research.

Model specification

FBP = F (I&C)

$FBP = \beta_0 + \beta_1 PRQ + \beta_2 NTECH + \beta_3 NPD \ldots\ldots\ldots + \mu$ --------- Equation 1

Where: FBP = Family Business Performance (sales),

PRQ = Product Quality
NTECH = New Technology
NPD = New Product Development
I = Innovation
C = Creativity

Data Analysis and Discussion of Findings

Table 1: Reliability Test and Validity Test

Cronbach's Alpha			No of Items
0.821			15
Validity Test			
	Product Quality	New Technology	New Product Development
Product Quality	1	0.821	0.720
New Technology	0.821	1	0.702
New Product Development	0.720	0.702	1

Source: SPSS Output Correlation is significant at the 0.01 level (2-tailed)

The study revealed the reliability, the estimate obtained for the Cronbach's Alpha which is 0.821; which is far greater than the required benchmark of 0.75 (Asika, 2001). The study further revealed the results of the validity test that is obtained from the Pearson Product Moment Correlation Coefficient (PPMC) with a value greater than 0.70. This implies that that the instrument of analyses employed for this current study is both reliable and valid appropriate for a study. Furthermore, the rate of usable questionnaires from the number of questionnaires administered is 93 percent. This strengthens the reliability of the instrument employed by study as shown in Table 1 above.

Test of Hypothesis 1

H_{01}: Innovation and creativity do not have effects family business performance

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.945[a]	.893	.843	.30645

Predictors: (Constant), Product Quality, New Technology, New Product Development

Source: Author's computation, 2025

From the regression analysis result in table 2, it was found that R value is (0.945), R-square adjusted (0.843) and the standard error of estimate is (0.30645), the value of R square (R^2) indicates a strong relationship between by innovation and creativity variables and Family business performance. In other words, the R^2 value (0.843) means that 84.3% performance was explained by innovation and creativity. More so, the value of adjusted R^2 (84.3%) showed that the value of R square (R^2) closely reflected the goodness-of-fit of the data to the regression line.

Table 3: ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1358.278	3	452.759	843.7551	.000[b]
	Residual	79.417	145	0.5366		
	Total	1437.695	148			

a. Dependent Variables: performance
b. Predictors: (Constant), Product Quality, New Technology, New Product Development

Source: Author's computation, 2025

In table 3, F-statistics shows that the model is useful in determining innovation and creativity, as the computed F-statistics which is 843.7551 is greater than the tabulated F-statistics value, with the p-value 0.000 less than the critical value is 0.05. This validates the rejection of the null hypothesis that Innovation and creativity do not have effects on family business performance.

Table 4: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		β	Std. Error	Beta		
1	(Constant)	.467	.028		-9.755	.000
	PRQ	.753	.042	.627	15.045	.000
	NTECH	.322	.037	.215	4.341	.001
	NPD	.482	.039	.254	6.830	.000

a. Dependent Variables: Performance
Source: Author's Computation, 2025

Based on table 4 shows (coefficient table), it was observed that the relationship between family business performance (product quality) and innovation and creativity was significant and positive (t-value=15.045, $p<0.05$) with 62.7% prediction. The relationship between family business performance (new technology) and innovation and creativity was significant (t-value=4.341, $p<0.05$) with 21.5% prediction. The relationship between relationship between family business performance (new product development) and innovation and creativity was significant (t-value = 6.830, $p<0.05$) with 25.4% prediction. This analysis suggested that innovation and creativity are statistically significant for family business performance

Test of hypothesis 2

$H_{02.}$ There is no relationship between Innovation and creativity and family business performance

Table 5: Correlations

		Innovation and creativity	family business performance
Innovation and creativity	Pearson Correlation	1	.921**
	Sig. (2-tailed)		.000
	N	148	148
family business performance	Pearson Correlation	.921**	1
	Sig. (2-tailed)	.000	
	N	148	148

***. Correlation is significant at the 0.01 level (2-tailed).*

Source: Author's computation, 2025

This table shows that there is a positive relationship of 92.1% between Innovation and creativity and family business performance. This means that Innovation and creativity has a positive relationship of 92.1% with family business performance and the results is significant as the p-value is less than 5% significant level. This further implied that Innovation and creativity highly correlated with family business performance. Consequently, the null hypothesis which states that there is no relationship between Innovation and creativity and family business performance is rejected and its alternative is accepted.

The study has revealed that innovations and creativity variables have significant effects on the management and performance of family business. At present, many studies have explored family businesses (Hofman and Newman, 2014; Miller, 2014; Overbeke et al., 2015). Unlike previous studies, this article mainly investigates the impact of innovation and creativity on family business performance.

A total of 150 questionnaires were administered out of which 148 were completely filled and returned. This represented a response rate of 98.7% and this was considered satisfactory for the analysis. Results from the descriptive statistics indicate that 112 were within 41-50yrs this shows that majority of the respondent are within the age of 41-50 years with a percentage of 75.7%. With this, the sampled family business has a large number of men and women who can participate actively in business activities as a result of their creativity and exposure. A total of 74.3% of the sampled family business, 110 respondents have 11-15 years' experience of doing family business in Ilorin metropolis.

The study revealed that the relationship between family business performance (product quality) and innovation and creativity was significant and positive (t-value=15.045, $p<0.05$) with 62.7% prediction.

The study revealed that innovation and creativity variables are statistically significant for family business performance. The second hypothesis shows that Innovation and creativity and family business performance are positively significant to each other. The relationship between family business performance (new technology) and innovation and creativity was significant (t-value = 4.341, $p < 0.05$) with 21.5% prediction. This was in line with Madhoushi, Sadati, Delavari, Mehdivand, and Mihandost (2011) that effective entrepreneurial management will significantly benefit family businesses in achieving innovation.

In order to achieve long-term performance, family businesses must find a balance between encouraging innovation and nurturing an entrepreneurial management. Finding this equilibrium is crucial to the success of any family business. The study findings further revealed that Innovation and creativity has a positive relationship of 92.1% with family business performance and the results is significant as the p-value is less than 5% significant level. This finding agreed with the study by Terho, Haas, Eggert, and Ulaga (2012) whose study reveals that product innovativeness has a significant relationship with business sales and performance.

Recommendations

A list of recommendations has been presented based on the findings of the survey conducted on enhancing family business management and performance through innovation and creativity.

i. The family business owners need to improve product quality in order to enhance performance of their family business.

ii. The study further recommended that management of family business should to be more conscious of latest technology in the areas of their business and ensure that this is procured for their business since this will enhance the business performance.

iii. Management of family businesses should ensure that they improve the methods of service delivery by introducing new products to customers in order to maintain and enjoy continuous patronage from their customers.

iv. The study finally recommended that management of family business should set itself as a market leader by involving in new product development by going beyond the conventional way of dealing with market that is attending to customer in a unique way in order to make them more reliable to customers.

Conclusion

This study adds to the growing body of literature emphasizing the importance of entrepreneurial management in shaping innovation outcomes and cultivating an entrepreneurial mindset within family business to drive sustained innovation, creativity and maintain a competitive advantage in a dynamic business environment.

The study concluded that innovation and creativity play the most important role in improving the performance of family own business. The entrepreneurs must develop different new strategies and modify the old and existing business. Therefore, innovation and creativity the family business performance will improve the position that is held by the family business in the different markets.

Family business with a greater entrepreneurial management, according to the findings, are more likely to engage in creative activities such as product quality, new technology, and product planning and development model. Family business should focus on Product quality in order to increase profitability, should introduce modern technology so as to enhance performance, and new product development further brings a high sales turnover in family businesses.

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NEXUS OF SOCIAL ENTREPRENEURSHIP, POVERTY ALLEVIATION AND GENDER VIOLENCE: LESSONS FROM SELECTED INTERNALLY DISPLACED PERSONS CAMPS MAIDUGURI

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Abstract

Economic entrepreneurship encompasses development, and implementation of business strategies to drive growth. Thus, social change, poverty alleviation and violence free society are part and parcel of economic development. The study area's raising poverty and GBV due to the insurgency results to deliberate policies and interventions that set the basis of this study; assessing the impact of social entrepreneurship on poverty alleviation and gender violence. Addressing gender violence is essential for poverty alleviation, thus, promoting economic development. The present study is a survey design based on a sample of 400 respondents drawn from three selected internally displaced persons camps in Maiduguri. However, this sample was selected through convenience sampling technique and a questionnaire was used for the data collection. Moreover, the obtained data was analyzed utilizing both descriptive and inferential statistics. Based on the study's hypothesis, the findings of the study revealed that social entrepreneurship and Poverty alleviation initiatives such as improved income level, healthcare, shelter, and, education had significant impacts on the gender violence in the study area. The study recommends that Government and other concerned bodies should operate under common fronts and platforms to develop ancillary mechanisms and policies that promotes social entrepreneurship.

Keywords: Entrepreneurship, Poverty, Displacement and Livelihood.

Section One- Introduction

Creating sustainable innovations and generate economic value or rather economic entrepreneurship management involves the application of business principles and strategies that drive economic growth. Whereas, social entrepreneurship encompasses focus on addressing diverse categories of social problems. Sustainable economic development in any nation may include poverty alleviation and gender

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equality which social entrepreneurship aim to achieve. The objective of this present study is to provides valuable insights into the role of social entrepreneurship in driving positive social change including economic development and/or social inclusion. Poverty and gender violence particularly economic violence (denial of basic resources); is intersectional in nature especially in emergencies. Globally, relative poverty is associated with attaining sustainable economic development and poverty alleviation is raising sustainable standard of living as well as improvement in the quality of life among people. For instance, during emergencies displaced individuals are expose to various forms of gender violence; sexual, physical, and emotional violence. Economic violence (denial of basic resources) is another form of gender violence exacerbated by poverty; perhaps, vulnerable individuals displaced by conflict live without access to meaningful livelihood opportunities as well as gainful employment that can fetch them basic income; perhaps, these individuals are front to series of abuses with has major detrimental social, physical, and emotional or psychological consequences including mental health or post-traumatic stress disorder (PTSD) (Miller, 1999). Feminist theory believed that gender violence inflicts serious economic harms on individuals because of the socially ascribed power relations in the society. Gender violence in society is a social problem that remained a worse form of economic inequality as a resulting of unemployment.

According to UN, 2016 and Odia et al, (2013) about 48 percent of world unemployment population are youths. In Maiduguri the Study area, Internally Displaced Persons labelled as IDPs in this study faces numerous challenges even with the efforts put forward to help them adjust and face the realities of life posed by the conflict. More than a decade insurgency in the area has resulted in widespread destruction of both infrastructure and livelihoods there by exacerbate more poverty and widespread gender violence scandals. IDMS (2023) report in 2021 revealed that about 59.1 million people were displaced due to conflict or natural disasters. However, the international law defined IDPs as persons or groups of persons who have been forced or forced to flee or who had reason to leave their home or place of residence mainly as a result of an armed conflict or to avoid its consequences. Interventions in IDP camps such as social entrepreneurship or poverty alleviation may significantly impact on IDPs life. According to Bansal et al, (2019) social entrepreneurship is an innovation that focuses on improving the socio-economic conditions of individuals including IDPs. Moreso, Garba, (2012) argued that social entrepreneurship is an opportunity towards solving socio-economic challenges that have plagued some countries including Maiduguri. Hence, social entrepreneurship promotes positive social change especially when new jobs are created.

Furthermore, Luguna et, al (2020) lamented that the population of Nigeria has been witnessing worse times in history due to recurrent insurgency in which about 2,046,604 were affected. Similarly, Adebayo, (2014) and Ekpa, (2016) revealed that 20 to 25 million people in more than 40 countries are affected making IDPs situation a global crisis. However, according to Singh (2012), in countries like India social entrepreneurship is used in identifying social problems such as poverty and gender violence. The concern countries implement this social project to achieve the desired social change and poster overall sustainable economic development. In international context, social entrepreneurship is among the best practices developed with the pretence to promote expanded sociocultural and environmental changes including peace and climate change. Eweka, (2016) states that the emergency in Maiduguri, where IDP's living conditions with no adequate social or economic security making significant number of them to leave in cramped and poorly equipped camps or in host communities where space and resources are overburdened and inadequate due to prolonged displacement.

Section Two- Statement of the Research Problem

Several studies, had shown the role of poverty alleviation in achieving gender equality via social entrepreneurship; job creation and sustainable economic development. However, despites there is limited literature on the impact of social entrepreneurship on poverty alleviation and gender violence especially among vulnerable population such as IDPs. The present study, assess the impact of IDP's income, healthcare, shelter, and education as the yard stick for measuring IDP's level of poverty and exposure to gender violence particularly economic violence (denial of resources). However, from the researcher's personal experience, the IDPs in the study area depend on income, healthcare, shelter, and education usually provided by government or philanthropists. Social entrepreneurship in the area is not well recognised as an innovative opportunity. Thus, the organisation of training among IDPs also did not favours the unemployed IDPs in the camps and host communities. However, based on this background, the study intends to examines the impact of social entrepreneurship initiatives on poverty alleviation and gender violence in Maiduguri IDP camps, in addition, this study assess lessons learned as well as the best practices from the existing social entrepreneurship initiatives in the camps.

Section Three- Literature Review

Today, social entrepreneurship initiatives had gained widespread recognition in many parts of the world. In recent times, quite a few studies had been carried out on

this subject especially by the academic institutions. According to Peredo, (2006) research on social entrepreneurship constitutes part of global practices. Though, the ongoing debates on social entrepreneurship had culminated fundamentally into different approaches to business. For instance, Johnson, (2000) argued that social entrepreneurship is the application of diverse business methods to the management of non-profit organizations. However, many of these researchers perceived social entrepreneurship as a cutting-edge strategy for addressing socioeconomic challenges. According to Saebi, (2019) the blended and the social inclined nature of it had fused the entrepreneurial operations. Social entrepreneurs and their actions are motivated by social aims and desire to impact society in some positive ways. The objective of the social entrepreneur is to increase "social benefits" or to promote well-being or the common good in a particular human group even though Sing, (2012) and Saebi, (2019). disagree with this viewpoint. However, Mosedale, (2005) opined that entrepreneurship is necessarily improving the standard of living of the vulnerable group. Hence, beneficial in managing disadvantaged groups such as IDPs. Studies shows that about 40% of epidemics like cholera affect IDPs due to lack of initiative for empowerment (Ilemona, 2013; Al-Dajani etal 2015; Osazuwa etal 2017; Kristina, 2003 and Mishra, 2023). Thus, the impact of social entrepreneurship on healthcare delivery, poverty even gender violence cannot be overemphasized (Sserwanga etal, 2014; Sing, 2012; Bomstein, 2007; Littlewood etal 2000; Rivera, 2015; as it may assist the vulnerable groups affected by conflict like IDPs in Maiduguri the Study area.

Section Four- Methodology

Research Design

The study is a survey design based on a sample so that the attitudes, opinions, behaviours, or characteristics concerning the population are described.

Population and Sampling

The population of this study comprises all the IDP camps in Maiduguri. A sample of 400 respondents was selected to represent the entire population of IDPs in Maiduguri. However, considering the various constraints associated with sampling, an appropriate sample size was determined using the Yaro Yamane formula for a finite population to represent the entire population. In addition, the study uses a non-probability sampling technique due to limited time and resources.

Table 1: Distribution of Questionnaire by IDP Camps

Displaced Person Camps	Proportion	Number of Questionnaires
Balasi IDPs Camp	57 ˣ 400/100	228

Dalori IDP Camp	16 x 400/100	64
Muna IDP Camp	27 x 400/100	108
Total		**400**

Method of Data Collection and Instruments

The study used a questionnaire as an instrument to collect data. The research instrument was titled Questionnaire on the relationship between social entrepreneurship, poverty alleviation, and gender violence in IDP camps in Maiduguri.

Table 2: Five Points Likert-Scale Respondent's Questionnaire Options

S/N	Scaling Point	Numerical Value
1	Strongly Agreed	5
2	Agreed	4
3	Undecided	3
4	Disagreed	2
5	Strongly Disagreed	1

Method of Data Analysis

The study employs descriptive and inferential statistical to analyse the data obtained. The first was utilised to analyse the demographic data such as age, occupational group, tenure, gender, and education and later was however, was used to draw statistical inferences on the populations from sample data. The aim is to test the hypotheses associations so that the study can be generalise to the larger population. Thus, Multiple Regression Analysis referred to MRA, tests the relationship between social entrepreneurship, poverty alleviation and gender violence. However, the initial regression analysis predicts and infers causality.

Section Five-Results and Discussion of Findings

Results

Table 3: Correlation between social entrepreneurship, poverty alleviation, and gender violence among IDPs in Maiduguri

Variables	Coefficients	Std.	t-	p-	Hypothesis

		Error	Values	values	Testing
(Constant)	5.313	2.293	2.317	.021	
Income Level	1.084	.055	19.834	.000	Ho: Rejected
Quality Healthcare	1.045	.110	9.498	.000	Ho: Rejected
Standard of Shelter	.920	.093	9.944	.000	Ho: Rejected
Quality of Education	.673	.096	7.017	.000	Ho: Rejected
R	0.956				
R^2	0.915				
Adjust. R^2	0.914				
F-Stats	705.491		.000		

Table 3 clearly shows the summary of the regression model on the significant role of social entrepreneurship on IDP's livelihood in Maiduguri. The result of the Pearson correlation reveals that the bivariate relationship between the dependent and independent variables is positively strong (r = 0.956). The result of the coefficient of determination(R-Square) of the regression model shows that social entrepreneurship explains variations in the level of poverty alleviation among IDPs in Maiduguri. However, the results of the study attributed the variables not captured in the regression model. The result of the Analysis of Variance (ANOVA) shows that the goodness of fit of the regression model is statistically significant (F (6, 394) = 705.491, P< 0.05), signifying that the variables in the regression model have jointly predicted the poverty alleviation. Thus, the results imply that the regression model developed can be relied on for prediction at a 95% confidence level. The regression coefficient for the contribution of all the independent variables represented by the unstandardized beta-value of 5.313 implies that when the influence of the role of social entrepreneurship is zero. Hence, all the other independent variables are held constant. IDPs have an average income of 5.313 units of Naira at their disposal with significance level. Thus, the study concludes that social entrepreneurship plays a significant role in poverty alleviation among Internally Displaced

Discussion

Practicing social entrepreneurship in developing economies is an innovation (Sengupta, 2018). For example, in South Africa, social entrepreneurship is increasingly recognized as creating the most jobs because it focuses on solving social problems and creating economic sustainability (Quacoe, 2022). However, after South Africa's first democratic elections ended apartheid, the African National

Congress government paid attention to social, economic, and political change and development in South Africa. This regime addressed the legacy and imbalances of the former apartheid system (Littlewood, 2018). Social entrepreneurship provides a solution to unbearable poverty in the country created by the apartheid regime. However, studies assessed various theoretical issues and debates in social entrepreneurship to quantify any activity as social entrepreneurial activity by assessing several skills associated with success in South Africa (Urban, 2008).
Therefore, to alleviate poverty among people, the principles of social entrepreneurship organize, create, and manage a social enterprise to achieve the desired social change of poverty (Singh, 2012). The analysis of the results obtained from respondents shows that quality education associated with entrepreneurship training significantly influenced poverty among IDPs in Maiduguri. The results are consistent with findings that agree with the study that education plays a crucial role in poverty alleviation. Education provides skills that boost employment opportunities and incomes while helping to protect people from socio-economic vulnerabilities. (Chaudhry, 2010). Thus, the focus of economic policy on education to reduce poverty and accelerate development seems justified. Inflation also becomes a cause of poverty, while trade openness significantly reduces poverty. Also, studies acknowledged that entrepreneurship education and training include a philosophy of self-reliance, how to create a new cultural and productive environment, promote new attitudes and culture to meet future challenges (Ifeoma, 2018) that entrepreneurship education is an effective and efficient mechanism for self-empowerment, to create jobs and wealth (Arogundade, 2011). Entrepreneurship education involves teaching students, and the potentials including equipping them with skills to be responsibility, and developing initiatives for potential interns (Ezeani, 2012). Entrepreneurship education prepares young people to be responsible and rational entrepreneurs with rational learning experiences to manage situations and risks (Undiyaundeye, 2015). Entrepreneurship training equips IDPs with skills for continuous improvement and innovation.

The study also reveals that quality healthcare reduces Poverty Alleviation among IDPs in Maiduguri. This finding confirms previous research (Riman, 2010) that found strong unidirectional causality suggesting that health improvements/spending are concentrated among people living near or below the poverty line, a "trickle down" mechanism, and redistribution of income leads to reductions in poverty and disease. They stated that only increasing the budgetary resources allocated to finance the health sector without reducing poverty is not enough to improve the health and social status of the population. A long-term association between poverty and health status cannot be over-emphasized. Studies revealed that an increase in the health of a population leads to an impressive reduction in poverty (Barro, 2004).

Better health also has a positive effect on child learning attitudes and abilities that leads to better educational outcomes (school graduation, higher average school achievements) and increases the efficiency of human capital formation of people and households (Strauss, 1998; Schulz, 1999).

The study indicates that income has a significant role in poverty alleviation among IDPs in Maiduguri. The results are consistent with studies that found a positive relationship between entrepreneurship and poverty reduction in Sokoto State. The study asserts that when the level of entrepreneurship increased, the poverty level decreased (Usman, 2017). The study established a positive relationship between social entrepreneurship and poverty alleviation. Social entrepreneurship can alleviate poverty (Ogidi, 2021). In addition, the study concluded that social entrepreneurship has a significant relationship with poverty alleviation among IDPs in Maiduguri. Thus, the null hypothesis is accepted.

Section Six-Recommendations

Based on the findings, the study recommends the followings:

1. Government should develop policies and programmes that promote social entrepreneurship initiatives in Maiduguri and Nigeria in general, and;
2. Government should sensitize IDPs on social entrepreneurship initiatives that alleviate poverty and formulate policies that discourages gender discrimination or violence especially among vulnerable persons like the IDPs.

Section Seven-Conclusion

This study targeted the role played by social entrepreneurship on poverty alleviation (saving capacity) and gender violence among IDPs as most respondents are household heads saddled with the responsibilities of providing the basic daily needs for their families and most of the respondents have secondary school education.

The study indicates the existence of more than three training interventions adopted to teach various skills needed, and the initiative's skills impact significantly on poverty alleviation and gender violence in different ways. Social entrepreneurship as a new transformation or innovative drive to improve the quality of health services, quality education, shelter, profitability, and business output among IDPs revealed appropriate. Overall, findings show that social entrepreneurship significantly influenced poverty alleviation initiative. However, differing pathways of the variables also resulted in income level, quality health care, standard of shelter, quality of education and overall social change significantly impacting poverty alleviation and gender violence among IDPs in Maiduguri.

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EFFECTS OF LEADERSHIP BEHAVIOUR AND CONDUCIVE WORKING ENVIRONMENT ON EMPLOYEE JOB SATISFACTION

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Abstract
This study presents an empirical review of literature on the impact of effective leadership behavior and a conducive working environment on employee job satisfaction in the public sector organisations. it also looks at how effective leadership and conducive working environment affect productivity. Job satisfaction is crucial to employee performance, organizational effectiveness, and public services delivery. This seminar paper synthesizes theoretical frameworks, conceptual and empirical literature of literatures, and integrates relevant leadership and environmental factors influencing job satisfaction. It also outlines the significance of these factors in the public sector context and provides recommendations as well as a conclusion for future research and policy development.

Keywords: Job, Satisfaction, Employee job satisfaction, effective leadership, conducive work environment.

Introduction:
Job satisfaction is a situation when employees of an organization are happy with their job, it is about emotional feelings employees have towards their jobs. Job satisfaction is defined as the level of contentedness that an employee has towards his job, (Bhasin 2020). It is an important concept for an organization because it is the level of employee job satisfaction that determines their willingness to contribute more to attaining objectives. Organisations success depends on the satisfaction of its employees, as happy employees and a productive worker, moreover, employees are the ones to carry out other functions of the organization. Therefore, employee job satisfaction is key in organization success. Milana (2018), job satisfaction is a pre-requisite to high service performance because satisfied employees are more open to quality enhancement and continuous improvement. Employee job satisfaction sometimes has positive bearing on a company success. Orgaissations should ensure that their employees are happy with their jobs to encourage them to contribute their best to the institution. Organisations have to look at critical issues that impacted job satisfaction and ensure to provide them for greater productivity.

There are various aspects of a job that are perceived to create employee job satisfaction. People manager or human resources managers should ensure that employee job satisfaction is given highest consideration, to ensure higher

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productivity. When employees are satisfied with their jobs, they become an ambassador to the orgainsation, they intend to represent the organization even outside work setting. To ensure job satisfaction, organisations should focus to approach each employee to understand their opinion about their jobs. Job satisfaction is an important aspect in organization success. Stakeholders or organization should ensure that employee's opinion about their jobs and the organization are constantly positive. Their opinion should be sought on what aspect of their jobs needs to be reinforced to make it conductive to stay. When employees are satisfied with their jobs, they will ensure every bit of the job succeeds, however when employees are dissatisfied with their job, their main responsibilities will sometimes be neglected. Organization should ensure employees are given all what is required to make work enjoyable. An organization that takes employee job satisfaction as a priority is expected to stay in the business for a longer time and is expected to grow in the industry. However when an organization does not prioritize staff welfare, they are bound to crumble and pushed away from the industry. (Hoppock, 1935) defines job satisfaction as any combination of psychological, physiological, and environmental circumstances that cause a person to truthfully say that they are satisfied with a job. Job satisfaction is a person's positive emotions or feeling about his or her job.

On the other hand, job dissatisfaction also has negative consequences on staff. When employees are dissatisfied with their organization they have no regards to their institution, rules, procedures or processes. Job dissatisfaction amongst employees can have serious impact on the effective functioning on the organization. Most of the employees express job dissatisfaction either swift anger towards their colleagues, not showing to work early and leaving the work too early. It is therefore, the responsibility of the organization to investigate what is causing sudden change in the behavior of its employees in other to address it. Squires, Hoben, Carleton, and Graham (2015) contended that though dissatisfied employees are unlikely to leave their jobs, their feelings of frustration can affect them, their co-workers, and the quality of their work.

Therefore, understanding employee job satisfaction will finally lead this research to evaluate how an effective leadership and conductive working environment have on employee job satisfaction in an organization.

Statement of the problem

A Public sector organization is established with clear mission and visions designed to guide the operations toward achieving national development objective. However, to realize these objectives largely depends on the employee satisfaction, motivation, and performance. Employee job satisfaction is a critical determinant of organizational effectiveness and service delivery. In a public institution, achieving high level of job satisfaction remains a challenge due to factors such as ineffective leadership practices and unconducive working environments. When leadership is ineffective and workplace conditions are unfavorable, employees often experience low morale's, reduced organizational commitment, and low productivity; these

hinder the attainment of organizational vision and missions. To this extent, it is essential to explore the extent to which effective leadership behavior and a conducive working environment positively influence employee job satisfaction in a public sector organization.

Research Question

- Does effective leadership behavior has impact on employee job satisfaction in public sector organisations?
- How does a conductive working environment create employees job satisfaction in public sector institutions?

Objective of The Study

1. To examine the impact of effective leadership behavior on employee job satisfaction in public sector.
2. organisations.

3. To access whether a conductive working environment has a bearing on employees job satisfaction in a public sector institutions.

4. Provide public sector institutions to act accordingly in line with the results of the findings in the research objective (1) and (2).

Literature Review

To understand the impact of effective leadership behavior and conductive working environment on employee job satisfaction and its impact organization successes, are discussed below:

Conceptual Review

Job satisfaction, an unquantifiable metric, is defined as a positive emotional response you experience when doing your job or when you are present at work.

Effective leadership is about executing the company's vision (or redefining and improving it, in some cases) and setting the tone and the culture for that particular organization, Ahmedov (2020).

A conducive Working Environment It is a place that encourages employee productivity, 11 recruiting (2025).

Empirical Review

Effective Leadership

Effective leadership involves motivating and inspiring people in a way that provides a safe environment for growth and innovation, which often results in a team that routinely exceeds expectations, Vanasse (2024). A good leadership means inspiring others to achieve certain outcomes, Gallup (2025). Effective leaders work with their employees and teammates to reach a common goal, courser (2024). Effective leadership is about executing the company's vision (or redefining and improving it, in some cases) and setting the tone and the culture for that particular organization,

Ahmedov (2020). Effective leadership is the ability to guide, inspire, and influence others to achieve common goals and drive organizational success, Vanasse (2024). Effective leadership refers to a leader's ability to guide, inspire, and influence the rest of the team toward achieving common goals, Swiss Education Group (2025). Effective leadership is inspiring others to take action and guiding them toward a common purpose, Gallup (2025). According to Landry (2024), Leadership influences everything from strategic planning to everyday workplace culture, making effective leadership the backbone of any successful organization. Effective leadership is recognised as key to the success of any organization, Benmira S, Agboola M. (2021).

An effective leadership helps in good managerial principles that in return may reduce the cost of running the organisation, firm or business and this will in great deal leads to its growth and development, Alhaji (2019). According to Naser A, Najim A, (2013), an Effective leadership styles have always played a positive role in motivating employees, raising their morale, and making a positive impact on individuals and organizational performance. Organisations should ensure that leaders have the moral qualities to be able to lead effectively. Hao M J, Yazdanifard R, (2015) have state that effective leadership is essential in managing change and change is the only method to sustain the organization in the current business environment. To ensure success in organisations as well as increasing employee job satisfaction, leaders should develop some fundamental characteristics that are necessary and critical for considering a leader an effective leader. It has been observed that an effective leader should be able to have a vision of where he intends to drive the organization. He must be able to clearly communicate the direction of intent and shift his followers to understand this direction. Characteristic of effective leaders is that they give a clear direction to their employees, and also lead their employees to commit to their jobs and to work as a group to achieve the organization’s goals and objectives, Wasim, and Imran, (2010). Leaders provide direction and vision, guiding organizations through challenges and helping them seize opportunities, Swiss Education Group (2025).

It is important to also list some important characteristics effective leadership display. Vanasse (2025), Swiss Education Group (2025), Gordon T, (1998) they identify that following characteristics of good leader such as: Visionary thinking, effective communication, integrity, courage for which leaders must learn to become more effective in their leadership.

According to a study conducted by Çakmak, Esra & Öztekin Bayır, Özge & Karadağ, Engin. (2015). The Effect of Leadership on Job Satisfaction. The result out a moderate impact of leadership behavior on employee job satisfaction. In a similar study that occurred studies conducted from 2000 to 2009 have found that leadership has a strong effect on job satisfaction. In another study by Iman N and Lestari W (2019) on The effect of leadership on job satisfaction, work motivation and performance of employees: Studies in AMIK Yapennas Kendari. Results showed that leadership has a significant effect on job satisfaction, motivation and

performance of employees. Furthermore, job satisfaction and work motivation influence employees' performance.

A conductive working environment

A workplace environment comprises people, the physical environment, the organization's culture, and working conditions, which can affect an employee's day-to-day job productivity and satisfaction, 11 Recruiting (2025). A working environment is a place where employee go to work to earn their living, therefore, a conductive working environment is created by organizational leadership to ensure that staff can be able to perform their assigned task with a piece of mind. Organisations working environment composes of so many aspects. Working environment could mean physical environment, which has direct impact of employee job performance. Badave S. S. and Genbote A. J. (2016) alluded that the physical aspect of work place environment can have a direct impact on productivity, health and safety, comfort, concentration, job satisfaction and morale of the people within it. An efficacious leader possess certain traits and mannerisms that create conducive environments for high performance, Karauri, L. G., & Kyongo, J. (2024).

A conductive environment may constitute the structure in which employees dwell to perform their work, tools, and the technology provided are all part of the resources to create a healthy working environment for employees to perform their work satisfactorily. The physical environment of the workplace environment is the location and the surrounding area with tangible assets in the work area such as ventilation, noise levels, quality of air in the workplace, parking lots, tangible perks for example lunch, tea, and coffees, building of offices, setup of the office (Mathew, 2015).Once employees get a favorable working environment, then they become more dedicated to their assigned tasks which ultimately improves their performance, Zhenjing G, et al (2022).

The factors of work place environment give an immense impact to the employees either negative outcome or positive outcome, Chandrasekhar (2011). Creating a conducive work environment is essential for increased motivation, productivity, job satisfaction, and the overall well-being of employees, 11 Recruiting (2025). To ensure positive and productive working environment the organization should be a safe place for employees to perform their duties without fear of danger or harassment.

The inclusion of a safe and healthy working environment as a fundamental principle and right at work calls attention to the mutually reinforcing nature of all such principles and rights, ILO (2023). A healthy workplace is a place where everyone works together to achieve an agreed vision for the health and well-being of workers and the surrounding community, Pravamayee (2014). A conducive working environment encompasses a range of factors. It's about more than just ergonomic chairs and well-lit office spaces. Kenny et al (2020), state that the work environment is a broad category that includes physical conditions, job characteristics, organizational features (culture, history), and other aspects of the

organization such as local labor market conditions, industry, and household-labor relations. It's a place where employees feel physically and psychologically comfortable. It's a space where they can thrive and give their best. It's a setting that supports health, happiness, and success. According to Basahal et al, (2022) in a typical work environment, significant factors include physical and behavioural elements associated with employees' abilities and thus affect their behaviour in terms of productivity. Cherian et al (2013) also state that, the physical workplace has a significant impact on employees' productivity, happiness, social interactions, and wellbeing. Kenny et al (2020) state that condition of the work environment has an important role for the employees because it is one of the determining factors whether employees still want to work in the organization.

In a study conducted by Taheri et al (2020) on Impact of Working Environment on Job Satisfaction. The result found out that Job satisfaction depends on the working environment. It further states that By providing the most the facilities with the working environment it is possible to make the goal of an organization accomplished.

Conducive Environment on job performance

Conducive working environment is believed to have positive impact on employee performance and improve their effectiveness in their job roles. The employees' behavior is influenced by the work environment that depicts effectiveness and the efficiency at the work environment (BUSHIRI, 2017). The physical workplace has a significant impact on employees' productivity, happiness, social interactions, and wellbeing, Menka A (2023). Employees who are satisfied with their work environment are more likely to have positive work output, Zhenjing G, et al (2022). Employees spend a major considerable amount of time at work, and their working environment has an impact on their performance in integrated ways (2022). According to a research conducted by Santoso A. B. and Oktafien S. (2024), on the impact of a conducive work environment on improving employee performance the result revealed that there is a significant influence between a conducive work environment on improving employee performance. The physical environment at work is critical to employees' performance, satisfaction, social relations and health, Al-Omari and Okasheh (2017). Baker and Brian (1998) has state that a good workplace plays a crucial role in influencing the level of employee engagement, productivity, and performance.

The work environment represents everything around the employees and where they work, which impacts how they perform their work functions, Chandrasekar and Karim (2011). A positive working environment encourages employees to contribute more and propos new methods to increase productivity. To enhance productivity, the working environment must be safe and sound to ensure that decisions and operations are not influenced by external forces or threats.

Theoretical Review

The Great Man Theory of Leadership

This leadership theory was coined by Thomas Carlyle in 1841 book "On Heroes, Hero-Worship, and the Heroic in History" and his speech. According to him the Great Man theory of leadership states that some people are born with certain personality traits which make them great men it states that such people are born to become leaders. When the leader takes a leadership role and become successful in the job he/she therefore becomes a hero in what they do. It states that Great men are born with high level of ambition and also have a clear vision of where they want to be. It is believed that they are born with sets of natural qualities that make them great leaders according to contemporary theorists, great leaders are not like other people, they are not required to acquire academic degrees to become great. Therefore, great man theory suggests that a great man should possess the following qualities: Charisma vision, influence, integrity, confidence, intelligence and courage.

Trait theory of Leadership

This theory is believed that leadership is based on personality traits. Trait Theory of Leadership focused on the examination of such characteristics or traits in successful and unsuccessful leaders to understand their behaviours which is used to predict leader's effectiveness in their leadership positions. Therefore, the behaviours depicted by leaders will be compared to determine whether potential leaders may be successful or unsuccessful in their endeavours. These studies attempt to identify the following leadership behaviours: Psychological, demographic, personality, intellectual, task related and social characteristics.

It is believed that leaders who possess trait theory of leadership are: achievement oriented leadership motivation, honesty and integrity, cognitive ability, knowledge of the business, emotional maturity and charisma.

Contingency Theory of Leadership

This theory proposes that the behavior of a leader in one situation may be different from the behavior a leader displays in a different situation. The theory states that there is no single behavior or characteristic that is directly responsible for a leader's success. It states that the combination of different traits within a situation at different times makes a leader successful. It states that for a leader to be called successful, it is contingent upon how the leader is able to control the situation at hand and whether they style used by the leader befits the situation. Therefore, this theory tries to explain that a leader's success or failure depends on the marching style if it is right or wrong for the situation at hand.

Behavioural theory of leadership

Contrary to the Great Man theory, behavioural theory believes that leadership can be studied, trained and develop on it. The behavioural theory of leadership is a management theory that accesses a leader's actions and management styles they display at work. This theory argued that what managers and leaders need to do to be successful at what they do is to learn certain leadership behaviours. This theory

propounds that leaders can be trained, as a result, all employees in organization can have the opportunity to be trained and become business leaders. It involves observing effective leadership behavior within employees and align it business strategies.

The following theories explain the importance of creating conducive working environment on job satisfaction, they are:
The Human Relations theory

The Human Relations Theory which was developed by Elton Mayo from the Hawthorne Studies, it explains that positive and social interactions between employees improve employee morale and organizational performance. This study also emphasizes a supportive management style that encourages open and effective communication and increases job satisfaction. The theory also tries to explain the benefits in collaboration and team work which create trust amongst employees and create a healthy organization culture. Additionally, Mayo corroborates this perspective by emphasizing the significance of social and environmental factors in the workplace. The theory state that employees are not only motivated by extrinsic reward like monetary rewards but also by intrinsic factors such as positive relationships with employer, a supportive atmosphere conditions, and attention to their safety and well-being. These important elements collectively contribute to creating a conducive working environment, which as well enhances moral and employee productivity.

Herzberg two Factor theory
Herzberg's Two-Factor Theory explains the importance for understanding the role of conducive working conditions plays in employee satisfaction and performance in an organisation. According to Herzberg,s two factor theory states that job satisfaction and dissatisfaction are influenced by two sets of factors: motivators (intrinsic factors such as achievement, recognition, and growth) and hygiene factors (extrinsic factors such as working conditions, salary, and company policies).

A conducive working environment is considered to be under the hygiene factors, which, prevent job dissatisfaction when adequately provided. Poor working conditions, also, lead to employee demotivation and reduce productivity.

In this regard, creating conducive environment and improving workplace safety and overall working environmental comfort ensures employees basic needs are fulfil, fostering satisfaction and reducing turnover.

Research Design
This research focused mainly on qualitative research. It involves the empirical review of secondary data to scout understanding on how effective leadership and conducive working environment contributes to creating employee job satisfaction and productivity in a public sector organization. To compile this information, the research involved the use of peer review journals, relevant literatures, books and

internet searches and give qualitative analysis for deeper understanding in the subject matter.

Discussion of Findings

Objective one above examines the impact of effective leadership behavior on employee job satisfaction in public sector. It has been found out that effective leadership increases employee morals and provide support to increase job satisfaction. Therefore, effective leadership guarantees high employee moral which have positive impact on productivity.

In research objective two which is to access whether a conductive working environment has a bearing on employee job satisfaction in a public sector institutions. This paper has found that a conducive working environment set the base for a productive work place. The work environment must be peaceful and providing all the tools required for employees to perform effectively increases job satisfaction and productivity.

Conclusion and recommendation

Taking a guide from the great man theory, trait theory of leadership and behavioural theory of leadership, organisations leaderships should endeavor to identify some of these traits discussed above to identify which of the employees possess those qualities and train them to assume leadership positions. Organization leadership and stakeholders should focus on identifying employees that possess characteristics of great man theory and accord them with responsibilities while observing their leadership behaviours, whether they possess some of the personalities traits to be a great leaders.

Moreover, they should also observe leaders that possess characteristics of the behavioural traits and prepare them for leadership roles in the future. On the other hand, from the contingency theory, employees in the organization can be placed on difference positions at different situations to monitor the effectiveness of their leadership roles and develop their leadership skills before they are fully matured to take up leadership responsibilities. When those are carried out, organisations will have great leaders that will push for organization success. In conclusion, effective leadership behavior and creating conducive working environment have positive impact on job satisfaction.

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POTENTIAL APPLICATIONS OF GROUNDNUT SHELL POWDER-FILLED POLYLACTIC ACID COMPOSITES FOR SUSTAINABLE ECONOMIC DEVELOPMENT: A PATHWAY FOR GREEN ENTREPRENEURSHIP

A. Hammajam[g] and H. Maidawa[h]

Abstract

This paper explores the entrepreneurial potential of using groundnut shell powder as a filler in biodegradable polylactic acid (PLA) composites. Groundnut shells, an abundant agricultural waste, are proposed as a low-cost reinforcement material to develop sustainable bioplastics. The investigation characterized and determined the mechanical properties of groundnut shell powder (GSP) filled Polylactic acid (PLA) thermoplastic composites. Two different fiber sizes; 150 µm and 212µm were pulverized. The fiber loadings were 10 %, 20 %, and 30 % by weight. The GSP-PLA composites were prepared by application of internal mixer, followed by compression molding process. Tensile and Flexural properties were tested using universal testing machine (UTM). The tensile strength decreases from 0 % to 10 % by weight fiber loadings for the mesh sizes and increases slightly as the fiber loading increase to 20%. The modulus increase as the loadings increases for mesh size 150 µm and decrease for 212µm at 10% loading. The tensile percentage elongation also reduces at 10% loading. Flexural strength and modulus increase for both mesh sizes for all the fiber loadings. However, 30 % fiber loadings, the flexural strength and modulus decrease slightly for 212µm composites. The hardness of the composites increases for both mesh sizes and fiber loadings. It is presumed that the tensile properties performed good at 20% loading while, flexural properties were better at all loadings. Also, the hardness is excellent at all the fiber loadings for both mesh sizes. The study identifies key application areas including packaging, construction, agriculture, and consumer products, highlighting their relevance in supporting eco-friendly startups and rural industries. The innovation aligns with global sustainable development goals (SDGs) and offers promising opportunities for green entrepreneurship, especially in agrarian economies.

Introduction:

The growing emphasis on environmental sustainability and circular economy principles has catalyzed the development of bio-based and biodegradable polymer composites. Biocomposite, polylactic-rich biomass material has emerged as promising reinforcement and offers versatile applications and potential benefits in

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various fields, especially in natural fiber composites (Ahmed M.B et al 2022). The use natural fibers for composite material manufacturing have received great attention because of their sustainability and renewability. Research and advancement on natural fiber composites are continually rising and their function is growing into novel fields of usage (Jumaidin et al., 2017; Kiruthika, 2017; Merkel et al., 2014; Sapuan and Mansor, 2014). The modern age of technology presents an abundant of bio-based composites that give better chance for environmentally friendly achievement, lower energy utilization, insubstantial weight, lagging and sound absorption behaviors, reduction in volatile organic radiation, and decreased reliance on synthetic and forest manufactured articles. Advancement of workable resources as the substitute for synthetic materials are being investigated to reduce the over-reliance on oil or petroleum (Mohammed A.U et al 2022).

On the other hand, agro waste cereals such as; rice, barley, maize, sorghum, wheat etc contribute significantly as reinforcements or fillers in plastic composites productions in recent time. PLA is thermoplastic polymer with high strength and modulus that can be derived from annually renewable resources. It can be degraded by simple hydrolysis of the ester bond and does not demand the presence of enzymes to catalyze this hydrolysis (Collins S and Ghodke P. 2018; Simone, M., et al 2022). It also has melt and glass transition temperatures of 175 ^{o}C and 55 ^{o}C. These attributes make it suitable candidate for most degradable natural fibers as environment friendly materials. Groundnut (Arachis hypogaea) also known as peanut or legume is grown in several countries as a cash crop. The top three groundnut producing nations are China, India, and Nigeria with an annual production of 16,685,915, 6,857,000, and 3,028,571 metric tons, respectively (Mohammed A.U et.al 2021; Maidawa and Dukku 2022). Groundnut shell (GS), which is an agro-waste with little or no commercial value, accounts for 20% of the total weight of the pod. Thus, a large amount of groundnut shells is generated globally, paving way for more studies to search for other viable areas of applications.

Statement of Problem

Agro waste and natural fiber composites are not altogether a new phenomenon. The interest in superior material started to grow as a result of environmental safety and industrialization. Groundnut shells as waste are abundantly available and has the potential to be used as filler or reinforcement in plastic composites. Rapid increase in quantity and categories of agro waste as a result of rigorous agriculture in wake of population growth and improve standard of living is becoming dwindling problem as rotten waste emits methane and leachate, and open burning by farmers to clear lands generate carbon dioxide (CO) and other local 2 pollutants. Groundnut

shells is an agro waste left on the farm site after harvest. Due to under utilization of this waste, it became houses for micro organisms that harbor diseases and consequently resulted in environmental pollutant.

Literature Assessment

The groundnut shells, a by-product of the processing process, are an abundant agricultural waste material that decomposes slowly in nature (Adhikari et al 2019; Zheng et al., 2013). Despite their potential, groundnut shells are often discarded, leading to environmental harm through burning or disposal in landfills. However, these shells contain valuable bioactive compounds and functional ingredients that can benefit various industries, including food, feed, paper, and bioenergy. To achieve zero waste and unlock the full potential of groundnut shells, innovative technologies and applications are necessary to transform this waste into a valuable resource (Rosa et al 2021, ; Matumba et al, 2017; Venkatarajan S and Athijayamani A. 2020). This study investigates the potential of groundnut shell-filled polylactic acid (PLA) composites as a sustainable alternative to conventional petroleum-based materials (Trivedi N S et al 2019). Groundnut shells, an underutilized agricultural byproduct, were processed and incorporated as lignocellulosic fillers into a PLA matrix to develop lightweight, eco-friendly composites. The incorporation of groundnut shell powder not only improves the composite's cost-efficiency but also influences its mechanical and thermal properties, with results indicating enhanced stiffness and thermal stability at optimal filler loadings. The use of natural fibers within composite applications is being pursued extensively throughout the world. Consequently, natural fiber composite materials are being used forThese materials are based largely on polypropylene or polyester matrices, incorporating fibers such as flax, hemp, and jute. Thus in the future cars may be molded from cashew nut oil and hemp. Even golf clubs may be built around jute fibers, and tennis racket may be stiffened with coconut hair. Bicycle frames may derive their strength from any one of the 2000 other suitable plants. The high-tech revolution in use of natural fibers could end in replacement of synthetic materials.

The diverse range of products now being produced, utilizing natural fibers and biobased resins derived from soybeans, is giving life to a new generation of biobased composites for a number of applications. These include not only automotive vehicles (including trucking) butalso hurricane-resistant housing and structures, especially in the United States. The construction sector and the leisure industry are some of the other areas where these novel materials are finding a market. In Germany, car manufactures are aiming to make every component of their vehicles either recyclable or biodegradable.

The composite material demonstrates significant potential for application in a variety of sectors. In packaging, it serves as a biodegradable alternative for single-use containers and films. In the automotive and consumer goods industries, it shows promise for use in low-load structural and semi-structural components such as interior panels, casings, and household items. This research highlights the dual advantage of valorizing agricultural waste and advancing green material technologies, thereby contributing to both waste reduction and sustainable material innovation.

Materials and Methods.

Sample collection and preparation

Groundnut shells were collected from farm site dumped after milling at Kaleri, Bauchi State, Northeastern Nigeria. These husk residues were left in an open-air area on the farm after harvest. For the purpose of this study, 4 kg of the materials were collected one month after the milling on the farm site. The groundnuts were usually harvested in December, and the husks were collected in January and packaged in a bag for this research. The husks were initially dried at 105°C for 24 hrs in an industrial oven for the purpose of removing excess moisture according to the ASTM D4442 The poly lactic acid (PLA) grade 2002D was from the Nature Works LLC (USA) IngeoTM grade and was supplied in the form of granules. The properties of the matrix were: density of 1.25g/cm^{3}; glass transition temperature (Tg) of 59°C; melting point of 152°C and melt flow index (MFI) of 30.3g/10 min. Groundnut shell were pulverized into two different mesh sizes of 150 µm and 212 µm using Fritsch Pulverisette P15/P16 mill. The pulverized samples were subjected to 105°C temperature for 24hrs in an industrial oven in order to remove moisture before blending with the polylactic acid granules. Plate 1 depict mesh sizes of GSP.

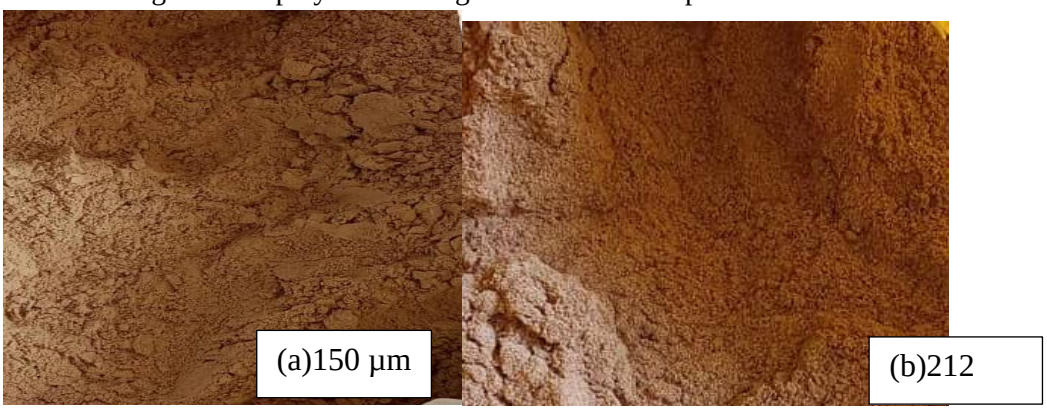

Plate 1. (a & b) Mesh sizes of GSP

Characterization

Composites Fabrications.

Groundnut shell fibers and polylactic acid (PLA) were compounded by mixing, followed by compression molding process. Internal mixer (Brabender GmbH) was used in the blending process at processing temperature of 170°C, for a period of 10min, and rotating speed of 50rpm. This method was adopted by Collins S and Ghodke P. (2018). labquip scientific 40-ton compression molding machine was used in hot pressing the test specimens. 15 cm ×15 cm × 0.3cm steel mold was used for the compression process. The samples were pre–heated for 3min at 170 °C. Venting time was set to 3min and final press temperature of 170°C for 3min. Finally, the samples were cold pressed for 5min at room temperature. GSP–PLA composites were cut from the two sample sizes with 0%, 10%, 20% and 30% weight of fiber loading.

Composite Formulation

Rule of mixure (ROM)

This process involves the rules guiding the mixing of fiber and matrix in composite formulations. In this study, the ROM was based on the capacity of the internal mixer (Brabender). The weight of the fiber and matrix was governed by the rule;

ROM; Wf + Wm = 1. (2.1)

Wmf + Whdpe = Mcw (2.2)

Where Wf is weight of fiber, Wm is weight of matrix, Wmf is weight of groundnut shell powder, Wpla is weight of Polylactic acid, Mcw is mixer capacity. Table 4.1 shows the composite formulation.

Table 4.1 Formulation of GSP-PLA

Sample Name	GSP (wt %)	PLA (wt %)
Neat PLA	0	0
GSP-PLA	10,20,30	90,80,70

Mechanical Properties.

The tensile properties were tested according to ASTM D638 by using Instron 3365 machine. Tensile testing was carried out at 5mm/min with load cell of 5kN. While the flexural properties were tested by using the same machine that was used for the tensile test at a crosshead speed of 3 mm/min with a load cell of 5 kN and a span of 50 mm.

Table 2 shows the compression conditions for the composite formulation. Figures 1 and 2 are flexural and tensile test specimens adopted ASTM standards. Plate 1 shows the mechanical properties test specimens. While Figures 1 and 2 shows flexural and tensile test specimen as per ASTM D790; D638 respectively.

4.2.4 Microstructural Examinations.

The fiber-matrix dispersion analyses were carried out to understand the extent of fracture surface when the composites were subjected to tensile testing. The fiber dispersions were inspected using SEM. This process was done by using Hitachi S–3400 N model at 20.0 kV.

Results and Discussion

Tensile Strength of GSP-PLA Composite

Figure 1. depicts the mean values of tensile strengths of different GSP–PLA composites with different fiber loading. Generally, in composites there is a complicated interaction of the dynamics of the basic stages such as matrix, fiber and interfacial zone between the fiber and matrix. Similar investigation was reported by Ridzuan, et al (2016). The increase of 10 % by weight of GSP causes slight decreased in the tensile strength of GSP–PLA composites when compare to 0 % PLA. It was observed that composites with 20 % fiber loadings appreciated in strength of 14.2 MPa and 15 MPa for 150 µm and 212 µm respectively. it is slightly below 0 % PLA with 25.9MPa strength. Thus, it can be said that fiber size has effect on the tensile strength of GSP-PLA composites. This shows similar finding in Kanayo et al (2018). Hence the decrease in the tensile strength is due to poor GSP–PLA interaction as a result of opposing separations of the GSP and PLA matrix. Also, in Figure 1, increase loading up to 30 % has slightly decreased the tensile strength of the composite for both the fiber sizes. This could be due to weak dispersion and weak interface in the PLA matrix resulting in poor bonding between GSP and PLA.

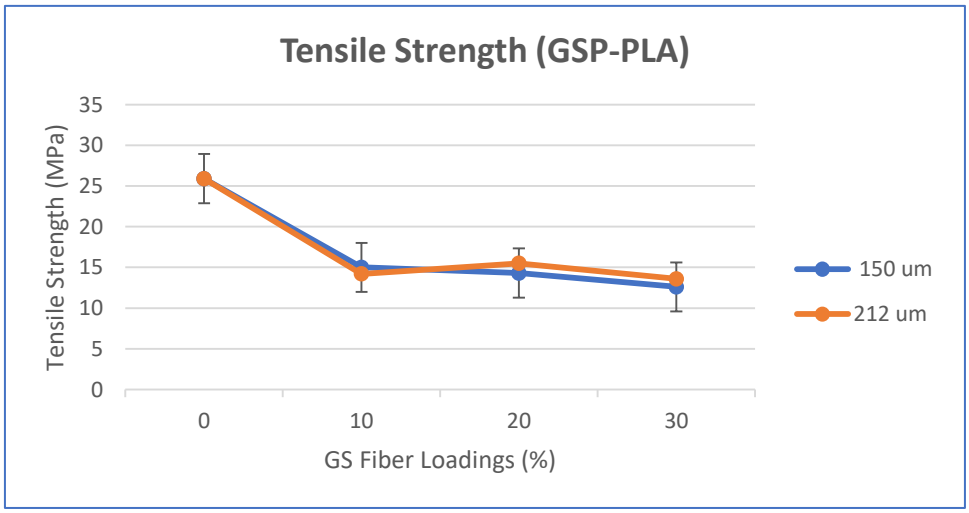

Figure 1. Effect of fiber loading on the tensile strength of GSP-PLA Composite

5.2 Tensile Modulus of GSP-PLA Composite.

From Figure 2, there was an increase in the tensile modulus of GSP–PLA composites as fiber loadings increased. It can be observed that the maximum value of the tensile modulus was 712 GPa at 10 % loading for 150 µm. it was drop to 472 GPa at the loading for 212 µm. at 20% loading, the modulus increases for 212 µm and decrease for 150 µm. But at 30 % loadings, 150 µm continue to decrease while

212 µm appreciated. Thus, it was still appropriate to argue that increasing GSP up to 30 % in PLA increases the rigidity of the composites. It showed the level of adhesion between GSP-PLA hardly affect the tensile modulus significantly. The tensile moduli of the composites are enlarged by increasing the fiber loadings. The reason is the fact that lignocellulosic fibers possess greater modulus when compared to polymer matrix (Kabir et al., 2013; Karger-Kocsis et al., 2015). Also, because modulus is processes that involve so small strain values and small stress may be produced with application of little value of elongation. Thus, it was expected that there will be further improvement of modulus of the composites when going above 30% fiber loadings for 212 µm.

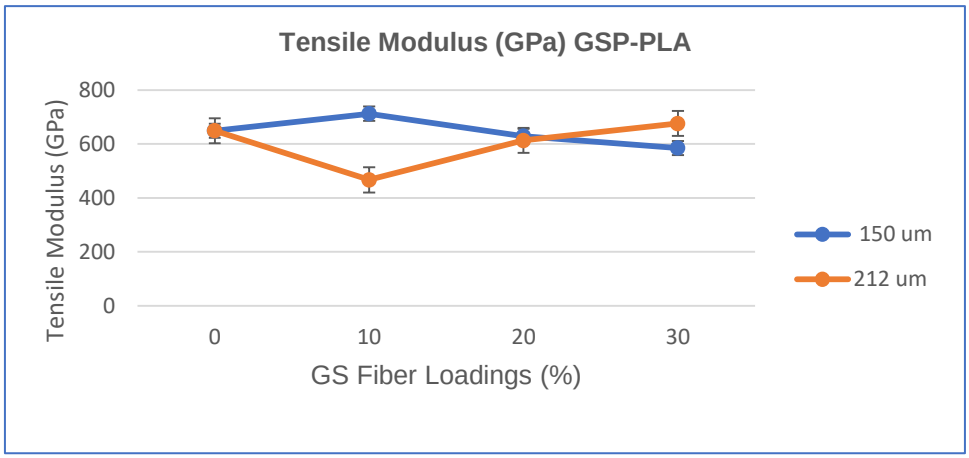

Figure 2. Effect of fiber loading on the tensile modulus of GSP-PLA Composite

5.3 Percentage Elongation of GSP-PLA Composite

It was observed from figure 3 that the tensile elongation at the break of the composites was grossly decreased. This is the result of thermoplastic composites having a rigidity tendency because of the increase in fiber loading. Usually, the reduced tensile elongation at break values is as a result of increased modulus. Similar findings were reported by Mohammed et al; (2021). It is possible that the addition of fibers which has brittle attribute decrease the elongation at break.

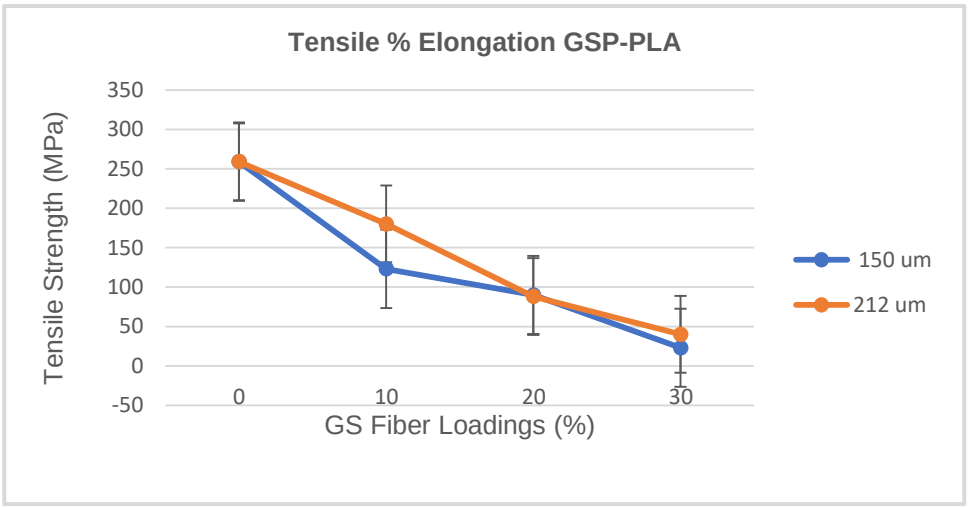

Figure 3. Percentage Elongation of GSP-PLA Composite

Flexural strength of GSH-PLA Composite

Figure 4 depict the effects of fiber loadings on the flexural properties of the GSP-PLA composites. The flexural strength of the GSP-PLA composites increased for the 10% and 20% fiber loadings for 150 µm but decreased at the 20% fiber loadings for 212 µm. There was an increase as fiber loadings reached 30% for 150 µm and dropped slightly for 212 µm when compared to neat PLA. It was observed that the strength dropped 11.9% from 10% to 20% fiber loading. The findings show an increase in strength at 10% and 20% fiber loadings for PLA composites. Therefore, the fiber did not reduce completely the ability of fibers and matrix to interact. The increased adhesions create better fiber and matrix interactions which allow the stress to transfer from the matrix to fiber and translates into improved flexurability. Similar work was reported by Yakub et al; (2017). The increase became highly prominent when the fiber loading did not go beyond 10% and 20%. Furthermore, this was only likely when there was a better stress transfer from matrix to fiber via a good interface adhesion.

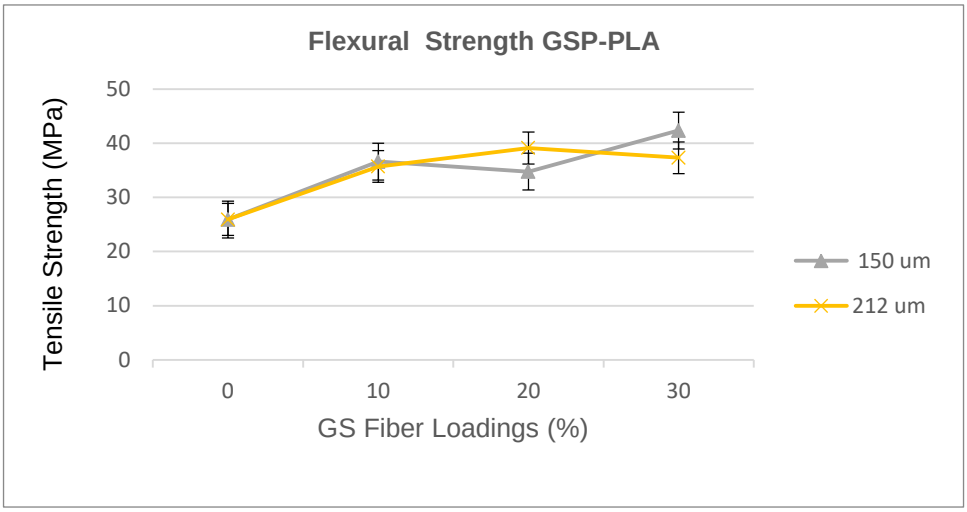

Figure 4. Flexural strength of GSP-PLA Composite

Flexural Modulus of GSP-PLA Composite

In most cases, the normal trend for flexural modulus was to increase with increasing fiber loading. These characteristics were indeed observed in Figure 5. this could be attributed to the contribution made by fibers to impart their own property to the composite. The findings reveal a steady increase in the modulus values as the fiber loading is increased from 712.9GPa for neat PLA to 2344.9GPa at 30% loading in 150 µm and 1576 GPa for 212 µm. It was revealed that there was around 45% improvement in flexural modulus up to 30% fiber loading from neat PLA and 44.7% from 10% fiber loading for the PLA composites. These phenomena presume that above 30% fiber loading, the composites stiffness will decrease as the fiber loading increases. Therefore, the increase in the modulus of these composites was due to the higher initial modulus of the fibers acting at the main building block of composites and improve interfacial bond between the fibers and matrices

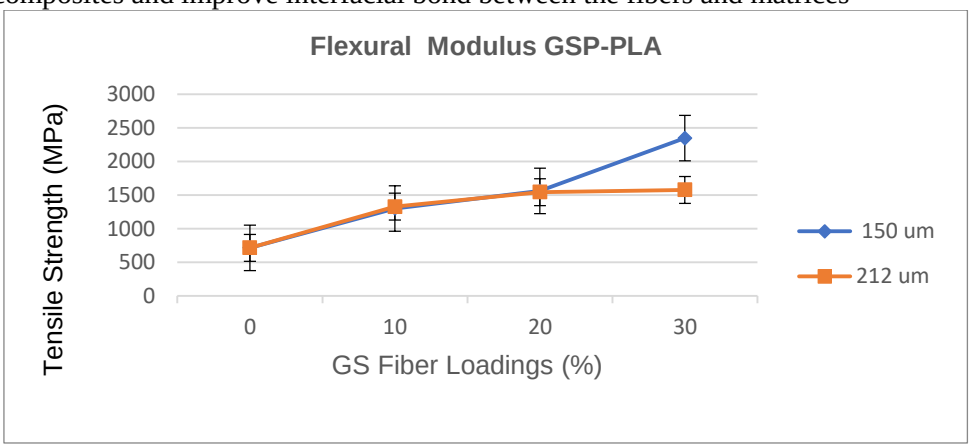

Figure 5. Flexural Modulus of GSP-PLA Composite

Result of Hardness Test of GSP-PLA Composite

Hardness of a material is the measurement of its resistance to dentation due to a compressive force caused by a sharp object. The results of hardness test shown figure 6 below. It can be seen that hardness of 90 ° GSP-PLA fibre orientation of thecomposite is more than 0 ° and 45 ° GSP-PLA fibre orientation of the composite which is observed from Figure. This is because as the fibre loadings increases, the resistance to penetration is more due to the availability of fibres acting as rigid medium.

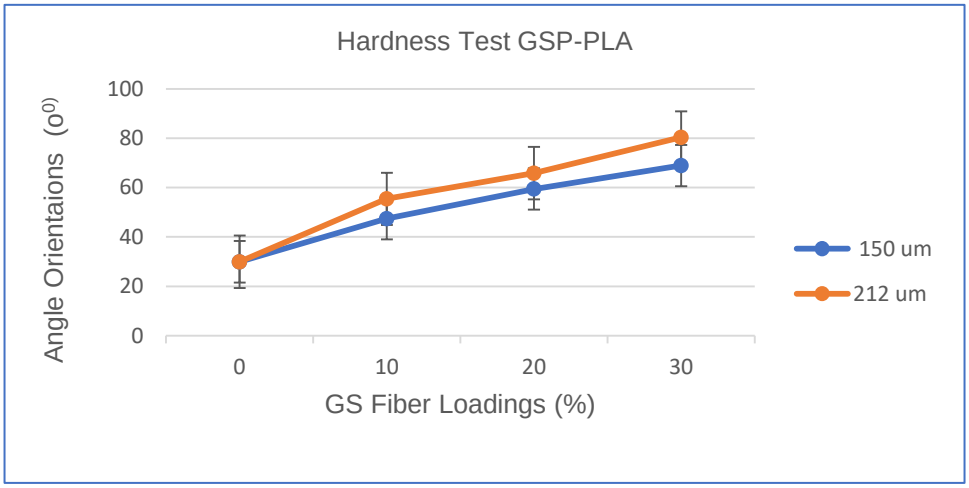

Figure 6. Hardness Test of GSP-PLA Composite

Microstructures Observation of GSP-PLA Composite

SEM images of fractured surface of GSP–PLA composites were depicted in Figures 7 (a & b). The image of different fiber loading composites shows that lower GSP loadings indicates non–homogeneous dispersion patterns. This causes fiber pull–out and makes the fiber to undergo accumulation. Hence, these lead to reduction in the tensile strength of the composites mostly at lower fiber loadings. Similar findings were reported by Fogorasi, M. S. and Barbu, I. (2017). However, at 20 % and 30 % loadings, there were better dispersion of GSP–PLA formation with reduced fiber pull out and breakage. This is the main reason for improvement of tensile strength at these loadings for smaller fiber sizes.

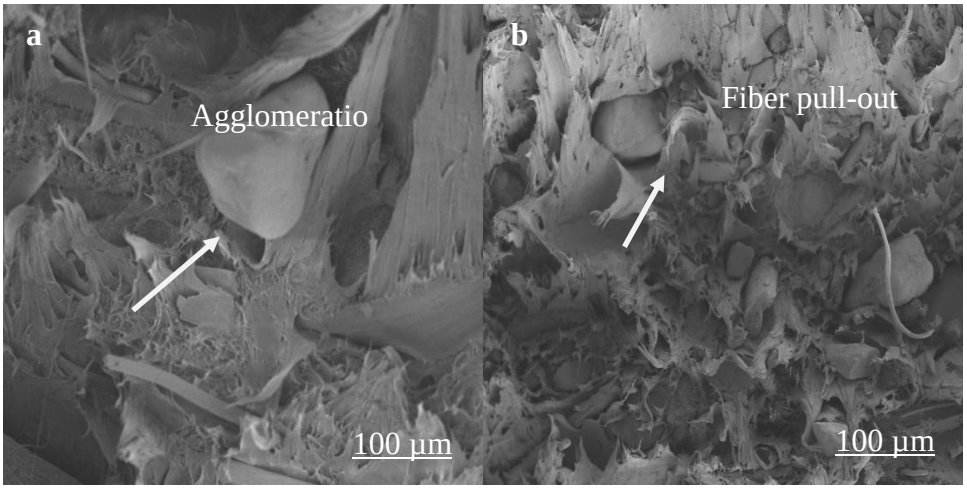

Figure 7a. SEM micrographs 150 µm of GHP-PLA composites

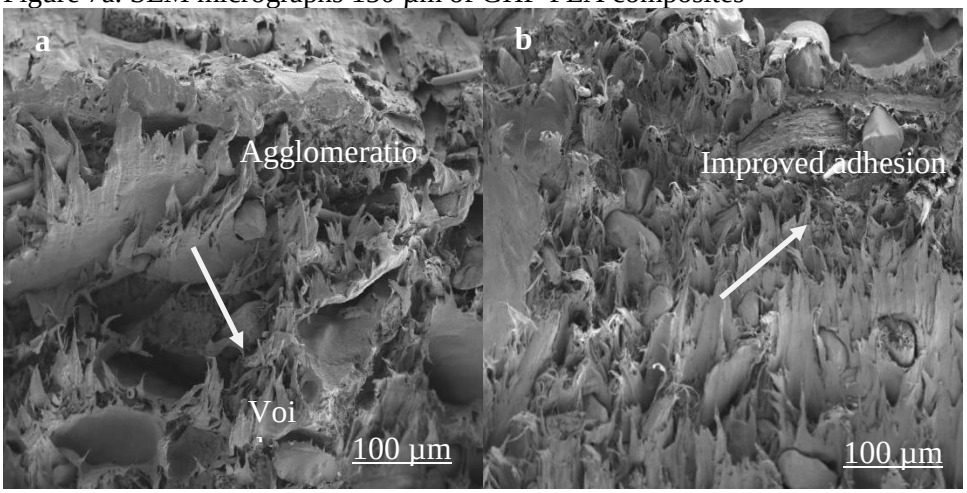

Figure 7b. SEM micrographs 212 µm of GHP-PLA composites

Recommendations

Natural fibers, when used as reinforcement, compete with such technical fibers as glass fiber. The advantages of natural fibers are good mechanical properties; which vary only little, while their disadvantage is difficulty in recycling. Several natural fiber composites reach the mechanical properties of glass fiber composites, and they are already applied, e.g., in automobile and furniture industries. Till date, the most important natural fibers vary in area of applications. Thus, rice husk fibers if put into proper use could save costs and environment in term of engineering functions. In order to be environment friendly, automotive engineers have now developed a concept car, the Eco Car. It is expected to be the sustainable vehicle for the future, running on biofuels. It uses natural fiber composite panels where biodegradable resins have been incorporated as the matrix material. It has been recently predicted that the most important technologies of the future that incorporate natural fiber composite materials will be natural fibers for injection moulded products (32%)

followed by natural fibers with a bioplastic matrix (19%) and modified fibers for use in advanced applications (19%).

Conclusions

Drawing from the experimental evidence, discussions, and ideas presented, some conclusions can be drawn. The findings indicated that the fiber loading had the utmost influence on the mechanical properties. It was observed that increasing fiber loading lead to increase the tensile modulus of the GSP– PLA composites. The optimum performance strength for both composites type was at 20% filler loading and the modulus was at 30% filler loading GSP-PLA composite. Consequently, tensile strength decreases with increase the fiber loading, due to weak adhesion between GSP and PLA. These problems can be enhanced by fiber surface modifications.

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THE DEVELOPMENT OF A CHATBOT FOR CUSTOMER SERVICE

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Abstract
The integration of artificial intelligence (AI) into customer service has transformed how organizations engage with their clients. Chatbots—AI-powered conversational agents—provide real-time responses, improve service efficiency, and reduce operational costs. This study focused on the design, development, and evaluation of a chatbot system tailored for customer service. The modified waterfall methodology was employed, ensuring systematic analysis, design, implementation, and testing. Primary data were obtained from customers and ICT experts through questionnaires and interviews, while secondary data were gathered from existing literature. The findings revealed that the chatbot significantly enhanced response speed, reduced wait time, and improved customer satisfaction. Hypothesis testing confirmed that chatbot adoption has a statistically significant effect on customer service efficiency. The study concludes that chatbots represent a strategic tool for institutions and businesses to improve customer relations, and recommends integration with existing systems, periodic updates, and user training for optimal results.

Keywords: Chatbot, Artificial Intelligence, Customer Service, ICT, Modified Waterfall Model

Introduction

Customer service has long been recognized as a critical determinant of organizational success (Parasuraman et al., 1988). With the increasing demand for immediate responses in the digital age, traditional human-based customer support often struggles to meet expectations. Long queues, limited service hours, and inconsistencies in information delivery remain persistent challenges.

Advancements in artificial intelligence and natural language processing (NLP) have paved the way for chatbot technologies that mimic human conversation while providing round-the-clock service (Colby, 2021). Chatbots offer instant responses, multitasking abilities, and seamless integration into web platforms, mobile applications, and social media. The conceptual framework of a chatbot for customer service is grounded in artificial intelligence, natural language processing, and human-computer interaction theories, positioning the chatbot as a digital intermediary that enhances customer engagement and organizational efficiency. According to Shawar and Atwell (2007), chatbots function as conversational agents

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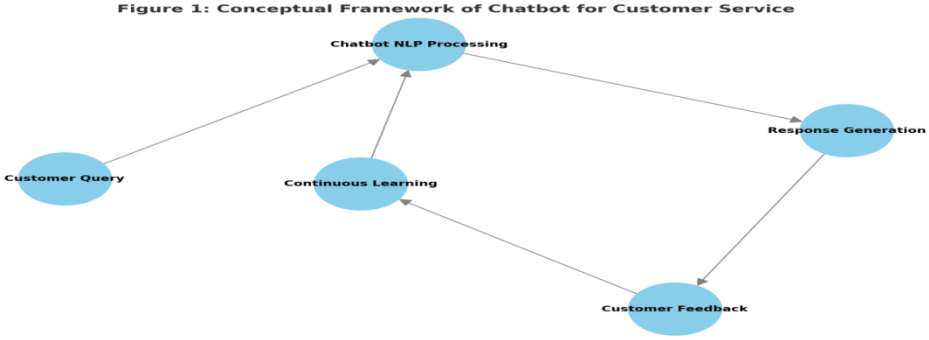
that interpret user queries and generate relevant responses based on structured rules or AI models. More recent studies highlight that effective customer service chatbots rely on intent recognition, knowledge base integration, and continuous learning to improve personalization and response accuracy (Adam, Wessel, & Benlian, 2021). Vlahu-Gjorgievska and Zdravevski (2022) further emphasize the role of feedback loops in improving system performance and user satisfaction, illustrating how customer interactions can refine chatbot intelligence. Thus, the conceptual framework situates the chatbot within a dynamic ecosystem where customer input is processed by an AI-driven engine, linked to a knowledge base, and refined through feedback, ultimately creating a responsive, adaptive, and scalable service delivery model.

Figure 1: Conceptual Framework of Chatbot for Customer Service



Customer service is central to organizational survival and growth in today's competitive global economy. It serves as the primary interface through which businesses engage, retain, and satisfy their clients. Traditionally, customer service relied heavily on human agents, telephone lines, and physical interactions. However, this model has proven to be limited due to long waiting times, high operational costs, and inefficiency in managing large volumes of inquiries (Okonkwo, 2019). With increasing customer expectations for immediacy, personalization, and convenience, organizations have sought technological solutions to improve service delivery.

Artificial Intelligence (AI) has emerged as a transformative force in this regard, particularly through the adoption of chatbots. A chatbot is a conversational agent designed to interact with users through natural language, providing instant responses to queries without direct human intervention (Dale, 2016). Chatbots can operate via text or voice interfaces on websites, mobile applications, and messaging platforms, making them versatile tools in customer service.

The deployment of chatbots has become popular across industries, including banking, e-commerce, healthcare, and education, because they provide round-the-clock support, reduce workload on human agents, and ensure greater consistency in communication (Følstad & Brandtzaeg, 2017). In Nigeria, financial institutions, telecommunication companies, and online retail platforms are increasingly adopting chatbot technologies to enhance customer experience (Adepoju & Olayinka, 2019).

Despite their advantages, chatbots also face challenges such as limited contextual understanding, cultural and linguistic diversity, technical infrastructure constraints, and resistance from customers who prefer human interactions (Nuruzzaman & Hussain, 2018). These issues are particularly significant in developing countries where infrastructural limitations may hinder the smooth adoption of AI technologies (Okonkwo, 2019).

This study, therefore, focuses on the development of a chatbot for customer service with emphasis on its effectiveness, benefits, and challenges. It also seeks to contribute to the growing body of knowledge by exploring how chatbot systems can be tailored to the Nigerian context, addressing specific cultural and technological constraints.

Research Questions

- To what extent does the use of chatbots improve customer service efficiency?
- What is the impact of chatbot adoption on customer satisfaction?

Research Hypotheses

H_{11}: Chatbots significantly improve customer service efficiency.
H_{12}: Chatbot adoption has a significant effect on customer satisfaction.

Literature Review

The application of chatbots in customer service has attracted growing scholarly attention worldwide, with researchers highlighting both opportunities and limitations. Chatbots are widely defined as conversational systems that use natural language processing (NLP) and artificial intelligence (AI) to simulate human dialogue (Shawar & Atwell, 2007). They serve as digital assistants capable of handling routine queries, providing personalized responses, and offering 24/7 support (Jain, Kumar, Kota, & Patel, 2018).

Globally, studies emphasize the transformative impact of chatbots on service delivery. Følstad and Brandtzaeg (2017) observed that customers appreciate the immediacy of chatbot responses but remain cautious about their ability to fully replace human interactions. Xu, Liu, Guo, Sinha, and Akkiraju (2017) noted that chatbot adoption in organizations improves efficiency but is limited by challenges of contextual understanding. Similarly, Adam, Wessel, and Benlian (2021) argued that while AI-based chatbots increase compliance and satisfaction, poor design can lead to customer frustration.

In the African and Nigerian context, digital transformation is reshaping customer service delivery. According to Ayo (2011), Nigeria has experienced significant growth in e-commerce, creating demand for efficient customer interaction platforms. Chatbots, in this regard, are seen as tools to bridge service gaps caused by infrastructural limitations and shortage of skilled manpower. Adepoju, Oyelere,

and Suhonen (2019) highlighted that AI technologies in Nigeria are still in their early stages, but adoption in sectors like banking and telecommunications is steadily rising. For example, Nigerian banks such as Access Bank ("Tamara") and United Bank for Africa ("Leo") have deployed AI-powered chatbots to handle customer requests, illustrating practical relevance (Ogunyemi, 2020).

Furthermore, Olaleye, Adepoju, and Akinbode (2021) emphasized that Nigerian customers increasingly prefer digital interaction platforms due to convenience, affordability, and accessibility, especially on mobile devices. However, issues such as internet instability, low AI literacy, and lack of local language support limit chatbot effectiveness. This aligns with global findings by Brandtzaeg and Følstad (2018), who observed that personalization and context-awareness remain major challenges.

Comparative studies also reveal that while developed countries focus on enhancing customer experience through sophisticated chatbot designs, developing economies prioritize cost reduction and accessibility (Ajah & Nweke, 2019). This indicates a research gap: most chatbots deployed in Nigeria lack advanced NLP capabilities for indigenous languages such as Yoruba, Hausa, and Igbo, making inclusivity a challenge.

Overall, literature shows that chatbots are valuable tools for modernizing customer service, offering benefits such as reduced operational costs, faster responses, and greater accessibility. However, their success—particularly in the Nigerian context—depends on cultural adaptability, integration with existing business systems, and the ability to process local languages effectively.

Evolution of Chatbots

The history of chatbots reflects the broader trajectory of artificial intelligence, progressing from simple rule-based systems to advanced AI-driven conversational agents. The earliest chatbot, ELIZA (1966), created by Joseph Weizenbaum, demonstrated the potential of simulating human conversation through pattern-matching techniques, albeit in a limited and scripted manner (Weizenbaum, 1966). This was followed by PARRY (1972), designed by Kenneth Colby, which attempted to mimic the conversational style of a patient with paranoid schizophrenia, offering a more psychologically informed interaction model (Colby, 1975). The 1990s introduced ALICE (Artificial Linguistic Internet Computer Entity), which employed AIML (Artificial Intelligence Markup Language) to provide structured, though still rule-based, responses and went on to influence early chatbot development significantly (Wallace, 2009). With the rise of the internet and instant messaging platforms in the 2000s, chatbots became increasingly integrated into customer service environments. The release of intelligent virtual assistants such as Apple's Siri (2011), Amazon's Alexa (2014), and Google Assistant (2016) marked a paradigm shift, incorporating natural language understanding, speech recognition, and machine learning. More recently, the advent of transformer-based large language models, including OpenAI's GPT series, has enabled unprecedented

contextual awareness and naturalness in human–machine dialogue (Vaswani et al., 2017; Brown et al., 2020). Today, chatbots serve as critical tools across education, healthcare, e-commerce, and customer service, showcasing their evolution from novelty experiments to indispensable AI-powered assistants.

With advancements in natural language processing (NLP) and machine learning, modern chatbots now leverage deep learning to generate more human-like and context-aware responses (Jain et al., 2018). The evolution from rule-based to AI-driven chatbots marks a shift towards systems that can learn from large datasets and adapt dynamically to user needs.

Chatbots in Customer Service

The integration of chatbots into customer service has been widely studied. Brandtzaeg and Følstad (2017) observed that chatbots provide convenience by offering 24/7 customer engagement, reducing wait times, and enhancing the overall user experience. Følstad and Skjuve (2019) also highlighted that businesses adopt chatbots primarily for efficiency, scalability, and cost reduction.

In the Nigerian context, Adepoju and Olayinka (2019) found that banks and e-commerce companies have deployed chatbots for services such as balance inquiries, transaction histories, complaint resolution, and order tracking. This reflects the growing recognition of chatbots as valuable tools in emerging economies.

Benefits of Chatbot Deployment

The literature highlights several advantages of chatbot integration:

Operational Efficiency: Chatbots reduce the burden on human agents by automating repetitive tasks (Adam et al., 2020).

Customer Satisfaction: Jain et al. (2018) argue that chatbots improve service delivery by providing prompt responses and ensuring consistency.

Data-Driven Insights: Logs from chatbot interactions can be analyzed to reveal customer preferences and service gaps (Davenport & Ronanki, 2018).

Cost Reduction: Organizations reduce labor costs by minimizing reliance on human staff for basic inquiries (Følstad & Brandtzaeg, 2017).

Challenges and Limitations

Despite their potential, chatbots face several limitations:

Language Ambiguity: Dale (2016) noted that chatbots often fail to interpret user intent accurately, especially in complex conversations.

Trust and Acceptance: Some customers perceive chatbots as impersonal and prefer direct interaction with human agents (Følstad & Brandtzaeg, 2020).

Infrastructure Challenges: In developing countries, poor internet connectivity and low digital literacy remain barriers to adoption (Okonkwo, 2019).

Ethical Concerns: Issues of data privacy and security remain significant when chatbots handle sensitive customer information (Nuruzzaman & Hussain, 2018).

Theoretical Foundations

The adoption and use of chatbots can be understood through several theoretical models:

Technology Acceptance Model (TAM): Davis (1989) explains that perceived usefulness and ease of use significantly influence technology acceptance.
Diffusion of Innovation (DOI): Rogers (2003) emphasizes how innovations spread through communication channels, influenced by factors such as compatibility and relative advantage.

Service-Dominant Logic (SDL): Vargo and Lusch (2004) argue that value is co-created between organizations and customers, which aligns with chatbot systems designed to enhance service interactions.

Research Gaps

While much research has explored chatbot adoption in developed economies, limited empirical studies exist on their deployment in Nigeria and Africa. Most existing works focus on technical design rather than user experience, cultural adaptation, and infrastructural constraints (Adepoju & Olayinka, 2019). This gap underscores the need for research like the present study, which addresses both the technological and socio-cultural dynamics of chatbot deployment in customer service.

Methodology and Data Collection

Research Design

This study adopted a descriptive and experimental research design, combining both qualitative and quantitative approaches to ensure a comprehensive evaluation of the system. The modified waterfall model was employed to guide the system development process, providing a structured framework that ensured systematic progression from requirements analysis through design, implementation, testing, and deployment. This model was particularly suitable as it allowed for iterative modifications while maintaining detailed documentation, which is essential in academic and institutional contexts. To assess the effectiveness of the developed chatbot system, surveys were administered to capture users' perceptions of satisfaction, ease of use, and overall efficiency.

Figure 2: Modified Waterfall Model for Chatbot Development



Population and Sample

Population: Customers and ICT staff of selected institutions.

Sample Size: 100 respondents (80 customers, 20 staff) selected using purposive sampling.

Data Collection Instruments

Structured questionnaires (efficiency and satisfaction measures).

Interviews with ICT staff.

System testing (response time, error rate, task completion).

Data Analysis

Descriptive statistics (mean, frequency, percentage).

Hypothesis testing using chi-square and t-test.

Results and Analysis

Hypothesis One Analysis

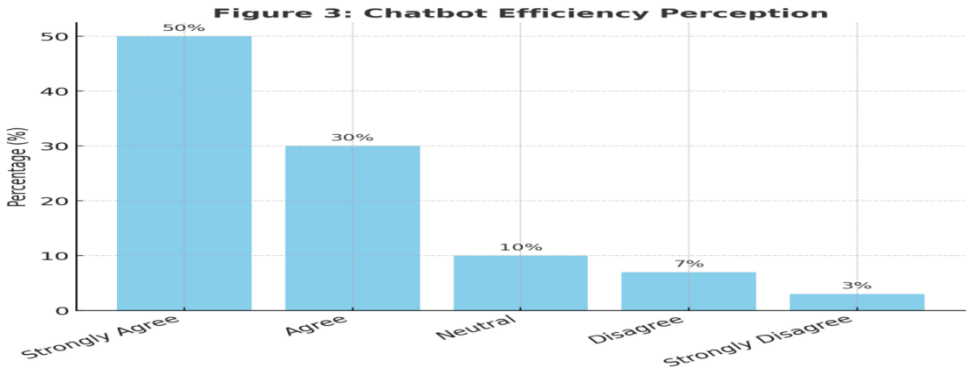
H_{11}: Chatbots significantly improve customer service efficiency based on respondent perception.

Response	Frequency	Percentage (%)
Strongly Agree	50	50%
Agree	30	30%
Neutral	10	10%
Disagree	7	7%
Strongly Disagree	3	3%

Table 1: Respondents' Perception of Chatbot Efficiency: The analysis reveals that 50% of respondents strongly agree and 30% agree that chatbots significantly improve customer service efficiency. This indicates a strong positive perception among respondents, suggesting that chatbots are effective in enhancing customer service.

Chi-square test result: $p < 0.05 \rightarrow$ Reject H_{01}.

Conclusion: Chatbots significantly improve efficiency.



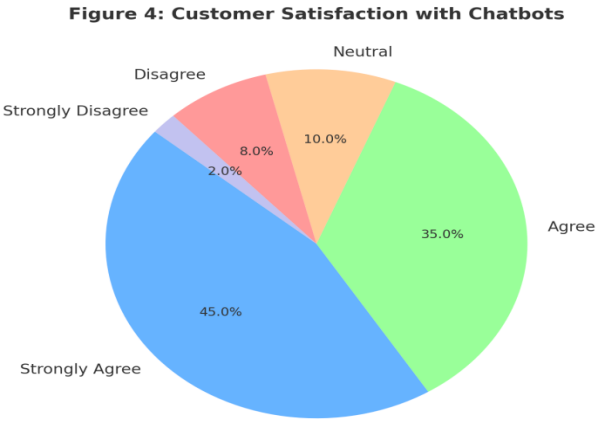
Hypothesis Two Analysis

H_{12}: Chatbot adoption has a significant effect on customer satisfaction: The analysis reveals a significant positive correlation between chatbot adoption and customer satisfaction. As shown in the table below:

Response	Frequency	Percentage (%)
Strongly Agree	45	45%
Agree	35	35%
Neutral	10	10%
Disagree	8	8%
Strongly Disagree	2	2%

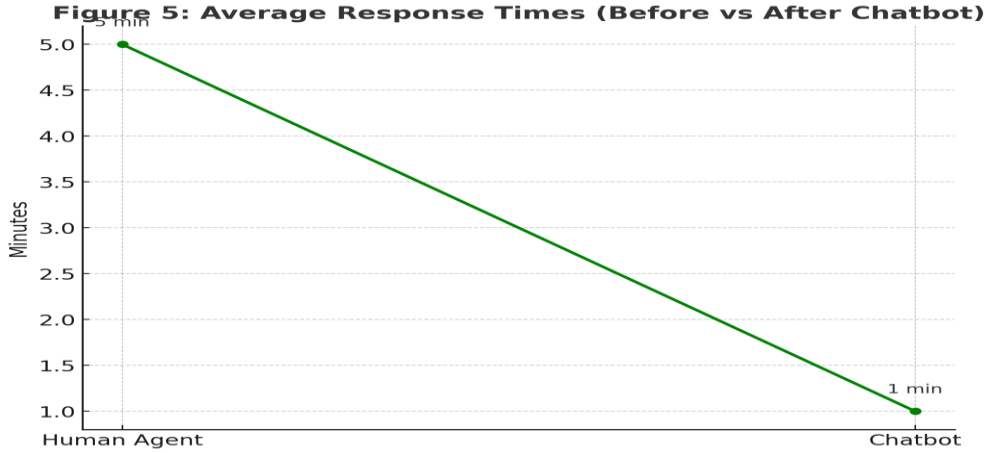
Table 2: Respondents' Perception of Chatbot and Customer Satisfaction: The results indicate that 45% of respondents (45% strongly agree and 35% agree) reported a positive experience with chatbot adoption, while only 10% were neutral and 8% expressed disagree. This suggests that chatbot adoption has a substantial impact on enhancing customer satisfaction.

Chi-square test result: $p < 0.05 \rightarrow$ Reject H_{02}.
Conclusion: Chatbots significantly enhance customer satisfaction.



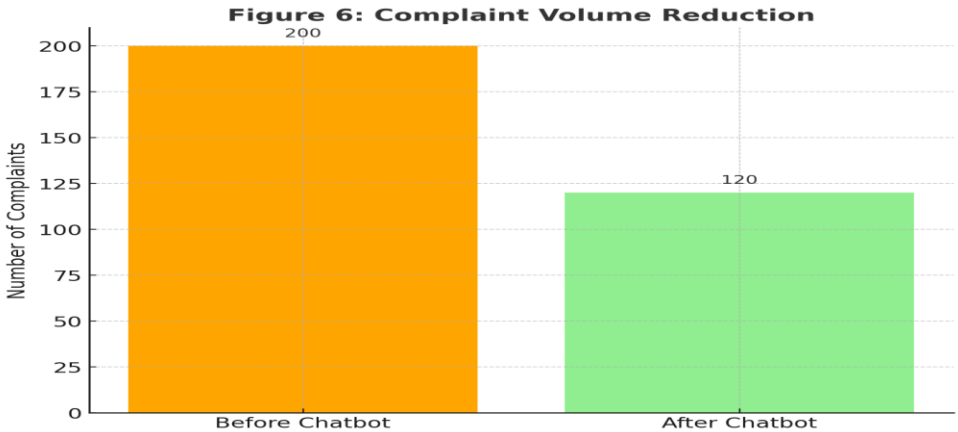
Research Question One Analysis

RQ1: To what extent does the use of chatbots improve customer service efficiency?
80% of respondents agreed efficiency was improved.
Average response time reduced from 5 minutes (human agents) to less than 1 minute (chatbot).



Research Question Two Analysis

RQ2: What is the impact of chatbot adoption on customer satisfaction?
70% of respondents rated chatbot service as "satisfactory" or "highly satisfactory."
Customer complaint volume reduced by 40%.



In RQ1 the above chart described the use of chatbots significantly improves customer service efficiency, with 80% of respondents agreeing that efficiency has improved. Notably, the average response time has drastically reduced from 5 minutes with human agents to less than 1 minute with chatbots. This substantial reduction in response time highlights the potential of chatbots to enhance customer service efficiency. While RQ2 also mention the adoption of chatbots has a positive impact on customer satisfaction, with 70% of respondents rating chatbot service as "satisfactory" or "highly satisfactory." Furthermore, the implementation of chatbots

has led to a 40% reduction in customer complaint volume. These findings suggest that chatbots are effective in improving customer satisfaction.

Discussion of Findings

The findings showed that 80% of respondents agreed that chatbot use improved efficiency, reducing average response time from five minutes (human agents) to under one minute (chatbot). Hypothesis testing confirmed statistical significance, supporting the argument that chatbots improve service delivery efficiency.

In terms of customer satisfaction, 70% of respondents reported satisfaction with chatbot services, and complaint volume decreased by 40%. These results demonstrate that chatbots provide consistency and reliability, enhancing customer experience.

The findings align with Hill et al. (2015) and Gnewuch et al. (2017), who also observed efficiency improvements, as well as Jain et al. (2018), who linked chatbots with higher satisfaction levels. Although some respondents expressed reservations, likely due to chatbot limitations in handling complex queries, the overall effect was positive.

Recommendations

Organizations should adopt hybrid systems, combining chatbots and human agents for optimal performance.

Chatbots must undergo continuous training and dataset updates to reflect evolving customer needs.

Structured feedback mechanisms should be implemented to improve system responsiveness.

ICT staff should receive training to manage and refine chatbot systems.

Privacy and security policies must be enforced to protect customer data.

Chatbots should be integrated into Customer Relationship Management (CRM) and Enterprise Resource Planning (ERP) systems for seamless operations.

In Nigeria, chatbots should support local languages and dialects to improve accessibility.

Conclusion

This study demonstrated that chatbots enhance customer service by improving efficiency, reducing response time, and increasing satisfaction. While they cannot fully replace human agents, chatbots are effective in managing routine queries and providing round-the-clock support.

The findings confirm that chatbots are a strategic necessity for organizations that wish to remain competitive in a digital environment. For long-term effectiveness, organizations must invest in continuous system upgrades, hybrid adoption strategies, and staff training.

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ENTREPRENEURIAL INTELLIGENCE AND ENTREPRENEURIAL ACTION AMONG GRADUATES: THE MEDIATING ROLE OF SELF-EFFICACY AND EMOTIONAL INTELLIGENCE FOR ECONOMIC DEVELOPMENT

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Abstract

Entrepreneurial Intelligence (EI) and Entrepreneurial Action (EA) are seismic twin that play crucial roles in economic development and poverty alleviation. However, the success of entrepreneurial endeavours often depends on intrinsic psychological factors, which are often underestimated. A dearth of studies exists with regard on how certain key entrepreneurial skills as self believe, regulating, managing and cultivating emotions or ways of the mind could influence entrepreneurialship. This study investigated the possible mediating role of self-efficacy and emotional intelligence in the relationship between entrepreneurial intelligence and entrepreneurial actions among graduates. Using the expost facto design, four hundred (400) graduates with the National Youth Service Corp deployed to serve in Ondo state were selected for the study. Four standardized and valid scale were used for data collection. Data were analyzed, using Pearson Product Moment Correlation and Path analysis. Two research hypotheses were tested in the study. The results indicated that there were significant relationships among all four variables investigated. While emotional intelligence was an effective mediator in the relationship between entrepreneurial intelligence and entrepreneurial action, the effect of self-efficacy was unexpectedly very low. This study therefore suggest the inclusion and promotion of emotional intelligence and self-efficacy skills in entrepreneurial development programmes targeting graduates from tertiary institutions.

Keywords: Entrepreneurial Intelligence, Self-Efficacy, Emotional Intelligence, Entrepreneurial Actions

Introduction

Entrepreneurial intelligence is a multifaceted concept that goes beyond traditional cognitive abilities. It encompasses a blend of cognitive, emotional, and social competencies that enable individuals to thrive in entrepreneurial endeavours. Entrepreneurial intelligence refers to an individual's capability to function effectively in an enterprising diverse setting. It encompasses understanding business norms, behaviours, and communication styles, allowing individuals to adapt and work successfully across various entrepreneurial settings. Entrepreneurial action remains one of the most critical catalysts for economic development, offering wide-ranging societal benefits such as fostering innovation, generating employment, developing human capital, and satisfying emerging customer demands. In this

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context, action refers to behaviour or activity imbued with subjective meaning for the individual demonstrating intentionality and awareness. Current research follows a causal model of action grounded in the functionalist paradigm that underpins much of contemporary entrepreneurship scholarship. Studies have recently investigated how entrepreneurial action is shaped by personal characteristics such as self-efficacy, need for achievement, locus of control, innovativeness, and risk-taking propensity traits consistently identified in systematic reviews and mixed-methods studies through (Martins, Shahzad & Xu, 2023). Additional research highlights variables like ambiguity tolerance and enthusiasm as further predictors of entrepreneurial intentions, underscoring the nuanced psychological profile of proactive individuals (Yangailo & Qutieshat, 2002).

Statement of research problem

There is no denying that one of the major challenges hindering effective development in recent times is the rising rate of unemployment. As globalization continues to reshape the labour market, technological advancements in both public and private sector organizations have led to the elimination of numerous jobs, thereby reducing employment opportunities. According to the National Bureau of Statistics (NBS), Nigeria's unemployment rate in the first quarter of 2024 was 5.3%, 4.3% for males, and 6.2% for females. 6.0% in urban areas and 4.3% in rural areas. 2.0% for those with post-graduate education, 9.0% for those with post-secondary education and 6.9% for those with secondary education, and 4.0% for those with primary education. 8.4% for those aged 15–24. The unemployment rate in Nigeria is forecasted to be 4.84% in 2025, with 3.90 million people expected to be unemployed. Being statistically in similarity with unemployment rate observed 10years ago; it is acknowledge that unemployment is stagnated in the country.

This suggests that only about 10% of the roughly 170,000 graduates produced annually by Nigerian Universities and Polytechnics secure meaningful employment, while the rest are either underemployed or unemployable. The surge in unemployment, coupled with its socio-economic implications, has driven many young people toward criminal activities such as robbery, kidnapping, child trafficking, and extortion. Similarly, numerous National Youth Service Corps (NYSC) graduates remain jobless and vulnerable to engaging in such destructive behaviours. In response, promoting entrepreneurship is identified as a crucial strategy to address this growing crisis. Since entrepreneurship is widely recognized for its potential to generate businesses and employment, research in this field often focuses on outcomes that could benefit aspiring or current entrepreneurs with little to less concern on working variables in the process. Therefore, this paper intends to investigate to what extent is the mediating role of self-efficacy and emotional intelligence on entrepreneurial intelligence and entrepreneurial action among graduates.

Review of related Literature

In recent times studies confirmed that entrepreneurship education significantly bolsters entrepreneurial intentions, especially for students with high need for achievement and internal locus of control, though these effects can be moderated by

personality traits and family economic background (Vodă & Florea, 2019). Family, peer, and institutional support also emerge as important environmental enablers that boost intention by mediating knowledge, risk-taking ability, and innovativeness (Martins, Shahzad & Xu, 2023). In summary, contemporary scholarship continus to affirm that entrepreneurial action is influenced by a blend of personal attributes including self-efficacy, innovativeness, locus of control, and ambition as well as by educational experiences and supportive environments. These multidimensional factors together shape entrepreneurial intentions and behaviours in today's economy.

Entrepreneurial intelligence, self-efficacy and action

Self-efficacy has been linked with entrepreneurial action. Entrepreneurial self-efficacy (ESE), which refers to an individual's belief in his/her capability to perform tasks and roles aimed at entrepreneurial outcomes (Chen, Greene, & Crick, 1998), plays a crucial role in determining whether individuals pursue entrepreneurial careers and engage in entrepreneurial behaviour. A growing body of research attests to the potency of entrepreneurial self-efficacy on entrepreneurial actions. For instance, Chen, Greene and Grick (1998) demonstrated that entrepreneurs' self-efficacy is significantly higher than that of managers in two domains-innovation and risk taking. Krueger, Reilly and Carsrud (2000) associated self-efficacy with perceived feasibility and formation of entrepreneurial intentions while, Rauch and frees (2007) showed in a meta-analysis that entrepreneurial self-efficacy for starting a new business is a crucial factor for increasing the likelihood of business start-up activity.

Further, Tang (2009) examined how self-efficacy moderated effects of environmental munificence on entrepreneurs' alertness and entrepreneurs' commitment to their new ventures. Also examined are normative, social and cognitive effects of self-efficacy on entrepreneurial intentions in different geographical settings in order to show that self-efficacy and close social supports may be instrumental to enhancing entrepreneurial activity in some countries. More so, De Pillis and Reardon (2007) explored the effects of personal efficacy on entrepreneurial action formation in a cross-cultural sample and found significant cultural differences in the relationship. Higlights from the findings of Glosenberg et al. (2022) indicated that Self-efficacy is meaningfully related to some forms of entrepreneurial success, Entrepreneurial versus generalized self-efficacy is more strongly related to success and self-efficacy is not always meaningfully related to firm size. Thus, much is yet to be known on how entrepreneurial self-efficacy translates to entrepreneurial actions. This study explores self-efficacy and actions as well as the key roles of mediation in its occurrences.

Emotional intelligence, entrepreneurial intelligence and entrepreneurial actions

Emotional intelligence is a topic that plays a prominent part in scientific, academic, and entrepreneurial debates. It is an essential key to the success of intrapersonal and interpersonal relations. Emotional intelligence (EI) is a critical factor in entrepreneurial success, enabling individuals to understand and manage their own

emotions and the emotions of others, leading to better decision-making, stronger relationships, and more leadership that is effective. As noted by Boussalama , Eljaib , Lahrachc and Tamouhd (2022), entrepreneurs are certainly considered project implementers who are in a permanent search for new avenues of development. They will accordingly privilege leadership, control, risk-taking, and emotional management. In fact, entrepreneurial actions are conditioned upon the state of mind of the entrepreneur, as they present a reading of their emotions. Moreover, entrepreneurs who display positive and intense feelings about their daily entrepreneurial activities are more prone to success and tend to achieve more throughout their careers (Baume & Locke, 2004).

Recent empirical research has increasingly highlighted the significant role of emotional intelligence (EI) in shaping entrepreneurial action. Emotional intelligence, the ability to perceive, understand, manage, and regulate emotions has been found to positively influence key entrepreneurial behaviours such as opportunity recognition, risk-taking, decision-making, and resilience in uncertain environments. Studies have shown that entrepreneurs with high EI are better equipped to navigate interpersonal relationships, handle stress, and adapt to dynamic market conditions, all of which are critical for initiating and sustaining entrepreneurial ventures. For instance, research by Miao, Humphrey, Qian, and Pollack (2018), demonstrated a strong correlation between EI and proactive entrepreneurial behaviours among early-stage entrepreneurs. Similarly, a 2022 meta-analysis by Allen, Stevenson, O'Boyle, and Seibert (2021) revealed that individuals with high emotional intelligence are more likely to translate entrepreneurial intentions into concrete action, particularly in high-pressure or ambiguous settings. These findings suggest that EI not only supports the emotional demands of entrepreneurship but also enhances strategic thinking, leadership, and perseverance, thereby increasing the likelihood of entrepreneurial success.

It is observed that despite the inclusion of entrepreneurial programmes in most tertiary institutions, little or none of its graduates has successfully channel efficacy developed from entrepreneurial training to entrepreneurial actions. Hence, the continuous increase in the size of unemployed graduates and many becomes unemployable. Despite prior theoretical attempts in generating models and design for improving entrepreneurial development among these graduates, in as much as they are logically elucidated, seems insufficient with little or no visible results. This study identifies a gap still exist in the understanding of the mechanism of action between entrepreneurial self-efficacy and entrepreneurial actions. Therefore, the purpose of this study was to investigate the possible mediating role of mindfulness and opportunity identification in the relationship between entrepreneurial self-efficacy and entrepreneurial actions among graduates. The graduates attending the National Youth Service Commission were selected for this study since it is largest gathering of graduates from tertiary institutions with a better representation of all educated youths.

Research hypotheses

The following research hypotheses were tested in the study:

- There will be no significant correlations among the entrepreneurial intelligence, self-efficacy, emotional intelligence and entrepreneurial action
- There will be no significant predictive effect of entrepreneurial intelligence on entrepreneurial action when self-efficacy and emotional intelligence were entered in the model as mediators.

Methodology

Research Design

The ex-post facto design was adopted in this study. This approach does not involve manipulation of any of the variables in the study. They are studied, as they currently exist in the repertoire of the participants.

Participants

The population for the study consisted of all graduates in the National Youth Service Corps deployed to serve in Ondo State. Four hundred (400) graduates among a total of 2,139 deployed to the state for the 2025 Batch 'A' were selected for the study. The selection was based on convenience and availability as well as willingness to participate and provide details as required for the study. Among the sample 213 were males while the remaining 187 were females. The participants were aged between 23 and 29 years with a mean of 26.1 years and a standard deviation of 6.7. Also, along ethnic lines the Ibos and Yorubas accounted for 24.75% (99) and 22.25% (89), of the sample. Hausas, Edos, Tivs, and Urhobos accounted for 8.5% (34), 8.25 % (33), 7.75% (31) and 7.5% (30) respectively. Others are Efik, 7 % (28) Idoma 6.25% (25) , Ibibio (13) and Birom 3.25% (8). The remaining 4% (11) did not indicate their ethnic group.

Instrumentation

The following instruments were used to carry out the research:

The entrepreneurial Intelligence Scale (EQS) is a self-developed scale that measures an individual's ability to function in an enterprising diverse setting, encompassing cognitive, emotional, and behavioural dimensions. . It assesses an individual's capability to navigate and adapt in multi-faceted business environments. The scale consists of 20 items that evaluate four key components of entrepreneurial intelligence with responses anchored on a four likert points. The scale has a Cronbach‟s Alpha of .850 and after a two weeks test-retest, a reliability coefficient of 0.75 was obtained.

Emotional intelligence scale by Wong and Law Emotional Intelligence Scale (WLEIS) is a 16-item self-report measure designed to assess emotional intelligence (EI) based on the ability model. It comprises four dimensions: self-emotional appraisal (SEA), others' emotional appraisal (OEA), use of emotions (UOE), and regulation of emotions (ROE). The WLEIS is widely used in research and has demonstrated good psychometric properties. With reliability coefficients

(Cronbach's alpha) for the WLEIS subscales typically range from .79 to .86. For this study, the coefficient was 0.84

Self-Efficacy Scale (ESES): Entrepreneurial Self-Efficacy Scale (ESES) was used to measure the entrepreneurial self-efficacy of the participants. The entrepreneurial self-efficacy scale was adopted from the self-efficacy scale developed by DeNoble et al., 1999. This scale consists of 16 items measuring an individual's abilities in performing entrepreneurial tasks with each item measured on a 5 point Likert scale ranging from strongly disagree (1) to strongly agree (5). The scale has Cronbach alpha of 0.87(DeNoble et al., 1999) and a reliability coefficient of 0.77.

Entrepreneurial Action Scale comprised of 34 items. Mode of answering the questionnaire items ranges from strongly disagree (1) to strongly agree (5). The questionnaire was formerly used in University of Netherlands and was adapted for this study. The scale has reported a reliability coefficient of 0.74.

Procedure

The researcher personally distributed and collected the completed questionnaires from the participants. Permissions were obtained from significant authorities to facilitate the process. These included managing directors, supervisors, and controllers depending on the organization and the corps members deployed to participants. Participants were adequately informed of confidentiality and the need to be precise and truthful in filling the questionnaire. The questionnaires were then filled and returned by the participants after adequate understanding.

Method of Data Analysis

Data were analyzed, using Pearson Product Moment Correlation to determine the relationship among the variables investigated. Path analysis was also used to identify the total effect that is direct and indirect effects of independent variables on the dependent variable. Path analysis is a straightforward extension of multiple regression. Its aim is to provide estimates of the magnitude and significance of hypothesised causal connections between sets of variables. It is also a method of studying direct and indirect effects of variables taken as causes on variables taken as effects

Results

Table 1

Mean, Standard Deviations, and Correlations between Variables

	N	X	SD	Entre. Action	Entre. intel	Entre. Self-efficacy	Emotional intelligence

Entrepreneurial Action	400	112.3	11.4	1.000			
Entre. intelligence	400	73.1	9.7	.47**	1.000		
Entre. Self-efficacy	400	62.26	8.9	.18*	.17*	1.000	
Emotional intelligence	400	78.4	8.1	.46**	.41**	.42	1.000

*. Correlation is significant at the 0.01 level (2-tailed).
**. Correlation is significant at the 0.05 level (2-tailed).

Table 2
Path Analysis of Mediating Role of Mindfulness and Opportunity Identification

Variables	Adj R2	Unstand. β	se	Stand. β	t	Mediation
Entrepreneurial intelligence to mediators (a paths)						
Emotional intelligence	.25	.71	.07	.51	8.18**	
Entrepreneurial self-efficacy	.08	.36	.07	.25	3.47**	
Direct Effect of the Mediators to Entrep. actions (b paths)						
Emotional intelligence	.31	1.17	.19	.57	8.11**	Yes
Entrepreneurial self-efficacy	.31	.15	.15	.07	.84	No
Total Effect of Entrepr intel on action (c path)						
Entrepreneurial intelligence	.12	.87	.17	.31	5.5**	
Direct Effect of Entrepr Intel on action (c^1 path)						
Entrepreneurial intelligence	.31	.08	.26	.05	.32	

$F(3, 396) = 8.18$, $p < .05$
** Significant at p <. .05

Table 1 shows the descriptive statistics and correlations between the variables. As demonstrated in the table, the mean scores for emotional intelligence, entrepreneurial self-efficacy, action and intelligence; 78.4, 62.26, 112.3 and 73.1 respectively. The corresponding standard deviations for the four variables are; 8.1, 8.9, 11.4 and 9.7. Significant relationships were found between among all the variables with the strongest being between entrepreneurial intelligence and action ($r = .47$, $p<0.5$) and entrepreneurial action and emotional intelligence ($r = .46$, $p<0.5$).

Table 2 describes examination of the direct and indirect effects of the proposed mediators. The result revealed that emotional intelligence was the only mediator in the model ($\beta = .57$, $t = 8.11$; $p < .05$) self-efficacy on the other hand, did not have a significant direct effect on entrepreneurial action ($\beta = .04$, $t = .84$; $p > .05$.). Based on these analyses, it can be claimed the self-efficacy was not a mediator of the

relationship between entrepreneurial intelligence and entrepreneurial action in this study.

Discussion of findings

Before examining the full path model, an examination of the correlations between the four variables of interest entrepreneurial intelligence, entrepreneurial action, self-efficacy and emotional intelligence was conducted. Although a number of researchers have examined the impact of self-efficacy on various populations (Chen, Greene, & Grick 1998; Reilly & Carsrud, 2000; Tang, 2009), sparse studies have examined the relationship between entrepreneurial intelligence and entrepreneurial action. Furthermore, the ability to sustain attention to be focus and identify entrepreneurial climates theoretically and practically should be areas of study to self-efficacy and action. Sparse research however, have been conducted on these relationships. Therefore, an examination of these relationships was necessary. As hypothesized, all four variables in the study were significantly related to each other. These findings reveals that entrepreneurial intelligence is related to emotional intelligence and self-efficacy as well as action. The findings supported further exploration of the predictive nature of entrepreneurial intelligence, self-efficacy and emotional intelligence on entrepreneurial action.

A path analysis was conducted to examine more explicitly the predictive relationships and the direct and indirect effects of the predictor variables on counselling self-efficacy. As hypothesized, emotional intelligence, accounted for 31%, a significant portion of the variance in entrepreneurial action of the total sample. As hypothesized, emotional intelligence was found to be a potent mediator of the relationship between entrepreneurial intelligence and entrepreneurial action. Entrepreneurial intelligence accounted for 28% of the variance in emotional intelligence in the total sample. This suggests that those graduates who are effectual about entrepreneurial experiences also are more capable of coordinating their others emotion successfully, able to strategically control their attention during entrepreneurial related activities and not get distracted.

The significant predictive relationship between entrepreneurial intelligence and emotional intelligence is consistent with other empirical studies in which researchers have found improvements in various measures (Adeyemo & Agokei, 2011, Bentley, 2007; Bogels et al., 2006; Shapiro et al., 2006). These findings make sense as emotional intelligence also has been found to be related to increases in affect tolerance and success in business (Baer, 2003). Entrepreneurial starters who are able to tolerate affective distress in themselves and in their clients may be more likely to maintain non-judgmental attention during the entrepreneurial developmental activities. Rather than focusing their attention on how to fix the inhibiting or challenging problems, they would be able to stay with the new entrepreneurial development or idea, thus really focusing on the creative sides than destructive context. This finding suggest that entrepreneurial intelligence may be an important tool not only for cultivating emotional intelligence capacities among graduates, but also for helping them learn to be more focused.

An unexpected finding was the non-significant predictive weight of self-efficacy. This finding appears contrary to existing theory suggesting relatedness to entrepreneurial self-efficacy (Ucbasaran et al., 2001; Ardichvili et al., 2003; Dimov, 2007). According to self-efficacy theory, individuals who perceive themselves to have skills in identifying entrepreneurial opportunities should also feel more self-efficacious for using those skills in their work engagements. Drawing from cognitive theory, individuals with a high need for cognition are efficacious, likely to seek, acquire, think about, and reflect back on information to make sense of stimuli, relationships and events. These theoretical positions explain specific relationship between self-efficacy on entrepreneurial action. The findings of the current study, however, did not support this conclusion.

Overall, the results of this study provide evidence of a predictive relationship between entrepreneurial self-efficacy and key entrepreneurial outcomes, particularly the ability to manage emotions and identify opportunities. Nevertheless, that an individual is efficacious about being an entrepreneur does not translate directly to actions. Certain key skills like habit and ways of the mind in addition to identifying opportunities are essential factors requiring consideration (Uddin & Bose, 2012). These results, however, should be examined within the context of the current study's limitations. These include the design, the selected participants, the perceive measure and location. Nevertheless, the results remain valid with its context.

Implication

The current study provides empirical support for the theorized relationship between entrepreneurialship and key entrepreneurial training and development outcomes. The results provide evidence that a sizable portion of the variance in entrepreneurial action can be explained by a graduates' ability to be stable emotionally and strategically be emotionally intelligent in their entrepreneurial pursuit. Further, the results suggest that those participants who are more emotionally intelligent may also be more likely to identify entrepreneurial prospects. These results have implications for the NYSC development scheme, entrepreneurial training programmes and graduates capacity building. The study fills the gap in understanding on how diverse variables influence entrepreneurial development.

Emotional intelligence is reported to mediate the relationship between entrepreneurial intelligence and entrepreneurial action. This finding further affirms the relevance of emotional intelligence in human daily activities. Emotional intelligence is associated to being passionate. The passion requires to succeed in an entrepreneurial act. An intentional mode of processing involves a receptive state of mind, wherein emotions are kept to a bare registering of the facts observed and curtailed. When used in this way to prolong that initial contact with the world, the basic capacities for awareness and attention permit the individual to acknowledge the reality as it is, rather than to react to it or habitually processing it through conceptual filters. Approaching one's experience with an orientation of curiosity and acceptance, regardless of valence or desirability, sets the stage for intensive

self-observation. Thus, promoting emotional intelligence may act to increase the intensity of focus graduates who may reflect towards becoming entrepreneurs. Therefore incorporating emotional intelligence in programmes designed for entrepreneurial training would be beneficial.

Recommendations

Emotional intelligence and self-efficacy should be evaluated at all levels of University development to ensure, encourage and foster its development among prospective entrepreneurs.

Emotional intelligence should be synergize into the curricula advancement of entrepreneurial education in the Universities.

A package integrating emotional intelligence interventions should be developed for fostering entrepreneurs among trainees in the NYSC.

Prospective entrepreneurs should be encouraged to become more emotionally intelligent in their everyday activities in other to provide the opportunity of personal and cognitive development in entrepreneurial engagements.
Values and practices that encourage the development of emotional intelligence and self-efficacy should be encouraged.

Conclusion

This study has explored the mediating role of self-efficacy and emotional intelligence in the relationship between entrepreneurial intelligence and entrepreneurial action. Theoretically, self-efficacy and Emotional intelligence have been identified as basic and key skills required in successfully engaging in entrepreneurs. This study therefore suggest the inclusion and promotion of self-efficacy and Emotional intelligence in entrepreneurial development programmes and course targeting graduates from tertiary institutions. It is averred that synergizing these factors in entrepreneurial development programmes towards producing successful entrepreneurs would not only curb the problem of unemployment but also add value to educational development.

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WEB 2.0 TECHNOLOGIES AND UNDERGRADUATES' CREATIVITY SKILLS DEVELOPMENT IN SOUTHWEST, NIGERIA

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Abstract

The study examined the extent to which web 2.0 technologies could enhance undergraduates' creativity skills development in Southwest, Nigeria. It was guided by three research questions. A correlation research design was used. The population comprised all undergraduates' in state-owned universities in Southwest, Nigeria. Simple random sampling technique was used for selecting three state-owned universities in Southwest, Nigeria; this includes Ekiti State University, Tai Solarin University of Education and Lagos State University of Education. Using stratified sampling technique, a total of 457 undergraduates were selected as sample size. Self-designed instrument tagged 'Web 2.0 Technologies and Undergraduates' Creativity Skills Development Questionnaire (WTUCSDQ) with 0.91 as reliability coefficient was used for data collection. Descriptive and inferential statistics were employed in presenting answers to the research questions. The findings revealed that technologies enhance undergraduates' creativity skills development through acquiring new knowledge, new innovative idea, learning ability, effectively manage information acquired for learning, access learning resources (e.g. slides, videos, photo, audio) online and ability to share information contents with peers. Poor internet supply, high cost of internal data, inadequate web 2.0 technologies training, privacy at risk, distraction on the internet, lack of technical support and slow network were among the challenges facing undergraduates in the effective usage of web 2.0 technologies for creativity skills development. There was relationship between web 2.0 technologies and undergraduates' creativity skills development in the order of ($r = 0.257$, $P<.05$). The management of the selected universities should make provision for fast and reliable internet connectivity to further encourage and enhance the use of Web 2.0 technologies for learning. Technical support should also be made available to students and lecturer; this will help in training students on the effective use of Web 2.0 technologies for learning in Nigerian Universities.

Keywords: Web 2.0 Technologies, Undergraduates, Creativity Skills
Word Count: 294

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Introduction

The need for creativity skills development among undergraduates is a source of concern to the stakeholders in Universities, in Nigeria. Creativity is the ability to think about a task or a problem in a new or different way, or the ability to use the imagination to generate new ideas. Creativity skills enables undergraduates to solve complex problems or find interesting ways to approach tasks. If undergraduates are creative, they look at things from a unique perspective. Daud and Zakaria (2021) defined creativity skills as critical thinking and problem-solving; multiple modes of inquiry in the natural sciences; communication skills (ICT literacy); sensitivity to diversity; interpersonal skills; and integration of knowledge from diverse sources. Mbanefo (2022) also defined creativity skills as a process of knowing that leads to invention and innovation through the use of imagination to combine parts and produce something original. It involves the process of thinking through possible solutions for a problem in a logical way, to come up with innovative ideas. A person who thinks creatively uses imagination to manipulate instruments or variables, to formulate models, to discover possibilities, to construct objects and images. This is a process of invention. Imagination is used to combine parts to form or produce something original. Daud and Zakaria (2021) further stated that creativity skill is the development of something which does not exist before either as a thought, a process or a product, and it involves the use of the three domains of knowledge: cognitive, affective and psychomotor domains in inventing what was imagined.

The imparting of creativity skills development is accepted today as primary purposes of delivering education. There are three sources of creativity skills development: (a) through the five senses; (b) through the intellect (reasoning) - this is superior to the knowledge gained through senses: Science is knowledge gained through the intellect (we understand that the earth rotates); and (c) knowledge through intuition. It is creativity skills from the spirit that comes from silence. Intuition is the level of creativity skill that one gets when one lets go of our knowledge through the senses and the intellect and relax. It involves meditation that takes one to the level of knowledge, which is beyond the senses and beyond the intellect (Ayooluwa, Oluwakemi, Afe & Olusola, 2018). Creativity skill development is a fundamental skill that is most cherished in today education. It involves the ability to create new ideas out of existing situations and it also involves an undergraduates readiness to evolve a new way of doing things (Aboluwodi, 2018). According to Okpara (2017), creativity skill development involves an articulation of strategy, where such a strategy incorporates the idea of flexibility and originality. Aside from recreating ideas in a new way, creativity skill development also focuses on bringing into birth original ideas. Adams (2014) identifies some of the characteristics that are fundamental to creativity skill development, and these are (a) being able to create idea that departs from status quo, (b) combine knowledge from previously disparate fields, (c) perseverance through different problems, and (d) step away from efforts and return later with a fresh perspective. Harrison's (2015) reiterated that creativity is more of an internal word. It is subjective, and far harder to measure and to define. Craft (2019) contended that creativity skill development is the process that includes original ideas, a different

point of view, breaking out of the mold, recombining ideas or seeing new relationship among ideas. Of importance of creativity skill development is craft's idea which represents the notions of holding a different view and breaking out of the mold to the enterprising initiative. The two notions are attributes of creative minds and by extension of an entrepreneur.

Statement of Research Problem

The imbedding of creativity skills development in education encourages undergraduates to engage in higher order thinking, but the used of lecture method in teaching seems to the reducing the level of undergraduates' creativity skills development. However, this might be among the factors fueling poor students' academic performance in universities. This study sought to examine the extent to which web 2.0 technologies could enhance undergraduates' creativity skills development in Southwest, Nigeria.

Objectives of the Study

The main objective of the study sought to examine the extent to which web 2.0 technologies could enhance undergraduates' creativity skills development in Southwest, Nigeria. Specifically, the study sought to:

1. Identify contributions of web 2.0 technologies on undergraduates' creativity skills development.
2. Ascertain the challenges facing undergraduates in the effective usage of web 2.0 technologies for creativity skills development.
3. Find out the relationship between web 2.0 technologies and undergraduates' creativity skills development.

Research Questions

- The following research questions were answered in this study:
- What are the contributions of web 2.0 technologies on undergraduates' creativity skills development?
- What are the challenges facing undergraduates in the effective usage of web 2.0 technologies for creativity skills development?
- Is there relationship between web 2.0 technologies and undergraduates' creativity skills development?

Review of Related Literature

There have been different agitations and review of curriculum to accommodate better innovative teaching method to increases undergraduates' creativity skills development. Different literature has concluded that the continuous usage of lecture method for instructional delivery is not yielding desire result for undergraduates' creativity skills development (Mbanefo, 2022; Aboluwodi, 2018; Ayooluwa, et al., 2018). An, Alon and Fuentes (2014) said the introduction of technology into teaching and learning is a starting point towards innovation in education; while Okello-Obura and Ssekitto, (2015) reiterated that web 2.0 technologies among innovative techniques for teaching and learning in universities and that is, a method that can promote collaborate between lecturer and students. Web 2.0 technologies

have become in recent times one of the ways of achieving interactive and impactful learning process. Web 2.0 technologies have increasingly helped in producing quality learning and significant opportunities for students (Ayooluwa, et al., 2018). Web 2.0 technologies are internet applications that speed up interactive information creation, sharing, and collaboration on the World Wide Web (www) (An & Williams, 2017). Web 2.0 is a second-generation web-based service which encourage and enable users to share ideas and collaborate on innovative ways unlike the Web 1.0 a first-generation web-based services and a read-only and static web. Web 2.0 technologies such as Blogs, Social networking sites, Discussion forum, Wikis, Podcasts, Google documents and Facebook allow users to read, write, collaborate and share information content on the web (Anunobi & Ogbonna, 2012). Web 2.0 technologies enable users to compose, edit, read, and distribute information whenever and wherever it is characterized by openness, persistence, user participation, searchability, knowledge sharing and collaboration (Waycott, Kurnia & Chang, 2015).

Similarly, Web 2.0 technologies can aid active participation in the learning process especially with its ability to help undergraduates become knowledge creators, producers, evaluators and editors and consequently promote their creativity skills development. These technologies have also been found beneficial to the community of undergraduates in the developed and some developing nations (Ferdig 2017). For instance, they have aided learners' critical thinking skills through interaction with peers in Australia and Malaysia (An et al., 2014). The use of Web 2.0 technologies in education provide numerous opportunities for social interaction and collaboration among undergraduates in different fields of interest and also support personalized learning. This help in strengthening undergraduates' creativity skills development as they interact, team up and share knowledge with peers at different locations (Ayooluwa et al., 2018).

Web 2.0 technologies have become in recent times one of the ways of achieving interactive and impactful learning process. Web 2.0 technologies have increasingly helped in producing quality learning and significant opportunities for students. Web 2.0 technologies are internet applications that speed up interactive information creation, sharing, and collaboration on the World Wide Web (www) (Melek et. al., 2023). Web 2.0 grant undergraduates access to quick and global information useful for learning. It can also enable users to compose, edit, read, distribute information, easily publish information content online and network with learners with similar interest (Michael, 2023). These technologies support interactions among undergraduates by allowing them to leave comments on a blog or discussion forum, request for detailed explanations on a subject matter, initiate communication or add a friend (Metin & Yasemin, 2021).

Methodology

A correlation research design was used for the study. The design was appropriate because it helped the study to captured the correlation between explanatory and dependent variables. The population of this study comprised all undergraduates' in

state-owned universities in Southwest, Nigeria. Simple random sampling technique was used for selecting three state-owned universities in Southwest, Nigeria, this includes Ekiti State University, Tai Solarin University of Education and Lagos State University of Education. However, using stratified sampling technique, a total of 457 undergraduates from the selected state-owned universities were selected as sample size of the study. Self-designed instrument tagged 'Web 2.0 Technologies and Undergraduates' Creativity Skills Development Questionnaire (WTUCSDQ) was used for data collection. WTUCSDQ comprised items on the issues relating to the contributions of web 2.0 technologies on undergraduates' creativity skills development as well as the challenges facing undergraduates in the effective usage of web 2.0 technologies for creativity skills development. The instrument requested responses on a four (4) – point scale format which was a modification of 5-point Likert scale. The responses rating scales are as follows: Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). To ensure the face and content validity of the instrument (WTUCSDQ), copies of the instrument were given to an expert in the Department of Educational Technology in Tai Solarin University of Education, Ijegun, Ogun State for validation. All the issues raised were corrected before subjecting the instrument to reliability testing. Reliability test of the instrument was done using a test-retest method. In this case, copies of the instrument were administered twice on 25 undergraduates from Lagos State University (LASU). The collected data from the dual administration of the instrument were compared using Pearson moment reliability statistic. The reliability coefficients of the instrument are 0.88 and 0.91 respectively for the dual testing. Primary method of data collection was adopted in this study. Questionnaire was the basic instrument used for data collection. Two trained research assistants with researcher participated in questionnaire administration. However, a total of 450 copies of instrument were distributed among the undergraduates, only 423 copies were retrieved. Retrieval rate was 94%. Descriptive and inferential statistics were employed in presenting answers to the research questions.

Results

Research Question 1: What are the contributions of web 2.0 technologies on undergraduates' creativity skills development?

Table 1: Descriptive statistics on the contributions of web 2.0 technologies on undergraduates' creativity skills development

Items	Mean	SD	Decisions
Web 2.0 technologies have helped undergraduate to acquire new knowledge.	2.77	0,922	Agreed
Web 2.0 technologies helped undergraduate in acquiring a new innovative idea.	2.67	0.946	Agreed
Web 2.0 technologies helped undergraduate learning ability	2.93	0.903	Agreed
Web 2.0 technologies help undergraduate to effectively manage information acquired for learning	3.14	0.666	Agreed
Web 2.0 helps undergraduate to access learning	3.18	0.621	Agreed

resources (e.g. slides, videos, photo, audio) online.			
Web 2.0 helped undergraduate in sharing information contents with peers.	3.29	0.673	Agreed
Web 2.0 helped undergraduate in developing skills and capabilities for collaboration	3.22	0.627	Agreed
Cluster Mean	3.03		

Source: Field Survey, 2024

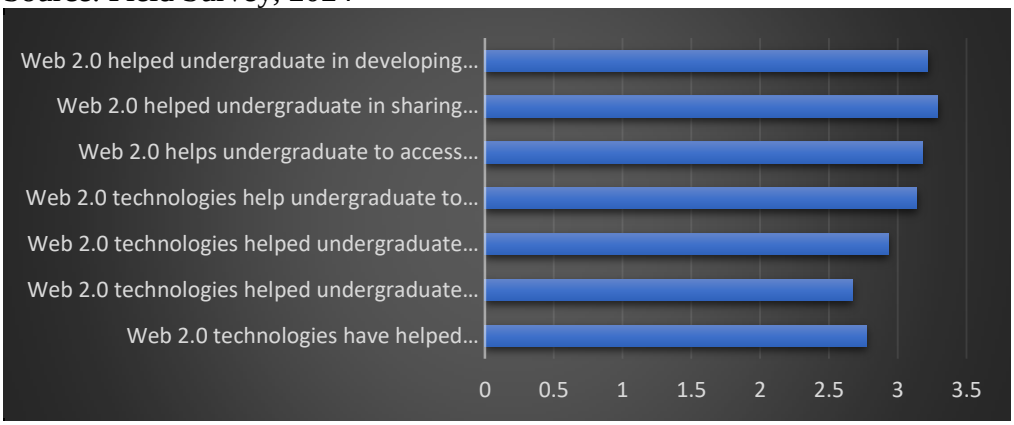

Figure 1: Bar-chart showing contributions of web 2.0 technologies on undergraduates' creativity skills development

Table 1 indicated that cluster mean was 3.03 which greater than the bench mark of 2.50. The implication of this result was that web 2.0 technologies enhance undergraduates' creativity skills development through acquiring new knowledge, new innovative idea, learning ability, effectively manage information acquired for learning, access learning resources (e.g. slides, videos, photo, audio) online and ability to share information contents with peers.

Research Question 2: What are the challenges facing undergraduates in the effective usage of web 2.0 technologies for creativity skills development?

Table 2: Descriptive statistics on the challenges facing undergraduates in the effective usage of web 2.0 technologies for creativity skills development

Items	Mean	SD	Decisions
Poor internet supply	3.11	0.978	Agreed
High cost of internal data	3.01	0.999	Agreed
Inadequate web 2.0 technologies training	3.14	0.902	Agreed
Privacy at risk	3.09	0.938	Agreed
Distraction on the internet	2.89	0.888	Agreed
Lack of technical support	2.99	0.899	Agreed
Slow network	2.78	0.903	Agreed
Cluster Mean	3.00		

Source: Field Survey, 2024

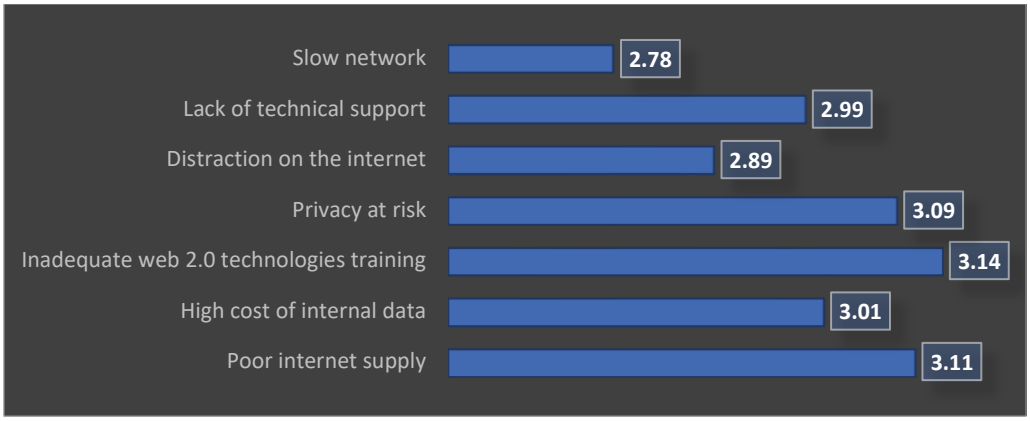

Figure 2: Bar-chart showing challenges facing undergraduates in the effective usage of web 2.0 technologies for creativity skills development

Table 2 revealed that cluster mean was 3.00 which greater than bench mark of 2.50. This implied that poor internet supply, high cost of internal data, inadequate web 2.0 technologies training, privacy at risk, distraction on the internet, lack of technical support and slow network were among the challenges facing undergraduates in the effective usage of web 2.0 technologies for creativity skills development.

Research Question 3: Is there relationship between web-2.0 technologies and undergraduates' creativity skills development?

Table 3: Relationship between web 2.0 technologies and undergraduates' creativity skills development

Variables	Mean	SD	r-value	df	p-value	Remark
Undergraduates' creativity skills development	19.0086	1.90732	.257	419	.0001	Significant
Web-2.0 technologies	19.7425	2.64620				

Source: Field Survey, 2024

Table 4.4 showed Mean, Standard Deviation and zero order correlation between the variables. It was observed that there was relationship between web 2.0 technologies and undergraduates' creativity skills development in the order of ($r = 0.257$, $P<.05$).

Discussion of Findings

The findings of the study indicated web 2.0 technologies enhance undergraduates' creativity skills development through acquiring new knowledge, new innovative idea, learning ability, effectively manage information acquired for learning, access learning resources (e.g. slides, videos, photo, audio) online and ability to share information contents with peers. It was also revealed that poor internet supply, high cost of internal data, inadequate web 2.0 technologies training, privacy at risk,

distraction on the internet, lack of technical support and slow network were among the challenges facing undergraduates in the effective usage of web 2.0 technologies for creativity skills development. Finally, there was relationship between web 2.0 technologies and undergraduates' creativity skills development. These findings correlate with Mbanefo (2022) who found that web 2.0 enhance students level of creative thinking skills and that a lot of management-related factors pose challenges to the development of creative thinking skills in the students; while Ayooluwa et al., (2018) findings revealed that web 2.0 technologies facilitates undergraduates' skills development and innovative ability. Daud and Zakaria (2021) findings indicated that web 2.0 technologies application to enhance undergraduates' creativity in ICT literacy skills.

Recommendations

It was recommended that government should provide funds for infrastructural facilities and equipment that are needed for creativity and innovation skills development.

The management of the selected universities should make provision for fast and reliable internet connectivity to further encourage and enhance the use of Web 2.0 technologies for learning.

Technical support should also be made available to students and lecturer; this will help in training students on the effective use of Web 2.0 technologies for learning in Nigerian Universities.

Conclusion

The study has successfully examined the extent to which web 2.0 technologies could enhance undergraduates' creativity skills development in Southwest, Nigeria and concluded that effective application of web 2.0 technologies have the ability to enhance undergraduates' creativity skills development.

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DEVELOPMENT OF AN ENTREPRENEURSHIP ECOSYSTEM ASSESSMENT TOOL FOR TERTIARY INSTITUTIONS IN NIGERIA

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Abstract

The development of a comprehensive entrepreneurship ecosystem assessment tool for tertiary institutions in Nigeria is long overdue. As the country seeks to diversify its economy and create jobs, fostering entrepreneurial mindsets and skills among students has become increasingly crucial. However, without a robust assessment tool, institutions lack the insights needed to evaluate their entrepreneurship ecosystems, identify areas for improvement, and make data-driven decisions to support entrepreneurial growth. This research work argues that a well-designed assessment tool can enable tertiary institutions in Nigeria to assess their entrepreneurship ecosystems holistically, taking into account key components such as entrepreneurial culture, support systems, resources, and industry partnerships. By leveraging such a tool, institutions can gain a deeper understanding of their strengths and weaknesses, inform strategic decision-making, and foster collaboration between stakeholders. The development of an entrepreneurship ecosystem assessment tool for tertiary institutions in Nigeria presents both opportunities and challenges. On one hand, it can help institutions to better support entrepreneurial talent, drive innovation, and contribute to economic growth. On the other hand, it requires careful consideration of the unique needs and challenges of Nigeria's tertiary institutions, as well as stakeholder buy-in and collaboration. This article makes the case for why an entrepreneurship ecosystem assessment tool is essential for tertiary institutions in Nigeria, outlines the key components of such a tool, and discusses the potential benefits and challenges of its development and implementation. By working together to develop and implement a robust assessment tool, stakeholders can help unlock the entrepreneurial potential of Nigeria's tertiary institutions and drive economic growth and development.

Keywords: Entrepreneurship Ecosystem, Assessment Tool, Tertiary Institutions and Nigeria

Introduction

Nigeria's higher education sector has incorporated entrepreneurship education to equip students with essential skills and mindsets (Adejimi & Olufunmilayo, 2018).

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Economic diversification and job creation efforts underscore the significance of this educational approach (Isenberg, 2010). Nigeria's youthful demographic can be a catalyst for economic growth, leveraging their creativity and innovation (World Bank, 2020). A supportive ecosystem, comprising various stakeholders, is vital for entrepreneurial success (Isenberg, 2010). This ecosystem fosters entrepreneurial activities, innovation, and employment opportunities (Acs, 2006).

Nigeria's tertiary institutions require a comprehensive assessment tool to evaluate their entrepreneurship ecosystems effectively. This tool would facilitate a holistic assessment, considering factors like entrepreneurial culture, support systems, resources, and industry collaborations (Neck & Greene, 2011). By utilizing this tool, institutions can identify areas of strength and weakness, make informed strategic decisions, and promote stakeholder collaboration, ultimately unlocking their entrepreneurial potential and driving economic growth.

Entrepreneurship education plays a vital role in Nigeria's tertiary institutions. Research indicates that it positively influences students' entrepreneurial mindset, skills, and actions (Kolvereid & Moen, 1997). By promoting entrepreneurship, innovation, and creativity, this education can drive economic progress and development (Acs, 2006). Furthermore, it equips students with the necessary skills and knowledge to launch their own ventures, generating employment opportunities and wealth.

Nigeria's tertiary institutions encounter notable obstacles in delivering impactful entrepreneurship education, such as insufficient resources, outdated infrastructure, and limited industry collaborations (Neck & Greene, 2011). A significant hurdle is the absence of a structured framework to evaluate and nurture entrepreneurship ecosystems, hindering institutions' ability to support entrepreneurial growth (Mwasalwiba, 2010).

A comprehensive entrepreneurship ecosystem assessment tool can mitigate these challenges by enabling institutions to assess their strengths and weaknesses, pinpoint areas for enhancement, and inform data-driven decisions that foster entrepreneurial development. This tool can also facilitate stakeholder collaboration among policymakers, educators, industry partners, and entrepreneurs. Nevertheless, Nigerian tertiary institutions' entrepreneurship education faces substantial hurdles, including inadequate resources and infrastructure, such as business incubators and mentorship programs (Neck & Greene, 2011). The disconnect between academia and industry further exacerbates the issue, limiting students' opportunities for practical experience and real-world application.

Entrepreneurship education in Nigeria's tertiary institutions encounters significant obstacles, such as scarce resources, insufficient infrastructure, and limited industry collaborations (Neck & Greene, 2011). Furthermore, the gap between academic theory and industry practice hinders students' ability to apply knowledge in real-

world contexts. Many programs also lack clarity and direction, impeding students' development of essential entrepreneurial skills and knowledge (Mwasalwiba, 2010).

This article posits that creating a thorough entrepreneurship ecosystem assessment tool is vital for Nigeria's tertiary institutions. Such a tool would enable institutions to assess their ecosystems, pinpoint areas for enhancement, and make informed decisions to foster entrepreneurial development, ultimately driving economic growth.

Overview of Entrepreneurship Ecosystem in Nigerian Tertiary Institutions

Nigeria's tertiary education sector has expanded notably, with a growing focus on entrepreneurship education. Key regulatory agencies, including the National Universities Commission (NUC), National Board for Technical Education (NBTE), and National Commission for Colleges of Education (NCCE), significantly influence the entrepreneurship ecosystem in Nigerian higher education.

The NUC oversees university programs to ensure quality standards are met. Its mandate includes maintaining high academic standards (National Universities Commission, 2024). Specifically, in entrepreneurship education, the NUC's role is vital in ensuring programs provide students with relevant skills and knowledge for entrepreneurial success.

The NBTE oversees technical education, including polytechnics and monotechnics, ensuring proper planning, coordination, and execution (National Board for Technical Education, 2013). In entrepreneurship education, the NBTE's role is crucial in designing technical programs that impart practical skills and relevant knowledge for entrepreneurial success.

The NCCE oversees teacher education programs, ensuring high quality and relevance (National Commission for Colleges of Education, 2024). In entrepreneurship education, the NCCE's role is vital in equipping teachers to effectively impart entrepreneurial skills and mindset to students.

The Tertiary Education Trust Fund (TETFund) supports entrepreneurship initiatives in Nigerian tertiary institutions, aligning with the Federal Government's objective to promote entrepreneurship and self-reliance among graduates (Federal Republic of Nigeria, 2013). TETFund's support can foster innovation and job creation.

Regulatory bodies play a vital role in shaping Nigeria's entrepreneurship ecosystem. Research by Adeyemo (2018) highlights the positive impact of entrepreneurship education on students' entrepreneurial intentions and behavior. By maintaining quality standards, these bodies can foster a culture of entrepreneurship.

Concept of Entrepreneurship Ecosystem Assessment Tool

Assessing entrepreneurial ecosystems requires robust tools to evaluate their strengths, weaknesses, opportunities, and challenges. These tools provide a thorough framework for examining key factors influencing entrepreneurship, innovation, and economic development. By analyzing these elements, stakeholders

can identify areas for improvement, inform decision-making, and foster collaboration. Effective ecosystem assessment enables policymakers, educators, and entrepreneurs to create supportive environments that drive innovation and economic growth. Several key components are essential to consider when developing an entrepreneurship ecosystem assessment tool. These include:

- Entrepreneurial Culture: Assessing the presence of a supportive culture that encourages entrepreneurship, innovation, and risk-taking (Sexton & Bowman, 1986).
- Support Systems: Evaluating the availability and effectiveness of support systems, such as incubators, accelerators, mentorship programs, and funding opportunities (Amezcua et al., 2013).
- Policy and Regulation: Assessing the impact of government policies and regulations on entrepreneurship, including taxation, licensing, and permits (Lerner, 2010).
- Access to Finance: Evaluating the availability and accessibility of funding options for entrepreneurs, including venture capital, angel investors, and crowdfunding (Gompers & Lerner, 2004).
- Human Capital: Assessing the availability of skilled and talented individuals, including entrepreneurs, mentors, and industry experts (Florida, 2002).
- Infrastructure: Evaluating the availability and quality of physical infrastructure, such as office space, transportation, and communication networks (Audretsch & Belitski, 2017).
- Market Opportunities: Assessing the presence of market opportunities and demand for innovative products and services (Porter, 1990).

The benefits of using an entrepreneurship ecosystem assessment tool are numerous. These include:

- Identifies Strengths and Weaknesses: Helps stakeholders understand the ecosystem's strengths and weaknesses, enabling targeted interventions (Isenberg, 2010).
- Informs Policy and Decision-Making: Provides data-driven insights to inform policy and decision-making, ensuring that resources are allocated effectively (Lerner, 2010).
- Enhances Collaboration: Fosters collaboration among stakeholders, including government, industry, academia, and entrepreneurs (Amezcua et al., 2013).
- Supports Entrepreneurship Development: Helps create a supportive environment for entrepreneurship to thrive, leading to job creation, innovation, and economic growth (Audretsch & Belitski, 2017).

Entrepreneurship Ecosystem assessment tools are available to help evaluate and understand the dynamics of entrepreneurship ecosystems. Some prominent examples include:

- Global Entrepreneurship Monitor (GEM): The GEM is a comprehensive assessment tool that evaluates entrepreneurship ecosystems globally. It

provides insights into the entrepreneurial attitudes, activities, and aspirations of individuals and societies. The GEM report is based on a large-scale survey of adults in participating countries and provides a rich source of data on entrepreneurship.

- Startup Genome: Startup Genome is a tool that assesses startup ecosystems, providing insights on strengths, weaknesses, and opportunities for growth. It evaluates various components of startup ecosystems, including startup activity, funding, talent, and mentorship.
- Endeavor's Ecosystem Assessment Tool: Endeavor's Ecosystem Assessment Tool is a framework that evaluates the strength and potential of entrepreneurship ecosystems. It assesses various components, including entrepreneurial culture, support systems, and access to finance.
- World Bank's Entrepreneurship Survey: The World Bank's Entrepreneurship Survey is a tool that evaluates the business environment and entrepreneurship ecosystems in developing countries. It provides insights into the challenges and opportunities faced by entrepreneurs in these countries.
- OECD's Entrepreneurship Indicators Programme: The OECD's Entrepreneurship Indicators Programme is a framework that evaluates entrepreneurship ecosystems in OECD countries. It provides insights into the drivers of entrepreneurship, including entrepreneurial attitudes, skills, and access to finance.
- Global Entrepreneurship Index (GEI): The GEI is a tool that evaluates the health and potential of entrepreneurship ecosystems globally. It assesses various components, including entrepreneurial attitudes, skills, and access to resources.

The Need for an Entrepreneurship Ecosystem Assessment Tool in Nigeria's Tertiary Institutions

The development of an entrepreneurship ecosystem assessment tool is crucial for Nigeria's tertiary institutions to evaluate the effectiveness of their entrepreneurship programs and make data-driven decisions to improve them. Entrepreneurship education is essential for Nigeria's economic development, as it provides students with the skills and knowledge needed to start their own businesses and create jobs (Acs, 2006). With a growing population of young people, Nigeria has a unique opportunity to harness the energy and creativity of its youth to drive economic growth and development (World Bank, 2020).

An entrepreneurship ecosystem assessment tool can help Nigeria's tertiary institutions to evaluate the effectiveness of their entrepreneurship programs and make data-driven decisions to improve them. Such a tool can provide insights into the strengths and weaknesses of the entrepreneurship ecosystem, identify areas for improvement, and inform strategic decision-making (Isenberg, 2010). By assessing the entrepreneurship ecosystem, institutions can identify opportunities to foster innovation and creativity among students, and develop programs to support these efforts.

The potential benefits of an entrepreneurship ecosystem assessment tool for Nigeria's tertiary institutions are numerous. Firstly, it can help institutions identify the skills and mindset gaps among students, and develop targeted programs to address these gaps (Kolvereid & Moen, 1997). Secondly, it can help institutions to foster a culture of entrepreneurship, innovation, and creativity among students, which is essential for driving economic growth and development (Acs, 2006). Thirdly, it can help institutions to evaluate the impact of their entrepreneurship programs on job creation and economic growth, and make data-driven decisions to improve their programs (Isenberg, 2010).

An entrepreneurship ecosystem assessment tool for Nigeria's tertiary institutions should include several key components. These components include entrepreneurial culture, support systems, resources, and industry partnerships (Neck & Greene, 2011). Entrepreneurial culture refers to the extent to which the institution fosters a culture of entrepreneurship, innovation, and creativity among students. Support systems refer to the availability and effectiveness of support systems, such as incubators, accelerators, and mentorship programs, that support entrepreneurship among students. Resources refer to the availability and accessibility of resources, such as funding, facilities, and equipment, that support entrepreneurship among students. Industry partnerships refer to the extent to which the institution partners with industry to provide students with practical experience and opportunities to apply theoretical knowledge in real-world settings.

Conclusion

In conclusion, the development and implementation of an entrepreneurship ecosystem assessment tool is a critical step towards fostering entrepreneurship, innovation, and job creation in Nigerian tertiary institutions. By leveraging the strengths of regulatory bodies such as the NUC, NBTE, NCCE, and TETFUND, Nigerian tertiary institutions can create a supportive ecosystem that promotes entrepreneurial mindset, supports startup growth, and drives economic growth. Through a collaborative approach that involves strengthening policy frameworks, enhancing resource allocation, building capacity, and fostering industry-academia partnerships, Nigerian tertiary institutions can develop a vibrant entrepreneurship ecosystem that contributes to the country's economic growth and development.

Ultimately, the creation of a robust entrepreneurship ecosystem assessment tool in Nigerian tertiary institutions has the potential to transform the country's economy, enabling it to become a hub for innovation, entrepreneurship, and economic growth. By working together, stakeholders can unlock the potential of Nigerian graduates, create jobs, and drive economic growth, thereby positioning Nigeria as a leader in entrepreneurship and innovation in Africa.

Suggestions

Based on the discussion in this article, several suggestions can be made for the development and implementation of entrepreneurship ecosystem assessment tools in Nigeria's tertiary institutions:

- Develop a tailored assessment tool: Develop an entrepreneurship ecosystem assessment tool that is tailored to the specific needs and context of Nigeria's tertiary institutions.
- Incorporate key components: Incorporate key components of entrepreneurship ecosystems, such as entrepreneurial culture, support systems, policy and regulation, access to finance, human capital, infrastructure, and market opportunities.
- Use data-driven decision-making: Use data-driven decision-making to inform policy and program development, and to evaluate the effectiveness of entrepreneurship programs.
- Foster collaboration: Foster collaboration among stakeholders, including government, industry, academia, and entrepreneurs, to ensure that the assessment tool is comprehensive and effective.
- Provide training and capacity building: Provide training and capacity building for stakeholders on the use and application of the assessment tool.
- Regularly review and update: Regularly review and update the assessment tool to ensure that it remains relevant and effective in evaluating entrepreneurship ecosystems.
- Encourage entrepreneurship culture: Encourage entrepreneurship culture and mindset among students, and provide them with the necessary skills and support to start their own businesses.
- Develop industry-academia partnerships: Develop industry-academia partnerships to provide students with practical experience and exposure to real-world entrepreneurship.

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SMART CITIES AND ENTREPRENEURIAL URBANISM: INTEGRATING INNOVATION ECOSYSTEMS INTO SUSTAINABLE URBAN DEVELOPMENT PLANNING

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Abstract

This study examines how entrepreneurial urbanism can be systematically integrated into sustainable urban development planning through the incorporation of innovation ecosystems such as tech hubs, startup incubators, and co-working spaces. The study adapted a qualitative multiple-case study of Lagos, Abuja, and Maiduguri, data were collected from 30 urban planners, policymakers, and innovation managers through semi-structured interviews and policy document reviews. The findings reveal distinct spatial configurations of entrepreneurial infrastructure: Lagos exhibits concentrated innovation clusters, Abuja demonstrates planned spatial dispersion and Maiduguri shows community-based resilience with varied policy frameworks; Lagos has strong institutional support, Abuja faces coordination gaps, and Maiduguri relies on external interventions. Economically, entrepreneurial integration increased business creation by 35–40%, while environmentally, innovation-driven practices improved sustainability indicators by 25%. The study concludes that effective policy alignment, spatial equity, and stakeholder collaboration are vital for integrating innovation ecosystems into urban planning. It recommends hybrid urban models to combine centralized innovation districts with decentralized community hubs to achieve economic diversification, social inclusion, and environmental resilience in African cities.

Keywords: Smart cities, Entrepreneurial urbanism, innovation ecosystems, spatial planning, economic sustainability, environmental resilience

Introduction

The rate of urbanization in African cities presents unprecedented opportunities and enormous challenges for sustainability. As reported by UN-Habitat (2020), more than 40% of the population of Africa now inhabits its cities and the proportion is projected to rise to 60% by 2050, making that urban centers will be crucial nodes for economic transformation and creation. This demographic trend is consistent with the increasing global appearance of smart city projects and entrepreneurial urbanism ideas under great waves in addressing urban challenges and generating economic growth. Harvey (2019) defines entrepreneurial urbanism as a shift in the administration and development of cities, and characterises this by the depiction of cities as proactive agenies who are "constantly on the lookout for economic opportunities" and innovation driven growth. This approach differs from traditional urban planning approaches in that it integrates market-based practices, public-

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private interfaces and innovation clusters into urban projects. This is relevant in African urban areas, where the scarcity of resources and developmental challenges demand creative approaches to urban planning and management. According to Friederici et al (2020), African cities have witnessed a considerable increase in technology hubs, startup incubators and co-working spaces with Lagos, Nairobi and Cape Town having been established as leading innovation hubs. However the spatial planning implications of this entrepreneurial ecosystem is yet to be fully understood, particularly with regard to how these innovations are systematically integrated as a strategic instrument in urban development planning. This paper examines Lagos, Abuja, and Maiduguri to explore the capacity of entrepreneurial urbanism to promote sustainable urban development while tackling the distinct issues encountered by African cities.

Statement of problem

Entrepreneurial urbanism is conducive to city expansion but the potential of innovation ecosystems in sustainable urban planning for African cities is not obvious. There are numerous technology hubs, startup incubators and co-working spaces cropping up without a strategic master plan, which has resulted in access disparity and siloed innovation. This fragmentation is inefficient and prevents collaboration, leading to imbalance in the distribution of development among a handful of cities which in turn further aggravates spatial inequality and reduces economic progress. The poor co-ordination also undermines environmental sustainability. When well-integrated with urban development, innovation ecosystems can also support sustainability in the form of cleaner technologies, more efficient use of resources, and circular economy. But entrepreneurship left unguided can lead to a rise in energy consumption, traffic and pollution. Policy tensions between entrepreneurialism and planning increasingly hinder delivery. Little co-operation from the economic departments, planners and innovators can at best stifle if not hinder entrepreneurial urbanism's contribution to sustainable development. Economic and environmental effects of this model in African cities are little understood. Evidence based assessment is required to inform policy and investment. There are one-off success stories, but Africa's extremely rapid rate of urban growth, infrastructure gap and resource constraints simply do not permit a uniform response. Further research is necessary to understand how innovation ecosystems can be systemically embedded in the urban planning process, mitigated and managed to enable sustainable and inclusive social outcomes.

Objectives of the Study

The primary objective of this study is to examine how entrepreneurial urbanism can be systematically integrated into sustainable urban development planning to enhance economic sustainability and environmental outcomes in African cities. Specific Objectives:

- To analyze Spatial Configuration Patterns of Entrepreneurial Infrastructure
- To evaluate Policy Frameworks Supporting Entrepreneurial Urbanism
- To quantify Economic Impacts of Integrated Entrepreneurial Infrastructure

- To assess Environmental Sustainability Outcomes

Literature Review

The concept of entrepreneurial urbanism originated from Harvey's (1989) pivotal research on the evolution of urban government, which recognized a transition from managerialism to entrepreneurialism in municipal administration. This transition signifies the growing embrace of market-oriented strategies in urban development by cities, marked by public-private partnerships, place marketing, and the quest for competitive advantages in the global economy (Brenner & Theodore, 2021). Modern study has broadened this framework to include the influence of innovation ecosystems, technical infrastructure, and knowledge-based enterprises in urban development plans. Recent literature highlights the multifaceted character of entrepreneurial urbanism, which includes economic development, social innovation, environmental sustainability, and governance change (Storper & Scott, 2019). This broadened understanding acknowledges that prosperous entrepreneurial cities must harmonize economic competitiveness with social equity and environmental stewardship, a principle especially pertinent to African urban settings where developmental challenges are frequently interrelated and complex.

The smart city paradigm has greatly developed since its conception, transitioning from technology-centric methods to more holistic, citizen-centered models of urban development (Yigitcanlar et al., 2019). Modern smart city frameworks prioritize the amalgamation of digital technologies with social innovation, environmental sustainability, and economic growth goals. This progression is particularly significant for African towns, as smart city projects must confront essential infrastructure difficulties while utilizing technological breakthroughs to surpass conventional development trajectories. Innovation ecosystems are essential to smart city development, comprising intricate networks of participants, institutions, and resources that facilitate entrepreneurial endeavors and technology advancement (Audretsch & Belitski, 2021). These ecosystems generally encompass technological parks, incubators, accelerators, co-working spaces, research institutes, and conducive policy frameworks. The spatial arrangement and planning of these ecosystems substantially affect their efficacy and influence on urban development results.

African cities have witnessed significant increase in entrepreneurship and innovation over the last decade, propelled by demographic dividends, technological adoption, and legislative reforms (Kshetri, 2021). The continent's innovation landscape features a variety of entrepreneurial models, including institutional technology parks, incubators, informal innovation clusters, and maker spaces. This variability illustrates the varied characteristics of African urban environments and the necessity for tailored strategies in the creation of innovation ecosystems. Lagos has become a prominent model of entrepreneurial urbanism in Africa, characterized by its flourishing fintech industry, many technology clusters, and conducive regulatory environment that draw substantial investment and talent (Ogunyemi & Johnston, 2022). Likewise, some African towns have cultivated unique innovation

ecosystems that capitalize on local strengths while tackling particular urban issues. The incorporation of entrepreneurial activity into official urban planning procedures is, however, constrained, frequently leading to geographical fragmentation and inefficient use of innovative potential.

The interplay between entrepreneurial urbanism and environmental sustainability is a vital field of study, especially in light of the urgent necessity for African cities to confront climate change while advancing economic growth (Lwasa et al., 2020). Studies indicate that effectively structured innovation ecosystems can enhance environmental sustainability by fostering clean technology, circular economy practices, and sustainable business frameworks. The environmental consequences of business endeavors, such as energy usage, trash production, and transportation trends, necessitate meticulous management via comprehensive planning strategies.

Methodology

This study employs a qualitative multiple-case study methodology to investigate the incorporation of entrepreneurial urbanism into sustainable urban development in three Nigerian cities: Lagos, Abuja, and Maiduguri. Lagos exemplifies a developed entrepreneurial ecosystem characterized by significant private sector engagement, Abuja imparts knowledge on governmental policy and planning, while Maiduguri delivers insights into innovation within an evolving framework. These cities were chosen to represent various phases of urban growth and the maturity of business ecosystems. The data collection comprised semi-structured interviews with 30 participants from three principal stakeholder groups: urban planners (n=10), innovation center managers (n=10), and policymakers (n=10), chosen via purposive sampling. The interviews addressed the spatial organization of innovation, policy frameworks, and the problems and opportunities associated with incorporating entrepreneurial infrastructure into urban development. Furthermore, the examination of papers related to urban development policies, innovation initiatives, and planning materials offered contextual insights and facilitated the triangulation of data sources. The data analysis employed thematic content analysis, initiating with open coding to find themes, progressing to axial coding to examine interrelations among themes, and concluding with selective coding to formulate theoretical ideas. The study was facilitated by NVivo software to enable systematic data management (Braun & Clarke, 2019; Yin, 2018).

Results

Spatial Configuration of Entrepreneurial Infrastructure

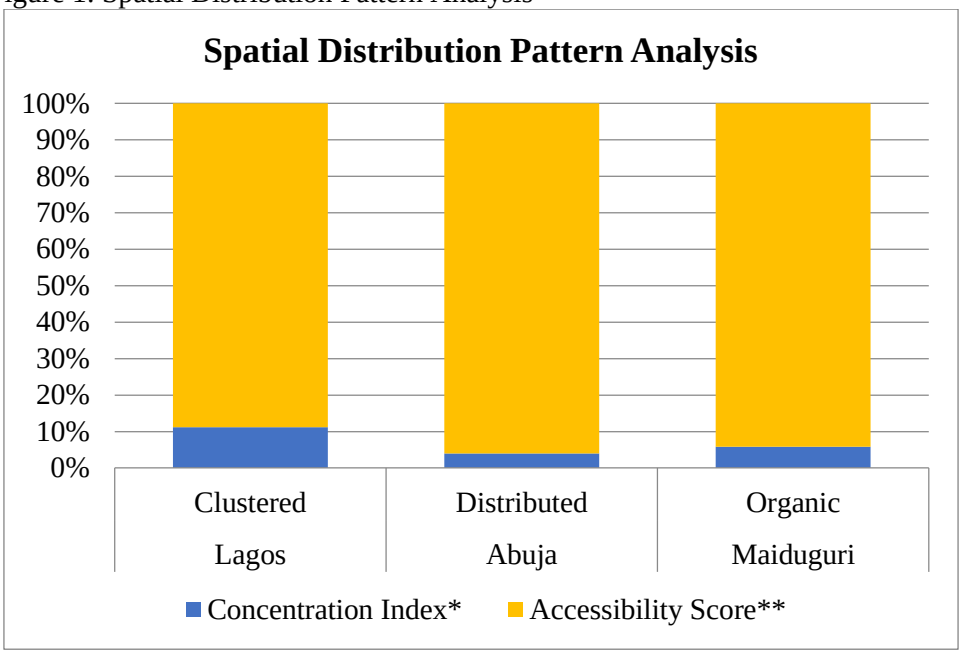
The analysis reveals significant differences in the geographical arrangement of entrepreneurial infrastructure among the three case study towns. In Lagos, entrepreneurial endeavors are concentrated in particular locations, notably Lagos Island and Ikeja, forming dense innovation clusters that use agglomeration effects and knowledge spillovers. This concentration has also resulted in geographical inequity and accessibility issues for entrepreneurs from other areas of the city.

Table 1: Entrepreneurial Infrastructure Distribution by City

Infrastructure Type	Lagos	Abuja	Maiduguri	Total
Tech Hubs	45	18	8	71
Incubators/Accelerators	28	12	5	45
Co-working Spaces	67	23	12	102
Innovation Labs	15	8	3	26
Total Facilities	155	61	28	244
Facilities per 100k Pop.	1.1	1.8	2.3	1.4

Table 1 reveals that Abuja exhibits more scattered entrepreneurial infrastructure architecture, shaped by the city's planned development framework and governmental initiatives advocating for equitable spatial development. The Federal Capital Territory Administration has enacted zoning laws that promote the incorporation of innovation spaces into mixed-use complexes, thereby facilitating more fair access to entrepreneurial opportunities.

Figure 1: Spatial Distribution Pattern Analysis



*Concentration Index: 0 = perfectly distributed, 1 = completely concentrated
**Accessibility Score based on public transport connectivity and geographic coverage

Maiduguri is a unique scenario in which entrepreneurial endeavors have arisen spontaneously as a reaction to economic difficulties and security issues. The city's innovation ecosystem features small-scale, community-oriented initiatives that frequently function within established commercial and residential zones, showcasing exceptional adaptability and resilience.

Policy Frameworks and Institutional Support

The study reveals notable disparities in policy frameworks that facilitate entrepreneurial urbanism among the three cities. Lagos has established the most extensive policy framework, encompassing the Lagos State Innovation Strategy, technology park development rules, and regulatory sandboxes for fintech enterprises. These measures have fostered an environment conducive to entrepreneurial endeavors while tackling planning and regulatory obstacles.

Abuja's policy framework is significantly shaped by federal government initiatives, including as the National Digital Economy Policy and Strategy 2020-2030 and several technology and innovation policies. Nonetheless, collaboration between federal and municipal planning agencies continues to pose a difficulty, occasionally leading to contradictory objectives and implementation discrepancies.

The policy environment of Maiduguri is underdeveloped, offering minimal formal support for entrepreneurial endeavors. The city has gained from federal and international development initiatives that foster economic recovery and resilience, several of which include elements of innovation and entrepreneurship.

Economic Impact and Business Development

The incorporation of entrepreneurial infrastructure into urban design has shown substantial economic advantages in all three case study towns. In Lagos, participants indicated that regions with concentrated innovation infrastructure saw a 35-40% rise in new business registrations compared to regions lacking such infrastructure. This expansion is ascribed to knowledge spillovers, finance accessibility, mentorship possibilities, and collaborative networks that enhance business development.

Abuja's decentralized strategy for entrepreneurial infrastructure has yielded more moderate yet regionally equitable economic effects. The city has witnessed consistent expansion in technology and service sector employment, notably in government technology solutions and digital services. The incorporation of innovation spaces inside mixed-use complexes has fostered synergies between entrepreneurial endeavors and various urban purposes.

The entrepreneurial ecosystem of Maiduguri, however limited in size, has exhibited notable resilience and significant local economic influence. Community-driven innovation efforts have facilitated economic recovery and offered alternative livelihood choices for communities impacted by regional problems. The city's experience underscores the capacity of entrepreneurial urbanism to enhance urban resilience and facilitate post-conflict rehabilitation.

Environmental Sustainability Outcomes

The environmental effects of entrepreneurial urbanism differ markedly among the case study cities, shaped by the nature of entrepreneurial endeavors, spatial arrangement, and alignment with overarching sustainability objectives. Lagos has realized substantial environmental advantages, with increases of up to 25% in

specific environmental metrics in regions with concentrated innovative infrastructure.

The enhancements are ascribed to multiple sources, such as the advancement of clean technological solutions, optimized resource utilization via shared facilities, and the implementation of sustainable business practices by innovative enterprises. Nonetheless, the concentration of entrepreneurial activities has also led to heightened energy consumption and transportation demands in particular regions.
Abuja's decentralized strategy for entrepreneurial infrastructure has led to reduced environmental consequences, with advantages disseminated throughout the city. The incorporation of innovation areas inside mixed-use complexes has facilitated sustainable urban growth by minimizing transit requirements and enhancing resource efficiency.

Maiduguri's experience illustrates the capacity of entrepreneurial endeavors to enhance environmental sustainability via community-oriented solutions and resource-efficient corporate frameworks. Local advancements in waste management, renewable energy, and sustainable agriculture have produced economic and environmental advantages.

Findings of the Study
As a result of the analysis of data the following findings were emerged:
Lagos shows clustered innovation hubs causing inequality, Abuja has evenly spread infrastructure due to planning, and Maiduguri's small-scale ecosystem reflects resilience amid challenges.

Lagos has strong supportive policies, Abuja benefits from federal initiatives but faces coordination gaps, while Maiduguri lacks formal policies and depends on external aid.

Lagos's innovation zones boosted new business growth by 35–40%, Abuja achieved steady tech-sector expansion, and Maiduguri's community efforts improved local recovery and resilience.

Lagos demonstrate cleaner technologies but higher energy use, Abuja's mixed-use planning improved efficiency, and Maiduguri promoted sustainable local practices in waste and energy use.

Discussion of Findings
The findings of the study reveal that spatial organization, policy coordination, and context-specific strategies are significant to advancing sustainable development in African cities. The spatial variations in Lagos, Abuja, and Maiduguri demonstrate that integrating entrepreneurial infrastructure requires careful consideration of local development patterns, governance systems, and sustainability goals. Cugurullo (2021) explains that innovation ecosystems in the Global South must evolve within local socio-economic and institutional contexts, while Odendaal (2022) adds that

African cities need customised digital and spatial innovation strategies that reflect their infrastructural realities. The results support the evolution of entrepreneurial urbanism theory toward inclusive and sustainability-oriented frameworks that balance growth, equity, and environmental responsibility. The experiences from Maiduguri highlight the role of grassroots entrepreneurial initiatives in enhancing urban resilience and supporting post-crisis recovery. This agrees Pieterse and Parnell (2021) who argue that community-driven innovation strengthens urban adaptability, and Ntema and Lekgau (2023) who demonstrate how bottom-up entrepreneurship contributes to post-conflict economic rebuilding in sub-Saharan Africa.

Policy analysis from the study reveals that effective entrepreneurial urbanism depends on coordinated policy frameworks that connect economic development and urban planning. Lagos illustrates how institutional alignment can attract investment and foster innovation-led growth. However, Abuja reflects the challenge of inter-agency fragmentation despite strong federal initiatives, while Maiduguri's reliance on external support underscores weak institutional foundations. These align with UN-Habitat (2020) and the World Bank (2022), both of which emphasize multi-level governance and policy coherence as prerequisites for sustainable urban transformation. Similarly, Akinbami and Fadeyi (2024) note that policy fragmentation remains a major barrier to innovation integration in Nigerian cities. Spatially, the results demonstrate that clustered innovation hubs in Lagos benefit from agglomeration economies and knowledge spillovers but also intensify spatial inequality and strain public infrastructure. While Abuja's decentralized innovation spaces promote equitable access and better environmental outcomes. This pattern supports Glaeser and Kominers (2021) that while clustering accelerates innovation, decentralized ecosystems better distribute opportunities. Lwasa, Smit, and van der Merwe (2022) argue that African cities should adopt hybrid models that combine dense innovation districts with distributed neighborhood-level hubs to balance growth with inclusion.

The findings also suggest that rigid zoning systems often limit the flexibility needed for innovation ecosystems to thrive. Olanrewaju, Yusuf, and Bello (2023) contended that African cities should reform land-use policies to accommodate mixed-use innovation spaces that integrate living, working, and research functions. Similarly, OECD (2021) emphasizes adaptive regulatory frameworks that support flexible innovation environments. Stakeholder participation emerges as another critical factor. The study's evidence from Abuja and Lagos demonstrates that continuous dialogue among entrepreneurs, planners, and community representatives is essential for aligning innovation infrastructure with broader sustainability goals. This supports Mboup and Jenkins (2022), who assert that collaborative governance is the foundation for resilient urban innovation, and Ayodele and Onifade (2024), who emphasize participatory approaches in shaping inclusive innovation ecosystems in Nigerian cities. Watson (2020) notes that incremental reform is more feasible than rapid transformation in low-capacity urban contexts, while Berrisford (2023) argues that adaptive planning fosters long-term institutional resilience.

Recommendations

Based on the findings of the study the following recommendations are made:

Urban Planners and Local Governments should promote balanced spatial distribution of entrepreneurial infrastructure to develop both centralized innovation districts and neighborhood-level hubs.

Policy Makers and Government Agencies should strengthen coordination of policy frameworks by aligning innovation, economic, and urban planning policies.

Economic Development Authorities and Private Sector Partners should enhance entrepreneurial urbanism for economic diversification by investing in innovation facilities, business support programs, and digital skills development.

Environmental Agencies and City Administrations should integrate sustainability into innovation ecosystems by enforcing green standards, encouraging clean technologies, and supporting community-led circular economy projects.

Conclusion

This study examined how entrepreneurial urbanism can be systematically integrated into sustainable urban planning to enhance economic and environmental outcomes in African cities. The findings revealed that the success of entrepreneurial urbanism depends on the spatial organization of innovation infrastructure, the strength of policy frameworks, and the alignment of entrepreneurship with sustainability objectives. Lagos demonstrates the benefits and challenges of clustered innovation, Abuja highlights the value of planned decentralization, and Maiduguri exemplifies resilience through grassroots entrepreneurship. These cases indicate that entrepreneurial urbanism should be context-specific, guided by inclusive policies and spatial equity to promote balanced development. Therefore, the study concludes that effective integration of innovation ecosystems into urban planning can drive economic diversification, social inclusion, and environmental sustainability. However, achieving this requires coordinated governance, adaptive planning regulations, and active stakeholder engagement.

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ENHANCING FIRMS' VALUE THROUGH ENVIRONMENTAL MANAGEMENT ACCOUNTING IN EMERGING ECONOMY: THE MODERATING EFFECT OF PROFITABILITY

Zephaniah Liuraman[o]

Abstract

This study examined the moderating effect of profitability on environmental management costs and value of manufacturing companies listed on the Nigerian Exchange Group. Correlation research design was adopted while waste management costs, ecological management costs, gas emission management costs, Tobin's Q and Returns on Assets were used as proxies of environmental management costs, firms' value, and profitability respectively. Data was collected from financial statements of 26 listed manufacturing firms from 2015-2024, and analyzed using Panel regression.

The result of the analysis shows positive but insignificant direct effect of ecological management cost, gas emission management cost on Tobin's Q, while waste management costs shows negative insignificant direct effect on Tobin's Q. Furthermore, returns on assets shows positive significant moderating effect on environmental management costs and firms' value. Hence, the study concludes that profitability has positive significant moderating effect on environmental management costs and value of listed manufacturing companies in Nigeria. This study contributes to knowledge been the first study to observed the integrated effect of waste management costs, ecological management costs, and gas emission management costs on firm's value, while adopting profitability as moderator. Its further sheds light on how changes in profitability affect firms' environmental management activities and valuation metrics.

Keywords: emerging economy, environmental management costs, firms' value, profitability

Introduction

Maximization of owners' wealth is the primary objective of any profit-making business. The value of firm is a description of its achievement as a form of public trust for the activities carried out. This value could be nominal value, market value, intrinsic value, or book value. In evaluating business potency to maximize value capital base and managerial skills were considered as major factors. However, the modern business perception has a tremendous impact on business strategies and make the market so dynamic and increase business competition and risk (Temitope, 2021). Capital base and managerial skills that were once considered the major

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driving force for business success is eroding in its influence, as modern business success depends not only on capital based and managerial skills but also business legitimacy (Eke et al., 2024). Legitimacy theory believe that businesses operate in alignment with societal norms to earn and maintain stakeholder trust.

Thus, in pursue of business objective, environmental challenges have emerged as significant concerns which leads to rise in global warming and environmental degradation hence intensified calls for corporate environmental accountability. Stakeholders are clamoring for environmental consciousness by business, since businesses are seen polluting their operating environment. Thus, Paonganan et al. (2024) emphasized that firms are expected not to solely focus on profitability but must also ensure sustainability which consists of environmental, social, and economic dimensions. This shift aligns with legal frameworks in Nigeria such as Associated Gas Re-Injection Act 2004 and Harmful Waste Special Criminal Provision Act 2004 which mandates environmentally sensitive businesses to engage in both social and environmental responsibility. Manufacturing sector in Nigeria just like in any other country is an environmentally sensitive industry that contributes allots in polluting environment (Ignasius et al., 2025). Thus, the industry is required to be environmentally conscious. However, despite these frameworks, corporate violations of environmental management persist, reflecting a lack of seriousness in addressing sustainability issues.

More so, the role of firms' profitability in improving environmental accountability deserve kin attention as highlighted by Ignasius et al. (2025). Profitable firms tend to prioritize transparency by disclosing more information in their annual reports. This trend reflects a long-term commitment to accountability and sustainability. Thus, balancing environmental aspects of business operations with economic dimension would contributes significantly to business legitimacy. Furthermore, engaging in environmental management is believe to enhance business's public image, foster trust, and expand its market presence. However, implementing sustainability initiatives involves considerable costs, which some businesses view it as expenses without benefit. Thus, the need to empirically examine the relationship between profitability, environmental management costs and firms value.

Statement of Research Problem

Given the need for businesses to be environmentally conscious, most businesses view environmental preservation activities as costs without benefit (Ilelaboye & Alade, 2022) thus, little or no attention is given to environmental preservation activities. To establish this relationship statistically, studies were conducted but the findings were inconsistent. Studies such as Aliamutu et al. (2023) reported positive and significant effect of environmental management costs on firms' value. However, Husnah and Ayunita (2021) documented negative effect of environmental management costs on firms' value, while Nuzula (2019) reported no significant relationship.

As the result of the inconsistency in the findings of the relationship between environmental management costs and firms value, Anggreni et al. (2025) saw the need for the adoption of moderator or mediator variable to observe its interactive effect on the relationship between environmental management costs and the value of firms. Understanding this relationship empirically, is crucial for enhancing business sustainability in an emerging economy. However, literatures highlighted paucity in studies concerning moderator and mediator. This is in addition to the limited empirical evidence on the integrated impact of waste management costs, gas emission management costs, ecological management costs, and profitability on the value of firms (Idamoyibo, 2025). The few studies conducted such as Hilda et al. (2024) were of foreign origin which the findings might not be applicable to Nigeria given the differences in accounting framework, legal structure, business and technological development, and transparency in financial reporting. Also, the revolving pattern of the practice of environmental management system and its costs implication on firm value over time was lacking. These indicate the existence of significant research gap concerning the domain, time frame and the integrated effect of waste management costs, gas emission management costs, and ecological management costs, measured simultaneously, on the value of listed manufacturing firms in Nigeria, while considering profitability as moderating variable as observed by Anggreni et al. (2025). Hence, the motivation of this study to examine the moderating effect of profitability on the relationship between environmental management costs and the value of listed manufacturing companies in Nigeria over a period of ten years (2015-2024).

To achieve these objectives, hypotheses were formulated to guide the study.
Ho1: Environmental management costs has no significant effect on the value of listed manufacturing companies in Nigeria.

Ho2: Profitability has no significant moderating effect on the relationship between environmental management costs and the value of listed manufacturing companies in Nigeria.

Literature Review

Firms' Value

Firm's value in a free market is the outcome of market forces on the investment worth of a firm at a given time (Idamoyibo, 2025). Hence, describe the investors' perception of the business success rate commonly reflected in share price. The share price creates signals to the public in relation to business worth (Reschiwati et al., 2020). Firms' value is mostly measured using Tobin's Q which indicates the current financial market estimates of the value of returns of every incremental investment (Idamoyibo, 2025). The ratio compost of firms' liabilities, inventory, equity, and company's assets. Hence, the higher the value of Tobin's Q the better the future growth prospect of the firm. More so, the greater the market value compared to asset book value, the greater the investors' willingness to acquire shares of the firm. Therefore, this study used Tobin's Q ratio to measure firms' value.

Environmental Management Accounting

Environmental management accounting was defined by Hilda et al. (2024) as an approach to management accounting that focuses on costs associated with environmental management issues. It covers all aspects of environmental management activities such as waste management, gas emission management, ecological management, and control of environmental degradation. Thus, Chikantin (2019) describe environmental management costs as a cost incurred by an organization to prevent, monitor and control environmental impact. These are expenses related to the development, identification, remediation, and prevention of environmental damage. With the growing importance of the environmental concern, firms are required to play leading role by being conscious of their operating environment since businesses are partners in economic development. To this extend, amount of resources is sacrifice by firms to achieve clean environment as well as maximize profit (Ubesie et al., 2022). Thus, environmental management cost is the amount of money spend by firms to prevent, protect, monitor and control environmental impact.

Waste is anything that cannot be turned into a marketable product and is therefore indicative of production inefficiency. Waste generation and management are critical environmental issues faced by countries all over the world. Recovery, collection and removal of waste, which includes the administration of such an operation, is useful for waste management. Thus Okore (2021) define waste management cost as the costs of wasted materials and other costs related to their processing such as the costs of energy, transportation, and labor. It also includes investment in waste treatment facilities and the cost of untreated waste outflows.

Ecological management is aim at environmental protection. Thus, Chiamogu and Okoye (2020) describe environmental protection as the practice of protecting the natural environment. This practice is aim at conserving biophysical environment from degradation and where possible repairs damage and reverse the trend. Maintaining a balanced nature grows, develops and nourishes living things in the globe as well as achieving a healthy environment is crucial (Okezie et al., 2019). Thus, environmental protection costs cover the cost of planning, controlling, utilizing, and preserving biophysical environment and enacting and reviewing laws that systematically integrate efforts to preserve the environmental functions and prevent destruction (Adediran & Alade, 2013).Since the industrial revolution, greenhouse gas emissions, especially carbon dioxide (CO2), cause climate change. Thus, Hilda et al. (2024) define gas emission as the release from the combustion of carbon containing compounds such as CO2, diesel, LPJ, and other fuels. Corporate stakeholders are conscious about the management of climate change risks and demand remedial actions from business. Hence, firms should provide remedial measure on how to reduce greenhouse gas emissions and the number of emissions over time. Thus, the concept of gas emission cost was defined by Okere et al. (2022) as the cost of reduction or elimination of carbon dioxide pollutants at their sources. It includes the cost of avoiding, management, treatment, disposal, or clean up a pollutant. Firms adopts activities such as redesigning machines to cause less pollution during manufacturing, use, or disposal, and altering production processes

to minimize the use of toxic chemicals, implementing better housekeeping practices to minimize leaks and fugitive releases from manufacturing processes, and taking steps to reduce energy consumption.

Profitability

Profitability was described by Hilda et al. (2024) as a value that shows firms' financial condition and achievements in a certain period. It provides information about how firms efficiently deploy its assets and manages its operations. Hence, Rahmadiva and Henny (2024) concluded that, higher profitability showcases firms' capability to earn more income, while lower profitability signal potential operational challenges, such as reduced sales or increased operational costs. Thus, profitability is a crucial metric for understanding firms' ability to sustain itself in competitive markets. Return on Assets (ROA) is one of the most commonly used metrics to measure profitability (Dwi & Haq, 2023). It describes the extent of firms' utilization of its assets to generate profits. Hence, was used by this study as a moderating variable to observe its interactive effect on environmental management costs and firms value.

Theoretical Review

In the course of explaining environmental accounting, several theories such as agency theory, legitimacy theory, and stakeholders' theory were used by previous studies. However, this study was anchored on stakeholders' theory. This was based on the idea of Henry (2001) that, stakeholders' theory is the most appropriate theory to explain the concept of environmental accounting, as the theory explain the essence of corporate environmental management.

Stakeholder theory was employed in accounting literature to provide a justification for corporate environmental practices. The theory stands on the recognition and identification of various stakeholders that relates with firm (Eke et al., 2024). The theory emphasizes that, for a firm to remain sustainable, it requires support from stakeholders. Hence, firm must adjust to gain its legitimacy through stakeholders' acceptability. Thus, Gacar (2016) emphasized that, the more important the stakeholder to the organization, the more effort will be made to manage and manipulate this relationship.

With respect to environmental accounting practices, it can be observed that stakeholder theory explains the relationships in the real world based on its descriptive aspect, as corporate environmental accounting is a means by which stakeholders are managed to gain support and approval for the organization's continued existence (Jain & Jamali, 2016) as well as to distract stakeholders' opposition and disapproval. Since various stakeholders are demanding more environmental consciousness due to their interest in the environmental issues and its related costs and liabilities, organizations are engaging in environmental management activities to gain stakeholders approval. Environmental management issues are taken into consideration by stakeholders' in risk and returns assessment. Thus, stakeholders increasing demand for corporate environmental management

activities necessitate companies to engage in environmentally friendly activities such as waste management, gas emission management, and ecological management. Hence, this study believed that, stakeholder theory is appropriate to explain the concepts of environmental management costs and firms value.

Empirical Review

Aniefor et al. (2023) studied the effect of carbon emission management costs on the value of 7 oil and gas companies in Nigeria. Secondary data was collected for the year 2023 and analyzed using OLS. The result show positive significant effect of carbon emission management costs on the firms' value. Furthermore, Darlington and Cecilia (2023) evaluated the effect of carbon emission costs on the value of listed oil and gas companies in Nigeria. Data was collected from annual reports and accounts and was analyzed using regression analysis. The study also reported positive significant effect of gas emission management costs on the value of the companies.

However, Eric and Jacob (2022) reported negative effect of waste management costs on firms' value when they studied the impact of waste management costs on the value of quoted oil companies in Nigeria. This result was further confirmed by the study of Ilelaboya and Alade (2022) who reported negative insignificant relationship between environmental accounting and the value of listed family owned companies in Nigeria. Data was collected from financial statement of the companies for nine years (2012-2020) and analyzed using regression analysis. Desai and Raval (2022) also reported negative relationship when they evaluated the relationship between market value and CO2 emission of listed firms in India. Data was obtained from financial statements of the companies and were analyzed using regression analysis.

On a different note, Adeneyi and Adebayo (2020) reported no significant relationship between environmental protection costs and the value of thirteen listed oil and gas firms in Nigeria. The data was obtained from the financial statements of the firms for the year 2018 and was analyzed using panel linear regression. Steve (2020) also reported no significant relationship between waste management costs and the value of firms when he evaluated the effect of environmental costs on the value of sixty-four listed industrial companies in four Sub-Saharan countries. The data obtained from statements for ten years (2007-2016) was analyzed using panel regression.

Seeing the need for the use of either mediation or moderation variable, Idamoyibo (2025) studied CSR compensation costs and the value of listed consumer goods companies in Nigeria. Liquidity was used as a mediating variable. The result shows that, liquidity could not mediate the relationship between CSR compensation cost and Tobin's Q. More so, Hilda et al. (2024) studied the influence of environmental management accounting and carbon emission disclosure on company value with financial performance as mediation in energy and basic material sector companies listed on Indonesian stock exchange. The results show that, financial performance

could not mediate relationship between carbon emission disclosure and company value.

Considering the literature reviewed, one could understand that; in addition to inconsistency in the findings and the concentration on oil and gas companies, there was paucity of empirical studies on the integrated effect of environmental management costs on the value of firms, particularly, concerning other environmentally sensitive companies. Thus, the motivation of this study to adopt profitability as observed by Anggreni et al. (2025) and observe its moderating effect on environmental management costs and the value of listed manufacturing companies in Nigeria for 10 years (2015-2024).

Methodology

Correlation research design was used while the target population consisted of manufacturing companies listed on the main board of the Nigerian Exchange Group as at 31st December, 2024. Out of the 43 companies, 26 were selected as sample based on the criteria that; the selected companies must have been listed on or before 31st December 2014 and remained listed till 2024; and also, the selected companies were active in terms of environmental reporting within the period of the study evidenced with the inclusion of environmental disclosure in their annual report and accounts over the period of the study. The data collected were analyzed using descriptive statistics and panel regression analysis.

To achieve these objectives, two models were developed in line with the model used by Ubesie et al (2022). Model 1 was developed to evaluate the direct effect of environmental management costs on the value of the firms while controlling firms' characteristics. While model 2 was developed to evaluate the moderating effect of profitability on the relationship between environmental management costs and the value of the firms. Thus, the models are presented as follows.

$Y = F (WMC, EMC, EHC, GEC, ROA, FMS, FML)$

…….....equation

$FMVit = \beta0 + \beta1WMCit + \beta2EMCit + \beta3GECit + \beta4ROAit + \beta5FMSit + \beta6FMAit + \mu it$… ……model 1

$FMVit = \beta0+\beta1WMCit+\beta2EMCit+\beta3GECit+\beta4ROAit+\beta5WMCit*ROAit+\beta6EMCit*ROAit+\beta7GECit*ROAit+\beta8FMSit + \beta9FMAit + \mu it$…. model 2

Table 1 presents the variables and their measurements as used by previous studies.

Table 1: Variables identification and measurement

Label	Variable	Description	Sources
FMV	Firms value	Tobin's Q = (Market value of outstanding shares + Total Liabilities + Inventory)-Current assets divide by Total Assets	Reschiwati et al., 2020
WMC	Waste	Natural logarithms of the	Okere et al., 2022

	management cost	expenses or cost of waste management for a year	
EMC	Ecological management cost	Natural logarithms of the expenses of eco-friendly management	Lawrence & Bernard, 2023
GEC	Gas emission management cost	Natural logarithms of the expenses or cost of gas emission control for a year	Hilda et al., 2024
ROA	Profitability	Net profit after tax divide total assets	Anggreni et al., 2025
FMS	Firms size	Natural logarithms of total assets	Aniefor et al., 2023
FML	Firms' leverage	Debt to equity ratio for a year	Eke et al., 2024

Results and Discussion of Findings

The results of descriptive statistics are presented in Table 2.

Table 2: Descriptive statistics

Variables	Mean	Std. Deviation	Min.	Max.
FMV	.0912	.0282	.0035	.1976
WMC	.0321	.0346	.0001	.0921
EMC	.0415	.0514	.0015	.0724
GEC	.0217	.0183	.0004	.0912
ROA	.0027	.0014	.0005	.0132
FMS	14.469	1.738	11.170	20.850
FML	.1330	.1172	.0201	.5400

Source: STATA 14 Output (2025)

Table 2 shows that firms value has an average value of .0912, standard deviation of .0282, and minimum and maximum values of .0035 and .1976 respectively. Waste management cost has a mean value of .0321 that fall in between minimum value of .0001 and maximum value of .0921 with standard deviation of .0346. More so, ecological management cost has a mean of .0415, standard deviation of .0514, minimum value of .0015 and maximum value of .0724. Gas emission management cost revealed an average value of .0217 that falls in between minimum value of .0004 and maximum value of .0912 with standard deviation of .0217. More so, returns on assets has an average value of .0027 with a standard deviation of .0014 and minimum value of .0005 and maximum value .0132. Looking at the values of descriptive statistics, the data collected are partially dispersed.

Correlation analysis was carried using Pearson moment correlation and the result is presents in Table 3.

Table 3: Correlation Results

Variables	FMV	WMC	EMC	GEC	ROA	FMS	FML
FMV	1						
WMC	-.0641	1					
EMC	.0133	-.0151	1				
GEC	.0012	-.0368	.2034	1			
ROA	.0081	.0179	.0838	.1133	1		
FMS	.0844	.0108	.0291	.0223	.1122	1	
FML	-.0002	.1102	.0460	-.0624	-.0063	.0415	1

Source: STATA 14 Output (2025) @5%

Table 3 shows that; waste management cost has negative correlation with firms' value, while ecological management cost, gas emission management costs, and returns on assets, have positive correlation with the value of the firms. With respect to the degree of the correlation, most of the variables were negligibly correlated, with a minimum value of .0002 and the maximum value of .2034. More so, the data collected presents no problem of multicollinearity since the highest correlation of .2034 is less than .8000 critical level of multicollinearity problem (Hair et al., 2017).

More so, normality of the data, absents of multicollinearity, and autocorrelation were tested and the result presented in Table 4.

Table 4: Diagnostic test results

Variables	VIF	1/VIF	Skewness	Kurtosis
WMC	2.8794	0.3473	.0212	6.0121
EMC	4.6119	0.2168	.0145	4.1206
GEC	3.3240	0.3008	-.0690	3.8042
ROA	3.7494	0.2667	.0397	5.6054
FMS	3.2934	0.3036	.4011	4.0122
FML	1.2500	0.7901	.7740	6.0019
Hausman test = .0000				

Source: STATA 14 Output (2025)

Table 4 shows that, the absolute skewness values were all less than 1.96, and kurtosis more than 3. Hence, the data is considered to be moderately skewed and platy Kurtic. Variance inflation factor (VIF) shows the maximum value of 4.6119 with a minimum value of 1.2500, while the maximum tolerance coefficient is 0.7901 with a minimum value of 0.2168. Thus, the data are normally distributed and has no multicollinearity problem (Hair et al., 2017). Hausman model specification test of 0.000 is also significant, thus, the null hypothesis was rejected (random effect) in favor of fixed effect.

Given that the data collected are normally distributed and no issues of multicollinearity and autocorrelation, panel regression analysis was carried out and results presents in Table 5.

Table 5: Regression results

Models	Model 1		Model 2	
Variables	Coeff.	p-value	Coeff.	p-value
Constant	.5132	.0014	.0127	.0000
WMC	-.0130	.1355	.0272	.0000
EMC	.0026	.2053	.1024	.0031
GEC	.0348	.1016	.2012	.0151
ROA	.0217	.0893	.1101	.0000
FMS	.0155	.6213	.0165	.0102
FML	.1671	.3901	.0137	.0021
WMC*ROA			.1032	.0030
EMC*ROA			.0214	.0017
GEC*ROA			.0104	.0029
R2 = .5421	Adj. R2= .4460		R2 = .6072	Adj. R2= .5084

Source: STATA 14 Output (2025)

Table 5 model 1 revealed a coefficient of determination (R2) of .6072 and Adj. R2 of .5084. This implies that about 54.21% variation in the value of the companies could be explain by the explanatory variables included in model 1, while 45.79% could be explained by other factors not included in model 1. The p-value of intercept of .0014 at 5% significant level, is significant, thus model 1 is significant, hence has a good predictive power. With respect to the direct effect of environmental management costs and profitability on the value of the firms, the regression result in Table 5 model 1 shows that ecological management costs, gas emission management costs, and returns on assets have positive insignificant effect on the value of the firms, while waste management costs show negative insignificant effect on the value of the firms.

However, introducing returns on assets as moderator in model 2, revealed a higher level of significance (.0000) than the direct relationship presented in model 1. This implies that, returns on assets has improve the explanatory power of model 2. The regression result in Table 5 model 2 further revealed that, the interaction between waste management costs and returns on assets, ecological management costs and returns on assets, and gas emission management costs and returns on assets have positive coefficients with significant results (r =.1032, p =.0030; r =.0214, p =.0017; r =.0104, p =.0029 respectively). This implies that, listed manufacturing firms with higher profitability tends to engage more in environmental management activities which give them competitive advantage and significantly improve their share price. This was further confirmed by the increase in R2 value from 54.21% (model 1) to 60.72% (model 2), as it suggests that, the introduction of returns on assets as a

moderator could better predict the value of the firms. Therefore, profitability has significantly moderated the relationship between environmental management costs and the value of listed manufacturing companies in Nigeria.

Recommendations

Therefore, this study recommends that, the management of listed manufacturing companies in Nigeria should pay adequate attention to policies such as conserving biophysical environment from degradation, maintaining a balanced nature grows, installing modern equipment for waste collection and disposal, and adoption of eco-friendly production process. This, would help management to gain trust from operating community, hence improve firms' value through increase product acceptability.

Conclusion

Regression result of model 1 shows that; ecological management costs and gas emission management cost have insignificant positive direct effect on Tobin's Q, while waste management costs shows negative insignificant effect on Tobin's Q. Observing the interactive effect of profitability on environmental management costs and the value of the firms, the statistical result revealed positive significant moderating effect of profitability on the relationship between environmental management costs and the value of the firms. Therefore, the study concludes that profitability has significant positive moderating effect on the relationship between environmental management costs and the value of listed manufacturing companies in Nigeria. This implies that, listed manufacturing companies in Nigeria invest more in environmental management when they made more profit which subsequently improve their firms' value through increase share price.

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ENHANCING BIOLOGY LEARNING THROUGH THE USE OF INDIGENOUS LANGUAGE IN THE TEACHING AND LEARNING OF NERVOUS SYSTEM IN SELECTED SECONDARY SCHOOLS IN ONDO WEST LGA, NIGERIA

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Abstract

This study examined the impact of using indigenous language specifically Yoruba as the medium of instruction on students' academic achievement in the Biology topic "Nervous System." A quasi-experimental design was adopted involving pretest and posttest administered to 120 senior secondary school students from three co-educational schools in Ondo West Local Government Area of Ondo State, Nigeria. The students were divided into two experimental groups and one control group. The first experimental group was taught the topic using Yoruba language, the second using English, while the control group received no intervention. Data collected were analyzed using mean, standard deviation, and independent t-test statistics. Findings revealed a statistically significant difference in the posttest scores of students taught in Yoruba compared to those taught in English and the control group. The results suggest that using mother tongue which is Yoruba as the language of instruction has the potential to enhance comprehension and academic performance in certain science-related topics. This study supports the call for inclusive language policies in science education and affirms that indigenous languages can be effective tools for delivering scientific knowledge, particularly at the foundational learning stages.

Keywords: Indigenous Language, Nervous System, Biology Education, Mother Tongue Instruction, Student Achievement.

Introduction

Language is an important tool in education which serves as the primary medium through which knowledge is transmitted and acquired. The language of instruction in education plays a crucial role in students' comprehension and academic performance. In Nigeria, where over 500 indigenous languages exist, English remains the dominant medium of instruction, particularly in science education.

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However, research suggests that the use of indigenous languages in teaching science subjects can enhance conceptual understanding, improve retention, and foster cultural relevance in learning (Bamgbose, 2014; Okebukola, 2020). In multilingual countries like Nigeria, the choice of language for instruction significantly influences students' comprehension and academic performance, particularly in science subjects that are conceptually demanding (Adeyinka et al., 2022). The integration of indigenous languages into science education in Nigeria has garnered significant attention in recent years, driven by pedagogical, cultural, and policy considerations. Research underscores the cognitive advantages of teaching science in learners' mother tongues. Drawing on Jean Piaget's Constructivism Learning Theory, Sani (2024) argues that students build knowledge through experiences in familiar linguistic environments, which enhances conceptual understanding in subjects like biology and physics. A case study by Adeyinka et al. (2022) revealed that Nigerian pupils performed better in biology when taught in indigenous languages compared to English, as it reduced language barriers and improved engagement with complex scientific ideas. These ideas support the argument that indigenous languages can serve as effective tools for teaching science, particularly in early and middle basic education and also reported from studies which indicated that students grasp scientific concepts better when taught in their mother tongue (Adedimeji, 2017; Ogunniyi, 2011). Indigenous languages provide familiar terminologies that simplify abstract scientific ideas, reducing cognitive load (Awoniyi, 2015).

The use of indigenous language in teaching science holds immense benefits and this has been established in previous studies. For instance, according to Bamgbose (2014), using indigenous languages in science education helps preserve cultural knowledge and fosters a sense of identity. Indigenous scientific terminologies (e.g., traditional medicine, agriculture) can be integrated into curricula, making learning more relatable (Oladipo et al., 2019). Adegbija (2003), corroborated this fact by positing that ‘students are more likely to participate actively in classroom discussions when they communicate in their native language. This engagement enhances critical thinking and problem-solving skills in science’.

Cultural preservation is closely linked to the use of native languages in science instruction. The 521 indigenous languages of Nigeria act as conduits for the transmission of ecological facts, scientific methods based on local circumstances, and oral traditions. For example, through storytelling and apprenticeships in the local languages, indigenous education has traditionally incorporated vocational skills (such as agriculture and herbal medicine). However, as English becomes more and more important in affluent families' homes, globalization and English's dominance endanger this legacy by causing a gap between the language

backgrounds of pupils and the curriculum taught in schools. Proponents contend that teaching science in native tongues helps promote pride in region nal knowledge systems and rejuvenate cultural identity.

Biology, a core subject in the Nigerian secondary school curriculum, encompasses complex topics such as the nervous system, which require not only cognitive engagement but also linguistic clarity for effective understanding. The use of English, Nigeria's official language, as the sole medium of instruction often poses challenges for students whose first language is indigenous, leading to difficulties in grasping scientific concepts (Aiyedun & Ogundairo, 2023).

The National Policy on Education (Federal Republic of Nigeria, 2014) advocates for the use of the mother tongue or the language of the immediate community as the medium of instruction in the early years of education. However, this policy is predominantly implemented at the primary level, with English taking precedence in secondary and tertiary institutions. This shift may hinder students' ability to fully comprehend and engage with scientific material, as it introduces a linguistic barrier at a critical stage in their educational development (Osungbemiro et al., 2013).

Recent studies have highlighted the benefits of incorporating indigenous languages into science education. For instance, code-switching between English and Yoruba has been shown to enhance students' understanding of scientific concepts by providing explanations in a language they are more familiar with (Aiyedun & Ogundairo, 2023). This bilingual approach not only aids comprehension but also fosters a more inclusive learning environment that respects and utilizes students' linguistic backgrounds.

Furthermore, the implementation of indigenous language policies in science education has been associated with improved academic performance. Students taught in their mother tongue have demonstrated better retention and understanding of scientific concepts compared to those taught exclusively in English (Ojoo & Moyi, 2022). These findings suggest that integrating indigenous languages into science instruction can be a viable strategy for enhancing educational outcomes in Nigeria. The utilization of indigenous languages as mediums of instruction in science education has garnered significant attention in recent years, particularly within Nigeria's multilingual context. Research indicates that instruction in students' mother tongues can enhance comprehension and academic performance in science subjects.

Given these considerations, this study investigates the impact of using Yoruba as the medium of instruction for teaching the Nervous System in Biology to senior secondary school students in Ondo West Local Government Area, Ondo State. By comparing academic performance between Yoruba and English-taught groups, the research aims to provide evidence supporting inclusive language policies in science education, ultimately advocating for mother tongue integration to improve comprehension, achievement, and cultural preservation at foundational stages.

Statement of Research Problem

Although the crucial role of indigenous languages in maintaining cultural identity and promoting educational inclusion is being increasingly acknowledged, their application in science instruction is still restricted and fraught with difficulties. The majority of science instruction in many multilingual countries, especially in places like Nigeria, is given in colonial languages like English, which frequently alienates students who are more fluent in their mother tongues. This language barrier can impair understanding, lower participation, and eventually impact scientific students' academic achievement.

The core problem lies in the disconnect between the linguistic context of learners and the language of instruction. Indigenous languages often lack standardized scientific vocabulary, making it difficult for educators to convey complex concepts accurately. Additionally, there is a scarcity of teaching materials and trained personnel capable of delivering science content effectively in local languages. These challenges raise critical questions about equity, accessibility, and the effectiveness of science education in indigenous language settings.

Therefore, this research seeks to investigate the multifaceted challenges associated with using indigenous languages, especially Yoruba language predominantly spoken in southwest Nigeria, in science education. It sought to explore their impact on teaching methodologies, student understanding, and overall learning outcomes. The study aimed to identify practical solutions and policy recommendations that can bridge the gap between language and science learning, fostering a more inclusive and culturally responsive educational environment.

Methodology

Research Design

This study employed a quasi-experimental design featuring a pretest-posttest non-equivalent control group format. This approach was selected to evaluate the impact of using the indigenous Yoruba language as a medium of instruction for teaching the Biology topic "Nervous System," without the need for random assignment of

participants to groups. It facilitated comparisons among groups exposed to different instructional languages, including Yoruba (experimental), English (experimental), and no intervention (control).

The population comprised senior secondary school students from co-educational institutions in Ondo West Local Government Area, Ondo State, Nigeria. A purposive sample of 120 students was drawn from three distinct secondary schools, with each school's intact class randomly assigned to one of three groups (40 students per group, designated as Groups A, B, and C). Group A served as the Yoruba experimental group and was taught the topic exclusively in Yoruba. Group B functioned as the English experimental group and received instruction solely in English. Group C acted as the control group and received no instruction on the topic during the study period.

The instructional materials, prepared in both Yoruba and English, covered three key subtopics: (1) the meaning and structure of the nervous system; (2) the central nervous system and its components, along with the peripheral nervous system and its components; and (3) the transmission of nerve impulses. To ensure content validity and linguistic accuracy, the materials underwent rigorous validation. Three experienced Biology teachers reviewed the content for scientific accuracy and suggested revisions, which were incorporated. Additionally, Yoruba language experts validated the Yoruba version, while English language experts assessed the English version; all recommended amendments were implemented to enhance clarity and appropriateness.

Ethical considerations were prioritized throughout the study. Permissions were obtained from the relevant school authorities prior to commencement. To maintain fairness and avoid confounding variables, it was confirmed that the topic of the nervous system had not been previously taught in any of the selected schools. Participants' involvement was voluntary, and confidentiality was assured.

The procedure began with the administration of a pretest to all groups to establish baseline knowledge. Following this, Groups A and B received targeted instruction using their respective languages, while Group C did not. Upon completion of the lessons, a posttest—identical to the pretest—was administered to all participants to measure changes in achievement and assess the effects of the instructional languages. Data were analyzed using descriptive statistics (means and standard deviations) and inferential statistics (independent t-tests) to test the hypotheses.

Results

Table 1: Means and Standard Deviations of Pretest Scores for Experimental and Control Groups Yoruba and English)

GROUP	N	MEAN	SD
EEG	40	3.80	1.04
YEG	40	3.67	1.16
Control	40	4.75	2.00

Table 1 shows the mean scores for Yoruba and English Experimental groups which are 3.67 and 3.80 are almost equal while that of the Control group is the highest 4.75, this shows that neither of the two languages i.e. Yoruba and English had an advantage over the other. The S.D of all the groups also shows the English deviation of 1.04 and the Control Group with the highest of 2.00.

Table 2: Mean and Standard Deviation of post-test scores for Experimental and Control Groups

GROUP	N	MEAN	SD
EEG	40	8.47	2.91
YEG	40	13.23	2.89
Control	40	5.75	2.62

The test which was administered to the students for the pretest was also administered again as the post-test after teaching the experimental groups using English language as the medium of instruction for EEG and Yoruba language as the medium of instruction for the Yoruba Experimental group. The Yoruba Experimental Group is the highest (13.23) followed by the English Experimental group and the Control group with the following mean 4.75 and 5.75 respectively. The result showed that the students in the Yoruba Experimental Group performed better than their counterparts in EEG. The data obtained were further analysed using the t-test to verify the hypotheses.

Table 3: T-Test Comparison of Post-test scores of Experimental and Control Group

GROUP	N	MEAN	SD	T-value
EEG	40	8.47	2.91	3.65
Control	40	5.75	2.62	
YEG	40	13.23	2.89	
CG	40	5.75	2.62	7.184

*Significant at P0.01

Table 3 indicates that there is a significant difference between the experimental group and the control group because they performed better than the control group. This seems to signify that both Yoruba and English languages are effective media of instruction. Therefore, the hypothesis was rejected.

Table 4: T-Test Comparison of Post-test Scores of EEG and YEG

GROUP	N	MEAN	SD	T-value
EEG	40	8.47	2.91	3.65
Control	40	5.75	2.62	
YEG	40	13.23	2.89	7.184
CG	40	5.75	2.62	

*Significant at P0.01

Table 4 indicates the scores of students who were taught in Yoruba language performed significantly better than those who were taught in English language. This showed that there is significant difference between the Yoruba Group and the English Group in favour of the Yoruba Group. Therefore, hypothesis 2 was also rejected.

Discussion

The findings of this study reinforce the value of indigenous language use in science instruction, particularly Biology, at the secondary school level. Students taught the topic of the nervous system in Yoruba (the experimental group) demonstrated improved understanding and performance compared to those taught in English (control group). These outcomes align with earlier empirical studies by Ojerinde and Cziko (1976, 1977), and Ojerinde (1979, 1983), which showed that students instructed in Yoruba performed significantly better in Mathematics than those taught in English. Similar results were reported by Yoloye, Ojerinde, and Taiwo (1985), and further supported by Fafunwa et al. (1989), whose Ife Six-Year Primary Project revealed that children taught various subjects in their mother tongue outperformed their peers educated in English.

These findings are corroborated by Ehindero (1980) and by science education research conducted by Olanrewaju and Akinwumi (1988), Olanrewaju and Jimoh (1995), and Olanrewaju (1997), who found a positive correlation between the use of Yoruba for science instruction and student achievement. These historical findings remain relevant, especially in the context of modern discussions on culturally responsive pedagogy and inclusive science education.

Recent studies continue to affirm that using learners' first language improves cognitive engagement, retention, and concept internalization in STEM subjects (Benson, 2019; UNESCO, 2021). According to Adegbola, Adeyemo, and Akinrinade (2022), mother-tongue instruction in Nigerian secondary schools not only improves academic performance but also enhances students' interest in science subjects, helping bridge the gap between scientific abstraction and students' everyday experiences. Similarly, Adegbija and Fakeye (2020) emphasized the role of language familiarity in reducing learning anxiety and fostering classroom participation.

These results highlight the pedagogical potential of indigenous language instruction in enhancing science education outcomes. They also underline the need for curriculum developers, textbook authors, and education policymakers in Nigeria to consider bilingual or mother-tongue-based instruction models, especially in foundational science topics.

Conclusion

It was found that the experimental groups performed better than the Control group. One of the possible reasons for the performance could be attributed to the medium of instruction. Simply put, the result of the Yoruba language placed the Yoruba experimental students at an advantage over the English experimental group and the Control groups. It could be claimed that the use of Yoruba as medium of instruction contributed to the higher achievement of the experimental group.

Nervous system known to be difficult to teach and learn due to its being too wide in nature was taught and learned with relative ease using Yoruba language as medium of instruction. If we are interested in inculcating the spirit of science in our students, if we do not want to be left behind in the global more for scientific and technological development, then it is imperative for all concerned science teachers, science educators, educational administrators, curriculum developers, authors and policy makers to join forces in order to teach and learn science in a language that gives minimum difficulty to the students (Olarewaju, 1991) thereby making the desired results a reality.

However, these conclusions do not obviate the notable challenges highlighted in previous studies which identified the following critical gaps:

Lack of standardized scientific terminology in indigenous languages - This was pinpointed by Jegede (2018) when he wrote that 'many Nigerian languages lack standardized terms for modern scientific concepts, making translation difficult'.

However, it is believed that efforts by the Nigerian Educational Research and Development Council (NERDC) to develop indigenous science lexicons are still in progress.

Resistance from Stakeholders - According to Bamgbose (2014), parents, policymakers, and educators often perceive English as the language of prestige and upward mobility, leading to resistance against indigenous language instruction. In fact, many elite Nigerians perceive anyone who is incapable of speaking Queen's English as socially inferior and erroneously tag them 'illiterate'. However, these concerns are not misplaced as they stem from apprehensions about the global competitiveness of graduates taught in indigenous languages, fearing limited access to international opportunities.

Teacher Preparedness and Training - Adedimeji (2017) was of the opinion that many science teachers are not proficient in indigenous languages or lack training in bilingual education methodologies. He then suggested that professional development programs are needed to address this gap.

Policy Implementation Issues - Although Nigeria's National Policy on Education (2013) recommends mother tongue instruction in early grades, implementation remains weak due to inadequate funding and lack of enforcement.

Recommendations

- Policy Implementation: Educational policymakers in Nigeria should promote the integration of indigenous languages into science education, particularly at the junior and senior secondary levels.
- Curriculum Development: Textbooks and teaching resources should be developed in both English and indigenous languages (mother-tongue language) to facilitate bilingual learning.
- Teacher Training: Teacher education programs should include modules on effective bilingual instruction strategies to prepare teachers for mother-tongue-based teaching.
- Further Research: Future studies should explore the long-term impact of indigenous language instruction on students' interest and career choices in science fields.
- Community Involvement: Schools should engage local communities and parents in promoting and validating the use of indigenous language in educational settings.

Limitations of the Study

Despite the insightful findings, this study is not without limitations. First, the research was limited to three secondary schools within Ondo West Local Government Area, which may affect the generalizability of the findings to other regions with different sociolinguistic contexts. Secondly, the study focused solely on the topic of the nervous system in Biology; broader topics across various science disciplines may yield different outcomes. Thirdly, the relatively short duration of the intervention might not have captured long-term retention or academic benefits. Lastly, the availability of standardized bilingual instructional materials was limited, and the researcher had to develop the teaching texts, which may introduce variability in content delivery.

Future research could address these limitations by expanding the scope to more diverse regions, incorporating longitudinal studies, and utilizing a broader range of science topics.

Acknowledgements

We acknowledge the Management of Adeyemi Federal University of Education for allowing us conduct this study.

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A SCOPING REVIEW OF SOCIAL ENTREPRENEURIAL CHARACTERISTICS IN COMMERCIAL MOTORCYCLE START-UPS AND SUSTAINABILITY

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Abstract

Current global economic challenges and the evolving business landscape have intensified concerns about the survival of small businesses. Unlike large conglomerates, multinationals, and non-governmental organizations with strong financial stability and social capital, small enterprises remain highly vulnerable. Their prospects for survival in such an unfavourable economic environment therefore require critical evaluation.

Justification: A scoping review is essential to synthesize evidence on the changing characteristics of the business environment and its associated challenges. This will help elucidate the dynamics influencing artisan-level business start-ups and sustainability in Nigeria, while identifying the social entrepreneurship characteristics that support their survival.

Objective: The review aimed to determine whether concepts within the social entrepreneurship framework appropriately describe the characteristic features of small business enterprises.

Methodology: A structured scoping review was conducted using electronic database searches for relevant published studies. The review followed defined selection criteria and protocols, focusing on scoping questions related to entrepreneurial mindset, social support systems, business start-up dynamics, sustainability factors, and the prevailing economic context.

Findings: Eighty articles met the inclusion criteria. Most studies validated core conceptual elements of social entrepreneurship (SE) but did not fully demonstrate the mechanisms through which these concepts operate across various contexts. Overall, findings indicate favourable perceptions of the regulatory and normative dimensions of SE and positive associations with Social Entrepreneurship Self-Efficacy (SESE).

Keywords: Social Entrepreneurship; Social Support; Mutual Benefit; Community Support; Economic Downturn.

Introduction

Over the past decade, reports from the International Monetary Fund (IMF) and the United Nations World Economic Situation and Prospects (UN WESP) have

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highlighted a sharp global economic decline, especially in low- and middle-income countries. These regions face persistent market volatility and inadequate buffers to withstand economic shocks (IMFWEO, 2022; UN WESP, 2023; IMFWEO, 2025). In contrast, developed economies have attempted to stabilize through mechanisms such as mergers, acquisitions, and consolidations, though with limited success. Despite these efforts, the economic climate remains unfavourable for many business ventures, especially smaller enterprises with minimal financial safeguards.

This instability has widened the development gap between industrialized and lower-income countries, further deepening poverty and exposing systemic weaknesses in healthcare and infrastructure. For instance, fragile health systems in these regions continue to record high mortality rates from preventable diseases. In response, financial innovations like microfinance have provided some relief to small businesses, but the broader environment remains challenging.

Entrepreneurship, defined as the process of transforming ideas into viable business ventures, has emerged as a potential solution. Entrepreneurs often identify new opportunities and take significant risks to actualize them. However, small-scale entrepreneurs are disproportionately affected by the unpredictability of financial systems and often lack the capital needed to compete or scale their businesses. Foreign aid intended to buffer these challenges has had limited impact on real economic transformation. While high-net-worth individuals continue to see strong returns on investment, grassroots entrepreneurs struggle to secure the support needed to launch or sustain ventures. This disparity raises a crucial question: Who supports new entrepreneurs and organizations whose contributions to society are not immediately profit-driven but nonetheless essential for national development?

In this context, social entrepreneurship is gaining prominence. Entrepreneurs who are motivated by social impact—rather than just profit—are increasingly recognized for their role in addressing systemic challenges. However, these neo-entrepreneurs often face difficulties attracting conventional investors unless those investors are also willing to offer social support mechanisms.

Research Problem

Small enterprises, particularly artisan trades and microbusinesses, face severe resource constraints. Often dependent on seasonal or locally demanded "non-tradable goods" (such as services or products with high transport costs), these businesses struggle with low productivity and limited market access. Consequently, they experience decreased demand, reduced labour opportunities, and a high risk of failure. Securing traditional bank loans is typically unfeasible for these small businesses due to stringent requirements. Their survival often hinges on informal support networks or alternative financing strategies. This highlights the crucial role of social entrepreneurs, individuals who drive social innovations across sectors like health, education, environment, and economic development. These entrepreneurs pursue poverty alleviation goals with entrepreneurial zeal, applying business methods and the courage to innovate within challenging environments.

While non-governmental organizations (NGOs) and donor-driven programs are commonly recognized for advancing social entrepreneurship, small businesses, especially artisan trades, remain underappreciated in this context. This raises an important question: Why are small, community-based enterprises not as widely acknowledged as NGOs, even though they play a significant role in local development?

Defining the Research Question

The review was designed around the central question: "What are the characteristic features of social entrepreneurship that influence the start-up and sustainability of commercial motorcycle businesses in Nigeria?"

This question emerged from the characteristic features of the problem phenomenon and the population contextualizing the concern. The population being Small-scale entrepreneurs, with a focus on commercial motorcycle riders; Concept: Social entrepreneurship, social capital, and social support mechanisms Contextualized in Start-up and sustainability of CM businesses in the Nigerian informal economy.

Review of Related Literature

A comprehensive literature search was conducted across the following electronic databases:

EBSCOhost, Science Direct Scopus, Web of Science, African Journal online (AJoL), and Google Scholar. Keywords and search terms were developed to capture core concepts related to social entrepreneurship and informal business models. The search was limited to peer-reviewed publications, conference papers, and grey literature published between January 2010 and July 2025, to ensure relevance to current economic and entrepreneurial realities.

Theoretical and Conceptual Clarifications

Social Entrepreneurship

Social entrepreneurship is an evolving field focused on creating social value rather than purely economic returns. Unlike traditional, profit-oriented entrepreneurs, social entrepreneurs apply business strategies to solve pressing social issues. Thought leaders like Bill Drayton and Jeff Skoll have emphasized the power of social entrepreneurship in improving education, health, and overall societal welfare.

Although its popularity is increasing, the field still lacks a unified theoretical foundation. Broadly, social entrepreneurship includes not-for-profit initiatives, socially responsible business models, and hybrid approaches aimed at generating measurable social impact. Key principles include innovation, sustainability, scalability, and an enduring commitment to serving marginalized populations. Thompson et al. (2020) recommend grounding entrepreneurship research in the "entrepreneurship-as-practice" framework, emphasizing the lived realities and practices of entrepreneurs. Mort et al. (2003) further describe social entrepreneurship as the creative pursuit of solutions to social needs, resulting in sustained social value.

In times of economic austerity, such as in Greece (Zikou et al., 2013), social entrepreneurship has emerged as a critical force for community resilience. These ventures often prioritize societal benefit over profit and are supported by NGOs, civil society groups, and grassroots initiatives. In Tanzania, Allen et al. (2010) applied a participatory action research approach to improve malaria diagnosis using social entrepreneurship principles. Their model emphasized local stakeholder innovation and the use of business frameworks to address healthcare challenges—demonstrating the relevance of social entrepreneurship even in cost-intensive sectors. Urban (2013), studying South Africa, demonstrated how social entrepreneurship helps address systemic inequalities in education, health, and employment, particularly where traditional government initiatives fall short. Social entrepreneurs in such contexts act as change agents who create and sustain value by relentlessly pursuing opportunities to improve society. Thus, in the face of today's economic realities, social entrepreneurship has become increasingly vital for sustaining businesses that may not immediately attract commercial investors but have the potential to generate long-term social returns. This study reviews literature and theories that define the characteristics and frameworks of social entrepreneurship and highlights the knowledge gaps this review seeks to address.

Conceptual framework

This study draws on three key concepts: social entrepreneurship, social capital, and social support. Together, these provide the basis for understanding relevant factors associated with small business start-ups and sustainability, particularly in commercial motorcycle riding enterprises.

Social Capital - Social capital refers to the networks and relationships that enable trust, reciprocity, and access to resources (Adler & Kwon, 2002; Paldam, 2000). Putnam (2000) defines it as social networks characterized by norms of reciprocity and trustworthiness. Structural views emphasize the importance of network ties, while dynamic perspectives focus on trust, values, and shared norms. In entrepreneurship, social capital is vital for identifying opportunities, accessing information, and building trust within business ecosystems.

Social Support - Social support is particularly crucial for aspiring entrepreneurs in developing economies. In Nigeria, cultural preferences for civil service jobs often overshadow entrepreneurship, despite the growing need for self-employment in the face of high youth unemployment (Mustikawati & Bachtiar, 2008). Support from family, peers, and community is instrumental in overcoming this bias and fostering entrepreneurship.

Various types of social support exist, emotional, financial, informational, and instrumental (Schwarzer & Rieckmann, 2000; Cobb, 1979). For example, emotional encouragement helps entrepreneurs cope with stress, while financial assistance and practical advice enable them to navigate uncertainties. In the case of commercial motorcycle riders (popularly called "Okada" riders in Nigeria), such support systems are vital for both start-up and long-term sustainability.

Entrepreneurial aspirations are also shaped by the support—or lack thereof—received from reference groups like parents, siblings, and teachers (León, Descals, & Domínguez, 2007). Studies show that absence of such support significantly reduces confidence and persistence among youth entrepreneurs (Amalia, 2012).

Justification of the Review

This scoping review sought to map and summarize the characteristic features of the changing landscape of business world and associated challenges based on available evidence for elucidation of the dynamics involved in Artisan-level business start-ups, particularly the commercial motorcycle (CM) riding businesses in Yaba, Local Government Area, Lagos, Nigeria. and sustainability in Nigeria. Such scoping reviews are needed to provide better understanding of the social entrepreneurship characteristics involved in the survival of such systems. Given the remarkable growth of commercial motorcycle riding in Nigeria over the past decade, it is pertinent at this time to define and document the nature of the economic challenges faced by this industry and to discuss insights that may be valuable for others.

Considering the changing landscape of the business world warrant questions about the dynamics of the survival of small businesses to be raised. Characterized by lack of financial securities and social capital, unlike the well-developed features of the conglomerate's multinational and the Non-governmental Agencies, what hope is there for this group in such an unfavourable economic situation for survival of small businesses.

Small businesses, particularly those in artisan trades, health, education, and poverty alleviation, face substantial sustainability challenges in developing countries. These businesses often struggle to gain traction unless they adopt social entrepreneurial principles. Yet, there is limited empirical understanding of how these principles are operationalized in such contexts. This review seeks to address that gap by exploring how social entrepreneurship contributes to the start-up and sustainability of commercial motorcycle businesses in Yaba Local Government Area, Lagos, Nigeria. Given the rapid growth of this sector in the past decade, it is timely to examine its underlying economic and social dynamics. By analysing the characteristic features of social entrepreneurship and mapping the ecosystem of support around these small businesses, this study aims to generate insights that may inform practice and policy in other similar settings.

Methodology

This is a scoping review that systematically mapped existing evidence on the role of social entrepreneurship in the establishment and sustainability of small-scale businesses, specifically commercial motorcycle (CM) riding enterprises in Nigeria. The approach is appropriate for synthesizing diverse sources and identifying key concepts, theories, and knowledge gaps in an emerging field with limited empirical clarity.

Following the framework proposed by Arksey and O'Malley (2005) and refined by Levac et al. (2010), this review aims to collate and categorize relevant research without assessing the quality of evidence.

Study Selection

The study selection process adopted were based on defined inclusion and exclusion criteria as described in table 1.

Table 1. shows the inclusion criteria and exclusion criteria

Inclusion criteria	Exclusion criteria
Discussed social entrepreneurship in low- or middle-income countries	Focused exclusively on formal-sector entrepreneurship
addressed informal sector businesses	did not provide empirical or conceptual discussion of social entrepreneurship
with a focus on transport or trade	lacked relevance to the Nigerian or Sub-Saharan African context,
identified elements of social capital,	
social support, or entrepreneurship-related theory	
provided contextual insights into sustainability, scalability, or innovations in small businesses	

Data Extraction and Charting

Eighty articles were extracted from the pool of included studies, key information was extracted and organized into a structured chart that included Author(s) and year of publication, study location and problem addressed and findings from the studies, entrepreneurial characteristics or interventions described, summary of findings related to start-up support, community dynamics, and sustainability. This charting enabled thematic analysis and synthesis of recurring social entrepreneurship features and support mechanisms applicable to commercial motorcycle enterprises contextualized within the domain of the review question. Because of limitation of space imposed by the number of pages for this submission, tables and flow charts are omitted. However, a summary of the articles is included in the result to illustrate the resources involved in the thematic analysis of the problem phenomenon and synthesis of the findings and conclusions.

Ethical Consideration

Since this study involved a review of publicly available literature, no ethical approval was required. However, the research process adhered to established ethical standards for integrity, citation, and data handling.

Discussion of Findings

Summarizing, and reporting the Findings

This scoping review sought to address the question warranting the study "What are the characteristic features of social entrepreneurship that influence the start-up and

sustainability of commercial motorcycle businesses in Nigeria?". The eighty published articles were reviewed and the problem phenomenon warranting the conduct of each of the studies published were analyzed and a synthesis of the finding made. Drawing from the synthesis of all 80 articles (See reference list), the following key features of social entrepreneurship (SE) emerged as most relevant thematic synthesis of the problems and findings from the reviewed articles organized into three emergent thematic categories: Motorcycle businesses can expand via franchising, digital integration, or union support.

Institutional and Structural Enablers of Social Entrepreneurship

A recurring challenge across the literature is the absence or weakness of enabling institutional frameworks. Many social entrepreneurs (SEs) operate in harsh or resource-scarce environments, requiring them to demonstrate exceptional self-efficacy and adaptability. Findings reveal that when regulatory and normative institutions are supportive, they help boost entrepreneurial confidence, particularly in marginalized or rural contexts (e.g., public health diagnostics, post-austerity ventures). Additionally, local ecosystems and national policies significantly shape entrepreneurial behaviour, especially among immigrants or underserved populations, as seen in Turkey and India. Further, institutional innovations like Islamic waqf models and hybrid business models are identified as promising pathways to merge profit and social missions. However, despite their potential, these models remain underutilized due to lack of awareness or enabling structures.

Social Capital, Networks, and Community-Embeddedness

The second major theme centres on the importance of social capital and networks. Successful SE initiatives frequently leverage bonding and bridging social ties, community identity, and stakeholder trust to achieve legitimacy and sustainability. In several contexts, such as women's cooperatives in India or community-based enterprises in the UK, shared values, democratic governance, and inclusive practices enhance impact and longevity.

Again, findings sound a note of caution that social capital alone may not guarantee entrepreneurial outcomes, especially in informal or underserved economies. There is also a growing recognition that education and narrative framing—such as those provided through media, storytelling, or structured training—can enhance SE legitimacy and learning.

Strategic Orientation and Innovation for Sustainability

A final thematic cluster highlights the need for strategic, innovation-led approaches. SEs often struggle with scaling, structured marketing, and sustainability, particularly when their ventures are purely pro-social or donor-dependent. Research underscores that imitative models, cross-sector collaboration, and context-sensitive innovations are more likely to endure.

Additionally, the emotional and motivational landscape of SEs is complex: compassion, shame, and mission-alignment all influence entrepreneurial behaviour. Many SEs also intuitively practice bricolage—reassembling available resources—to

navigate constrained environments, especially where formal business acumen or institutional support is lacking.

The synthesis and Response to the review Question

The review was premised on the raised question of "What are the characteristic features of social entrepreneurship that influence the start-up and sustainability of commercial motorcycle businesses in Nigeria?" Drawing lessons from the synthesis of all 80 articles, the following key features of social entrepreneurship (SE) emerging as most relevant include recognizing SEs as basically Mission-Driven Opportunity Recognition in which SEs begin not just from a profit motive, but from a desire to address real social needs (e.g., transport gaps in Nigeria). Start-up Okada ventures often arise in underserved regions where state infrastructure is lacking. Again, Institutional Support and Legitimacy have potential for providing the enabling factor creating the level ground for SEs to flourish where governments offer enabling regulations, not burdensome restrictions. In Nigeria, licensing, law enforcement collaboration, and road safety frameworks impact the legitimacy and endurance of Okada businesses. SE sustains when profit and purpose align, Okada services reduce unemployment while offering mobility. Social Capital and Community Integration in the context of peer support networks, unions, and cooperatives provide mutual aid, financing, and political voice. The Okada rider associations reflect bonding and bridging social capital crucial for resilience.

Nigerian Okada businesses innovate through flexible pricing, logistics integration, and mobile platforms creating local innovation and adaptation. Inclusiveness and Empowerment is a characteristic feature of SE empowerment factor for youths, migrants, and low-income individuals to achieve autonomy. Scalability and Replicability is an important consideration for successful SEs scale either deeply (within communities) or broadly (across cities) and motorcycle businesses can expand via franchising, digital integration, or union support.

Summarizing the treatise of the findings in this review, the underpinning problem phenomenon and findings converge on three key dimensions:
(1) institutional conditions and hybrid frameworks,
(2) social capital and embedded networks, and
(3) innovation and strategic capability. These dimensions collectively shape the start-up and sustainability potential of social ventures, especially in emerging and under-resourced environments.

Lessons Learned - Emerging from the innovative Nigerian Okada businesses is the Gokada technology company that started as a motorcycle ride-hailing service in Lagos. It was founded in 2018 by Fahim Saleh, a Bangladeshi-American entrepreneur. Gokada originally offered on-demand motorbike transport through a mobile app. Riders (called "pilots") were trained, wore helmets, and followed safety and customer service protocols. It helped address Lagos's traffic congestion by offering fast, point-to-point transport. The ban on commercial motorcycles on major roads necessitated the quick focus on logistics and delivery services which included

food delivery, parcel dispatch, E-commerce and last-mile logistics. Despite the tragic loss of the founder and chief executive officer, the company continued under new leadership and focused on expanding its logistics and delivery services partners with SMEs, restaurants, and e-commerce vendors to offer fast delivery.

Recommendation

Policy Brief: Leveraging Social Entrepreneurship for Sustainable Motorcycle Transport in Nigeria

Background: The Okada (commercial motorcycle) sector provides essential mobility and employment opportunities across Nigeria, particularly in underserved urban and rural areas. However, the industry faces multiple challenges, including regulatory restrictions, public safety concerns, and financial instability. Applying the principles of social entrepreneurship (SE) presents a viable framework for addressing these challenges while promoting economic inclusion, innovation, and sustainable livelihoods.

Policy Challenge: How can Nigeria create an enabling environment for Okada enterprises that ensures both public safety and the sustainability of livelihoods?

Evidence-Based Recommendations:

i).Regulatory Reforms:

- Develop clear and inclusive licensing frameworks for riders, cooperatives, and digital ride-hailing platforms.
- Formally recognize and engage rider cooperatives as key stakeholders.
- Encourage hybrid social–commercial models (e.g., Gokada-style technology platforms) that combine profit-making with social value creation.
- Provide fiscal or tax incentives for ventures that demonstrate measurable social impact.

ii).Strengthening Social Capital Mechanisms:

- Support the institutional capacity of Okada unions and cooperatives to serve as hubs for education, access to finance, and conflict mediation.
- Facilitate partnerships with microfinance institutions to enable affordable credit access and savings schemes.

iii). Promoting Inclusive Entrepreneurship:

- Expand empowerment programs targeting youth and women in commercial transport enterprises.
- Introduce community-based microgrants or revolving credit initiatives to encourage small-scale ownership and innovation.

iv).Encouraging Investment in Innovation:

- Support local development of safety technologies such as rider-tracking systems, smart helmets, and safety gear distribution networks.
- Standardize fare systems through mobile and digital tools.

- Foster collaborations among government agencies, startups, and academic institutions to generate data-driven solutions.

Target Audience:
Policymakers, transportation authorities, social enterprise incubators, rider unions, donor agencies, and urban development planners.

Conclusion
This review synthesized evidence from 80 international studies to identify the defining features of social entrepreneurship (SE) influencing the creation and sustainability of commercial motorcycle (Okada) businesses in Nigeria. The findings reveal a consistent trend of socially driven entrepreneurship that fills critical service gaps, particularly within underserved and informal economies. Positioning Okada enterprises within the framework of social entrepreneurship presents an opportunity to enhance formalization, safety, and economic inclusion. Achieving this potential requires a coordinated approach involving policymakers, regulators, financiers, and community stakeholders.
Ultimately, the sustainability of commercial motorcycle ventures in Nigeria hinges on enabling policies, community participation, hybrid value creation, and grassroots innovation. Future interventions should acknowledge these social entrepreneurial characteristics and strengthen them through targeted investments, legal reforms, and inclusive development strategies.

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THE ROLE OF TEACHERPRENEUR DEVELOPMENT PROGRAMMES AMONG TEACHERS IN NIGERIA'S BASIC EDUCATION SYSTEM

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Abstract

This paper examines the role of teacherpreneur development programmes among teachers in Nigeria's basic education system. Nigeria, like many developing countries, faces persistent educational challenges such as limited funding, teacher shortages, declining morale, and inadequate professional support. These realities necessitate a reimagination of the teacher's role beyond traditional classroom instruction. The concept of teacherpreneurship a blend of teaching and entrepreneurship has emerged as a dynamic framework for empowering educators to become innovators, leaders and economic contributors within and beyond the classroom. It explores the conceptual foundations, rationale, benefits and challenges of Teacherpreneur Development Programmes (TDPs) within Nigeria's basic education context. It draws on contemporary literature and policy reviews to argue that institutionalising TDPs can enhance teachers' professional identity, economic empowerment and pedagogical effectiveness. Through teacherpreneurship, educators can acquire skills in creativity, leadership, financial management, digital literacy and community engagement key attributes for success in the 21st-century knowledge economy. The paper also discusses barriers to implementing TDPs in Nigeria and proposes strategic recommendations for policy integration, curriculum reform, and institutional partnerships. The findings highlight that teacherpreneurship is not only a pathway to professional revitalisation but also a viable strategy for national development, poverty reduction, and sustainable educational reform.

Keywords: Teacherpreneurship, Teacherpreneur Development Programmes (TDPs), Educator Empowerment, Basic Education

Introduction

The role of the teacher has undergone a significant transformation in recent decades. Traditionally, teachers were seen primarily as transmitters of knowledge and custodians of societal values. However, the advent of globalisation, rapid technological innovation, and socio-economic shifts has expanded the teacher's role

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to include leadership, creativity, innovation, and entrepreneurship (Berg & Ferholt, 2022; Darling-Hammond et al., 2021). This transformation is even more pressing in developing nations like Nigeria, where educational systems struggle to meet the demands of the 21st century due to underfunding, infrastructural decay, and low teacher motivation (Obi & Nwosu, 2023).

The Nigerian basic education system, comprising primary and junior secondary education, serves as the cornerstone of national development and lifelong learning (Federal Ministry of Education [FME], 2020). However, the system faces significant challenges including inadequate teacher preparation, lack of innovation, low remuneration, and limited access to professional development (Ezeanya & Eze, 2022). Teachers often contend with poor working conditions, leading to diminished enthusiasm and reduced productivity (Udo & Ezeh, 2024).

Globally, the concept of teacherpreneurship teachers acting as entrepreneurs and change agents has gained attention as a means to revitalise teaching (Berry, 2023). Teacherpreneurs blend pedagogical expertise with entrepreneurial spirit to develop educational solutions, lead reforms, and generate income. This dual role positions teachers not just as facilitators of learning but also as innovators capable of contributing to national economic and social development (Ogunyemi & Adewale, 2023).

In Nigeria, however, the institutionalisation of teacherpreneurship remains at a nascent stage. Most teacher training programmes still focus narrowly on classroom pedagogy, neglecting the entrepreneurial competencies required for the modern educational environment (Oluremi & Adegboye, 2023). Consequently, teachers are often economically vulnerable, dependent solely on limited government salaries, and unable to explore innovative educational ventures.

Therefore, this paper argues that establishing structured Teacherpreneur Development Programmes (TDPs) can empower Nigerian teachers to become self-reliant, creative, and impactful educators. Through these programmes, teachers can gain skills in financial literacy, leadership, innovation, and digital technology—enhancing their role as catalysts for both educational and community development.

Problem Statement

The Nigerian educational system is experiencing a crisis in teacher quality, motivation, and retention. Despite being central to educational success, teachers often face economic hardship, limited professional growth, and low societal recognition. The system's heavy reliance on traditional teaching models has resulted in stagnation, with little room for innovation or entrepreneurship. While the global

trend in education has shifted toward developing entrepreneurial competencies among educators, Nigeria's teacher education curriculum remains largely theoretical, focusing more on subject mastery than on innovation or problem-solving (Oluremi & Adegboye, 2023). As a result, many teachers are unable to adapt to evolving educational technologies or initiate income-generating educational ventures. Additionally, there is a lack of structured institutional support for entrepreneurial learning within the teaching profession. The Teachers Registration Council of Nigeria (TRCN) has made efforts to reform teacher professional development, yet the integration of entrepreneurship into its framework remains minimal (TRCN, 2023).

These challenges collectively hinder the transformation of Nigerian teachers into creative, self-sustaining professionals. Consequently, there is a compelling need to explore how Teacherpreneur Development Programmes can serve as a strategic solution to enhance teachers' professional capacity, financial independence and contribution to national development.

Literature Review

Teacherpreneurship is an evolving concept that merges the skills of teaching and entrepreneurship. Berry (2023) defines it as a framework where teachers combine instructional expertise with entrepreneurial thinking to improve education while creating economic value. Teacherpreneurs initiate projects that address educational gaps such as developing learning resources, creating online platforms, or leading school enterprises (Adebanjo & Musa, 2022).

Unlike traditional teachers who adhere strictly to curricular guidelines, teacherpreneurs operate as change agents who apply creativity, adaptability, and leadership to transform educational outcomes. Afolayan (2023) explains that teacherpreneurs act as both educators and innovators, extending their impact beyond the classroom into communities and policy-making spaces. Teacherpreneurship draws from human capital theory and innovation theory. Human capital theory posits that investment in skills and knowledge yields societal and economic benefits (Schultz, 1961; Becker, 1993). Thus, developing entrepreneurial competencies in teachers enhances both educational quality and national productivity. Innovation theory, on the other hand, emphasizes the role of creativity and problem-solving in generating progress (Rogers, 2003). Teacherpreneurs embody these qualities by designing innovative educational products and services. In Nigeria, informal forms of teacherpreneurship have long existed. Many teachers engage in private tutoring, sale of instructional materials, or community-based education initiatives to supplement income (Oyetunde & Danlami, 2022). However, these activities are

often unstructured and unsupported by formal training. The emerging idea of structured TDPs seeks to professionalise these entrepreneurial activities, equipping teachers with business management and digital competencies (Oluremi & Adediran, 2023).

Nevertheless, systemic challenges persist such as poor policy alignment, funding shortages, and resistance from traditional educational institutions (Agbo & Nnadi, 2024). Teacherpreneurship remains underexplored in Nigeria's education reforms despite its potential to address teacher motivation and skill deficits. Countries like Kenya, South Africa, and Ghana have made strides in institutionalising entrepreneurship in teacher education. Kenya integrates digital entrepreneurship into teacher training programmes (Mwangi & Kamau, 2021), while South Africa supports teacher-led startups through incubators (Nkosi & Mbeki, 2022). In Ghana, teacher associations partner with NGOs to train teachers in community-based entrepreneurship (Mensah & Boateng, 2023). These models demonstrate that with proper support, teacherpreneurs can become vital contributors to education and the economy. Technology is a vital enabler of teacherpreneurship. The widespread adoption of smartphones, internet access, and online learning platforms allows teachers to reach broader audiences and create income streams from digital education services (Ezeanya, 2023). Nigerian teachers can leverage these tools to develop virtual classrooms, online tutoring services, or digital learning products (Olaniyi & Udoh, 2023). However, infrastructural barriers such as poor connectivity and power supply still limit the potential of digital teacherpreneurship, especially in rural areas (Udo & Ibe, 2024). Teacherpreneurship in Nigeria faces several barriers: insufficient funding for professional development, lack of awareness, cultural perceptions, gender constraints, and weak policy enforcement (Adeleke & Chukwuemeka, 2024; Agbo & Nnadi, 2024). Additionally, limited access to mentorship and networking opportunities prevents teacherpreneurs from scaling their innovations (Oluremi & Adegboye, 2023). Overcoming these obstacles requires a coordinated approach involving government agencies, educational institutions, and the private sector.

Methodology

This study adopted a qualitative descriptive research design focusing on the analysis and synthesis of existing literature, official policy documents, and theoretical perspectives related to teacherpreneurship and professional development in Nigeria's basic education system. The method was selected because it allows for a comprehensive exploration of emerging ideas and policies rather than direct empirical testing.

The descriptive design emphasizes analytical depth, conceptual exploration, and narrative synthesis. It was appropriate for this study since the objective was to explore the role and potential impact of Teacherpreneur Development Programmes (TDPs) rather than to measure quantitative variables. This design enabled a holistic review of multiple data sources, offering interpretive insights into the opportunities and challenges of teacherpreneurship in Nigeria.

The population for the study consisted of all teachers in Nigeria's basic education subsector—specifically those serving in primary and junior secondary schools, as well as teacher educators in colleges of education and continuous professional development institutes. The study also examined the roles of educational policymakers, professional associations such as the Teachers Registration Council of Nigeria (TRCN), and supporting NGOs involved in teacher training.

Peer-reviewed journal articles were sourced, focusing on teacherpreneurship, innovation in education and entrepreneurship training. Official reports and policy documents from the Federal Ministry of Education (FME, 2020) and the TRCN (2023). Books and empirical studies on global and African teacherpreneurship models (Berry, 2023; Akinbobola & Chikwendu, 2024).

Collected materials were reviewed and thematically analysed. Thematic coding helped identify recurring patterns such as the rationale for teacherpreneurship, barriers to its institutionalisation, and strategies for implementation. Themes were cross-referenced to ensure consistency with Nigeria's education policy goals and Sustainable Development Goal 4 (SDG 4) which emphasises quality education and lifelong learning opportunities for all.

To ensure trustworthiness, only peer-reviewed and policy-authenticated sources were selected. Interpretations were corroborated by triangulating multiple data sources, ensuring that conclusions drawn reflected consistent evidence. The findings were interpreted within the socio-economic and cultural realities of Nigeria's education system.

Discussion of Findings

The findings highlight that teacherpreneurship offers transformative potential for Nigeria's education sector, especially in addressing teacher motivation, financial instability, and classroom innovation. The review reveals several interrelated themes discussed below.

Findings show that when teachers are equipped with entrepreneurial skills, they become more motivated, self-confident, and innovative in their pedagogical

practices. Teachers who engage in entrepreneurial ventures such as tutoring services, educational resource design, or ICT-based learning platforms report higher levels of job satisfaction and self-efficacy (Fakolade & Adepoju, 2023). This empowerment not only improves their livelihood but also enhances their commitment to teaching and learning outcomes.

A key finding from the literature is that TDPs serve as bridges between theoretical teacher education and practical professional realities. Nigeria's teacher education curriculum has long been criticised for its overemphasis on theory (Oluremi & Adegboye, 2023). By incorporating entrepreneurship modules, TDPs promote experiential learning, project-based innovation, and reflective practice helping teachers translate theory into actionable classroom strategies (Nwokedi & Eze, 2024).

Economic vulnerability is one of the major causes of low teacher morale in Nigeria. Through teacherpreneurship, teachers gain financial resilience by creating supplementary income streams (Oyetunde & Danlami, 2022). For example, a teacher can design and sell digital lesson plans, start educational YouTube channels, or partner with NGOs for training consultancy. The ability to diversify income reduces dependence on government salaries and elevates teachers' social status within their communities.

Teacherpreneurs contribute significantly to economic growth and social development. Teachers who become innovators and entrepreneurs stimulate local economies by providing employment, offering community education programmes, and mentoring youth in entrepreneurial thinking (Okafor & Salisu, 2023). In this way, teacherpreneurship aligns with Nigeria's Economic Recovery and Growth Plan (ERGP) and supports national objectives of job creation and innovation.

Digital technology has become a critical enabler for teacherpreneurs. Platforms such as Google Classroom, YouTube, Coursera and Edmodo provide teachers with global reach and monetisation opportunities. Teachers can offer virtual classes, develop mobile learning apps, or share instructional videos. However, technological limitations, particularly in rural Nigeria, restrict widespread participation (Ezeanya, 2023; Olaniyi & Udoh, 2023). Therefore, digital literacy and infrastructure must form integral components of TDPs.

Despite its benefits, the institutionalisation of teacherpreneurship in Nigeria faces barriers. Findings indicate that funding constraints, weak policy frameworks, and resistance to change are major impediments (Adeleke & Chukwuemeka, 2024; Agbo & Nnadi, 2024). Most professional development programmes lack an

entrepreneurial focus, and bureaucratic bottlenecks within ministries slow down reforms (TRCN, 2023). Moreover, gender inequality further marginalises women teachers from accessing entrepreneurial opportunities due to cultural norms and domestic responsibilities.

Countries such as Kenya and South Africa offer useful lessons. Kenya's Teacher Digital Empowerment Programme (TDEP) integrates entrepreneurship with ICT training (Mwangi & Kamau, 2021), while South Africa's teacher incubators promote start-up culture within schools (Nkosi & Mbeki, 2022). These models demonstrate the potential of partnerships between governments, NGOs, and private enterprises. Nigeria can replicate such frameworks through collaborative funding and mentorship networks for teachers.

Recommendations

Based on the findings, the following recommendations are proposed to strengthen Teacherpreneur Development Programmes (TDPs) in Nigeria's basic education system:

Teacherpreneurship should be formally included in both pre-service and in-service teacher training curricula across all colleges of education and universities. Entrepreneurship modules must focus on creativity, financial literacy, business ethics and digital innovation.

Governments should create dedicated budget lines for teacherpreneurship, supported by public-private partnerships. Microfinance institutions can provide soft loans to teachers pursuing educational ventures, while NGOs can support mentorship and start-up grants.

To bridge the digital divide, the government must invest in rural internet connectivity, electricity, and ICT hubs in teacher training institutions. TDPs should prioritise digital literacy and the use of technology for instructional and entrepreneurial purposes.

A national policy framework should be developed to institutionalise teacherpreneurship. The TRCN, National Teachers' Institute (NTI), and Federal Ministry of Education must align policies, eliminate overlaps and streamline certification and monitoring processes.

Mentorship programmes pairing experienced entrepreneurs and educators should be established to guide teacherpreneurs. Professional learning communities can serve as platforms for sharing success stories, innovations and business opportunities.

Women teachers should receive targeted support through flexible TDP schedules, childcare-friendly training, and gender-responsive financing schemes to ensure

equitable participation.

To ensure accountability, TDPs should integrate measurable indicators of success—such as teacher satisfaction, entrepreneurial project outcomes and student performance impacts. Periodic evaluations will enable continuous improvement.

Educational stakeholders should launch campaigns promoting the legitimacy and benefits of teacherpreneurship. This will reduce cultural resistance and encourage community support for innovative teachers.

Conclusion

The imperative to reposition Nigerian teachers as innovators and economic actors cannot be overstated. This paper concludes that Teacherpreneur Development Programmes (TDPs) represent a transformative avenue for empowering educators beyond conventional teaching roles. Through structured entrepreneurship training, teachers can become self-reliant, creative, and technologically adept professionals capable of enhancing learning outcomes and community development. Teacherpreneurship bridges the gap between education and the economy, aligning the teaching profession with global trends in innovation and sustainability.

However, its successful institutionalisation requires deliberate policy support, adequate funding, gender inclusivity, and technological infrastructure. Stakeholders including government agencies, teacher training institutions, and the private sector must work collaboratively to create enabling environments where teacherpreneurs thrive.

Ultimately, fostering teacherpreneurship will not only uplift the teaching profession but will also accelerate Nigeria's progress toward inclusive education, poverty reduction, and national resilience.

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INVESTIGATING THE ROLE OF ENTREPRENEURSHIP IN PROMOTING BENIN MUSICAL CULTURAL HERITAGE

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Abstract

This paper explores the intersection of entrepreneurship and Benin music cultural heritage, examining the role of entrepreneurial strategies in preserving and promoting traditional music. Through a critical analysis of existing literature and case studies, this research reveals the complex dynamics between entrepreneurship, cultural preservation, and economic development. The paper argues that entrepreneurship plays a vital role in promoting Benin music cultural heritage, providing economic opportunities for musicians and entrepreneurs while preserving traditional music and introducing it to new audiences. However, the research also highlights the challenges facing entrepreneurs in the music industry, including limited funding, infrastructure, and cultural appropriation. This paper contributes to the existing body of knowledge on entrepreneurship, cultural heritage, and music industry development, providing insights into the complex relationships between entrepreneurship, culture, and development. The research informs strategies for promoting Benin music cultural heritage while fostering economic growth, highlighting the need for tailored support mechanisms and cultural preservation initiatives.

Keywords: Entrepreneurship, Benin Music Cultural Heritage, Cultural Preservation, Economic Development, Music Industry.

Introduction

The Benin Kingdom, located in present day southern Nigeria is an ancient and historically significant territory which in the precolonial days served as the root of many ethnic groups in Nigeria. It is celebrated world-wide for its artistic and cultural innovations and achievements. Parts of the present-day Benin Kingdom serves as the capital of Edo State, Nigeria. People from the Benin Kingdom are known as Edolites or Edos and they are ruled by a well revered monarch known as the Oba of Benin. It is also interesting to note that the Republic of Benin is named after the Kingdom of Benin in Nigeria. The Benin Bronzes serves as a pinnacle of precolonial civilization, showcasing its intangible heritage; scattered around museums in different parts of the world as a result of the looting of the British invaders in 1897. Its music is equally profound and intricate. The annual Igue

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festival of the Benins is a festival that showcases the cultures of the people including their music which is the life wire that holds the people together. Music is evident in every activity of the average Edo man. from birth to death. There is also the sacred Music called Ewini performed strictly at the Palace of the Oba. Aibuedefe and Abolagba (2014 pp 90) asserts that some of the songs of the Benin People are satirical; they expose the ills of the society, while some are didactic, used to educate and inculcate moral values. The further went to classify Benin songs as didactic, satirical and Panegyric.

Presently, this unique cultural heritage has been put under unprecedented pressure by contemporary practices. The ever-growing quest for modernization of societies, lack of access to funding, lack of infrastructure, and the prevalence of cultural appropriation has all contributed to efforts to diminish and undermine Benin music heritage. Music practitioners and other cultural stakeholders lack the support, resources and necessary strategic guidance in leveraging the entrepreneurial potentials abundant in Benin Traditional music which will in turn help in cultural preservation and the economic development of the region. The aforementioned issues raise a very crucial question on how entrepreneurial strategies can be effectively utilized to propagate and safeguard Benin's rich musical heritage, making sure that both its transmission to upcoming generations and its acceptance in the contemporary markets is made possible without compromising its authenticity. When this question is fully addressed it will bridge the gap that exists between economic opportunity and cultural continuity.

The study utilises a qualitative methodology in investigating the role of entrepreneurship in preserving and promoting Benin Music Cultural Traditions with its data gotten via participants and non-participant observation. The researcher observed the ways in which Benin traditional music is performed, marketed and consumed by different audiences. This observation provides insights into the entrepreneurial approaches employed by these musicians and possible challenges facing the sustainability of the music tradition.

A thorough review of secondary data was conducted which includes academic works, historical documents, and online sources related to the discourse. This review compliments the primary sources, provides a more contextual background to the discourse.

Theoretical Framework

To fully comprehend the unique relationship between entrepreneurship and Benin music culture, a robust theoretical framework is important. This paper fuses two

powerful theoretical lenses: Joseph Schumpeter's classic theory of innovation and the more specialized field of cultural entrepreneurship.

Schumpeter's Theory of Innovation and Creative Destruction

Joseph Schumpeter (1934) states that the entrepreneur is the primary figure in economic development, not as a mere manager, but as an innovator who challenges existing balance. The focal point of entrepreneurship, according to Schumpeter, is the carrying out of what he termed as "new combinations." He identified five main types of innovation which are stated below:

(1) the introduction of a new good,
(2) the introduction of a new method of production,
(3) the opening of a new market,
(4) the conquest of a new source of supply of raw materials,
(5) the carrying out of a new organization of any industry.

This framework systematically elucidates the work of entrepreneurs in the Benin music sector. Their activities can be related directly to Schumpeter's typology:

New Goods: A merger track blending an ancient Benin chant with a modern Afrobeats rhythm is a new artistic product. A professionally packaged album of traditional folk songs with liner notes explaining their context is also a new good, distinct from the original ephemeral performance. This innovation is seen in Shallipopi's track titiled Obapluto where he fuses an already existing Benin Folk melody with modern afro-beat material, creating an entirely new existing work.

New Methods of Production: Utilizing multi-track recording technology, digital audio workstations (DAWs), and professional mixing and mastering methods to capture the sound of the ema (drum) or egogo (gong) represents a new method of production, fundamentally different from oral transmission. This in its own way brings Benin traditional music to global limelight.

New Markets: Uploading a performance of palace music to YouTube or distributing an album on Spotify opens a global market, reaching the Benin diaspora, ethnomusicologists, and world music enthusiasts who would never have been exposed to it otherwise.

New Organization: The creation of an independent record label focusing solely on Edo music, or a digital platform for tutoring traditional instruments, represents a new organizational structure within the cultural industry.

Schumpeter's concept of creative destruction is also profoundly relevant. Entrepreneurial innovation in music does not leave the music the way it was, it is remoulded and recreated, resulting in an entirely new work. The rise of digital distribution creatively destroys the monopoly of physical media and oral transmission. The creation of fusion music may disrupt conservationist ideas of authenticity but in doing so, creates a new, more relevant form for younger audiences to consume and participate in. The entrepreneur, in this context, is a disruptive force that prevents cultural heritage from becoming a static, irrelevant relic.

Cultural Entrepreneurship: Balancing Economic and Cultural Value

While Schumpeter provides the method of innovation, the theory of cultural entrepreneurship addresses the one of a kind "what" and "why" of operating in the cultural sphere. Cultural entrepreneurs are persons who identify cultural opportunities, exploit them to create more appealing cultural goods, but their mission is inherently dual: they seek to create a lucrative art form and cultural preservation method (Lounsbury & Glynn, 2001; Daskalaki et al., 2019). This may be termed Enhanced Preservation Method; recreating to preserve.

As David Throsby (2001), a leading economist of culture, posits, cultural goods possess value that transcends their market price. This cultural value is numerous, they include aesthetic properties, spiritual importance, social integration, historical significance, and symbolic meaning. The central issue for the cultural entrepreneur is to create a viable business model without destroying the very cultural value that makes the product unique and meaningful.

To achieve this, cultural entrepreneurs act as cultural middlemen or bricoleurs (Wyszomirski, 2008). They skillfully assemble resources be it financial, artistic, technological, and social resources to order their cultural products in a way that makes them right and appealing to different audiences. For instance, an entrepreneur promoting Benin music must not only produce a good recording but also tell its story, explain its historical context, and build a brand around its authenticity. This act of "ordering" is crucial for acquiring legitimacy and resources, from securing a record deal to attracting a loyal fanbase (Lounsbury & Glynn, 2001). This paper will use this framework to analyze how Benin's music entrepreneurs navigate the delicate tightrope walk between commerce and conservation.

The Music of the Benin Kingdom

To appreciate the work of the entrepreneur, one must first understand the raw material they are working with. The musical traditions of the Benin Kingdom are not unified; it is a diverse system of genres, instruments, and social functions.

Royal Court Music: this is the highest formed Benin music performed at the Palace of the Oba of Benin Alone. This music is highly structured, sacred, and functional, primarily performed by guilds of royal musicians (ivbe-ogien) during palace rituals and major festivals like Ugie Erha Oba (a festival honoring the Oba's paternal ancestors) and Igue (an annual festival of the Benin people). The instrumentation is rich and iconic, featuring ensembles of ema Ugie and Ekasa (ceremonial drums), the resonant single-bell gong (egogo), and gourd rattles (ukuse). The lyrics are often praise songs recounting the greatness of the Oba and his influence and laying curses on his enemies and enemies of the kingdom, a form of oral historiography that legitimizes the Oba's reign (Egonwa, 2009). Access to this music is historically restricted.

Religious and Ritual Music: Beyond the palace, religious music is central to the indigenous people of Benin as all traditional and religious rites are as well accompanied with music. Shrines dedicated to various deities have their own specific repertoires of songs, and dances used to invoke spirits and enhance worship. Similarly, life-cycle events like naming ceremonies, marriages, age grade events, chieftaincy induction, and particularly funerals are accompanied by specific musical forms. More marriages and funerals, the Obito music of the Benin people shines bright. It is enjoyed by both the young and old. It fuses folk music with modern musical instruments like the Piano and lead guitar. Funeral dirges are slow, melancholic songs that reflect on life and mortality, expressing communal grief and paying respect to the deceased. This music is deeply rooted in community life and carries immense spiritual significance.

Edo	English
Vbo khin, oyemweno	What is it? It is Joy
Oyemwo’ kpia	Joy of a Male Child
Oyemwo’Khuo	Joy of a Girl Child
Oyemwe’kia, Oyemw’ uhe	Joy from the parents Genitals
Oyemw’igho	Joy from money

The above lyrics are from a popular folk song used in Naming ceremonies and weddings.

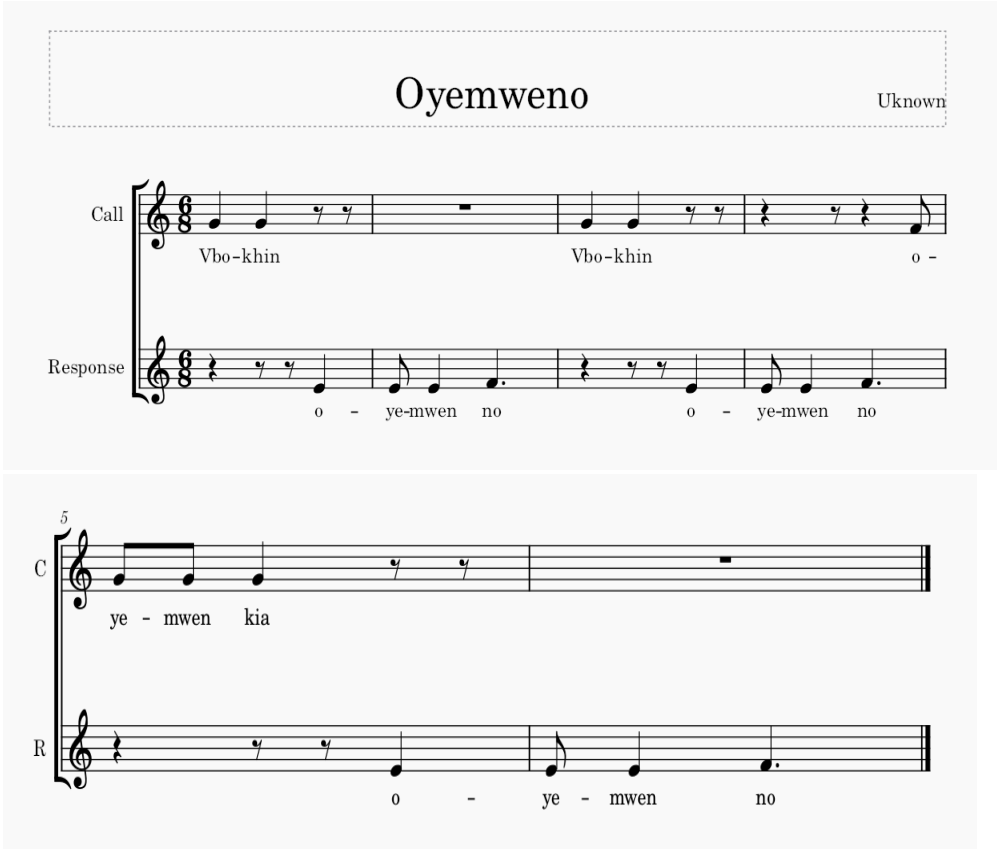



Fig1 photograph of a Benin music entrepreneur performing at a show accessed from https://shorturl.at/Xfy7O 18th July, 2025) (Also see https://youtu.be/0c5R4oco67g)

Folk Music and Popular Traditions: This category encompasses a broad range of music for social occasions, storytelling, and work. It includes children's game songs, women's chorus music, and storytelling traditions where narratives are interspersed

with songs. In the 20th century, these folk roots blended with outside influences (like Ghanaian highlife and Western instrumentation) to create a vibrant modern Edo popular music scene. This fusion laid the groundwork for today's entrepreneurs who continue to innovate within this space. The lyrical content is often rich with proverbs and social commentary, serving as a vehicle for transmitting cultural values and norms.

This diverse sonic landscape, from the sacred drums of the court to the popular guitar-driven highlife, provides a vast and fertile ground for entrepreneurial innovation and re-interpretation.

Entrepreneurial Avenues for Promoting Benin Music

Entrepreneurial activity in the Benin music sector is diverse and multi-pronged. These avenues represent the practical application of the Schumpeterian and cultural entrepreneurship theories discussed earlier.

Record Production and Label Management: The Modern way

Historically, Benin music was an oral and performative tradition, subject to the weakness of human memory. The modern record producer and independent label owner function as the new scribes, creating permanent, high-fidelity documents of this art form. In Benin City, Lagos, and even among the diaspora, agile record labels are taking on the crucial work of identifying, recording, and marketing traditional and contemporary Edo musicians. Examples of such record labels include the Marvins records that holds Rema and shallipopi

This process is a Schumpeterian "new method of production." The entrepreneur invests his money in studio time, sound engineers, and equipment to capture the unique tonalities of indigenous instruments that were never designed for amplification. They then put this music into albums, complete with artwork and liner notes that provide the cultural context; an act of ordering as described by cultural entrepreneurship theory (Lounsbury & Glynn, 2001). For example, a label might record a master of the akpata (lute) and, in the album booklet, explain the instrument's history and the meaning of the songs. This transforms a local performance into a global cultural product, creating both economic value (album sales, streams) and immense archival and cultural value (Agbo, 2019).

Digital Archiving and Global Dissemination

The digital revolution has been the single most powerful game changer for cultural entrepreneurs. Distribution Platforms like YouTube, Spotify, Apple Music, and Bandcamp have decentralized distribution, allowing small players to bypass

traditional gatekeepers and reach a global audience. Entrepreneurs are leveraging these tools in several ways:

YouTube Channels: Numerous channels have emerged, run by individuals passionate about Edo culture. They upload vintage music videos from the 1980s and 90s, new recordings of local folk musicians, and documentaries of performances at cultural festivals. Examples of such channels are visiting Edo, Edo updates, teddy the explorer etc. These channels function as living, breathing digital archives, accessible to anyone with an internet connection. They preserve music that might otherwise be lost on decaying VHS tapes and provide a vital link for the Benin diaspora seeking connection to their heritage (Onyeji, 2021).

Streaming Platforms: Getting Benin music onto major streaming platforms is an entrepreneurial act that places it on the same "shelf" as global superstars. This not only generates revenue through royalties but also lends the music a modern legitimacy. The act of creating playlists of "Benin Highlife Classics" or "Sacred Edo Rhythms" on Spotify is a form of curatorship that guides new listeners through the genre.

Live Performance and Event Management: Curating the Experience

While digital dissemination is vital, music is fundamentally a live, communal experience, enjoyed by both the performer and the listener. Entrepreneurs in event management play a critical role in creating a market for live Benin music. This goes beyond large, state-sponsored events like EDOFEST. It includes smaller, more intimate, and regular events organized by private entrepreneurs.

These entrepreneurs organize cultural meet and greet at hotels and venues in Benin City, featuring performances by highlife bands and traditional dance troupes. They curate wedding entertainment packages that blend modern DJs with traditional musicians. In doing so, they create a sustainable performance circuit that provides regular income for artists. Their role is to package the live performance that is appealing to a modern, urban audience. This involves marketing, ticketing, securing sponsorships, and managing logistics and all core entrepreneurial functions. These events revolutionized traditional music, moving it from a purely ritualistic setting to a space of modern leisure and entertainment, thereby ensuring its continued social relevance.

Artistic Fusion and Collaboration:

To avoid becoming a museum piece, cultural heritage must evolve. One of the most significant roles of the entrepreneur is often embodied by the artist themselves, is to

facilitate artistic fusion. This involves blending traditional Benin musical elements (rhythms, melodies, language, lyrical themes) with contemporary global genres like Afrobeats, hip-hop, R&B, and electronic music.

This "new combination" creates a product that is altogether familiar and fresh, capable of captivating a younger generation that might otherwise dismiss traditional music as archaic. Contemporary artists from Edo State, such as the globally acclaimed Rema, subtly weave Benin language and cultural lyrics into their modern Afrobeats sound, acting as cultural changemakers on the world stage. Others, like Maleke Idowu, have built careers on a more explicit fusion, creating popular hits that are unmistakably rooted in Edo rhythms and proverbs. This process of eclecticism is a high-wire act of cultural entrepreneurship, requiring a deep understanding of both tradition and modern taste to create something that feels authentic rather than distorted.

Music Education as an Enterprise: Transmitting the Knowledge

Addressing the critical problem of intergenerational knowledge transfer, some entrepreneurs are turning education into a viable enterprise. This includes:

Lectures and paid podcasts to educate people on the need for cultural sustainability through music.

Developing and pitching extracurricular cultural clubs to private schools in Benin City, providing a structured way for young students to learn about their musical traditions.

The master Apprentice models, this involves young aspiring musicians fixing themselves under renowned and accomplished traditional musicians to learn from them for a paid fee or service

These educational entrepreneurs are directly creating a new system for cultural transmission, one that is formalized and monetized, providing a sustainable alternative to the declining traditional art form.

Case Study Analysis

Case Study 1: The Legacy of Sir Victor Uwaifo – The Archetypal Cultural Entrepreneur

No discussion of entrepreneurship and Benin music is complete without a deep analysis of the late Sir Victor Uwaifo (1941-2021). His entire career serves as a masterclass in cultural entrepreneurship.

i. Innovator: Uwaifo was a relentless innovator. He created a "new product" by fusing Benin folklore (like the story of "Joromi") with highlife and rock, creating a globally unique sound. He introduced "new methods of production" by designing and building his own instruments, including a famous rotating, double-necked guitar, to achieve the specific sounds he envisioned. He opened "new markets" by becoming one of the first African artists to win a Gold Disc in 1966, taking Benin-inspired music to an international audience (Collins, 2018).

ii. Cultural Middleman: Uwaifo was a master at "ordering" his work. He was not just a musician; he was a storyteller, an academic (he earned a PhD in architectural sculpture), and a curator. He established his own private museum, the "Revelation Palazzo" in Benin City, to house his artifacts and art, physically contextualizing his music within the broader Benin culture. He understood that to sell the music, he had to sell the story and the culture behind it. He skilfully balanced commercial success with a fierce dedication to promoting his Edo identity, demonstrating that economic and cultural value creation are not mutually exclusive. His legacy provides the foundational model for contemporary cultural entrepreneurs in the region.
Others on this include the late Osayomore Joseph, Agbakpan Olita, etc.

Case Study 2: The Digital Frontier (Wisdom Joe and the Beni Chorale and Philharmonic, Nigeria)
These two artists own a YouTube channel that promotes Edo Musical Heritage; they are Benin City-based entrepreneurs. This individual's activities exemplify the modern digital approach.

i. The Mission: The stated mission is to discover, digitize, and disseminate rare and endangered Edo music both sacred and social.
ii. The Business Model (Value Capture): The enterprise is sustained through a diversified model. This includes recording and posting for subscribers on YouTube and other streaming platforms like boom play, apple music, Spotify, etc. Revenue comes from YouTube's AdSense program. A Patreon account enables dedicated followers from the diaspora to contribute monthly in exchange for exclusive content, such as early access to videos or downloadable high-resolution audio. The entrepreneur also offers a paid "digitization service" for families who have old recordings they want to preserve.
iii. The Impact (Value Creation): The channels creates immense cultural value by acting as a decentralized, accessible archive. It preserves at-risk material, provides a resource for researchers, and strengthens cultural identity for a global Edo community. It also creates economic value by providing a livelihood for the entrepreneur and potentially channeling some revenue back to the artists or

communities featured, thus demonstrating a sustainable model for digital cultural preservation.

Challenges and Ethical Considerations

The path of the cultural entrepreneur is cahracterised by huge challenges and ethical dilemmas that must be navigated with care.

The Double-Edged Sword of Commodification and Authenticity The most persistent analysis of cultural entrepreneurship is the risk of "commodification" , the process by which cultural practices are stripped of their meaning and turned into saleable products for a cultural marketplace (Wyszomirski, 2008). In the context of Benin music, this could mean turning a sacred invocation into a catchy ringtone or simplifying a complex polyrhythm to fit a standard 4/4 pop structure. This "folklorization" can lead to an unreal representation of the culture, tailored for everyone's consumption, which erodes its real meaning. The entrepreneur faces a constant tension: how to adapt and package the music for a wider audience without betraying its "authentic" core and purpose.

Intellectual Property and Communal Ownership

Intellectual property (IP) law presents a profound challenge. Western-style copyright, as enshrined in the Nigerian Copyright Act, is designed to protect individual authors and original works. However, much of Benin's musical heritage is "folklore", music that is communally created and owned, passed down through generations (Solanke, 2019). Who owns the copyright to a funeral dirge that has been sung for centuries? If an entrepreneur records a traditional ensemble, who are the rights owners? Is it the performer, the arranger, or the community from which the song originates? This legal grey area leaves traditional music vulnerable to exploitation, where entrepreneurs or outside artists can appropriate communal heritage for commercial gain without equitable compensation or attribution to the source community.

Economic Viability and Structural Barriers

Despite their inventiveness, most cultural entrepreneurs in Benin operate on a lean budget. They face significant structural barriers:

i. Access to Capital: Securing loans or investment for cultural projects is notoriously difficult, as banks often view them as high-risk and intangible.

ii. Infrastructure Deficit: A lack of professional-grade recording studios, reliable electricity, and high-speed internet in some areas hinders production quality and digital distribution.

iii. Market Dominance: The Nigerian music industry is heavily centralized in Lagos and dominated by a few major labels focused on mainstream Afrobeats. Edo-centric music struggles to gain national airplay and promotional support.

The Digital Divide

While digital platforms are a blessing, they also risk creating a new form of exclusion. The digital divide; the gap between those with and without access to modern technology. This gap is real. The most traditional, often elderly and rural, musicians may lack the skills, resources, or even internet access to participate in the digital music economy. This creates a danger that entrepreneurs may only engage with the more accessible, urban-based artists, leaving the deepest pool of traditional knowledge further neglected.

Conclusion and Recommendations

Entrepreneurship is not a total cure for all the challenges facing Benin's musical heritage, but itis an undeniable step in the right direction and an indispensable force for its promotion and survival in these contemporary times. Entrepreneurs, acting as Schumpeterian innovators and cultural middle men, are performing the crucial work of recording, re-interpreting, and disseminating this rich heritage. They build bridges between the past and the present, the local and the global, the sacred and the commercial. From the foundational legacy of Sir Victor Uwaifo to the lively creativity of today's digital archivists, they are ensuring that the melodies and rhythms of the Benin Kingdom are not silenced by the noise of modernity.

To amplify their impact and mitigate the inherent challenges, a supportive and enabling ecosystem is required. This paper concludes with the following actionable recommendations:

Develop Targeted Government and Institutional Support: The Edo State Government and relevant federal agencies should move beyond rhetoric and establish a dedicated Cultural Enterprise Fund. This fund could offer low-interest loans, seed grants, and matching funds specifically for ventures in the cultural sector. Furthermore, establishing subsidized Cultural and creative Hubs like the victor Uwaifo Creative Hub and soundstages in Benin City with affordable access to professional recording studios, rehearsal spaces, and co-working areas would lower the infrastructural barriers for emerging entrepreneurs.

Modernize and Adapt Intellectual Property Frameworks: There is an urgent need for IP reform. This should involve amending the Nigerian Copyright Act to include specific provisions for the protection of folklore and traditional knowledge, perhaps

establishing a system of unique rights that recognize communal ownership. In parallel, non-governmental organizations and legal aid groups should provide free workshops and legal clinics for musicians and entrepreneurs on how to navigate copyright, licensing, and equitable revenue-sharing agreements.

Promote Public-Private Partnerships for Large-Scale Projects: Strategic partnerships can achieve what individual entrepreneurs cannot. The government could partner with telecommunications companies (like MTN or Glo) and financial institutions to sponsor a large-scale, professional Benin Music Archival Project. This project would professionally record, digitize, and meta-tag a vast swath of the kingdom's musical heritage, creating a national asset and a resource for all.

Integrate Cultural Entrepreneurship into Education: To cultivate the next generation of cultural custodians, the principles of arts management and cultural entrepreneurship should be integrated into the curriculum at secondary and tertiary levels, particularly at institutions like the University of Benin, Benin Institute for musical Arts and Ambrose Alli University. This would equip young people with the skills to build sustainable careers in the creative industries, seeing their heritage not just as a subject of study but as a source of opportunity.

By embracing and strategically supporting its cultural entrepreneurs, the Benin Kingdom can ensure that its unique and invaluable musical heritage remains not a relic to be preserved under glass, but a living, breathing, and evolving tradition that continues to enrich the lives of its people and the world.

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ENTREPRENEURIAL ORIENTATION IN OFFICE TECHNOLOGY AND MANAGEMENT: PATHWAYS TO SUSTAINABLE ECONOMIC DEVELOPMENT IN POLYTECHNIC IN SOUTHWEST NIGERIA

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Abstract
The role of Entrepreneurial Orientation (EO) is vital not only to convert educational programmes into engines of sustainable economic development but also to the overall development of society. This study explored the impact of the dimensions of EO: innovativeness, risk taking, proactiveness, and competitive aggressiveness on entrepreneurship capacity of Office Technology and Management (OTM) students and graduates of Polytechnic in Southwest Nigeria. A descriptive survey research design was employed. The participants of the study were OTM teachers, students and professionals from the industry and 300 sample were chosen by multi-stage sampling method. We collected data through structured questionnaires on a four-point Likert scale and the data was analyzed with descriptive statistics (mean and standard deviation) and inferential methods (t-test). Results showed that the dimensions of EO positively influenced the entrepreneurial potential of OTM graduates. Association of digital skills, business incubation and industry partnership on entrepreneurial outcomes was significant. But institutional safety nets and policy landscapes faired less well. This study finds that EO is an essential driver of graduate enterprise but needs more institutional support. It suggests curricular re-focus, spending on digital tools and a better industry-academia interface to enable sustainable entrepreneurship through OTM education.

Keywords: Entrepreneurial Orientation, Digital Skills, Institutional Support, Sustainable Development

Introduction

In the rapidly changing world economy, Entrepreneurial Orientation (EO) is known to be a significant factor of innovation, competitiveness and sustainable development in the Higher Education (HE) context like Polytechnic. As technical institutions established to graduate technically sound and self-reliant products, Polytechnic have a strategic role in sustaining the economic diversification of Nigeria through the inculcation of entrepreneurial competencies. Similarly, EO indicated by innovativeness, proactiveness, risk-taking, autonomy and competitive aggressiveness provides students with the attitudes and skills crucial for recognizing and acting upon attractive opportunities in a corporate environment (Lumpkin &

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Dess, 2001; Covin & Wales, 2019). In the case of Office Technology and Management (OTM), the EO process is essential in reforming the old system of teaching shorthand and typewriting to a dynamic and innovative discipline that encourages creativity, resilience and economic development.

The curriculum of Office Technology and Management has for so long been set aside for administration and secretarial training, but with the current trend in the labour market, a new look is needed for this curriculum with entrepreneurial and ICT modules in view. Incorporating EO in the OTM education can help produce graduates not only as 'job seekers' but as 'job creators' with entrepreneurial skills to start a business by be seeking new opportunities and challenges through personal initiatives, which will be the builders of industries with innovative skills, accepting technological changes. Entrepreneurship education embedded in vocational programmes is expected to improve employability and economic participation (Onuma, 2020; Ibrahim & Ogundele, 2022). Furthermore, in the digital age, the possibility for OTM graduates to apply technologies such as cloud computing, virtual office tools and digital communication platforms is a necessary condition for the implementation of competitive microfirms and service-oriented businesses that can promote regional development.

In the Southwest geopolitical zone of Nigeria, the integration of EO into OTM education may represent a tactical lane to economic renewal. Regionally sustainable economy can be reinforced by focused interventions that mainstream EO practices in Polytechnic education, facilitated by policy that stimulates industry-academia partnerships, business incubation, and access to finance. As emphasized by Akinbami and Afolayan (2021), institutions of learning with entrepreneurship potential are in a better place to provide meaningful contributions to the Gross Domestic Product (GDP), youth joblessness, and innovation ecosystems. Therefore, the objective of this study is to empirically explore the ways in which EO in the OTM programmes in Southwest Nigerian Polytechnics could enhance sustainable economic development.

The main purpose of this study is to investigate Entrepreneurial Orientation (EO) and sustainable economic development in Office Technology and Management (OTM) programmes of Polytechnic in Southwest, Nigeria. Specifically, the paper aims to measure the influence of the four dimensions of EO — innovativeness, risk-taking, proactiveness, and competitive aggressiveness — on the entrepreneurial potential of OTM students and graduates. It also intends to find out to what extent digital skills, access to business incubation shops and collaboration with industries contribute to entrepreneurial outcomes of the OTM graduates. Finally, the research aims to assess how effective are support systems and policy frameworks in encouraging EO in OTM programmes in Nigerian Polytechnics.

Based on the purpose of the study, the following research questions were generated. (i) How does entrepreneurial orientation dimensions influence the entrepreneurial capacity of OTM students and graduates of Polytechnic in the Southwest, Nigeria?

Second, how does the digital skill acquisition, business incubation opportunities, and industry partnerships affect the entrepreneurial performance of OTM's graduates? Third, to what extent do the current institutional support and policy mechanisms promote an entrepreneurial orientation in OTM programmes? Consistent with the research purposes and questions, the following null hypotheses were subjected to testing. The first hypothesis (H_{01}) states that the dimensions of entrepreneurship orientation do not significantly influence the entrepreneur capacity of OTM students and alumni. The second hypothesis (H_{02}) states that digital skills, business incubation and industry partnerships do not influence the entrepreneurial outcomes for OTM graduates. The third hypothesis (H_{03}) maintains that the provision of institutional support system and policy framework do not have significant effect on entrepreneurial orientation among OTM programmes in the Polytechnic in Southwest Nigeria.

Statement of Research Problem

With the nation's emphasis on the promotion of the study of entrepreneurship in higher institutions, the infusion of entrepreneurial orientation into the OTM curriculum has remained weak and haphazard in Nigeria's Polytechnic. It is believed that a good number of OTM graduates do not possess entrepreneurial skills and digital competencies that will empower them to compete and set up viable businesses in the changing business environment. In addition, the lack of industrial cooperation along with poor institutional support practices and business incubation models prevents the development of the entrepreneurial potential of OTM education. Consequently, it is crucial to explore how the dimensions of EO—reactiveness, risk-taking, proactiveness, and competitive aggressiveness—are operationalised in OTM programmes and their influence on the sustainable economic development in the southwest region.

Review of Related Literature

Entrepreneurial Orientation is the processes, practices, and decision-making styles that are experienced by both firms and individuals as they engage in new entry (Loasby, 1976; Lumpkin and Dess, 2001). Its dimensions (i.e., novelty, risk taking, proactiveness, autonomy, and competitive aggressiveness) are important for explaining entrepreneurial orientation. In educational settings, these dimensions have been seen to contribute to the development of creative and self-motivated graduates who can be able to either start new ventures or introduce innovations in established ones (Wiklund & Shepherd, 2005). Several studies have analyzed the phenomenon of EO in academic and work contexts. EO and student entrepreneurial performance in business-related programmes Ibrahim and Ogundele (2022) observed a positive relationship between EO and student entrepreneurial performance. A study conducted by Akinbami and Afolayan (2021) on Polytechnic graduates in Lagos State indicated that graduates' exposure to entrepreneurial training significantly accounted for graduates' self-employment and survival in micro-enterprise. Similarly, Oladipo et al. (2023) established that digital competencies with EO enhanced innovation and the job creation among technology-based graduates.

This study is grounded on the Resource-Based View (RBV), which argues that organisations develop competitive advantage through the use of internal capabilities such as human capital, entrepreneurial talent, and innovation (Barney, 1991). If brought to bear on OTM education, RBV suggests the need to endow students with entrepreneurial assets that are valuable, rare, and nonsubstitutable. Also, Schumpeterian innovation theory actu-ates the centrality of EO in economic development-focusing on the entrepreneurship role in the destruction of the market equilibrium, and the emergence of the new value chains. The Nigerian Polytechnics system has been criticized for producing graduates with limited practical skills and entrepreneurial mindset (Onuma, 2020). However, recent curriculum revisions by NBTE are beginning to incorporate entrepreneurial education. Still, there is an urgent need for programme-specific integration, especially in OTM, where the fusion of administrative, digital, and entrepreneurial skills can revolutionize employability.

New business models and entrepreneurial ventures are fostered by digital technologies. The incorporation of ICT as tools used in OTM education for the students, such as virtual office simulations, online business tools, and digital communication platforms, tends to facilitate new venture creation and creative problem-solving (Adegboyega & Shobowale, 2021). Furthermore, internal incubation centers at educational institutions also act as mentors to students, in addition to acting as a bridge between theory and reality. To support EO, entrepreneurship education and institutional-industry linkages are crucial aspects, which should be encouraged through policy measures. Research has cited favourable regulatory environments and funding schemes as essential to boosting entrepreneurial emplacement in Nigerian Polytechnic (Nwankwo et al 2022). Engaging the private sector as partners in the process provides valuable input that enhances curricula with practical knowledge, internships and investment opportunities.

Methodology

This study adopted a descriptive survey design to examine the relationship between entrepreneurial orientation and sustainable economic development among Office Technology and Management students in Southwest Nigerian Polytechnic. The population consisted of OTM educators, final-year students from five accredited Polytechnic, and industry stakeholders. A multi-stage sampling technique was used to select a sample size of 300 respondents. Data were collected using a structured questionnaire designed on a 4-point Likert scale (Strongly Agree to Strongly Disagree). The instrument was validated through expert review and tested for reliability using Cronbach's Alpha. Data collection was conducted via physical distribution and online forms. Descriptive statistics such as mean and standard deviation were used to analyze the responses, while inferential statistics, including regression analysis, were used to test the formulated hypotheses.

Results Analysis and Discussion of Findings

Table 1: Influence of EO Dimensions on Entrepreneurial Capacity of OTM Students and Graduates

S/N	STATEMENT	MEAN ($\bar{x}$)	STD DEV (σ)
1	OTM curriculum encourages innovativeness in students.	2.89	0.92
2	Students are motivated to take entrepreneurial risks.	2.78	0.96
3	Proactive behaviour is promoted in OTM courses.	2.87	0.98
4	Competitive business practices are taught in OTM classes.	2.91	0.94
5	OTM Programme enhances problem-solving capabilities.	2.82	0.98
6	Students exhibit entrepreneurial initiative.	2.84	0.94
7	OTM courses promote decision-making autonomy.	2.83	0.89

Table 1 shows the descriptive data of the influence of entrepreneurial orientation on the entrepreneurial capability of Office Technology and Management Students/Graduates in the Polytechnic in Southwest, Nigeria. Average scores across the seven items are higher than the midpoint (2.50) and range from 2.78 to 2.91, and standard deviations from 0.92 to 0.98. These findings signal a consensus of the respondents that innovativeness, risk-taking, proactiveness and competitive aggressiveness are enshrined in the OTM curriculum and are highly relevant to developing entrepreneurial characteristics among students. The overall "Agreed" comments for all items provide an indication that the Polytechnic environment is conducive to the development of these important dimensions of EO.

Table 2: Impact of Digital Skills, Business Incubation, and Industry Partnerships

S/N	STATEMENT	MEAN ($\bar{x}$)	STD DEV (σ)
1	Digital tools are integrated into OTM training.	2.79	0.95
2	OTM students have access to business incubation platforms.	2.86	0.94
3	Industry professionals are involved in OTM curriculum delivery.	2.94	0.93
4	OTM graduates utilize digital skills for entrepreneurship.	2.92	0.92
5	Business incubation centres are active in Polytechnic.	2.92	0.97
6	Internships link students with industry mentors.	2.94	0.96
7	OTM curriculum reflects real-life business practices.	2.94	0.9

The perceived influence of including digital skills, the use of business incubation platforms and industry collaborations in the OTM programmes is presented in Table 2. The mean of the items scores ranges between 2.79 and 2.94 with corresponding standard deviations from 0.92-0.97, all surpassing the cut-off of 2.50. The addition

of online technology, hands-on business experience and industry mentorship, were identified by respondents as strengths to improve the entrepreneurial success of OTM graduates. The results of this study represent the consensus that digital innovation and industry partners are crucial for enhancing students' employability, innovative capabilities, and venture creation in the programme.

Table 3: Effectiveness of Institutional Support Systems and Policy Frameworks

S/N	STATEMENT	MEAN ($\bar{x}$)	STD DEV (σ)
1	The institution supports student entrepreneurial projects.	2.89	0.96
2	Policies encourage entrepreneurship in OTM.	2.88	1.0
3	Funding is accessible for student startups.	2.99	0.91
4	Workshops and seminars on entrepreneurship are regular.	2.79	0.93
5	Industry-academia collaboration is strong.	2.86	0.96
6	Regulatory frameworks support OTM entrepreneurship.	2.99	0.94
7	Staff are trained to promote EO in students.	2.99	0.89

Table 3 assesses of the effectiveness of institutional and policy support mechanisms for developing EO in OTM programmes. Average scores on the seven items range from 2.79 to 2.99, and standard deviations range from 0.89 to 1.0 Agreed" was not uniform, with mean scores higher than 2.50 for all items. This runs counter to the results that indicate that to the extent to which institutionalized policies, financial resources, continuous entrepreneurial seminars, and industry collaboration are available, providers should be more committed to EO. The rather high means indicate the significance of the supportive policy environment and the institution's effort in the sustenance of entrepreneurial education in Polytechnic.

Table 4: Test of Influence of EO Dimensions on Entrepreneurial Capacity

Test Value (μ_0)	Sample Mean ($\bar{x}$)	T-Statistic	P-Value	Decision (α = 0.05)
2.5	2.99	17.282	0.000	Reject H_0

The outcome of a one-sample t-test testing if the influence of EO dimensions significantly deviates from a neutral point of 2.50 is shown in Table 4. Our analysis results in a sample mean of 2.99, a t-statistic of 17.282 and a p-value of 0.000, confirming significant differences at $\alpha = 0.05$. Thus, the null hypothesis (H_{01}) that there is no significant effect, is rejected. The finding does support EO size has a strong positive influence toward OTM students and graduates' entrepreneurship capacity. This supports the conclusions derived by Wiklund and Shepherd (2005) that EO dimensions are conducive to predicting entrepreneurial behaviour.

Table 5: Test of Impact of Digital Skills and Incubation on Entrepreneurial Outcomes

Test Value (μ_0)	Sample Mean ($\bar{x}$)	T-Statistic	P-Value	Decision (α = 0.05)
2.5	2.67	5.56	0.000	Reject H_0

The hypothesis test on the effect of digital skills, business incubation and industry partnerships is shown in Table 5. The computed sample mean is 2.67 a t-statistic equals to 5.56, and p-value equals to 0.000. As the p-value is less than 0.05, we reject the null hypothesis (H_{02}) and conclude that these factors have a significant effect on the entrepreneurial outcomes. These findings corroborated the report of Oladipo et al. (2023) that vocational students are increasingly innovative and better prepared for self-employment, when digital skills and industry are incorporated into vocational education.

Table 6: Test of Institutional Support and Policy Frameworks on EO Promotion

Test Value (μ_0)	Sample Mean ($\bar{x}$)	T-Statistic	P-Value	Decision (α = 0.05)
2.5	2.40	-3.412	0.0007	Reject H_0

Table 6 tests for the effect of institutional support and policy framework on the extent to which EO is supported within OTM programmes. The average value of the sample is 2.40, which is lower than the reference value of 2.50, and the t-statistic equals -3.412 with a p-value of 0.0007. As the p-value was lower than 0.05, the difference was statistically significant, but in which direction the difference occurred, suggests that some present supporting systems might be lacking or underserving. Therefore, although the difference from the benchmark is large, it is a measure of the lack of the ability to implement EO at the institutional level. This result agrees with the report of Nwankwo et al. (2022) who brought to the fore the deficiencies in the regulatory and financial support to entrepreneurship in Nigerian Polytechnic.

The results of this study lent further support to the empirical evidence on the significant influence of Entrepreneurial Orientation (EO) in driving the economic impact of Office Technology and Management (OTM) education programme on Polytechnic in Southwest Nigeria. The results show high EO dimensions (innovativeness, risk-taking, proactiveness, and competitive aggressiveness) in the curriculum of OTM. This is demonstrated in the high mean scores and good agreement among the respondents (Table 1), which proves that entrepreneurial thinking and actions already have a good foundation in OTM programmes. This is consistent with Lumpkin and Dess (2001) who argued that EO is a multi-dimensional phenomenon that is critical for an organisation to effectively cope with both the competitive and uncertain environments. It is also evident from the findings that the infusion of digital skills, business incubation chances as well as industry partnership, enriches the OTM graduates' entrepreneurial skills. As Table 2 indicates, participants considered digital tools, real world business ventures, creativity, tech entrepreneurship and innovation, and preparedness for business

creation as the factors that enable creativity and entrepreneurial skill exposure. This supports the results presented by Oladipo, Ayodele, and Oduwole (2023) on the impact of digital literacy and institutional cooperation with industry representatives on the employability and self-employment intentions of graduates. Also, ICT as a tool to leverage acquisition of vocational education in promoting entrepreneurship was underscored in the studies of Adegboyega and Shobowale (2021).

In table 3, it can be observed from the table that institutional mechanisms such as funding sources, entrepreneurship seminars, policy structures and staff development programmes are considered to be fairly effective. The test of the hypotheses in Table 6 showed a significant negative departure from the expected threshold although the mean score was higher than 2.50. This indicates that there are support mechanisms but these are possibly not well engrained or sufficiently developed to stimulate continuing entrepreneurial expansion. These results resonate with the findings of Nwankwo et al. (2022) who observed that various Nigerian Polytechnic are deficient in appropriate structure, policy alignment and financial incentives required to stimulate a functional entrepreneurship ecosystem. Additional interpretations of the descriptive findings are offered by the inferential statistics. Such results are consistent with those of Wiklund and Shepherd (2005) who had argued that EO positively influences individual entrepreneurial performance (see Table 4). Table 5 equally showed that digital transformation and incubation programmes significantly influence the entrepreneurial success of graduates, and this is in line with the work of Ibrahim and Ogundele (2022), who found that targeted entrepreneurial training improves innovation and startup intentions.

The high but disappointingly not very high mean score in Table 6, however, begs questions about others aspects of Institutional support and policy frameworks. This vacuum suggests the requirement for expression of policy commitment/regression and strategic realignment for promotion of EO in an integrated manner. It also confirms the assertions of Onuma (2020) that to be able to deliver sustainable impact, entrepreneurship education in Nigeria should go beyond rhetorics and be backstopped by practical, institutionalized support systems. The study further underlines the importance of EO in re-tooling OTM education for sustainable economic development. Curriculum, industry cooperation, institutional capacity and policy support are the areas that need urgent attention although changes have already been made to align these areas. The implication is that for EO to be maximally executed in the OTM sector of Nigerian Polytechnic to be effective, there is the need for Nigerian Polytechnic to take a more comprehensive and integrated model encompassing entrepreneurial pedagogy, digital innovation, industry relations and structural policy reforms.

Recommendations

Based on the findings of this study, the following recommendations are put forward:

The National Board for Technical Education (NBTE) and Polytechnic managements should strengthen the OTM curriculum by explicitly embedding EO dimensions.

This includes the practical application of entrepreneurial concepts through case studies, simulations, and project-based learning.

Polytechnic should prioritize the acquisition of digital tools and establish functional business incubation centers. These facilities should offer mentorship, startup funding support, and access to digital platforms for business development, in collaboration with industry stakeholders.

Institutional leaders and policymakers must enhance the structural support for entrepreneurship through sustained funding, regular training of academic staff, and the formulation of clear policies that promote entrepreneurial initiatives across departments.

Stronger partnerships with private sector actors should be fostered through curriculum advisory boards, internship opportunities, and joint entrepreneurship projects. These collaborations will ensure that OTM graduates are equipped with market-relevant skills and business networks.

Polytechnic should institutionalize robust mechanisms for tracking the impact of EO on student outcomes and regional economic performance. Regular evaluation will ensure continuous improvement and alignment with global best practices in entrepreneurship education.

Conclusion

This study has tested empirically the function of Entrepreneurial Orientation (EO) as a significant driver of sustainable economic development via OTM programmes in Polytechnics in Southwestern Nigeria. The results highlight that the dimensions of EO - innovativeness, proactiveness, risk-taking and competitive aggressiveness - are considerably integrated within the OTM curriculum, and have a positive impact on students' and graduates' entrepreneurial potential. Furthermore, the infusion of digital capabilities, business incubation practices and relationships between these institutions and the industry serve as important and positive predictor towards the success of entrepreneurs with OTM graduates likely seeing themselves as potential innovation and economic productivity drivers. But the research also shows a significant lack of institutional and policy support. Although stakeholders acknowledge the existence of support systems, the inferential analysis indicates that these systems do not prove to be very effective in fostering EO to the maximum extent. This underlines the necessity for an integrated institutional approach, not only in incorporating entrepreneurial content in academic programmes, but also ensuring the empowering environment of regular implementation of policy, empowerment and stakeholder engagement.

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ACCESSIBILITY AND APPLICATION OF INFORMATION COMMUNICATION TECHNOLOGY (ICT) IN TEACHING OF AGRICULTURAL SECIENCE IN SOME SELECTED SECONDARY SCHOOLS IN KWARA STATE, NIGERIA

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Abstract

The adoption of appropriate technology is a global ideology, embraced across all facets of human society. In line with this, the study set to investigate the availability and utilization of Information and Communication Technology (ICT) in the teaching of Agricultural Science in some selected secondary schools in Kwara State, Nigeria. The specific objectives were to assess the influence of ICT on students' academic performance, examine the level of ICT usage among teachers, identify key constraints to ICT utilization and coping strategies adopted. A descriptive survey design was adopted for the study, and data were collected using structured questionnaires administered to 120 Agricultural Science teachers.

Findings revealed that although 70% of the schools had ICT facilities, although regular usage by teachers was relatively low. Only 30% of the respondents reported frequent use of ICT in their instructional delivery. The major constraints identified included inadequately trained ICT agricultural science teachers (71.7%), irregular internet connectivity (57.5%), and insufficient maintenance of existing ICT infrastructure (61.7%). Statistical analysis further showed a positive and significant influence of effective ICT application on the teaching of Agricultural Science ($r = 0.78$; $p \leq 0.01$). Government policy support ($\beta = 0.117$, $p = 0.045$) and school location ($\beta = 0.138$, $p = 0.013$) also contributed positively and significantly. However, adequate funding and power supply, though positively related, were not statistically significant predictors. Based on the findings, the study recommends that government agencies and educational stakeholders should provide adequate training and capacity-building programs for teachers. This will enhance their proficiency in ICT usage and improve instructional delivery in teaching of Agricultural Science in secondary school.

Keywords: Agricultural Science Education, ICT Utilization, Secondary Schools, Kwara State, Nigeria

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Introduction

In the contemporary educational landscape, Information and Communication Technology (ICT) plays a pivotal role in enhancing the quality and service delivery of teaching and learning of Agricultural Science. Globally, the integration of ICT into education is seen as a catalyst for effective curriculum implementation and for preparing learners with 21st century skills. In Nigeria, and Kwara State specifically, ICT adoption in education has gained attention due to its potential to improve pedagogy, increase access to instructional resources, and foster learner's engagement.

Agricultural Science is a critical subject in Nigeria's secondary education curriculum, given the country's reliance on agriculture for economic growth, economic development, food security, and employment. However, despite governmental and non-governmental efforts to promote ICT in schools, many educational institutions particularly in rural or peri-urban areas face challenges in accessing and effectively utilizing ICT tools. These include infrastructural deficits, lack of trained personnel, limited digital literacy, and inconsistent power supply (Yusuf & Balogun, 2023).

Recent studies (Aderibigbe & Ojo, 2022; Ajani et al., 2024) underscore that ICT can transform Agricultural Science instruction by enabling access to real-time data, multimedia resources, virtual farm simulations, and collaborative learning platforms. However, the questions still borders around the degree of ICT accessibility and its actual application in classrooms across the secondary schools in Kwara State.

Although, policies and frameworks such as the National Policy on ICT in Education exists, the practical realities in Nigerian secondary schools, including those in Kwara State, suggests a disparity between policy and practice. Many schools lack basic ICT infrastructure, and teachers often feel inadequately prepared to integrate ICT tools into their teaching processes (Oyelekan & Bello, 2021). These shortcomings may compromise the delivery of Agricultural Science, a subject that demands both theoretical understanding and practical application.

Statement of Research Problem

Despite efforts by educators and policymakers to improve learning outcomes, many students in public secondary schools in Oro Metropolis continue to perform far below expectations. Peer group influence has been identified as one of the critical factor shaping students' attitudes, study habits, and overall academic achievement. However, the extent to which peer interactions contribute positively or negatively to students' performance remains unclear. This gap in understanding necessitates an investigation into how peer group influence students' academic performance, in order to provide insights for effective ICT utilization. Therefore, this study seeks to investigate the current level of accessibility and utilization of ICT in the teaching of Agricultural Science in some selected secondary schools within Kwara State, with

the aim of identifying gaps and making a blueprint concept to ameliorate the lingering gaps.

Objectives of the Study were to:

- examine the extent to which ICT facilities are accessible to Agricultural Science teachers in selected secondary schools.
- assess the level of ICT application in the teaching of Agricultural Science.
- identify the challenges faced by teachers in integrating ICT into Agricultural Science instruction.
- explore possible coping strategies for improving ICT accessibility and utilization in the teaching of Agricultural Science.

Research Questions

- To what extent are ICT facilities available and accessible to Agricultural Science teachers in selected schools?
- How are ICT tools currently being applied in the teaching of Agricultural Science?
- What challenges do teachers face in using ICT for Agricultural Science instruction?
- What strategies can enhance the use of ICT in Agricultural Science teaching?

Literature Review

Concept of influence of peer group on academic performance

Academic performance remains a central concern in educational research as it reflects not only individual learning outcomes but also the overall effectiveness of the educational system. Among the many factors influencing students' achievement, peer group interaction has attracted considerable scholarly attention. Peer influence refers to the effect that students exert on one another through companionship, communication, and shared activities. Such influence can either foster positive learning behaviors or contribute to academic decline.

Several studies have highlighted the dual nature of peer group influence. According to Zafar et al. (2024), students surrounded by academically motivated peers are more likely to adopt positive study habits and achieve better results. Conversely, association with peers who display truancy, indiscipline, or negative attitudes toward learning often leads to poor academic performance. This underscores the social learning theory, which suggests that behaviors are learned and reinforced within peer groups. In the Nigerian context, research has shown that peer influence is particularly significant in adolescence when students are more inclined to value acceptance and belonging.

Okonkwo and Eze (2022) observed that secondary school students often prioritize peer influence over academic commitment, thereby compromising their scholastic performance. Similarly, Olatunji (2021) emphasized that peer pressure could discourage students from attending classes or completing assignments, further

reducing their chances of success. Nevertheless, peer influence is not inherently detrimental. Studies by Adeyemi and Adekunle (2020) revealed that cooperative learning, peer tutoring, and positive peer modeling significantly enhance student performance, especially in resource-constrained schools. These findings suggest that the nature and direction of peer influence are mediated by school culture, teacher guidance, and family background.

Despite these insights, empirical research specific to Oro Metropolis in Kwara State remains limited. Most available studies generalize findings without accounting for local variations in school environment, community values, and socio-economic conditions. This creates a research gap, as understanding peer influence within a localized context is essential for designing targeted interventions. Addressing this gap will provide educators, parents, and policymakers with evidence-based strategies to harness positive peer influence while mitigating its negative effects.

Methodology

Research Design

This study adopts a descriptive survey design to capture the current realities concerning ICT accessibility and utilization in teaching of Agricultural Science. The approach is appropriate for gathering data from a relatively large population within a limited timeframe within the scope of the study indices.

Population of the Study

The population comprises Agricultural Science teachers in some selected public secondary schools in Irepodun Local Government Area in Kwara State.

Sample and Sampling Technique

Purposive and stratified sampling techniques was employed to select 12 schools across urban and rural areas of Irepodun L.G.As. From each school, 10 Agricultural Science teachers were selected, yielding a sample size of 120 respondents.

Validity and Reliability

The instrument was validated by subject master expertise from agricultural education department. A pilot study was conducted in two non-sampled schools, and reliability was established using Cronbach's Alpha, with a benchmark value of 0.82.

Methods of Data Collection

Data was collected through direct administration of the questionnaire during school visits. Respondents were briefed on the purpose of the study, and their confidentiality was assured.

Method of Data Analysis

Quantitative data was analyzed using descriptive statistics such as frequency counts, percentages, and mean scores.

Results and Discussion

Socio-Economics characteristics of the respondent

Out of the total respondents, 64 (56.7%) were male while 56 (43.3%) were female. This reflects a moderate gender imbalance favoring male participants. The dominance of male teachers in the teaching of Agricultural Science aligns with findings by Afolabi et al. (2023), who reported that male teachers are often more represented in science-related disciplines in Nigerian secondary schools, possibly due to long-standing gender norms and career interest patterns. Teaching Experience In terms of professional experience, the majority of the respondents have considerable teaching exposure. Specifically, 33.3% have 11–15 years of experience, followed by 30.0% with 6–10 years, 20.0% with over 16 years, and 16.7% with 1–5 years of teaching. This distribution suggests a well-grounded teaching workforce, which is a positive indicator for pedagogical stability and instructional maturity. According to Ogunyemi and Adeola (2022), teaching experience significantly influences the ability of teachers to integrate innovative methods, such as ICT tools, into classroom instruction. School Location With respect to school location, 60.0% of the respondents teach in urban areas, whereas 40.0% are in rural schools. This suggests a higher concentration of respondents from urban settings. This trend may reflect the broader national distribution of educational resources, where urban schools are typically better staffed and more accessible for research participation (Yusuf & Ajayi, 2022). The urban dominance in this sample may also imply disparities in access to teaching resources, including ICT tools, which tend to be more available in urban than rural settings (Adebayo et al., 2023)

Table 1: Shows Distribution of the Demographic Information of the Respondents (120)

Variable	Frequency	Percentage (%)
Gender		
Male	64	56.7
Female	56	43.3
Teaching Experience (Years)		
1–5	25	16.7
6–10	33	30.0
11–15	35	33.3
16+	27	20.0
School Location		
Urban	63	60.0
Rural	57	40.0

Source: Field survey, 2025

Availability and Accessibility of ICT Facilities

The availability and accessibility of Information and Communication Technology (ICT) facilities in secondary schools play a vital role in determining how effectively digital tools are used in teaching and learning. These factors are essential in showing how well technology is incorporated into the educational process. Table 2 provides detailed information on the percentage of availability and accessibility of various ICT tools that are used in the teaching of Agricultural Science within the study area..

Table 2: Availability and Accessibility of ICT Facilities

ICT Facilities	Available (%)	Accessible (%)
Desktop Computers	90.0	68.0
Projectors	25.0	85.0
Internet Access	23.0	87.0
Agricultural Multimedia CDs	47.0	43.0
Computer Laboratories	82.0	20.0

Source: Field survey, 2025

The findings show that computer laboratories were the most commonly found facility, with 82.0% of institutions having access to them. However, despite their availability, these labs were not easily accessible, with only 20.0% of students able to use them regularly. This discrepancy highlights possible challenges, such as administrative hurdles or technical issues, which may be limiting students' ability to make full use of these resources. This situation aligns with the research conducted by Yusuf and Afolabi in 2023, who emphasized that even with good infrastructure, effective usage depends on supportive policies and well-trained staff In contrast, desktop computers were available in 90.0% of the institutions and accessible to about 68.0% of students, indicating a closer match between what is provided and what is actually used.

On the other hand, projectors and internet access had a different pattern—while they were not widely available, with only 25.0% and 23.0% of institutions having them, respectively, their accessibility was quite high, at 85.0% and 87.0%. This suggests a model where these resources are shared among many users, possibly through centralized systems or limited numbers of devices. This trend is similar to what was observed in the study by Eze and Nwankwo in 2022, which looked at Nigerian public schools. Lastly, agricultural multimedia CDs were more commonly available, with 47.0% of institutions having them, but their accessibility was below average, at 43.0%, indicating that while the materials were present, they were not always reaching the intended users.

This situation may stem from several challenges, such as an insufficiency of devices that are compatible with digital resources or an inadequacy of adequate training in t he effective deployment of multimedia in education, as noted by Olojede et al. (202 4). They emphasized that robust infrastructure and proficient digital capabilities are

crucial for optimizing the utilization of information and communication technologie s (ICT) in agricultural education. The findings of this research reveal a significant di screpancy between access to ICT assets and the actual ability to utilize them profici ently, underscoring the necessity for policies that go beyond merely supplying techn ologythey must also guarantee that everyone has equitable and uncomplicated acces s. This notion aligns with the structure proposed by Adigun and Lawal (2023), whic h contends that true incorporation of ICT in education encompasses more than just p ossessing the proper devices. It also includes equipping educators, providing contin ual support for the upkeep of these technologies, and formulating policies that priori tize the requirements of students in the deployment and usage of ICT.

Constraints against Availability and Accessibility of ICT

The information detailed in Table 3 sheds light on the significant challenges that secondary schools in Kwara State encounter when it comes to having and being able to access Information and Communication Technology (ICT) for the teaching of Agricultural Science. The findings show that the biggest challenge identified by the respondents is a lack of sufficient funding, which accounts for 80.7% of the responses. This situation reflects a consistent lack of investment in educational technology across developing areas, a point that Oyelere et al. (2023) also highlighted, pointing out that regular budget allocations are essential for making progress in integrating ICT into education. Coming in second is the problem of unreliable electricity supply, which affects 74.7% of the schools. This continues to be a major issue for schools located in rural and semi-urban areas, as noted by Adebayo and Salawu (2022), who stated that inconsistent power supply hampers the proper functioning of ICT tools, making even well-equipped schools unable to fully utilize the available technology in real teaching situations. A considerable number of respondents, 70.7%, also pointed out that there is a shortage of Agricultural Science teachers who are trained in using ICT, which points to a gap in human resources that hinders the effective application of technology in the classroom. This is in line with the conclusions of Olumide and Okebukola (2024), who stressed the need for ongoing training and development in ICT teaching methods. Additionally, the high cost of acquiring ICT equipment (65.7%) and the lack of proper maintenance (61.7%) indicate that even when schools do have access to ICT tools, maintaining them over time remains a considerable challenge, affecting the long-term usability of the technology. Similarly, the inconsistent availability of internet access, which affects 57.5% of the population, and the lack of sufficient government support, affecting 53.3% of individuals, highlight deep-rooted issues within the system. These problems impact both the physical infrastructure and the overall policy environment. Furthermore, the inadequate execution of Information and Communication Technology (ICT) policies, observed in 49.2% of cases, shows a clear gap between the creation of these policies and their actual implementation. This situation aligns with the findings of Adamu and Ibrahim (2023), who stressed that without strong systems in place to monitor and evaluate ICT initiatives, these efforts may not lead to real and lasting improvements. In summary, the various challenges identified point to a complex mix of financial, infrastructural, human resource, and policy-related obstacles. To truly enhance the availability and use of

ICT in Agricultural Science education within Kwara State, these issues must be tackled together in a well-organized and collaborative way.

Table 3: Constraints against Availability and Accessibility of ICT (N = 120)

Constraints	Frequency (f)	Percentage (%)
Inadequate funding	97	80.7
Poor electricity supply	91	74.7
Inadequate ICT-trained agricultural science teachers	85	70.7
High cost of ICT equipment	79	65.7
Insufficient maintenance of existing ICT infrastructure	74	61.7
Irregular internet connectivity	69	57.5
Limited government support	64	53.3
Poor ICT policy implementation	59	49.2

Source: Field Survey, 2025

To identify coping strategies for enhancing ICT teaching of agricultural Science

The data presented in Table 4 provides a detailed insight into how respondents view different strategic approaches that could effectively improve the use of Information and Communication Technology (ICT) in the teaching of Agricultural Science within secondary schools in Kwara State. A large majority, specifically 87.5% of the respondents, highlighted the necessity of government funding and subsidies for ICT infrastructure as a crucial strategy to address existing challenges. This finding is consistent with the work of Omotayo and Adekunle (2023), who stressed that long-term success in integrating ICT into education depends on consistent investment from the public sector in both hardware and software resources. Additionally, a significant number of respondents, 82.5%, pointed out that regular in-service training for teachers is essential.

This highlights the importance of continuous professional development, which can equip Agricultural Science teachers with the necessary digital pedagogy skills. This aligns with the view of Okorie and Danladi (2024), who noted that teacher competence plays a pivotal role in the adoption of ICT in science education. The availability of reliable electricity or alternative power sources was also widely recommended by 78.3% of the respondents. This aligns with the argument made by Emefiele and Agbaje (2022), who emphasized that access to energy is a fundamental requirement alongside digital access to ensure that ICT integration functions effectively.

Furthermore, partnerships with ICT companies and the provision of subsidized internet access were also suggested by a considerable number of respondents, with 73.3% and 70.8% respectively.

These findings indicate that educators are aware of the importance of public-private collaboration in expanding digital access and reducing the financial burden associated with digital tools. This idea has been similarly echoed by Adedokun and Eze (2023). Other strategies proposed include revising the ICT curriculum and establishing agricultural resource centers, with 66.7% and 63.3% of respondents supporting these initiatives. These strategies reflect a broader systems-level approach that not only focuses on providing resources but also on improving the structural and curricular aspects of ICT integration. Moreover, 56.7% of the respondents supported the formation of ICT innovation clubs within schools, emphasizing a grassroots and student-driven method to encourage practical and collaborative engagement with technology. This approach mirrors the model suggested by Tijani and Bello (2023), where student-centered activities serve as important catalysts for digital literacy and the practical application of ICT in specific subjects.

These insights illustrate the complex and multi-dimensional nature of the coping strategies required to advance ICT-based instruction in Agricultural Science. It is clear that a comprehensive approach is needed, involving infrastructural investment, teacher training, curriculum development, and active engagement with the community or industry to ensure that the integration of ICT in education is both sustainable and effective.

Table 4: Coping Strategies for Enhancing ICT Teaching of Agricultural Science (N = 120)

Coping Strategies	Frequency (f)	Percentage (%
Government funding/subsidy for ICT infrastructure	105	87.5
Regular in-service training for Agricultural Science teachers	99	82.5
Establishment of reliable electricity/power backups	94	78.3
Partnership with ICT companies for equipment support	88	73.3
Provision of subsidized internet access	85	70.8
ICT curriculum integration and revision	80	66.7
Creation of ICT-based agricultural resource centers	76	63.3
Encouragement of school-based ICT innovation clubs	68	56.7

Source: Field Survey, 2025

Extent to which Effective Application of ICT Influence Teaching Agricultural Science

The regression model is thus expressed as $Y=\beta0+\beta1X1+\beta2X2+\beta3X3+\beta4X4+\beta5X5+\beta6X6+\beta7X7+\varepsilon$

Where; Y = Effective application of ICT
X1 = Adequate funding
X2 = Access to ICT tools
X3 = Teacher training
X4 = Adequate power supply
X5 = Internet connectivity
X6 = Government policy implementation
X7 = School location (dummy-coded)
ε = Error term

Table 5: Model Summary

Model	R	R Square	Adjusted R^2	Std. Error of Estimate
1	.78	0.61	0.59	0.47

Source: Field survey, 2025

A dependent variable; predictors: Adequate Funding, Access to ICT Tools, Teachers' ICT Training, Availability of Power Supply, Internet Connectivity, Government Policy Implementation, School Location The model summary shows an R value of 0.78, indicating a strong positive correlation between the combined independent variables and the dependent variable (effective application of ICT). The R Square (R^2) value of 0.61 means that 61% of the variance in the application of ICT in teaching agricultural science can be explained by the following predictors: adequate funding, access to ICT tools, teacher training, power supply, internet connectivity, government policy support and school location. The remaining 39% of the variance is attributed to other factors not included in the model.

Conclusion and Recommendations

The study looked into how available and accessible ICT facilities are, the problems that prevent them from being used effectively, and the ways that can help improve the use of ICT in teaching Agricultural Science in some secondary schools in Kwara State. The results showed a big difference between how many ICT resources are available and how much they are actually accessible. These resources include things like computer labs, internet access, projectors, and multimedia CDs. Even though some of these facilities are somewhat available, they are not being used much because of issues related to infrastructure, money, and the skills of the people involved.

The main problems found were not having enough money, unreliable electricity, a lack of Agricultural Science teachers who are trained in using ICT, and inconsistent internet connections.

These issues not only stop ICT from helping improve the way teaching is done but also make the digital divide in science education even bigger. However, the study also found useful solutions that people believe can greatly help in making ICT a

bigger part of agricultural education. These include getting more government support, providing ongoing training for teachers, working with companies that provide ICT services, and changing the curriculum to better fit the use of ICT.

Overall, the study emphasizes the urgent need for holistic and sustainable interventions that target not just infrastructure, but also policy, teacher competence, and curriculum relevance in ICT deployment.

Recommendations

Increased Government Investment: The government at both state and federal levels should prioritize funding for ICT infrastructure in secondary schools, with specific allocations for agricultural science education.

Capacity Building for Teachers: Regular and targeted in-service training should be organized for Agricultural Science teachers to improve their digital literacy and competence in using ICT tools effectively for instruction.

Provision of Alternative Power Supply: To address electricity challenges, schools should be equipped with solar power or other backup energy solutions to ensure uninterrupted access to ICT facilities.

Strengthen Public-Private Partnerships: Collaboration with ICT companies, NGOs, and agricultural agencies can provide technical support, donations, or subsidized ICT resources to schools.

Monitoring and Policy Implementation: Education authorities must ensure that ICT policies are not only formulated but properly implemented, with periodic monitoring and feedback systems in place.

By implementing these recommendations, the integration of ICT in Agricultural Science education can be significantly improved, contributing to enhanced teaching efficiency, student engagement, and knowledge application in this digital age.

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THE IMPACTS AND CHALLENGES OF ENTREPRENEURSHIP EDUCATION IN NIGERIA UNIVERSITIES: THE WAY FORWARD

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Abstract
The importance of including entrepreneurship within higher education has developed as a result of the rampant unemployment and underemployment rates faced by graduates, and the unbalance of skills within the working population as a whole, as seen within Nigeria. This study pays attention to, and tries to gather as much information as possible around the range of challenges in the implementation of entrepreneurship education, and the effects. The study looks into the frameworks of the education programs, the teaching methodologies, and the entrepreneurial competencies the programs build within graduates. The study as well positions, the functions and possible limitations of entrepreneurship education initiatives as seen today, including the scope of funding, lack of industry exposure, and the absence of collaborative efforts with industry. In spite of the challenges, the initiatives around entrepreneurship education in Nigeria focused on innovation to function independence, and potential job opportunities. This has as a result developed the need for more practical, comprehensive entrepreneurship education to more closely match the needs economically on the ground. The study ends with proposals for more coordinated efforts in defining policies, collaboration in teaching program design, and entrepreneurial education partnerships aimed towards enhancing the nationally focused entrepreneurship education.

Keywords: Entrepreneurship Education, Nigerian Universities, Youth Unemployment, Curriculum Development, Entrepreneurship Mindset.

Introduction

Entrepreneurship education has been adopted by several nations as means to sustain the development of their countries and improve the Gross Domestic Product. Uwazie and Igwemma (2014) in Nwaiwu, Onuoha and Ajileye which (1993). Over 400 colleges and universities in the United States of America (USA) offered courses in entrepreneurship education. Many universities in Canada offer Entrepreneurship as course of study at Undergraduate Degree and Master's degree level. Entrepreneurship was introduced into Nigerian universities following the assertive direction of the National Universities commission (NUC) to all universities to include Entrepreneurship as course of study. The objective was to equip graduates from universities with skills to produce goods and services as well as inculcate entrepreneurial qualities. It was intended that at graduation the individuals will

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become job creators and not job seekers. Entrepreneurship is the process by which individuals pursue opportunities without regards to resources; they currently control (Onwugbuta, 2017). According to Okokokwo et al. (2015), entrepreneurship is a set of activities executed by individuals to access economic exploitable opportunities, assuming risks that are equal or up to the resources at their disposal. Adequate attention to entrepreneurial ventures is a motivation by the chance of identifying a business opportunity, and the entrepreneur orchestrates the necessary components with the will and effort to complete the task despite the risks. Currently, Nigeria is confronted with challenges such as poverty, unemployment, and crime, which are closely related to the situation of graduate unemployment.

According to the Economic Survey in 2011, the unemployment rate in Nigeria stood at 23.9 percent, which indicates the country's graduate unemployment rate is also high (Nwachukwu, 2012). Prior to the introduction of entrepreneurship education, the Nigerian university educational system placed little emphasis on the acquisition of vocational skills. Unemployment of graduates in Nigeria, as Adebisi and Oni (2012) noted, is greatly due to the absence of entrepreneurial skills. Nevertheless, as Onuma (2016) pointed out, stakeholders in entrepreneurship education and empowering individuals with entrepreneurial skills, in fact, graduates, will create job opportunities upon completing their degree. Furthermore, as asserted by Dogan (2015), the mere existence of self-employed individuals in a society, as well as their increasing number, is correlated to potential entrepreneurs having access to entrepreneurship education and a will to pursue it. The entrepreneur and their employees also benefit from self-employment as it provides income.

According to Nwosu and Ohia (2009), to ensure that entrepreneurship education has a practical impact on employment generation, it must be practice-based and undergraduate students from all disciplines must complete industrial attachments in related institutions. Besides the employment of human resources, otherwise dormant capital and real estate may also become productive. Entrepreneurship education also covers behavioral simulations. Focus has to be placed on negotiation, leadership, organizational creativity, technological innovation, new product development, business opportunity discovery, exploration, long range business planning, and the development of new business technologies (Kaalyoncuoglu, Aydintan, & Goksel, 2017). The primary reason entrepreneurship education is provided in institutions of higher learning is to equip future graduates with the entrepreneurial skills to become self-sufficient, by self-employment through job creation that is targeted at also employing others. Ezeugbor and Nwachukwu (2009) believed that rising crime levels in the society are due to the absence of job and self-employment skills. The employment opportunities created by graduates are economically productive and are accompanied by employment and skill self-reliance. The direct contribution of such employment opportunities, with innovative and resourceful strategies and an acute sense of market dynamics, increases the utilization of economically productive and consumable goods and services. It also increases the economic activity of the country by raising disposable or per capita income.

Growth in productivity results from the refinement of technology as well as the improvement of the management skills of program graduates from education in entrepreneurship. Teaching entrepreneurship creates value, as participants in economically viable activities satisfy the fiscal obligations of tax payment. The development of value through entrepreneurial undertakings is a necessity in developing countries and their economic transformations. Abubakar and Adeyeye (2018) identified numerous dimensions that entrepreneurship positively influences, including personal income, general levels of consumption, domestic savings, and social phenomena including crime. For Tamuno and Ogiji (1999), entrepreneurship education qualified as education that could facilitate the advancement and expansion of an enterprise, particularly through the provision of technical and vocational training. The design of entrepreneurial education targets graduates who, as a result of the training, will possess the potential to creatively and innovatively recognize new ventures for self-employment, economic self-employment, and economic development. Entrepreneurial education also equips university graduates with essential skills in risk management.

Nigerian universities' entrepreneurship educators face multiple challenges, such as insufficient number of educators, poorly designed curricular content, absence of workshop facilities, inadequate laboratories, and scarce funding (Ebong & Nwakudu, 2017). Agbonlahor (2016) underscored poorly developed and inadequate entrepreneurship educator capacities, as well as insufficient curricular scope and infrastructural provisions, to include practical instructional delivery as dominant challenges to entrepreneurship education provision in Nigeria. While many universities provide entrepreneurship education, the fundamental change in teaching and learning processes regarding entrepreneurship education remains elusive (Nwekeaku, 2013).

One of the economic problems that the country is faced with is the unemployment rate of the youth. The employment problem of graduates in Nigeria has not been solved despite the government’s efforts at job creation. (Ubogu, 2020). The potential of the youth in every country in stimulating economic, political, and social growth is under appreciated and the reality is that the youth need to be gainfully employed. Employment under this ideology helps to improve the development and the quality of life of every country. In the problems that the society of Nigeria is faced with, the youth unemployment problem is one of the most problematic. The challenges the Nigeria youth unemployment situation is posed with includes social vices, militancy and insecurity. Monthly and annually, higher institutions of learning produce graduates that are able and willing to work, however, the jobs that are deployed in the economy do not meet the scale of employed desired. This suggests the severe need for education that will develop the unemployment problem addressing able graduates.

Education should promote independence and have a positive influence on a person's creative and innovative potential. Consequently, entrepreneurship education should be one of the focus areas to address unemployment. (Omoregie & Olubor, 2021).

Therefore, the teaching quality on all levels of education should aim at instilling the acquisition of competencies needed for self-reliance and the reduction of poverty. (Ubogu, 2010).

Statement of the Research Problems

Entrepreneurship describes a situation in which one acts on an opportunity while disregarding the resources one currently holds. It also describes a situation where one uses inadequate resources at their disposal to take advantage of an opportunity and assumes the associated risks. Graduates of universities and colleges of education contribute to the unemployment problem in the country. There seems to be a contradiction in the country; the more graduates there are, the higher the unemployment. Many schools have been established that provide entrepreneurship education, and even though graduates are unable to sustain the businesses they set out to create, they are bypassed.2.Unsustainability of the course is another gap that this study addresses. Many of the graduate that underwent the course during their school days do not involve in what they have trained for, many of them are looking for white collar jobs instead of practicing what they have learnt, it should be noted that there are no inceptives from the government for this graduate which this study addressed.

Aim and Objectives of the study

The aim of this study is to look at the impact and the challenges of entrepreneurship education in the Nigerian universities and the specific objectives are to :

A. Access the impacts of entrepreneurship education in the Nigerian Universities.
B. Examine the challenges of entrepreneurship education in Nigerian Universities.

Research Questions

1. What are the impacts of entrepreneurship education to the universities graduates in Nigeria.?
2. What are the challenges faced by the entrepreneurship graduates of Nigerian Universities?

Hypotheses of the study.

Two hypotheses were tested for the study

- Ho: There are no impacts of entrepreneurship education in the Universities
- Ho: There is no difference in the challenges faced by the entrepreneurship education in the study area.

Research Method

The method employed descriptive survey design with quantitative analysis supported by inferential statistics, the method of collecting data was done on the students that offer the course and some numbers of graduate from the study area that have underwent the training, but cannot sustain the business they are into. The research was carried out in Adeyemi Federal University of Education Ondo. The

study population comprises students that are still offering the course in part three and those that are in four hundred level. 200 respondents were selected using stratified random sampling to ensure adequate representation of different categories followed by simple random sampling within the stratum.

Primary instrument for data collection was a structured questionnaire divided into three sections; socio-demographic data for correct students involving in the course of studies and graduated students that have undergone the course of studies. Four-point Likert scale which to provide quantitative measures of respondent's perception, to ensure the instrument quality, it underwent face and content validation by two experts from the department of social studies and civic education whose feedback enhanced its clarity, relevance and courage.

The data collection was done by the researcher and assisted by field worker who ad mistered the questionnaire directly to the respondents, explain item to the respondents. Average mean value and gross mean value were used to address the research questions with a mean cut off point of 21.3 and 22.5 any average mean that is less than the gross arithmetic means will be rejected but those that are greater than the gross arithmetic means will be accepted. Chi square was used to test the hypothesis at 0.05 significant level

Result and Discussion

The findings are presented based on the two research questions. Descriptive statistics such as average means and gross arithmetic means were used to analyses the data. A cut off gross arithmetic means of 21.5 and 22.5 were used any mean greater than was recorded as accepted and those less than cut off gross arithmetic means are rejected.

Research Question 1: how are the impacts of entrepreneur education in the study are

	items	A	SA	D	SD	Mean	Remark
1	Will entrepreneurship education give you livelihood after graduation?	40	80	60	20	22.5	Accept
2	The training you undergone, will it sustain you?	50	70	30	50	21.7	Reject
3	Do you practicing the course after school hours?	80	40	60	20	23.3	Accept
4	Will it be any impact from the training you get from the school?	50	70	50	30	22.5	Accept
Gross Arithmetic Means						22.5	

From the above analysis the gross arithmetic means is the determinant of both the acceptability and rejection of the mean the. The highest mean in the categories is 23.3 is we need to accept because is greater than the gross arithmetic means. Other items both in item 4 and item 1 are in the position of acceptability but the only mean

that is less than the gross arithmetic mean is item number 2.This result shows a favorable options because only one item was rejected.

Research Question2: What will the challenges of the entrepreneurship education be?

Table2:

	items	A	SA	D	SD	mean	Remarks
1	The challenges make the course not to gain adequate relevance	60	30	50	60	20.4	Reject
2	Will the school authority combat these challeges	70	40	50	40	22.5	Accept
3	Will students offer the course do to the challenges	50	70	60	20	22.9	Accept
4	Challenge such as the non-inclusivity of grants by the government will affect the sustainability of the course	40	60	20	80	19.2	Reject
	Gross arithmetic means					21.3	

From the table above the gross arithmetic means of the analysis is 21.3 any number greater than the number will be accepted, but any number less that the gross arithmetic means will be rejected, From that analysis we can see that only two numbers are greater than the GAM which is item which is item two and item three are accepted according to the analysis, but item number one and four are rejected because they are lesser than the gross arithmetic means. Items two and four are favourable because they were accepted.

Testing of the Hypotheses: There are two hypotheses tested

Hypothesis 1: There are no significant impacts of the entrepreneurship education in the study area.

Table 4: using of chi-square to test the impact of the entrepreneurship education

Classes	Yes	No	total
Part Three	65	35	100
Part Four	55	45	100
T0tal	120	80	200

Observed	Expected	O-E	(O-E)2	(O-E)2/E
65	60	5	25	0.4
55	40	15	225	5.6
35	60	-25	625	10.4
45	40	5	25	0.6
				17.01

@ 0.05 Significant level critical value=17.01 N-1=4-1=3,Table value=7.815

	Value	Df	Assump. sig
Pearson Chi square	17.01a	3	0.05
Likelihood Ratio	7.815	3	0.05
Valid number of cases	4		

The chi square analysis showcasing the significance of the case, which shows that there are no significant impact of the entrepreneurship education in the study area because the critical value of 17.01 is greater than the table value of 7.815 at 0.05 significant level, the hypothesis is hereby rejected, which means there are no significant impact of the entrepreneurship education in the study area

Hypothesis 2: There is no difference in the challenges of entrepreneurship education in the study area

Categories	Yes	No	Total
Part Three	40	30	70
Part Four	70	60	130
Total	110	90	200

Observe	Expected	O-E	(O-E)2	E)2/E
40	38.5	1.5	2.25	0.038
30	58.5	21.5	462.25	7.9
70	38.5	31.5	992.25	25.7
60	58.5	1.5	2.25	0.025
200				33.7

@ 0.05 Significant level critical value=33.7 N-1=4-1=3, Table value=7.815

	Value	Df	Assump. sig
Pearson Chi square	33.7a	3	0.05
Likelihood Ratio	7.815	3	0.05
Valid number of cases	4		

The chi-square analysis above showcase that the challenges of the entrepreneurship education is very significant, because the hypothesis is rejected,the critical value is greater than the table value which shows that the hypothesis is rejected, There is no significant difference in the challenges of the entrepreneurship education in the study area.

Literature Review

The literature was reviewed under the following:

(1) Entrepreneurship Education Programmes in Nigerian Universities

(2) Challenges to Entrepreneurship Education in Nigeria

(3) Employment and Entrepreneurship Education

Entrepreneurship Education Programmes in Nigerian Universities

Onuma (2016) noted that a 2007 review by the Development Policy Research Unit (DPRU) also stressed the need to reorient Nigerian education, particularly universities and other tertiary institutions, towards an entrepreneurial focus that encourages job creation and enhances the global competitiveness of Nigerian graduates. Entrepreneurship education in Rivers State universities, particularly Ignaius Ajuru University of Education, University of Port Harcourt, and Rivers State University, is offered at both the undergraduate and graduate (Master's) levels. Students in the entrepreneurship courses are taught business concepts and theories supplemented with practical training aimed at bolstering their confidence to initiate and sustain entrepreneurial ventures after graduation. Universities in Rivers State of Nigeria also expose students to entrepreneurial skills and training in the art of paint making, fashion design, baking, hair dressing, and barbering. Other skills offered included training in crop, fish, and snail farming, and poultry farming. For students pursuing production, sample demonstration models are available during practical sessions.

At the three (3) universities in Rivers State, Ignatius Ajuru University of Education, University of Port Harcourt, and Rivers State University, students in the entrepreneurship education programs work on a feasibility report or study for a prospective business which they plan to start after graduation. The entrepreneurship education programs provide students the training to acquire the knowledge and skills needed to prepare feasibility studies. The feasibility study serves to ensure that the student purposes to understand every detail of the business they intend to pursue, as well as the likely challenges they would face with the implementation of the entrepreneurial venture. This is also aimed to provide evidence for the prospective marketing plan to persuade probable investors, financial institutions, or government bodies to endorse the business the student chooses to pursue after graduation.

Major challenges to Entrepreneurship Education in Nigeria

According to Ubogu (2013), insufficient funding for high-quality entrepreneurship education in Nigeria remains a significant challenge. The period between 1990 and 2000, for instance, saw a severe decline in proprietor funding which forced university managers to cope with the burden of poor-quality student over-enrollment in satellite campuses and remediation programs as a means of securing tuition income (Banji, 2000). The maintenance of any reasonable standard in entrepreneurship education requires sufficiently allocated funding for the remuneration of teachers, the construction of new classrooms, the renovation of existing school buildings, and the purchase of equipment, furniture, and instructional materials (Onyeachu, 2008). Ubogu (2013) and Gyuse (2019) also identify poor facilities for training the requisite entrepreneurial skills as a foremost problem. Students learn better and more effectively when the requisite facilities for training are available. Unfortunately, Nigeria's higher education institutions have poorly maintained facilities. Thus, quality becomes a questionable assurance for entrepreneurship education in Nigeria (Ubogu, 2013; Obed Chukwuka, Ubogu,

2020). Finally, entrepreneurship education should be horizontally integrated into the curriculum as a fundamental principle. One of the main structural issues is the division of higher education institutions into faculties and schools.
This can inhibit the kind of cross-cutting that supports multidisciplinary teams and projects. The faculties and departments often work in silos, leading to many obstacles for students who want to move and for teachers who wish to develop cross-disciplinary courses. The curriculum structure often serves as an impediment that can counter inter-disciplinarity. (Azuka & Azuka, 2013). When the administration and the faculties do not prioritize inter entrepreneurship, there is an institutional problem of awareness and motivation. In many cases, the prized research publications take precedence. Therefore, the entrepreneurial education of an institution is dependent on the vision and willingness of a few leaders. This is not an organizational problem, but, rather, a strategic one. Unlike other elements of academic excellence, entrepreneurship programs remain unassessed. Faculty still often regard practice-oriented modules and exercises, which may accompany these unassessed programs, as non-academic. This perception is endemic to universities even today. Nonetheless, the fundamental stance must be that attaining a high educational standard entails not just the capacity to reflect, conceive, and critically analyze within the bounds of known knowledge, but also the ability to apply such knowledge to practical ends.

Role of Entrepreneurship Training among Undergraduate in Nigeria

Based on the work of Akande (2023), the importance of entrepreneurship training in Nigeria focuses on the value it develops in the mindset of undergraduates and their future opportunities. Given the level of youth unemployment in Nigeria, the value in training self-employment and entrepreneurial skills poses a practical alternative. Entrepreneurship training enables students to identify and assess business opportunities, develop innovative ideas, formulate business plans, and manage small entrepreneurial enterprises. The cultivation of creativity, problem-solving skills, and resilience, acquired in the training, are essential not only in the establishment of enterprises but also in the highly competitive formal employment sector. Furthermore, training in entrepreneurship enables students to develop economic and financial stewardship attitudes and helps them to establish business relations in the Nigerian economy. The over-emphasis on government dependent jobs indicates that the self-reliance promoted through this form of training suggests a positive notion towards self-entrepreneur. Attaching entrepreneurship training to an undergraduate course not only offers skills to self-employ but also to activate self-entrepreneur in the employee.

Students enrolled in entrepreneurship courses reported improved ability in assessing business opportunities and acquiring valuable business competencies necessary for effective business initiation and management. Positive change in students' self-employment intentions post-graduation is attributable to entrepreneurship education. Research showed heightened entrepreneurial intentions among students in public universities in Nigeria and this was tied to effective entrepreneurship education. This is an indication of influence of effective structured education in

shifting students' focus from employment to entrepreneurial activities. Students' access to networks during and after entrepreneurship training is greatly beneficial as it opens opportunities for business collaborations. Students receive access to industry networks and potential investors through business mentorship programs, seminars and other training forms. They receive access to industry networks and potential investors through business mentorship programs, seminars and other training forms. In Nigeria, most universities have laid an enabling foundation for entrepreneurship education but more effort is needed in building students' practical able to integrate. Courses that aid in building entrepreneurial competencies emphasize the need to curb graduate unemployment.

Graduates who are self-employed after learning entrepreneurship create jobs for their companions and for their communities. Being trained in entrepreneurship allows young people to transform from seekers of jobs to creators of jobs which in return contributes to the economic growth of the country. The growth of self-employment through innovation and new venture creation is crucial to the economic growth and overall improvement of Nigeria. (Fatoki, 2014).

Employment and Entrepreneurship Education

Entrepreneurship education is essential for reducing the employment challenges that graduates face, especially for countries, like Nigeria, where there are few formal jobs. More and more graduates are entering the work force and finding that the traditional path of white-collar employment is nearly impossible. The proactive alternative is educating graduates about entrepreneurship, as it arms them with the knowledge, skills, and attitudes for self-employment. It does not prepare them for jobs; it prepares them to create jobs. Students learn competencies like entrepreneurial planning and management, innovation, opportunity analysis, risk evaluation, and financial management. These skills will enable students to establish and sustain SMEs that are vital for economic growth and job opportunities. In addition, entrepreneurship education instills critical thought, creative spirit, and persistence, regardless of the type of employment. Essentially, entrepreneurship education provides a pathway from education to self-employment, decreases youth unemployment, and fosters economic self-sufficiency. Integrating entrepreneurship offers students the opportunity to prepare for a future centered on flexibility and self-sufficiency, regardless of employment opportunities.

Obasi (2010) describes the potential impact of entrepreneurship educational programmes on students by illustrating how, fundamentally, these programmes encourage students to direct their attention away from paid employment to self-employment, entrepreneurship, and the formation and expansion of new businesses. Education patterns under colonial rule trained individuals to be employees of colonial masters. Independence did not fundamentally change the focus of our educational system, which continued to emphasize the pursuit of paid employment (Akpomi, 2009). Entrepreneurship education can also enable students to become skilled and proficient producers of specific goods. This educational programme has a curriculum framework adaptable to a number of disciplines, where students can be

encouraged to focus their talents and imaginative powers on one or more of the disciplines.

Entrepreneurship education assists students in acquiring knowledge that improves instruction and learning (Agoha, 2011). It cultivates an entrepreneurial mindset among students, thereby discouraging lethargy and idleness within the student body. A significant number of today's idle and apathetic individuals lack familiarity with the fundamentals of entrepreneurship such as the skills necessary to formulate a business plan, initiate, and sustain a business. iv, (in points). Entrepreneurship education promotes the utilization of local resources. It enables graduates to establish small and medium-sized enterprises that draw on local assets. Larger corporations primarily overlook local raw materials and resources. Small enterprises, as noted by Owualah in Olorunmolu (2008), utilize local resources more effectively than larger firms. By relying on local resources, larger firms can redistribute raw materials and boost their output, thereby increasing employment opportunities for young people. The entrepreneurship education is a vital tool in combating national poverty.

In many developing countries as well as developing nations, extreme poverty is visible and pandemic. Many governments and institutions make the elimination of poverty a priority (Akpomi, 2009; Kalirajan, 2009). Poverty in Nigeria and entrepreneurship education become intertwined as 70% of the population poor (Ewohrudjakpor, 2008). Maybe because of the lack of an enduring entrepreneurial culture that enduring entrepreneurial education can provide. This is, in turn, why entrepreneurship education is much more crucial in reducing poverty. In the population dependency-and-working ratio, entrepreneurship education functions positively. The working population obtains entrepreneurial capabilities and employment thus reducing the population reliance. The education authorities construct entrepreneurship education as a specialized and comprehensive training for students, transforming them from job seekers and indirectly creating wealth for the country instead of merely seeking employment. It gives individuals the skills, competencies, knowledge, and value attributes that prepare them to be innovative in starting, managing, and controlling enterprises and community/business initiatives and socially entrepreneurial and employment seeking. The level of entrepreneurship education potential is a cornerstone in the socio economic and social development Abubakar (2010) articulately discusses. It fosters job and wealth creation and decreases poverty, stimulating economic growth by creating out entrepreneurial activities. Oviawe (2010) noted that in well planned and marketed entrepreneurship education, the youth in Nigeria will be fulfilled. Leveraging their unique skills, they will focus on national and global interests. Developing strategies for the effective implementation of entrepreneurial education in higher learning institutions for national development.

When taught properly, entrepreneurship education has the potential to advocate self-employment willingness and facilitate self-sustaining growth and development as seen in developed countries such as the US and Japan, which utilize entrepreneurial

education in the enhancement of human capital and human capital development as opposed to an overreliance on formal education and certification. Industrial visits, professional discussions with successful entrepreneurs, and the practical implementation of business initiatives during school are some of the more effective strategies to instruct entrepreneurship education (Akhuemokhan et al. 2013). As per Olajide (2019), the situation where students finish school and only become job seekers is an underutilization of the training and an underutilization of the country's human resources. There is, therefore, a need for coordinated policy initiatives to deepen entrepreneurship education within entrepreneurial education at the tertiary level.

Conclusion

Entrepreneurship education in Nigerian universities represents a vital strategy for addressing youth unemployment and fostering economic growth. Despite its growing recognition and integration into university curricula, the effectiveness of these programs remains limited by challenges such as theoretical teaching approaches, inadequate infrastructure, lack of practical training, and weak linkages with industry. Nevertheless, entrepreneurship education has demonstrated the potential to instill self-reliance, creativity, and job creation among graduates. For it to fully achieve its intended impact, a more robust and practice-oriented approach is essential.

Recommendations

Universities should revise and enrich entrepreneurship curricula to include more practical, experiential learning methods such as simulations, business incubation, internships, and case studies.

Lecturers and facilitators should undergo regular training and professional development to effectively deliver entrepreneurship content with real-world relevance.

Investment in entrepreneurship development centers, innovation hubs, and start-up labs within campuses is crucial to provide students with hands-on experience.

Stronger collaborations between universities, government agencies, and private sector organizations can provide mentorship, funding opportunities, and access to markets.

Government policies should support entrepreneurship education through increased funding, national frameworks, and incentives for institutions that excel in promoting entrepreneurship.

A robust system for assessing the impact of entrepreneurship education should be established to inform continuous improvement and ensure alignment with labor market needs.

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ENHANCING SOCIAL MEDIA SECURITY USING TWO FACTOR AUTHENTICATION (2FA)

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Abstract
Security and privacy issues are major concerns for the users of social media across the globe, several cases of accounts hacks, unauthorized accesses, breaches in privacy are what is seriously affecting the users of social media. Although, there is no perfect solution to these security and privacy vulnerabilities, researchers have developed many methods to reduce the issues associated with security and privacy in social media. In this research we proposed ways of enhancing the security in Social Media using Two Factor Authentication (2FA) using a review methodology. 2FA significantly increases social media security by adding an extra layer of protection. The multi-factor authentication method requires users to verify their identity through a second factor, like a code One Time Password (OTP) sent to their phone or a biometric scan, in addition to their password. This method makes it significantly difficult for unauthorized users to access accounts, even if they know the password. Solutions were provided as well as recommendation to enhance the social media security generally.

Keywords: Social media, Cyber Security, Data Privacy, Two Factor Authentication (2FA) and Identity Verification.

Introduction

The proliferation of Internet of Things (IoT) devices and the exponential growth of data generation have ushered in the era of big data [1]. These connected devices, equipped with sensors and actuators, are capable of collecting vast amounts of data from the physical world, presenting unprecedented opportunities for real-time data analytics and decision-making. However, the conventional centralized cloud-based big data analytics architectures face significant challenges in handling the sheer volume, velocity, and variety of data, as well as the latency introduced by data transmission to distant data centers.

To address these challenges, the concept of "Edge Computing" has emerged as a promising paradigm. Edge computing refers to the decentralized processing of data closer to the data source, reducing the need for extensive data transfers to distant cloud servers. This decentralization empowers edge devices to perform real-time analytics and generate valuable insights without relying heavily on the cloud

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infrastructure. As a result, the synergy between big data and edge computing has paved the way for the evolution of "Big Data Analytics for Edge Devices."

The convergence of big data analytics with edge devices introduces a range of opportunities for transforming diverse domains, including smart cities, healthcare, industrial automation, transportation, and environmental monitoring. By enabling data processing at the edge of the network, this innovative approach addresses the critical challenges posed by data volume, low-latency requirements, and resource constraints associated with IoT devices.

This research paper presents an exploration of the recent advancements in Big Data Analytics for Edge Devices [2]. It delves into the fundamental motivations behind the emergence of edge analytics and the significance of decentralized data processing for real-time applications. Moreover, the paper analyzes the technical challenges that arise when deploying big data analytics on resource-constrained edge devices, such as limited processing power, memory, and energy. Throughout the paper, various techniques and methodologies proposed to address these challenges are examined, including lightweight machine learning algorithms, distributed computing models, and edge-specific data management strategies. Furthermore, the study explores emerging technologies, like federated learning and edge-to-cloud coordination, which aim to strike a balance between localized processing and utilization of centralized cloud resources.

In addition to technical aspects, the research paper highlights the security and privacy concerns associated with edge analytics. As edge devices often deal with sensitive data from various domains, preserving data privacy becomes of paramount importance. The paper discusses privacy-preserving techniques, encryption mechanisms, and access control measures to safeguard data at the edge while ensuring compliance with data protection regulations.

To illustrate the practical implications of Big Data Analytics for Edge Devices [3], the research paper presents several real-world use cases in different sectors. These use cases demonstrate how edge analytics can enhance efficiency, responsiveness, and decision-making in scenarios such as smart manufacturing, remote healthcare monitoring, autonomous vehicles, and environmental monitoring systems.

In conclusion, the exploration of advancements in Big Data Analytics for Edge Devices sheds light on the potential of this transformative approach in reshaping the future of data-driven applications. By combining the power of big data analytics with the agility of edge computing, this research paves the way for harnessing the full potential of IoT devices, enabling them to be more intelligent, efficient, and capable of providing real-time insights that drive innovation and advancement in diverse industries.

Technology Used In Big Data Analytics For Edge Devices

Advancements in Big Data Analytics for Edge Devices leverage a combination of technologies to enable efficient and effective data processing at the edge of the network. These technologies work together to overcome the challenges posed by resource-constrained edge devices and to facilitate real-time analytics and decision-making. Some of the key technologies used in this context include:

Edge Computing Infrastructure: Edge computing relies on a distributed network of edge devices that are geographically closer to data sources. These devices are equipped with sufficient processing power, storage, and memory to handle data analytics locally. Edge computing infrastructure ensures that data can be processed and analyzed at the edge, reducing the need for data transfers to distant cloud servers.

Lightweight Machine Learning Algorithms: Traditional machine learning models may be resource-intensive and unsuitable for edge devices. Advancements in big data analytics for edge devices involve the development and deployment of lightweight machine learning algorithms that can operate efficiently with limited computational resources.

Distributed Computing: Edge devices often operate in a decentralized manner, requiring distributed computing techniques. Technologies like Apache Spark, Apache Hadoop, and other distributed computing frameworks are adapted and optimized for edge devices to enable scalable data processing across the network.

Federated Learning: Federated learning is a privacy-preserving approach that allows edge devices to collaboratively build machine learning models without sharing raw data. This technology enables centralized model updates while keeping the actual data decentralized and secure on edge devices, ensuring data privacy and compliance.

Edge-to-Cloud Coordination: To strike a balance between edge and cloud processing, edge-to-cloud coordination mechanisms are employed. These mechanisms determine which data and computations should be handled at the edge and which should be offloaded to the cloud for more intensive processing and analysis.

Edge Data Management Solutions: Edge devices generate and collect vast amounts of data. Effective edge data management solutions, such as data caching, data filtering, and data aggregation, are employed to optimize data storage, reduce data redundancy, and minimize data transmission overhead.

Real-time Analytics: Real-time data processing and analytics play a crucial role in edge environments. Technologies like Apache Kafka and Apache Flink are employed for stream processing, enabling data to be ingested, processed, and analyzed in real time as it flows from edge devices.

Security and Encryption Techniques: Edge devices often deal with sensitive data, making security a top priority. Advanced encryption and security mechanisms are implemented to protect data at rest and in transit, ensuring that data remains secure and private even in the decentralized edge environment.
IoT Protocols and Connectivity Solutions: To enable seamless communication between edge devices and other components of the IoT ecosystem, various IoT protocols and connectivity solutions, such as MQTT, CoAP, and LoRaWAN, are employed.

Visualization and User Interfaces: Intuitive visualization and user interfaces are crucial for interpreting insights generated from edge analytics. Visualization technologies are utilized to present real-time analytics results in a comprehensible and actionable manner.



Figure 1: Advancement of Edges in Big Data Analytics

The combination of these technologies empowers edge devices to efficiently process and analyze data locally, reducing latency, conserving bandwidth, and enabling real-time decision-making in various applications, such as smart cities, healthcare, manufacturing, and more.

As technology continues to advance, the potential for Big Data Analytics for Edge Devices to drive innovation and transformative changes across industries continues to expand.

I. Components of Edge Devices in Big Data

Edge devices play a critical role in big data analytics at the edge of the network. They are the devices that collect, process, and generate data locally before sending relevant information to the central cloud or data center for further analysis.

The components of edge devices in big data applications typically include:
Sensors and Actuators: Sensors are the primary components of edge devices responsible for capturing data from the physical environment. They can include various types of sensors such as temperature sensors, humidity sensors, pressure sensors, motion sensors, and more. Actuators, on the other hand, enable the devices to perform physical actions based on the data received.

Processing Unit: Edge devices are equipped with processing units such as microcontrollers or microprocessors. These components handle data processing tasks and run lightweight algorithms for real-time analysis and decision-making.

Memory: Edge devices require memory components to store data temporarily during processing. It can be volatile memory (RAM) for temporary storage or non-volatile memory (e.g., flash memory) for more permanent data storage.

Connectivity: Edge devices need connectivity options to communicate with other devices, the cloud, or a local network. This may include Wi-Fi, Bluetooth, Zigbee, cellular or other communication protocols.

Power Source: As edge devices are often deployed in remote or challenging environments, they require suitable power sources. This can be batteries, solar panels, or power cables, depending on the use case.

Operating System: Edge devices may have lightweight operating systems designed for embedded systems. These operating systems enable efficient utilization of resources and support real-time operations.

Edge Analytics Software: To perform real-time analytics and decision-making on the edge, these devices may run specialized edge analytics software. This software is designed to analyze data locally and trigger actions based on predefined rules or machine learning models.

Security Mechanisms: Edge devices must have security components to protect the data they collect and transmit. This may include encryption, authentication, access control, and secure boot mechanisms.

Data Pre-processing and Compression: To optimize data transmission and reduce bandwidth usage, edge devices may perform data pre-processing and compression before sending data to the cloud or central server.

Edge Gateway (Optional): In some cases, edge devices are connected to an edge gateway that acts as an intermediary between the edge devices and the central cloud. The gateway may handle aggregation, data filtering, and further processing before forwarding data to the cloud.

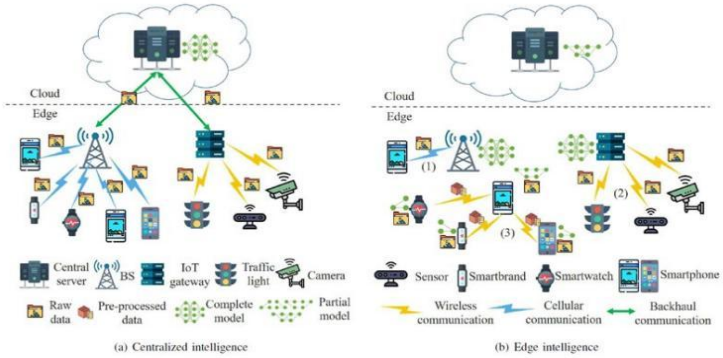

Figure 2: Centralized and Edge intelligence process

These components collectively enable edge devices to perform data processing, analytics, and real-time decision-making at the edge of the network, reducing latency, and offloading data from the central cloud for more efficient big data analytics.

IV. Challenges of Edge Enhancement in Big Data

Edge Intelligence, which involves processing and analyzing data closer to the source (edge devices) rather than sending it all to centralized servers or cloud, has gained significant attention due to its potential to improve data processing efficiency and reduce latency. However, along with its benefits, there are several challenges associated with implementing Edge Intelligence, especially concerning advancements in big data analytics for edge devices. Some of these challenges include:

Limited resources: Edge devices often have constrained resources, including processing power, memory, and energy. Running sophisticated big data analytics algorithms on such devices can be challenging due to these limitations.

Data volume and variety: Edge devices generate vast amounts of data, and the data can be of different formats and types. Analyzing this diverse and large-scale data at the edge requires efficient data management and analytics techniques.

Latency: One of the main drivers for adopting Edge Intelligence is reducing latency, especially in applications like real-time monitoring and decision-making. Performing complex big data analytics on resource-limited edge devices while maintaining low latency is a significant challenge.

Connectivity issues: Edge devices may not always have reliable and high-speed network connections to transmit data to centralized servers. This intermittency in connectivity can hinder real-time data processing and analysis.

Security and privacy: Edge devices often operate in open and potentially insecure environments, making them vulnerable to security breaches. Ensuring data security

and privacy while conducting big data analytics on edge devices is critical but challenging.

Data quality and reliability: Edge devices might collect data from various sources and sensors, leading to potential issues with data quality and reliability. These challenges need to be addressed to ensure accurate and meaningful analytics results.

Scalability: As the number of edge devices increases, ensuring the scalability of big data analytics solutions becomes crucial. The architecture and algorithms should be able to handle a growing number of devices and data streams.

Synchronization and coordination: When data analysis requires collaboration between multiple edge devices or with centralized systems, coordinating the processing and synchronization of results can be complex, particularly in dynamic edge environments.

Edge analytics architecture: Designing an effective and efficient edge analytics architecture that can integrate with existing edge devices and systems is a significant challenge, as it requires seamless integration and adaptability.

Data governance and management: Managing data across different edge devices can be difficult, especially when considering data versioning, access controls, and data governance policies. Proper data management strategies are essential to avoid data inconsistency and breaches.

Algorithm optimization: Big data analytics algorithms may need to be tailored or optimized for execution on resource-constrained edge devices to strike the right balance between performance and resource usage.

Despite these challenges, advancements in big data analytics for edge devices are continually evolving. Researchers and engineers are actively working to overcome these obstacles through innovations in hardware, software, and algorithm development to enable more efficient and effective Edge Intelligence solutions.

Future Cyber Threats for Society

The future scope of Edge Intelligence, specifically concerning advancements in big data analytics for edge devices, is promising and can have a transformative impact on various industries and applications.

Here are some key aspects that showcase the potential future scope:

Real-time Decision-making: As edge devices become more powerful and sophisticated, they will be capable of processing and analyzing large volumes of data in real-time. This will enable edge devices to make autonomous and instant decisions, reducing the need for data transmission to centralized servers and significantly improving response times in critical applications like autonomous vehicles, industrial automation, and healthcare.

AI at the Edge: With the integration of AI capabilities into edge devices, they will become smarter and more capable of handling complex data analytics tasks locally. Machine learning models and deep learning algorithms will be deployed at the edge, allowing devices to learn from data and adapt to changing conditions without relying heavily on cloud-based resources.
Edge-to-Edge Collaboration: Edge devices will not only communicate with centralized cloud servers but also collaborate with each other. This will enable more efficient data sharing and processing among edge devices, leading to faster insights and improved system performance.

Edge-Cloud Synergy: The future will witness a seamless integration of edge and cloud computing, forming a hybrid architecture. Edge devices will preprocess and filter data, sending only relevant information to the cloud for further analysis and long-term storage. This hybrid approach will optimize resource usage and improve the scalability of big data analytics.

Privacy and Data Security: Advancements in edge intelligence will address privacy and data security concerns by allowing sensitive data to be processed locally on edge devices, minimizing the risk of data breaches and ensuring compliance with data regulations.

Distributed Data Analytics: Big data analytics tasks will be distributed across edge devices and the cloud, resulting in a distributed computing approach. This will enable workload balancing, fault tolerance, and efficient resource utilization.

Edge Intelligence in IoT Ecosystem: The Internet of Things (IoT) will greatly benefit from Edge Intelligence as more edge devices are deployed to monitor and control IoT systems. Edge analytics will enable smarter and more autonomous IoT devices, optimizing various processes in smart homes, industrial IoT, and environmental monitoring.

Enhanced User Experience: Edge Intelligence will enhance user experiences across different domains, such as personalized services, augmented reality applications, and real-time recommendations, all powered by local data analytics on edge devices.

Resource Efficiency and Cost Reduction: By processing and analyzing data at the edge, organizations can reduce the amount of data transmitted to centralized servers, leading to cost savings on data storage and communication bandwidth.

Edge Intelligence for Edge Devices: Edge devices themselves will benefit from edge intelligence by optimizing their own performance, diagnosing issues, and conducting self-maintenance, leading to improved device reliability and longevity.

Overall, the future scope of Edge Intelligence in big data analytics for edge devices is exciting, and advancements in this field will bring forth a new era of efficiency,

real-time insights, and intelligent decision-making across a wide range of applications and industries. As technology evolves and new challenges are addressed, we can expect to witness the full potential of Edge Intelligence unfold in the coming years.

VI. Conclusion

In conclusion, Edge Intelligence, along with advancements in big data analytics for edge devices, represents a transformative paradigm shift in the world of computing and data processing. By moving data analytics closer to the source, Edge Intelligence addresses the limitations of traditional centralized approaches and opens up new possibilities across various industries and applications.

The potential benefits of Edge Intelligence are vast, including real-time decision-making, reduced latency, enhanced privacy and security, improved resource efficiency, and seamless integration with the Internet of Things (IoT) ecosystem. Edge devices equipped with AI capabilities can process and analyze data locally, making them smarter, more autonomous, and capable of learning from their environment.

The future scope of Edge Intelligence holds immense promise, enabling industries to harness the power of real-time insights and data-driven decision-making. From autonomous vehicles to smart cities, from healthcare to agriculture, Edge Intelligence is set to revolutionize processes, optimize operations, and elevate user experiences.

However, as with any emerging technology, challenges remain. Edge devices have resource constraints, and ensuring scalability and seamless edge-to-cloud integration will require continued research and innovation. Data privacy, security, and governance concerns must also be carefully addressed to build trust in edge analytics solutions.

Overall, Edge Intelligence and advancements in big data analytics for edge devices offer an exciting frontier for exploration, innovation, and disruption. As technology continues to evolve and industry-specific use cases are refined, the full potential of Edge Intelligence will undoubtedly be realized, reshaping the way we process, analyze, and act on data in a more efficient, real-time, and intelligent manner. Organizations that embrace Edge Intelligence stand to gain a competitive advantage in the data-driven and interconnected world of the future.

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APPLYING ENTREPRENEURSHIP EDUCATION IN A DEPRESSED ECONOMY

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Abstract

From avalanche of Literature on Entrepreneurship, it is evident that entrepreneurship education is one of the cardinal strategies to be applied in reviving a distressed economy. It plays vital roles in Economic growth, Employment generation and reduction of Poverty.

The paper therefore x-rays the role of Entrepreneurship Education in a Depressed Economy. It is therefore organized into six sections as follows: Section one discusses the Concept of Entrepreneurship, Section two explains the concept of Education, the Concept of Entrepreneurship Education is explicated in Section three, the Nigerian Depressed Economy is evaluated in section four, Section five x-rays the problems of applying Entrepreneurship Education in Nigerian Tertiary sector, while the paper concludes with prescriptions of policy options to be applied in Entrepreneurship Education in a depressed economy, with particular reference to the roles of the government and educational institutions in Nigeria.

Introduction

I am grateful to the authorities of this esteemed institution for according me the opportunity to present the key note address at this year's International Conference. My hearty felicitation also goes to the entire Staff and Students of this citadel of learning.

The Theme of this year's International Conference is timely: applying Entrepreneurship Education in a Depressed Economy. We shall begin this discussion with explanations on some basic conceptual issues as follows

Conceptual Explications

The Concept of Entrepreneurship refers to the process of creating something new with value by devoting the necessary time and effort, assuming the accompanying financial, and social risks, and receiving the resulting rewards of monetary and personal satisfaction and independence.

The above definition stresses four basic aspects of being an entrepreneur regardless

[ff] University of The Gamia, This Paper was originally presented at the International Conference in the School of Business Education, Enugu State College of Education (Technical)Enugu, Nigeria with a theme applying Entrepreneurship Education in a depressed economy (5th -10th December, 2016).

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of the field.

First, Entrepreneur involves the creation of something new of value, second, Entrepreneurship requires the devotion of necessary time and effort, third, the assuming of the necessary risks, and fourth there is the reward aspect of being an Entrepreneur, which consists of rewards of independence and personal satisfaction.

Entrepreneurship education involves teaching and imparting knowledge on the trainees with regard to the need for risks taking and creativity, for wealth creation, and associated rewards of independence and personal satisfaction.

1. Education as a concept many be defined as the process of acquiring knowledge about a given phenomenon. In the context of Entrepreneurship education, it implies the process of teaching students and trainees the ideas needed for risk taking, Creativity, wealth creation, independence and rewards for setting up a business enterprise. In precise, Education is a tool that facilitates economic, social, political and technological advancement and diversification in all human societies.

2. Flowing from the above conceptual explications, Entrepreneurship education involves the process of imparting knowledge and skills to students and trainees on how to develop ideas that would be transformed into business venture. Entrepreneurship education is the variable tool for the impartation of appropriate skills, capacities, values, knowledge and attitudes for the transformation of individuals and communities.

The National Economic, Empowerment and Development Strategy (NEEDS, 2004) document emphasized the need to provide equal and adequate education opportunities at all levels of government in Nigeria. This therefore places heavy responsibilities on managers of Educational institutions in Nigeria as this objective can only be realized and sustained through an efficient educational system which ought to impart the relevant skills, appropriate knowledge, attitudes and values to the students. It is evident today that virtually almost all graduates of tertiary institutions are not gainfully employed either by self or government.

This ugly trend can only be remedied by imparting entrepreneurship education skills in the students before their entry into the job market characterized by economic depression.

1. The Nigerian Economy is a depressed economy evident in stunted economic growth, rising Inflation, Poverty, Unemployment and low Gross Domestic Product (GDP).

The most destructive development in the Nigerian economy over the past five years has been the drop in the price of oil, which accounts for 70 percent of government revenue and 95 percent of export income, as oil prices fell from more than $ 100 per barrel in June 2014 to under $50 today, government revenue declined, leaving Nigeria with a $7 billion budget deficit.

Amidst the decline in oil revenue, the government prolonged peg of the Currency to the Dollar led to foreign exchange shortfalls and import barriers on item such as Margarine, Private Jets Wooden Doors and even tooth picks, significantly hurting both local and multinational businesses. These measures drove some foreign airlines to cut off routes to Nigeria. The measures also left domestic operators with painful fuel shortages. Businesses in other industries suffered as well, with companies operating in Nigeria struggling to access foreign exchange. Niger delta militants have blown up pipelines, contributing to Nigeria's loss of its title as Africa's largest oil producer. Sabotages have cost the country 700,000 barrel per day, sending the country's output down to its lowest level in almost three decades. Shell's production in Nigeria's dropped 24 percent between the first and second quarters of this year alone. And government peace process with the avengers has not yielded desired result. In the North, the military continues to battle Boko Haram terrorists whose violence has displaced 2.2 million people. At the same time regional tension has been intensified in the country.

Given this backdrop, the Nigeria economy is experiencing depression. Economic growth declined from 6.3 percent in 2014 to 2.8 percent in 2015, and the International Monetary Fund (IMF) predicted that the economy could shrink by 1.8 percent in 2016.

In June 2016 Inflation rose to an 11 year high of 16.5 percent, while Unemployment rate is over 12 percent. Major electricity companies are threatening to cut off power if the government does not pay them the hundreds of millions of Dollars it owes.

With a population growing at 2.7 percent per year, the economy needs to maintain that level of growth that would carter for the ever increasing expected income of its citizens. The above analysis presents huge challenges to Entrepreneurs to key in and set up local industries to produce domestic goods as a substitute for foreign imports. However, for Entrepreneurs to take up this challenge, the following section looked at the problems of applying Entrepreneurship education in Nigerian Tertiary Sector.

ProblemsofapplyingEntrepreneurshipEducationinNigerian Tertiary Sector

Education is seen as the tool that facilitates economic, social, political and technological advancement and diversification in all human societies. People and nations are what they are because of the nature and type of education they are exposed to. Education today has the effect of making it possible for a country to have a steady supply of highly creative citizens who help to keep improving the living conditions of the general citizenry and to solve the existential problems that are thrown up from time to time. Nigeria is fifty Six years old as an independent nation and the philosophy of education since 1960 has been that of promoting functional and self – reliance education. The National Policy on Education (1998) revised (2004) categorically spelt out the philosophy of education in Nigeria. However, in most cases actual performance of Nigerian graduates who have certificates raise doubts about the authenticity and workability of this Philosophy. Nigerians who are products of universities are issued with beautiful certificates after

passing prescribed courses. Employers complain that many university graduates are poorly prepared for work. In many cases, employers compensate for inadequate academic preparation by organizing remedial courses for new employees. Developed countries subject graduates of our universities to examinations in an attempt to ensure fitness into their own system. Nigerian University education system emphasizes theoretical knowledge at the expense of education for economic development. The assumption that all acquired knowledge in the university is geared towards practical utility in respective of jobs and this has caused many Nigerians to raise the following questions:

1. Do all Graduates from our tertiary institutions have the ability to adequately demonstrate or exhibit their competence either in written or oral communication?
2. Can this nation after fifty Six years of political independence achieve economic independence?
3. What is wrong with acquired knowledge from the tertiary institutions?
4. What shall we do to save the situation?

Focusing on the last two questions above, it is the right time to teach undergraduates the concept of Entrepreneurship education to help them learn wealth creation? The question then is what is Entrepreneurship education? Many professions have defined Entrepreneurship in different ways. However, Entrepreneurship is the ability to seek investment opportunities and establish an enterprise based on identified opportunities. Entrepreneurship is the effective manipulation of human intelligence as demonstrated in a creative performance. The entrepreneur is an actor, innovator or a developer of technology.

He is also a person who owns or controls a business through which income is gained. An entrepreneur is a person who in a bid to survive makes profit from his/her own business.

Entrepreneurship education has been embraced by almost all the developed countries. It is believed to be an instrument for economic growth, job creation and poverty alleviation in any country. Entrepreneurship education is the type of education that shapes people's mindset and also provides the skills and knowledge that is required for development. Entrepreneurship education should be available to all tertiary students regardless of their courses. In order to enhance competitive advantage it is important to introduce entrepreneurial education into existing education curriculum since education is internationally accepted as an index of development.

Nigeria today is passing through a lot of changes in virtually every field of her citizens' endeavour.These changes are no doubt, more on economic development.

We are in a period of business and industrial changes using new methods and techniques. There is an increased search for skilled workers and specialists in various fields. The tertiary sector has a role to play with regards to long range unemployed graduates. There is a declining job market for graduates that lack skills or ability to utilize the knowledge acquired from the institutions. Many Nigerians

cannot ascertain where the problems of graduates lie, is it that the lecturers transmit impracticable education from the colonial masters or is it that lecturers themselves are not capable of imparting functional skills. It is common for a holder of B.Sc. Degree, (Mechanical Engineering) to tow his broken down vehicle to an illiterate road side mechanic for repairs. B.Sc Agriculture graduates are known not to be able to operate a tractor or any other agricultural equipment and holders of B.Sc computer science who cannot type and print their application letters abound. There is also the tendency of well to do Nigerians to travel overseas for mere medical checkups in spite of our numerous medical personnel in the country. These occurrences are real and mind boggling. The curriculum aims at the total educational development of the individual through the acquisition of skills, knowledge and attitudes while the syllabus is purely examination focused and hence, contains only the content that will enable students to achieve academic excellence. The aspect that needs to be looked at closely is the content of the curriculum studies and the acquisition of specific knowledge, skills and attitudes.

If we compare the curriculum in engineering in a Nigerian University with what obtains in a University in Ghana, the content will most likely be the same.
The curricula of universally accepted courses or programmes in Nigeria are not in any way inferior to any that may be obtained in countries with similar courses.

There may be environmental and cultural differences here and there but the basics are essentially the same. The point is that if standards are to be measured by the curriculum content of academic programmes of Nigerian universities, the quality measured will be similar to those found elsewhere in similar programmes. The problem may be lack of delivering and clear translation of the content to the understanding of the students. Lecturers need to meet the standards clearly stated in the National Policy on Education (2004). The policy prescribes that all teachers in educational institutions, including universities, should be professionally trained. The import of this provision is to give lecturers competence in their respective subject matter, exposure, and experience in principle and practice of education, skill processes, resourcefulness, behaviour motivation and finally evaluation of self. With regards to the above policy requirements, lecturers are not trained. Majority of lecturers argue that they have been in the university for many years lecturing so they do not need to obtain teacher training certificate to lecture. Nigerian universities are faced with current problems which are summarized as follows:

1. Universities and other tertiary institutions in Nigeria admit students with diverse educational background and this leads to students studying courses for which they have no aptitude and are therefore exposed to learning material for which they are ill-prepared to assimilate.

2. Nigerian tertiary institutions are faced with the problems of facilities and under funding. A large number of students have to use limited Classrooms, Hostels, and Technologies.

3. Tertiary institutions in Nigeria produce large numbers of graduates, and all

of whom expect to join the labor force.

According to JAMB figures for 2012, Nigeria has one hundred and eight Universities with other unspecified number of tertiary institutions. The implication of this is that there is a large production of young men and women who are willing and ready to work. However, some employers in the country now insist on the acquisition of second – class upper degree as a prerequisite for employment, while others require years of working experience.

Globally, the public sector is under intense pressure to reposition its operations to become relevant in this ever changing world. It is thus necessary for both developed and non-developed countries to search for result-oriented ways of undertaking, organizing and managing public services and ultimately, redefining the role of modern states. The new paradigm advocates "the application of private sector management practices into the public sector, strengthening the prerogatives of managers, measuring performance, increasing competitiveness and cost cutting". The traditional role of the state as the primary employer of labour, has been compromised as public sector management is now concerned with concepts such as "downsizing" "right sizing" and "contracting".

This development has practically heightened the state of insecurity, distrust and even discontent among a large number of Tertiary institutions' graduates who seek public employment.

To address the problem of graduate unemployment and strategically position the economy for leadership, entrepreneurship education was introduced as a compulsory course. Despite the compulsory nature of entrepreneurship Education in the universities many Nigerian graduates will still be unemployed after graduation.

This is due to the facts that the content and management of the course is still porous and the objective of introducing it seems to be defeated. There is need to redefine the constitutional role of the state with reference to educational management in Nigeria. In addition, the course curriculum and contents of Entrepreneurial education needed to be redesigned to address current realities in our economy. This leads to the final phase in our discussion of this paper.

How to apply entrepreneurship education in a depressed economy with particular reference to the role of the government and educational institutions.

It is worthy to note that some developed states of the world had experienced economic depression in the past and applied entrepreneurship as a catalyst for economic development. For example, the United States of America economy shed more than eighteen (18) million jobs during the great recession. However, in a study conducted by Robert (2013) in the University of California, it reported as follows:

"... .Using data from the recession to analyze its effects on people's decisions to start new business showed that the recession encouraged a surge in entrepreneurship.

The study further reported that despite the rapid increase in layoffs, the availability of newly unemployed workers, and a dearth of employment alternatives, there was higher number of entrepreneurs during the recession than in the pre-recession years.

It was observed that although the great recession caused many businesses to close their doors, but the rapid rise in unemployment also drove an increase in entrepreneurship.

The study concluded that for many people across the U.S the potential opportunities for opening new businesses outweighed the alternatives despite slumping demand and tight credit.

Apart from the US, the Asian tigers which at a time suffered economic depression revived their economies by adopting import substitution and export promotion strategies of economic development. These strategies were anchored on reduction on imports of consumer goods and increasing the production of goods that could be exported to the highly industrialized nations of the world respectively.

In addition, the Asian tigers single out education as a way of improving the productivity of labour force. They subsidized educational sector in order to ensure that their children attended primary to university education.

The expected role of Nigerian government and educational institutions in reviving depressed economy

Government has major role to play to ensure sustainable economic growth, diversification and stability through export promotion. To this end, Nigeria government through a Decree established the Nigerian Export Promotion Council (NEPC) in 1976. One of the objectives of establishing the Nigerian Export Promotion Council was to boost the production of domestic goods for export.

It is sad that since its establishment, the Nigerian Export Promotion Council has not made significant breakthrough with regard to facilitating the production of locally produced goods for export. This problem is largely caused by poor organizational structure, incompetent personnel and lack of proper coordination and collaboration in the management of the agency. There is dire need for collaboration amongst government Ministries and Agencies concerned with production of goods for export. For instance, the Ministry of Agriculture, Ministry of Trade and Investment, Ministry of Labour and Productivity and National Agency for Foods, Drugs Administration and Control (NAFDAC) have related functions with the Nigerian Export Promotion Council. These Ministries and the agency ought to have been merged with the Nigerian Export Promotion Council to avoid redundancy, duplication and overlapping of functions and to ensure adequate production of goods for export.

Policy prescriptions/ options

Thus, this paper advocates for urgent reform of the aforementioned government Ministries and agencies which will go a long way in boosting export and attract foreign exchange.

Secondly, the government should embark on the reform of public services with the objectives of reducing ministries and agencies that have overlapping functions in order to avoid duplication, redundancy and waste of resources. In this respect, Ministries and Agencies with overlapping functions should be merged to ensure efficiency in services delivery.

Thirdly, the proceeds from the reform of ministries and agencies should be reinvested into Entrepreneurship Skill Development of education sector so as to impart knowledge to trainees that would go a long way in assisting in revamping the distressed economy.

Fourthly, Entrepreneurship education should be given a pride of place in our educational institutions. Both the government and the educational institutions have vital roles to play in this regard. While the government is expected to provide the enabling environment that would enhance learning, educational managers should focus on recruiting the right categories of staff that would impact entrepreneurship knowledge and skills to the students. Also government funding on education should be increased. Whereas, United Nations Educational, Scientific and Cultural Organization (UNESCO) had recommended that 26 percent of a country's Budget be allocated to the educational sector, Nigeria's Budget for education has been hovering around 1.5 percent. Again in order to meet basic international standard and to be on the right path for development, Dakar Declaration had recommended that a country's Budget for education, must not be less than 5 percent of the Nation's Gross Domestic Product (GDP). Given the enormous financial resources that Nigeria is endowed with, she has no reason to decrease expenditure for education sector.

The current war against corruption should be intensified, so that recovered loots from Politicians in Nigeria are reinvested into the distressed economy with the view to reviving the economy.

Distinguished guest of Honour, Special invitees, other Dignitaries here present, with the application of entrepreneurship education, and the implementation of the above policy prescriptions, the Economic depression in Nigeria would be a thing of the past.

THE CONTEXTUAL CREATIVITY AND FRUGAL INNOVATION IN AFRICAN ENTREPRENEURSHIP DEVELOPMENT

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Abstract

This paper explores the critical role of innovation and creativity in shaping entrepreneurial success across the African continent. Unlike traditional models rooted in industrial economies, African entrepreneurship is characterized by contextual adaptation, frugal innovation, and cultural creativity. Entrepreneurs across sectors including agriculture, fashion, fintech, and renewable energy are crafting unique value propositions that respond to infrastructural challenges, socio-economic disparities, and shifting consumer behaviors. The paper argues that African innovation is not merely about disruption but about iterative, community-embedded solutions that reimagine existing systems through local ingenuity. It highlights how youth and women-led ventures are at the forefront of this movement, often blending indigenous knowledge with modern technology to create scalable, inclusive enterprises. Drawing on case studies from across West, East, and Southern Africa, the paper presents a framework for understanding "contextual creativity" as a distinct entrepreneurial force. In doing so, it calls for a reassessment of what constitutes innovation and urges scholars and policymakers to develop models that reflect Africa's distinct entrepreneurial realities.

Keywords: Contextual creativity, Frugal innovation, African entrepreneurship, indigenous knowledge, modern technology.

Introduction

In Africa, entrepreneurship is undergoing a transformation. African entrepreneurs are innovating within constraints, rather than replicating Western industrial models, by leveraging limited resources, cultural heritage, and digital tools to create context-specific solutions (Odeyemi et al., 2024). This paper underscores the concept of *contextual creativity* as a defining feature of African entrepreneurship, emphasizing its potential to drive inclusive and sustainable development. Contextual creativity is the ability to adapt and find a creative solution based on the specific situation or the cultural context. Therefore, entrepreneurship in Africa in responding to the problem of entrepreneurship development chooses to identify the needs of Africans markets and attempt to fill these gaps by exploring the available technology blended with the advanced nations in a creative way. The ideation of entrepreneurial creativity in the context of Africa might be undermined yet it portends the significances of Africa

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rich resources (human and material) that are inadequately exploited. This not only increases the recognition and re-imagines Africa nation's potentials and the ability of growing resilience against external shocks if the drive into the innovative contextual creativity is pursued with vigour. The possibility of creating what might be referring to as 'African market' as a competitive global market can easily be attained through entrepreneurial contextual creativity. The thinking of contextual creativity might be difficult to imagine by many thinkers as it might look as a creation of autarky economy which may not be globalised. To unveil this speck from the eyes and reasons of the readers and thinkers, this is about satisfying the needs of Africans and the African markets. By extensions, satisfying the global needs in a unique Africa way, thereby promoting African commodities. This reason (contextual creativity) of entrepreneurship in Africa will boost domestic manufacturing and rapid industrialisation of African economy thereby facilitating actualization of sustainable development agenda such as poverty reduction and inequality of all kinds.

Entrepreneurship in Africa participating in sectors of the economy including agriculture, renewable energy, fashion, financial and telecommunication and more are faced with various constraints raging from infrastructural development to poor technology advancement. Yet, iteratively and in their ingenuity, the African entrepreneurs embraced the community-embedded solution to push beyond the frontier sustainable development. The iterative approach in the contextual creativity of Africans' entrepreneurship may be associated with time wastages, disruptions in the development processes, but it promotes evaluations of processes and mastering of the act as well as troubleshoot effectively. The iterative method is cost-effective as it permits evaluation of each cycle; provide feedbacks which are incorporated into the new phase to reduce development cost in the long term. This process is termed entrepreneurial innovation but frugal innovation (Radjou & Prabhu, 2015). However, this paper argued that blending the community-embedded solution with modern technology through technological adaptation will facilitate scalable entrepreneurial development and catches up with the global demands within a short frame of time.

Theoretical Literature Review

The Bottom of the Pyramid as a Framework for Creativity and Innovation

The Bottom of the Pyramid (BoP) concept, was popularized by Prahalad (2004), and has conventionally been framed as a market-based development strategy designed to integrating low-income populations into global markets. Though, contemporary scholarship increasingly positions the BoP as a fertile context for creativity and innovation. This shift aligns with broader creativity research, which emphasizes the generative role of constraints in stimulating novel solutions. Stokes (2005) and Amabile (1996) argue that resource limitations can enhance creative output by forcing individuals and organizations to explore unconventional pathways. BoP markets, characterized by income scarcity, infrastructural deficits,

and informal economic structures which embody such constraints and therefore function as catalysts for "necessity-driven creativity" (Radjou et al., 2012).

A major theoretical bridge between BoP scholarship and creativity studies is the literature on frugal innovation. Frugal innovation refers to the development of affordable, robust, and resource-efficient solutions tailored to low-income contexts (Bhatti, 2012). These innovations often rely on creative recombination, simplification, and modular design, extending Schumpeterian notions of innovation into resource-constrained environments. Examples such as mobile money systems, low-cost medical devices, and pay-as-you-go solar technologies illustrate how BoP conditions stimulate novel technological and business model solutions (George et al., 2012).

Frugal Innovation

According to Bhatti (2011), frugal innovation is a new innovation process which involves the reconfigurations and redesigns of a product to meet users' needs most especially who faced resources or inputs and affordability constraints. It involves the use of few resources to provide functional solution by adopting simple rather than complex methods to meet the immediate needs of the emerging markets. It is a bottom-up innovation method that attempts to satisfy the needs of the local meet and transcends to the global as against the standardized innovation of top-bottom. This is why frugal innovation refers to low-cost, resource-efficient solutions tailored to underserved markets (Radjou & Prabhu, 2015). In Africa, this often manifests in mobile-based services, modular infrastructure, and adaptive reuse of materials. However, given the context of optimisation, cost reduction, and core functionalities of a product or services, there is shift in perceptions paradigm of frugal innovation from emerging markets to developed markets (Wayrauch &Herstatt,2017). This means what perceive to be delimited to African entrepreneurial innovative approach to serve the non-affluent customers, is now witnessing a rising interest at developed markets owing to efficiency optimization, sustained cost reduction, simplification and scalability. Moleka (2024) concluded that inclusive growth and sustainable development in Africa can be facilitated through frugal innovation. He examined the defining characteristics of frugal innovation which include affordability, adaptability, functionality, and sustainability.

Though, the human-centered design also plays a central role in BoP-driven creativity. Design thinking frameworks emphasize empathy, contextual understanding, and iterative prototyping as drivers of innovation (Brown, 2009). BoP contexts require deep engagement with users' lived realities, cultural norms, and informal practices, leading to co-creation processes that challenge traditional top-down innovation models. This aligns with contemporary theories that view creativity as socially embedded and distributed across networks of actors (Hargadon & Bechky, 2006).

Beyond product innovation, BoP environments stimulate business model innovation, requiring firms to rethink value creation, distribution, and pricing. London and Hart (2011) highlight models such as micro-franchising, sachet marketing, and community-based distribution as examples of organizational creativity emerging from BoP engagement. These models reflect the need for flexibility, experimentation, and learning as key components of organizational innovation theory.

A further theoretical contribution is the concept of reverse innovation, where solutions developed for BoP markets diffuse upward into wealthier markets (Govindarajan & Trimble, 2012). This challenges traditional diffusion models (Rogers, 2003) and demonstrates that BoP-driven creativity is not peripheral but globally influential.

Despite its contributions, the BoP framework faces critiques. Scholars argue that some BoP innovations oversimplify complex social issues, risk prioritizing profit over empowerment, or fail to scale due to institutional barriers (Karnani, 2007). These critiques underscore the need for more nuanced integration between BoP and creativity research, particularly regarding ethics, power dynamics, and long-term sustainability.

Overall, while the BoP was not originally conceptualized as a creativity theory, it has evolved into a powerful lens for understanding how innovation emerges under extreme constraints. BoP environments stimulate frugal innovation, human-centered design, business model creativity, and reverse innovation, making the concept increasingly relevant to contemporary creativity and innovation scholarship.

Contextual Creativity

The ability to produce new ideas, solutions, or expressions that are not only imaginative and original, but also deeply informed by the surrounding like the environment, audience, culture, or purpose is known as contextual creativity. Contextual creativity is rooted in local knowledge, cultural expression, and adaptive problem-solving. It challenges the Universalist view of innovation by emphasizing place-based ingenuity (Mammana et al., 2024). Entrepreneurs utilised contextual creativity to identify market gaps which are specific to regional or socio-economic realities. Three foundational theories of contextual creativity are; Amabile's Componential Theory, Situated Cognition Theory, and Dynamic system theory.

The Amabile's component theory emphasises that creative performance arises from the interplay of three internal components which includes domain-relevant skills**,** creativity-relevant processes**,** and intrinsic task motivation alongside the social environment which is external factor in which the individual operates. (Amabile, 2012). The domain-relevant skills cover the knowledge and technical know-how essential for a given task, whereas creativity-relevant processes comprise cognitive approach and personality traits conducive to novel thinking, such as risk-taking and

tolerance for ambiguity. Intrinsic motivation, considered the most critical driver, refers to engaging in tasks out of genuine interest or personal challenge rather than external reward. The social environment can either support or hinder creativity depending on factors like managerial encouragement, team dynamics, and organizational culture.

Empirical Evidences

According to Laku (2024) M-Kopa introduced in Kenya has made significant strides by improving both energy access and financial inclusion not only in Kenya but Uganda, Ghana, Nigeria and South Africa. While over 5 million has benefited, the M-Kopa has unlocked about 1.5billion credit to empowering households to afford smartphones and clean energy. In terms of sustainable development agenda, the M-Kopa has reduced about 1.5 million tons of carbon emission through the use of Solar-power alternative in place of kerosene light. The growth of M-Kopa in Africa in terms of affordability and accessibility in its contextual creativity and frugal innovation is recognized In a related study of Ragan et al.(2024). In emphasising the significant of technological innovation Oloo(2018) adopted a case study research design to determine how technological innovation boost competitive advantage of M-Kopa solar (K) limited. His study concluded that innovative approach of sourcing the knowledge of customers had facilitated the M-Kopa to improve its performances and competitiveness. The pay-as-you-go solar energy involves providing mobile money platforms to deliver clean energy to off-grid households. The progress made as of 2023, has reached over 1 million homes (IFC, 2023). In Ghana, Ackah and Boadu (2025) explored the role of entrepreneurship in promoting innovation and economic growth in Ghana, using mixed method involving theoretical analysis and survey data. Their study conclude that entrepreneurship promote the economy of the Ghana. Connors and Press-Williams (2016) examined the nexus between local innovations and the entrepreneurship in Ghana using interview method and analysis of variance as a statistical technique to measure the difference among the groups of participants. Their study concludes that entrepreneurs in Ghana found it easy to start business and also pushed to start business owing to lack of jobs. It was also demonstrated in their study that cost of capital and infrastructure and major constraints to entrepreneurial innovations in Ghana. To explore further the relevant of finance to entrepreneurship development in Ghana, Sannou et al. (2025) examined the impact of access to finance on organizational innovation using mixed method. They found that cooperative facilitates access to finance in Ghana which promotes most women initiatives in the She nut farming in Ghana. It entails digital platform empowering women farmers with access to markets, weather data, and microloans. It blends indigenous farming practices with AI-driven insights (Adeyemi & Chikere, 2023).

Methodology

Research design

This paper implements a qualitative research design which is intended at investigating the interplay between contextual creativity and frugal innovation

within African entrepreneurship. Given the socio-cultural and economic diversity transversely the continent, a qualitative approach enables rich, nuanced insights into local entrepreneurial practices and adaptive problem-solving. Arising from this, multiple case study method is engaged to inspect various entrepreneurial ventures across selected African countries. This approach allows the research to highlight how entrepreneurs creatively navigate resource constraints and tailor their innovations to local contexts.

Sampling technique

The purposive sampling is utilised to identify entrepreneurs from low-to-middle-income settings**,** with a focus on industries such as agriculture, renewable energy, digital services, and informal manufacturing. It includes documentary evidences from selected four countries including Nigeria, South Africa, Kenya and Ghana. The countries included in this study were selected based on three criteria which include:

(i) Demonstration of the use of frugal innovation strategies,
(ii) Evidence of creativity adapted to socio-cultural contexts, and
(iii) Operational ventures active for at least two years.

Data Collection Methods

This paper relies on document analysis of existing reports, business profiles, and policy papers relevant to African entrepreneurship as a secondary source for data related to cultural creativity and frugal innovations in Africa.

Analytical technique

This study employs a comparative case study approach, analyzing four (4) ventures across Nigeria, Kenya, Rwanda, and South Africa. Evidence based data were collected from secondary sources including policy briefs and academic literature. A thematic analysis approach is utilized to identify recurring themes across cases, such as resourcefulness, improvisation, community integration, and ecological adaptation. A Cross-case comparison was used to explore how different contexts influence both creativity and frugal innovation outcomes.

Results

Table 4.1. Kenya M-KOPA Solar Creativity and Frugal Innovation

Contextual creativity	Frugal innovation	Impact and Outcomes
1.Mobile Money Integration: Recognizing Kenya's widespread adoption of M-Pesa, M-KOPA embedded SIM technology into its solar kits, allowing remote monitoring and payment enforcement (see Rangan et al. 2024).	**1.Reducing Costs**: Customers make daily payments as low as $0.43, making solar energy accessible to the unbanked	**1. Financial Inclusion**: M-KOPA customers build credit histories, unlocking access to loans, insurance, and smart phones (see Laku, 2024).
2.User-Centric Design: The solar kits include LED lights, phone charging ports, and radios. They are products tailored to the needs of rural households	**2.Reducing Costs**: Customers make daily payments as low as $0.43, making solar energy accessible to the unbanked	**2.Environmental Benefits**: The shift from kerosene to solar has reduced over 1.5 million tons of carbon emissions in Kenya
3.Local Distribution Networks: M-KOPA built a Direct Service Representative (DSR) model to reach remote areas, creating jobs and ensuring customer support	3. **Scaling Efficiently**: With over 5 million customers served and $1.5 billion in credit extended**.**	3.**Economic Empowerment**: 62% of customers use M-KOPA products to generate income, such as charging phones or running small businesses.

Source: Author's Search on Documentary analysis.

The M-KOPA Solar is a Kenyan-based social enterprise founded in 2011. It provides pay-as-you-go solar energy solutions to low-income households. Leveraging mobile money platforms like M-Pesa, M-KOPA enables customers to purchase solar kits through affordable daily payments, bypassing the need for traditional banking or upfront capital.

Table 4.2 Case Study of SheFarms – Empowering Women Farmers through Frugal Innovation in Ghana

Contextual creativity	**Frugal Innovation**	**Impact and Outcomes**
1.Mobile-Based Platform: Recognizing the widespread use of basic mobile phones, SheFarms developed a USSD-based system that allows farmers to access	1. **Low-Cost Technology**: The platform avoids expensive hardware and instead uses feature phone**s** and SMS/USSD services to reach	1 **Economic Empowerment**: Over 5,000 women farmers have increased yields and income through SheFarms' support.

information without needing smartphones or internet connectivity.	underserved populations.	
2.Localized Training: Agricultural content is delivered in local languages and adapted to regional crop cycles and farming practices.	2. **Lean Operations**: By collaborating with existing community networks, SheFarms minimizes overhead and scales efficiently.	2. **Digital Inclusion**: Many participants are first-time users of digital financial services, building credit histories and financial literacy.
3. Community Engagement: SheFarms partners with local cooperatives and NGOs to build trust and ensure adoption among women farmers	**3.Inclusive Finance**: Farmers are onboarded into digital savings and microcredit schemes, enabling them to invest in seeds, tools, and fertilizers without traditional banking.	**3.Social Transformation**: The initiative has strengthened women's roles in household decision-making and community leadership.

Source: Source: Author's Search on Documentary analysis, 2025.

The SheFarms is a Ghanaian agritech startup founded to empower female smallholder farmers by providing access to digital tools, agricultural training, and financial inclusion (Sonnou et al.2025). Operating primarily in rural regions, SheFarms addresses systemic challenges such as low productivity, limited market access, and gender inequality in agriculture. SheFarms exemplifies contextual creativity by tailoring its solutions to the socio-economic realities of rural Ghana. This approach reflects a deep understanding of local constraints and leverages existing infrastructure to deliver impactful solutions. These frugal innovations reduce barriers to entry and promote sustainable agricultural development.

Table 4.3 Thula Baba Box (South Africa)

Contextual creativity	Frugal Innovation	Results and Impact
1.Adapting a global concept (Finnish baby box) to local realities such as co-sleeping norms, limited access to clean water, and high prevalence of diseases like HIV and TB(Design Indaba, Undated)	**Low-cost design**: The box is produced with minimal resources while maximizing utility—serving as a cot, bath, and storage	1.The box **increased early and frequent antenatal clinic attendance**, which is critical for maternal and infant health (Bamford, 2013)
2.Using durable materials: Unlike Finland's cardboard box, the South African version is made of plastic to withstand harsh living conditions and double as a	**Leveraging partnerships**: Collaborations with Stellenbosch University, Western Cape Government, and J-PAL Africa helped fund and	2.It **reduced risks** associated with HIV transmission and maternal mortality by promoting earlier health interventions.

bath or storage unit(Thula Baba , 2019)	evaluate the pilot study.	
3.Incorporating behavioral incentives: The box includes educational materials and encourages clinic visits, aligning with local health outreach goals.	**Targeted distribution**: Focused on lower-income families in the Western Cape, the initiative aims to improve maternal and infant health outcomes without burdening public health budgets.	3. The initiative aligns with South Africa's health targets to reduce child mortality and improve postnatal care coverage.

Source: Source: Author's Search on Documentary analysis, 2025.

The Thula Baba Box is a South African adaptation of Finland's maternity package, designed to support low-income mothers and reduce infant mortality. Developed by entrepreneurs Ernst Hertzog and Frans de Villiers and the initiative reflects a deep understanding of local challenges and leverages design thinking to create a scalable, impactful solution (UNDP, 2024).

Table 4.4 Case study of American University of Nigeria (AUN), Nigeria: A Development-Driven Innovation Hub

Contextual Creativity	Frugal Innovation	Results and Impact
1. AUN operates in a region affected by poverty and conflict, particularly due to Boko Haram insurgency.	1. Low-cost, high-impact solutions**:** AUN developed community programs using minimal resources, leveraging student volunteers, local partnerships, and digital tools.	1. AUN was recognized as Africa's first "Development University" and received the African Development Award for Excellence.
2. The university creatively adapted its curriculum and outreach to address local socio-economic challenges**,** such as education gaps, peacebuilding, and youth empowerment.	2.AUN-Adamawa Peace Initiative (API): A grassroots peacebuilding and entrepreneurship program that uses education as a tool for social cohesion and economic empowerment.	2. The university's model demonstrated how entrepreneurial education can foster frugal innovation by empowering students to co-create solutions with their communities.
3. It established the New Foundation School (NFS) to educate girls who escaped Boko Haram captivity, blending trauma-informed care with academic instruction.	3. Tech-enabled learning**:** Despite limited infrastructure, AUN attracted global attention (including Google) for its innovative use of internet access and digital literacy in underserved areas.	3.It influenced policy discussions on the role of higher education in achieving the Sustainable Development Goals (SDGs)**.**

Source: Source: Author's Search on Documentary analysis, 2025.

The American University of Nigeria (AUN), located in Yola, Adamawa State, has pioneered a unique model of university-led frugal innovation**.** It integrates entrepreneurial education with community development, targeting resource-constrained environments in Northeast Nigeria.

These cases affirm that frugal innovation is not merely cost-cutting**,** but a strategic response to resource constraints**,** cultural norms**,** and institutional gaps. Contextual creativity enables entrepreneurs to reframe challenges as opportunities, often drawing on indigenous knowledge, informal networks, and grassroots participation. It entails responding to local needs with culturally and economically appropriate solutions which can drive frugal innovation in African entrepreneurship. It shows that innovation does not require high-tech labs or massive funding, but rather a deep understanding of context, resourcefulness, and community engagement.

Table 4.5. Comparative insights of four countries and several themes

Country	Key Innovation Driver	Contextual Creativity Focus	Frugal Innovation Mechanism
Nigeria	University-based entrepreneurship	Post-conflict education & peace	Volunteerism, low-cost
Kenya	Tech hubs & mobile platforms	Financial inclusion & ICT access	Mobile-based services
South Africa	Social enterprise & R&D	Disability & energy access	Modular design, recycl materials
Ghana	Agriculture & youth entrepreneurship	Rural communication & farming	Voice tech, microfinan

Author's Compilation and design, 2025.

Discussion

Contextual Creativity and Frugal Innovation in African Entrepreneurship. The entrepreneurial landscape across Africa is increasingly shaped by contextual creativity. This entails the ability to generate locally relevant solutions and frugal innovation, which emphasizes affordability, simplicity, and resourcefulness. Case studies from Nigeria, Kenya, South Africa, and Ghana reveal how these concepts manifest in diverse socio-economic and institutional contexts, offering insights into scalable and sustainable development models.

Nigeria: University-Led Frugal Innovation

Nigeria's American University of Nigeria (AUN) exemplifies how higher education institutions can drive frugal innovation through community engagement. Located in conflict-affected Adamawa State, AUN developed initiatives such as the New Foundation School for Boko Haram survivors and the AUN-Adamawa Peace Initiative**,** which leveraged student-led entrepreneurship to promote peace and economic inclusion. These programs used minimal resources including volunteer labor, digital tools, and local partnerships to deliver high-impact outcomes in education and social cohesion (Manishimwe et al., 2024). AUN's model

demonstrates how development universities can serve as incubators for frugal innovation, particularly in fragile contexts.

Kenya: Tech-Driven Grassroots Innovation

Kenya's innovation ecosystem is anchored by hubs like iHub Nairobi and the globally recognized M-Pesa mobile money platform. M-Pesa emerged as a frugal solution to financial exclusion, enabling millions to transact without traditional banking infrastructure. Its success lies in contextual creativity by leveraging widespread mobile phone usage to solve a local problem and frugal design, requiring minimal hardware and low transaction costs (Ndemo & Aiko, 2016). Additionally, Kenya's Konza Techno City initiative reflects a government-led effort to scale innovation through infrastructure and policy support, though its long-term impact remains under evaluation (Heilbron et al., 2017)

South Africa: Inclusive Innovation in Health and Energy

South Africa's frugal innovation efforts are often embedded in social enterprises and public-private partnerships. For example, the Shonaquip Social Enterprise designs affordable assistive devices for children with disabilities, combining local manufacturing with user-centered design. Similarly, SolarTurtle**,** a mobile solar kiosk, provides off-grid energy solutions using recycled materials and modular technology. These innovations reflect contextual creativity by addressing systemic inequalities and infrastructure gaps, while maintaining affordability and scalability (Moleka, 2024). South Africa's relatively advanced R&D ecosystem enables more structured innovation pathways, though challenges persist in reaching marginalized communities.

Ghana: Agricultural Innovation and Youth Entrepreneurship

In Ghana, frugal innovation is prominent in agriculture and youth-led enterprises. Initiatives like Farmerline use voice-based mobile platforms to deliver weather forecasts, market prices, and agronomic advice to smallholder farmers. This low-tech solution bypasses literacy and internet barriers, showcasing contextual creativity in adapting digital tools to rural realities. Moreover, Ghana's National Entrepreneurship and Innovation Programme (NEIP) supports startups with seed funding and training, fostering a culture of resourceful problem-solving among youth (Moleka, 2024). These efforts align with the Bottom of the Pyramid (BoP) framework, emphasizing inclusive innovation for underserved populations.

Contextual framework or model proposed by this study

Based on the synthesis of case studies and scholarly insights, this study proposes a conceptual framework to fill the gap and contribute meaningfully to the discourse on contextual creativity and frugal innovation in African entrepreneurship. This study proposed CAFÉ model or framework for entrepreneurship development in Africa. CAFÉ is acronym for: contextual action for frugal enterprise. Under this context, the entrepreneur is required to gain understanding or knowledge of the environment including the socio-cultural, economic, political and institutions.

within which it intends to operate. Scanning the business environment will potentially reveal the opportunities and risks inherent in the environment which influence the decision of the would-be entrepreneur on the material or resources needed and type of business to embark on. Next to the context is the Action. At this stage, the entrepreneur is expected to take action after gaining adequate knowledge of the environmental content.

The Core Components and implementation of this model or framework to promote entrepreneurship innovation in Africa is presented in table 5.1

Table 5.1 Core Components of the CAFÉ model and descriptions

Dimension	Description
Contextual Insight	Deep understanding of socio-cultural, economic, and institutional realities
Creative Adaptation	Reframing local challenges into opportunities using indigenous knowledge
Frugal Design	Low-cost, scalable, and sustainable solutions tailored to local needs
Collaborative Ecosystem	Multi-actor engagement: universities, communities, NGOs, and government
Impact Orientation	Focus on inclusive growth, SDGs, and long-term community empowerment

This framework can serve as a **strategic guide** for researchers, educators, and policymakers aiming to foster **inclusive, sustainable, and locally grounded entrepreneurship** across Africa

Conclusion and Policy Implications

This study explores the role of contextual creativity and frugal innovation in African entrepreneurship development. It deploys qualitative method to investigate how local initiative of the people and the availability of the resources in their environment and the socio-economic position influences innovation. It concludes that African entrepreneurship is not a derivative of Western models but a distinct paradigm shaped by creativity, resilience, and cultural intelligence. Recognizing and supporting contextual creativity can unlock transformative potential for inclusive development across the continent. Though, the study does not rule out entrepreneurial innovation by adapting existing models to local realities rather than inventing from scratch. These findings support the argument that African innovation is iterative, embedded, and socially grounded rather than disruptive in the Silicon Valley sense.

Therefore, for policy implications, this study underscores curriculum reform that adopt experiential learning focused on contextual problem-solving as a first fundamental policy step. It also charges governments to embed frugal innovation principles into national entrepreneurship strategies. Besides, government should provide micro-grants that impacts investment tailored to frugal startups and promote

gender inclusive policies targeted support for women and youth entrepreneurs through training, finance, and legal reform.

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KNOWLEDGE AND PERCEPTION OF THE DIFFERENT FORMS OF MANIFESTATIONS AND PRESENTATION OF ELEPHANTIASIS IN OWAN-WEST LOCAL GOVERNMENT AREA OF EDO STATE, NIGERIA

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Abstract

Elephantiasis is a disease that is characterized by the thickening of the skin and the underlying subcutaneous tissues, causing swelling, pain and permanent disability. The most common symptom of the disease is swelling and abnormal enlargement of the affected part of the body. Elephantiasis is one of the prevalent and the most neglected tropical diseases, although neglected, nevertheless it is still very infectious. Neglected Tropical Diseases (NTDs) are a different group of 20 infectious diseases that affects more than one billion people which is approximately one-sixth of the world population. They are a group of bacterial, parasitic, viral and fungal infections that are prevalent in many vulnerable populations in developing countries in tropical and subtropical areas of the world. The study which was conducted in Owan-West LGA of Edo State, Nigeria adopted the survey research design. The probability and the non-probability sampling techniques which included the convenience / accidental/ purposive / judgmental, stratified and snow balling sampling techniques were employed for the collection of both the quantitative and the qualitative data. The data collected were analysed using the descriptive statistic and manual content analysis and the phenomenological method. The study found out that the respondents were unaware of the different forms of presentation and manifestation of elephantiasis in Owan West Local Government Area of Edo State Nigeria. Based on this, the study recommends that the government and other concerned agencies and organisations should intensify awareness campaign to areas and regions endemic to elephantiasis.

Keywords*:* Elephantiasis, knowledge, Lymphatic filariasis, Neglected tropical diseases, Perception

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Introduction

Elephantiasis is a disease that is characterized by the thickening of the skin and the underlying subcutaneous tissues, causing swelling, pain and permanent disability. The most common symptom of the disease is swelling and abnormal enlargement of the affected part of the body (WHO, 2022; Negasa and Dufera, 2021; Morrison and Bandoim, 2019; Yimer, Hailu, Mulu and Abera, 2015). After malaria, Lymphatic Filariasis (Elephantiasis) is the second most vectors borne disease in the World (Yimer, et. al., 2015). Of all the tropical diseases, Lymphatic filariasis is the most prevalent and most neglected. It is the most infectious disease worldwide because of its disturbing prevalence in developing countries (Chandy, Thakur, Singh, and Manigauha, 2011; Dogara, Nock, and Agbede, 2008; WHO, 2000). Although neglected, nevertheless it is still very infectious (WHO, 2019; Adekunle and Asimiea, 2018; Dogara, et. al., 2008). In line with above assertions, WHO, (2010); and Centre for Disease Control and Prevention, (2022), also stated that it is one of the most neglected yet devastating neglected tropical diseases in the world.

Neglected Tropical Diseases (NTDs) are a different group of 20 infectious diseases that affects more than one billion people which is approximately one-sixth of the world population. They are a group of bacterial, parasitic, viral and fungal infections that are prevalent in many vulnerable populations in developing countries in tropical and subtropical areas of the world (Tidman, Abela-Ridder, 2021; World Health Organisation (WHO), 2020; Mistra and Mawson, 2017; Hotez and Kamath, 2009).

Lymphatic filariasis affects the lymphatic system, and it causes the lymph nodes to swell and becomes painful; it causes fever and leads to disfiguring and permanent disabilities for the sufferer (Maria and Patri, 2022). Infection from Lymphatic filariasis could be asymptomatic (not showing visible symptoms), acute or chronic. In the case of an asymptomatic infection, damages are done to the lymphatic system, with no symptoms as regarding the disease. This means that an individual can be carrying the Filariae worms in his / her system, with internal damages going on within the body system, yet there will be no physical manifestation of the disease (Gelderman, Bart and Duijst, 2020).

Lymphatic Filariasis is a major health problem in Sub Sahara Africa and South East Asia, mostly along the coastal areas. The infection is more prevalent in the tropical and subtropical regions of the world and it is associated with an increase in economic burden for the peoples in the regions. The tiny thread like worm (nematode) of about 40mm (male) and 50 – 100 mm long (female) are transmitted by Mosquitoes to humans during blood meal, that is when it bite to suck blood. The female worms give birth to their young ones alive, they do not lay eggs (viviparous)

and they give birth to as many as 50,000 microfilariae every day. Imagine more than 50, 000 worms inside of a living being and causing untold damages to the persons systems. When they are matured, the adult worms are usually found in the lymphatic system of humans (Arya, and Coumar, 2014; Ruplnder, Kandathll, Sanwal, Rajeev, and Cecil, 2009; Park, 2005).

Infection from the disease is generally acquired in childhood causing hidden damage to the lymphatic system, so by the time the disease start manifesting, much damages had been done internally to the person. Lymphatic Filariasis does not kill but it causes disability, social and financial burden to patients and their families which might lead to depression and later on to dead for some of the patients (Desai, Gouri, Bhandari and Desai, 2014). *Owan Communities in Edo State is endemic to elephantiasis, yet there appear to be little knowledge and perception concerning the disease elephantiasis particularly its forms, manifestation and presentation. Besides, little or no studies have been carried on elephantiasis in Owan Communities in Edo State, Nigeria. This therefore forms the basis upon which, this study is birthed.*

Objectives of the Study

The study seeks to examine the study of the knowledge and perception of the different forms manifestation and presentation of elephantiasis in Owan-West Local Government Area, Edo State. The specific objectives include:

1. Find out if the of people of Owan-West LGA Edo State, Nigeria know what elephantiasis is.
2. Ascertain if the people of Owan –West LGA, Edo State, Nigeria have seen anybody with symptoms of elephantiasis in other parts of the body aside from the very common parts.
3. Find out if the people of Own-West LGA are aware that elephantiasis can affect other parts of the body.

Brief review of related literature

According to Prasson and Agrawal, (2020); Sangwan, Ldra, Singh and Captb, (2014), the clinical manifestations of Lymphatic filariasis vary from one endemic area to another. In some regions, the Elephantiasis of the limbs is prevalent and in some other regions the genitals are mostly affected. There are different forms of manifestation or presentation of Lymphatic filariasis. There is Breast Filariasis, Hydrocele (genitals), Lymhoedema (leg and arms), Face extra-lymphatic, lung and thyroid Filariasis etc. in essence, elephantiasis can affect any part of the body, as long as the filarial worm lodges in the lymph node in that part of the body.

Elephantiasis of the Breast

Figure 1-2: Showing Lymphatic Filariasis / Elephantiasis of the Breast



Source: www.sciencephoto.com

Breast Filariasis is the abnormal swelling of the breast as a result of the presence of the filarial worms in the lymph nodes in or around the breast area. Sangwa, Ldra, Singh and Capth, (2015), stated that when the breast is involved, it means the larvae have entered the lymphatic vessels around the breast and it results in lymphangitis, fibrosis and disruption of lymphatic drainage. They further stated that the upper outer part of the breast is the most commonly affected site, but the breast will swell downward because it is gravitationally pulled downward. Filariasis of the breast is very rare, it always presents as breast lump with axillary lymphadenopathy and it simulates or looks like breast cancer in most cases, because if proper test is not done, the physician might wrongly diagnose the patient with cancer of the breast.

Most of the reports state that the breast is an unusual location for filariasis. When present, it present with lumps, swellings, itching and pain in the breast. This could be very dangerous, there is thickening of the skin and discharge from the breast in most cases (Kumar, Priyadharisini, and Singh, 2022; Sangwan, et al., 2014; Dayal and Selvaraju, 2010).

Parashar, Gupta and Singh (2020), also noted that it is unusual for the parasite worm to infest or transmit in the breast, but not totally ruled out. This implies that it is a rear manifestation, but not an impossible manifestation. In another study by Sangwa, Ldra, Singh and Capth, (2015), they confirmed also that filariasis of the breast is rare, as they had a first case where they found out that there was induration of the skin, subcutaneous lump and there was secretion from the affected nipple of their patient. While in another patient with filariasis of the breast they also studied

had similar symptoms, painful swelling on both breast, with itching, skin induration and subcutaneous, lump in part of the breast and yellowish discharge from the nipple. The difference in the two cases was that one had swelling in one of the breast and the other had swelling in both breasts.

Rupinder et al., (2009), also stated that Filariasis of the breast is an uncommon condition and can cause a diagnostic dilemma. Its presentation in breast region, although unusual, usually presents with an introverted palpable mass. They further said that filariasis of the breast sometimes, looks like a tumor or cancer and could coexist with both. In their study case, their patient presents with a large redness and thickening/hardening of the skin in the right breast. Further test and examination showed that Microfilaria were present in the blood sample of the patient.

Elephantiasis of the Leg/Limb

Figure 3 -4: Showing Elephantiasis of the Leg / Limb



Lymphoedema (females)



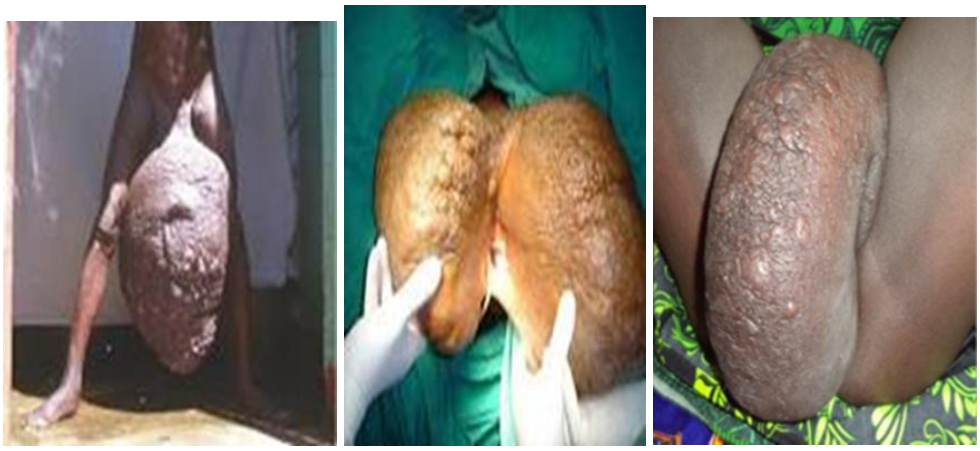
Lymphoedema (male) **Source**: www.cnn.com

Lymphedema is the enlargement or swelling of the lower limbs and this makes the leg look exactly like the legs of an elephant. It could affect just one of the limb or both limbs of the patient. This particular manifestation is the reason the disease is called elephantiasis, and it is very common in women. The legs are the most and often affected part of the body by the filarial worms (Marie and Petri, 2022). In agreement to the statement above, Coreil, Mayard, Louis-Charles and Addiss, (2002) said that elephantiasis of the leg affects women more frequently than men in many parts of the world. This indicates that women are ten times more likely than men to have elephantiasis of the leg / limb (Big foot) (InfoNTD, 2023).

This manifestation of the disease is so debilitating that it keep people from walking and working in its advanced stage, because of the weight and the pain associated with it. The legs when affect, also break out in sores, some patients experience fluid draining from the legs and foul smell emitting from the affected leg. This blisters or sore, if not properly taken care of results in several deformities. Some patients have lost their toes to this disease. This situation prevents the patients from social and economic activities. (Correll, 2022; Yan-Ping, Wan-Xue, Wei-Xi, Yi-Mu, Ping-An, Gang, and Qi-Ming, 2018).

Elephantiasis of the Genital (Scrotum and Vulva)

Figure 5 - 7: showing Elephantiasis of the Genital (Scrotum and Vulva)



Hydrocele (Scrotum) Vulvar Filariasis (female)

Sources: Chintamani et. al. 2010; Ipayana et. al., 2014.

An estimated 25 million men worldwide are said to have hydrocele as a result of Lymphatic Filariasis (Correll, 2022). Gupta, Ajth, Kanwar, Sehgal, Kumar and Mete (2006), posited that genital Elephantiasis is majorly caused by filariasis and it is an important medical problem that affects young reproductive age group, resulting in disability and extreme mental suffering. Genital Elephantiasis is the strange enlargement of the genital due to lymphatic obstruction, which usually results in difficulty in walking due to the location and size of the genital. It is a very depressing situation because of stigmatization that leads to social exclusion of the patient. Men are more prone to genital Elephantiasis than women worldwide (Arun, Kamalakannan, Sivasubramanian and Srivenkateswaran, 2015). According to WHO (2013), scrotal hydrocele is due to accumulation of fluid in the cavity of the tunica vaginalis. But it is presumed that true filarial hydrocele occurs after the death of adult filarial worms that lodged in the lymph nodes in or around the genital, while a chylocoele which due to a long- standing manifestation of Lymphatic Filariasis is the accumulation of fluid after the rupture of lymphatic vessels in the scrotal sac or cavity (Goel and Goel, 2016).

Generally, genital damage is a serious disability which could lead to physical limitations and social stigmatization for men. But this is a common chronic manifestation of Bancroftian Filariasis in males and it is characterized by the accumulation of fluid in the tunica vaginalis, which is the sac covering the testicles. The swelling gradually increases over a period of time and in long standing cases,

the size of the scrotum may be unbelievably enormous. In some patients, lymphoedema of the scrotum and penis as a result of Bancroftian Filariasis, shows the skin of the scrotum covered with vesicles distended with lymph which is also known as 'lymph scrotum genitalia' (Guideline for the Elimination Lymphatic Filariasis in India, 2023). In some other cases, there might be no hydrocele or lymph scrotum however; there may be some malfunctioning due to the presence of the micro filariae blocking the spermatic duct of the victim. And this has resulted in primary infertility for some patient unknown to them for years (Verma, Kapoor and Singh, 2017). National Organisation for Rare Disorders (NORD) (2019), also reported that in some male, there might be enlargement of the scrotum or not, and that the penis maybe withdrawn and become non-elastic, hot and painful, the spermatic cords may thicken, pain and burning sensation may be experienced.

Vulvar Elephantiasis is a very rare manifestation of the disease Elephantiasis compared to hydrocele in males, it occurs in 1 – 2% of all cases of Elephantiasis seen in clinical practices. The labia majora which are the outer lips of the female private parts / organ are mostly affected, the growth or tumorous mass is covered by thickened and ulcerated skin, and the condition can attract fungal and bacterial infection making it worse for the victim. The swelling in the vulvar grow progressively with pain and discomfort, distorting movement due to the size and location which is between the legs. This infection had been found not to obstruct the patients' menstruation circle or flow (Ipyana, Bonaventura and Januarius, 2014; Chintamani, Tandon, Khandelwal, Aeron, and Jain, 2010).

Elephantiasis of the Hand

Figure 8 -9: Showing Elephantiasis of the Hand





Source: www.alamy.com

Elephantiasis of the hand is rare, as early as 1885, Dr. Hoyer reported the case of Elephantiasis of the hand, which was characterized by the swelling of the hand and a loss of sensation by the patient in that particular hand. It was noted that under the supervision of the doctors, the hand grew in size and became enormously large, having a white shinning appearance with milky lymph which sometimes smells. The patient complained that the affected hand was a great burden / weight. This led to the amputation of the hand and the swelling reduced (Hoyer, 1886). According to Huntinhton, Forgel, Eichold and Dickson, (2023), they also reported that in the case of Elephantiasis of the hand, the swelling starts from the upper part of the arm close to the armpit, and it continues down wards, as seen in the picture above.

Elephantiasis of the Face

Figure 10 – 11: Showing Elephantiasis of the Face





Sources: Alamy www.alamy.com David Stamboulis (www.agefotostock.com)

Elephantiasis of the face is also another rare manifestation of the disease. Anderson and Asboe-Hansen, (1951), reported Elephantiasis of the face manifesting from the eye lids. They said that a male patient presented with puff up eyelids, that is, all four eyelids both the lower and upper eyelids were swollen. Close examination of the patient revealed that the disease has also affected the cheeks, behind the ears, scalp, and the face in general and the surrounding skin was thick and pink in colour. Li-Qiao (1985), also reported that Elephantiasis of the face is not common, and the treatment option was surgery to reduce and repair the face of the patient. In the case of Chen, Chen and Noordhoff, (1989), they report that facial Elephantiasis involves flappy skin in the face and around the head. According to them, the flappy skin on the forehead, the nose and surrounding part were repositioned by excision and skin grafting in their case study.

Aside from the above mentioned forms of manifestation, the lungs are sometimes affected by the filariae worms. It is present in the blood streams and causes tropical pulmonary eosinophilia. The symptoms are fever, shortness of breath, coughing with wheezing and in an advanced stage scaring of the tissue of the lungs which is fibrosis and blood particles might been seen in the sputum of the patient when he / she coughs. If proper examination is not done, the patient might be diagnosed with tuberculosis or other form of lungs infection outside of lymphatic filariasis (Marie and Petri, 2022).

Methods and material

The study was carried out in Owan-West LGA of Edo State, Nigeria and adopted the survey research design. The population projection for Owan – West as at 2022 is 146, 300. The sample size arrived at with the aid of the Krechie and Morgan (1970) sample size formula was 780. The probability and the non-probability

sampling techniques which were convenience / accidental/ purposive / judgmental, stratified and snow balling sampling techniques were employed for the collection of both the quantitative and the qualitative data). Both the questionnaire and the in-depth interview guide were used for data collection. The data obtained were analysed using the descriptive statistic and manual content analysis and the phenomenological method.

Presentation of Data

Socio-Demographic Characteristics of Respondents

Table 1 Frequency and percentage distribution of respondents' socio-demographic characteristics

Variables	Frequency (n=770)	Percentage %
Sex		
Male	460	59.7
Female	310	40.3
Age		
15 – 24	116	15
25 – 34	131	17
35 – 44	143	18.6
45 – 54	129	16.8
55 – 64	113	14.7
65 – 74	84	10.9
75 years & above	54	7
Marital status		
Single	217	28
Married	487	63
Divorced	29	4
Widowed	37	5
Occupation		
Student	93	12

Civil servant	98	13
Teaching	87	11
Business/Trading	195	25
Artisan	98	13
Farming	104	14
Pensioners / Senior citizens	52	7
Others	32	4
None	11	1
Educational Qualification		
Pry Certificate	69	9
SSCE	276	36
Diploma/NCE/OND	164	21
B. Sc / B. Ed / HND	183	24
Masters	38	5
Ph. D	8	1
None	32	4
Religion		
Christian	696	90
Muslim	61	8
Others	13	2

Source: Field Survey, 2023

Table 2: Awareness/knowledge of the different forms and presentation of elephantiasis (Lymphatic Filariasis)

Variables	**Responses**	**Frequency**	**Percentage %**
Do you know what elephantiasis (Lymphatic filariasis is)?	Yes	192	25
	No	578	75
	Total	**770**	**100**
With the aid of a picture do you know what this is (picture of a patient with visible symptom of elephantiasis)	Yes	653	85
	No	117	15
	Total	**770**	**100**
Have you seen a person with elephantiasis before?	Yes	585	76
	No	185	24
	Total	**770**	**100**
What part of the body was swollen/affected	One Leg	424	72
	Both legs	83	14

	Private part	22	4
	Feet/foot	56	10
	Total	**585**	**100**
Are you aware that it could also affect other part of the body?	Yes	184	24
	No	586	76
	Total	**770**	**100**

Authors field Survey, 2023

The data presented in table 2 above revealed that 192 (25%) of the respondent knew what elephantiasis was, while 578 (75%) did not know what elephantiasis was. But with the aid of a picture, 653 (85%) later affirmed that they knew what elephantiasis was, but 117 (15%) still did not know what elephantiasis was. 585 (76%) respondents in the study population have seen a person with physical manifestation of elephantiasis. While only 185 (24%) of the respondents have not laid their eyes on any person with physical manifestation of elephantiasis. This is evidence that elephantiasis is endemic in this area.

In response to the question on the part of the body affected for those that have seen persons with elephantiasis, 424 (72%) of the respondents have seen persons affected by elephantiasis on leg; 83 (11%) of the respondents have seen persons affected on both legs; 22 (4%) of the respondent have seen persons affected in their private part; 56 (10%) of the respondents have seen persons affected only on the feet/foot and 185 (24%) of the respondents have not seen any person with physical manifestation of the sign/symptom of elephantiasis. From the above it is important to know that a larger percentage of the population have seen patients with the physical manifestation of elephantiasis of the limb, whether of one, both legs, or of the feet. Marie and Petre, (2022), confirmed the above findings by asserting that the legs are the most affected part of the body by the disease elephantiasis and it is the reason the disease is called elephantiasis. In addition to the above assertion and findings, Prasson and Agrawal, (2020); Sangwan, Ldra, Singh and Captb, (2014), posited that some forms of manifestation of elephantiasis are more endemic in some areas than in others. They posited that limb/leg elephantiasis are more endemic in some areas, while in other areas, hydrocele (elephantiasis of scrotum) is more endemic. Hence in the study areas, it was discovered that the limb/leg were more affected, therefore, lymphedema is more endemic in the communities.

Furthermore, on the question on the awareness that elephantiasis could also affect other parts of the body aside from the ones they have seen, the following were their

responses. 184 (24%) said 'Yes' they were aware that it could also manifest in other parts of the body, while 586 (76%) of the respondent did not know that elephantiasis could also manifest in other parts of the body. This is an indication that there will not be any association between the cause of hydrocele, elephantiasis of the leg, hand or of the breast by those who have no knowledge or idea that they are all lymphatic filariasis (elephantiasis). More so, different meaning causation and treatment will be ascribed to the different manifestation of the disease because of lack of the knowledge of the different forms of manifestation and presentations of the disease.

The responses from the In-depth interview on the various forms and presentation of elephantiasis are thus:

> *I am aware of other form of manifestation and clinical presentation of elephantiasis, it could also manifest in the limbs and scrotum* ***(Johnny/ 45 years old/ Medical Doctor/ Uzebba/ 01/08/2023).***
>
> *I also know that it can affect the legs and private parts* ***(Janet/ 62 years old/ Spiritual Healer/ Uzebba/ 01/08/2023).***
>
> *It could affect the legs and the male private part especially the scrotum* ***(Jackson/ 81 years old/ Herbalist/ Sabo (31/07/2023)***
>
> *Yes I am aware that it manifest in the legs and private parts* ***(Betsy/ 41 years old/ Nurse/ Sabo/ 31/07/2023).***

Conclusion and recommendations

The knowledge of the different forms and presentation of the visible symptom of elephantiasis among the population of study was basically on the limbs and private parts. Other part of the body that could also be affected like the hands, breast, thorax and face, were not known hence not mention in their responses. This also indicated that the type of manifestation common in this study area were the leg and scrotum. This is a proof that the part affected varies from one endemic area to the other. In some areas, it might be the scrotum in some places, others places the limbs, some others the breast etc. now if there is no awareness in this regards, one with elephantiasis of the breast will get a different diagnosis and treatment, and will be treated socially different from a patient with elephantiasis of the limb or scrotum.

The study therefore recommends that intense awareness campaign should be carried out in areas endemic to elephantiasis to create adequate knowledge of elephantiasis

and the different forms of manifestations and clinical presentation. Relevant governmental agencies and Non Government Organisations should engage in meaningful campaigns to also enhance the knowledge of what elephantiasis is among the population, pictures of patients with visible manifestation of the diseases should be displayed for ease of recognition.

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EVALUATION OF FISCAL FEDERALISM IN INTERGOVERNMENTAL RELATIONS IN NIGERIA

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Abstract
The objective of this study is to examine the methodology adopted by the Nigerian Governments over the years in the sharing of revenue among the three tiers of Government. The lopsided nature of revenue allocation among the Federal, State and Local Governments in Nigeria has generated tensions among Nigerians. The study found out that the Federal Government in Nigeria enjoyed greatest revenue allocation to the detriment of the States and Local Governments visa-vis their development opportunities. The paper submits that given the development needs of both State and Local Governments, more revenue allocation should be accorded to the States and Local governments to meet their socio-economic challenges.

Keywords: Fiscal Federalism, Revenue Allocation, Intergovernmental Fiscal Relations, Policy issue in Nigeria

Introduction

The issue of revenue allocation is one of the thorny issues in the practice of fiscal federation in Nigeria. In the same vein, ogbonayo (1994) observed that:
Now the political party has taken hold of various state of Federation the political manoeuvre is here again, most of the states have not enough resources to generate internal revenue and have continued to depend on the dwindling fund allocated to them by the federal Government to maintain the essential services within their various States. Today, the allocation of fund from the federal government is mutilated by political consideration or alignment.

From the statement above, we can infer that in Nigeria, the issue of revenue allocation is partly economic , but it is largely treated as a matter of political compromise and more important the expected development at the local government level are affected by the federal state local government political fiscal relationship.
Revenue allocation or statuary distribution of revenue from the federation account among the different level of government been one of the most continuous and controversial issues in the nation's political life. So contentious has it been that none of the formula evolved at various time by Commissions or Decrees under different regimes since 1964 has gained general acceptability among the component units of the country. Indeed the issue is like a recurring decimal that has painfully

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remained for every regime to grapple with since independence. In the process many formula had been devised for an acceptable revenue allocation each of which is remembered for the controversies it generated than settling it thus, the very first remark about Nigerian federalism is it pre-occupational with revenue allocation.
Most people who are have written or formulated policy for Nigerian have placed emphasis on what is popularly preferred as the share of the national cake .
Unfortunately, not much emphasis has been placed on the baking of cake by every member and component part of the Nigerian political community. Because little or nothing at all is being internally generated, everybody now depends on oil money for the centre.
It has therefore generated suspicion, to the extent that some argued that in terms of the sharing some geographical areas in Nigeria have unduly benefited more than others.

Revenue allocation efforts in Nigeria from 1946-1990

The granting of internal autonomy to the regions under the Richards constitution of 1946 and the consequent sharing of responsibilities between the federal and regional government provided the starting point for the revenue allocation exercise in Nigeria.
The following were the six ad-hoc revenue allocation commissions between 1946-1969.

(a) Philipson Commission (1946)
(b) Hicks/philipson Commission(1951)
(c) Chicks Commission(1953)
(d) Raisman Commission(1958)
(e) Binns Commission(1964)
(f) Dina Commission(1969)

In addition, the various military governments issued decrees in 1967, 1970, 1971 and 1975 on the same subject. The major achievements of these early efforts at revenue allocation are:

(a) the establishment of regional / state government autonomy over certain revenue sources(e.g. personal income tax);
(b) the establishment of federal government exclusive control of some revenue sources (e.g. armed forces income tax);
(c) The creation of a distributable pool Account into which other revenue (including import and export taxes, mining , rent, and royalty, etc) were paid and which was subsequently distributed between the federal and region/state government and
(d) The development of revenue allocation principles, such as derivation, population, even development etc .on the basis of which funds on the distributable pool account were share among regions or state .

The period between 1977 and 1984 saw the emergence of a more comprehensive revenue allocation effort. The revenue allocation commission and legislature during this period include:

(a) The aboyade Committee(1977)
(b) The Okigbo Commission(1980)
(c) Allocation of revenue Act(1981)and
(d) Allocation of revenue amendment Decree (1984).

The Aboyade Report (1977)As part of the transition to the second republic, the federal military government appointed the aboyade technical committee or revenue allocation in 1977 in other to review the intergovernmental tax jurisdiction and revenue allocation arrangement with a view to injecting better efficient in the working of fiscal federalism. Based on consideration for economy and efficiency in tax administration, the aboyade committee was more concerned with setting up more effective administrative and fiscal control than hitherto. It recommended that federally collected revenue (except a personal income tax of armed forces, external affairs officers and capital territory) should be consolidated into one account to be shared by the federal, state and local government, using the following percentages.

Federal Government	_	57
State Government	_	30
Local Government	_	10
Special Grants Account	__	3
Total	__	**100**

In addition to the 10% share of the local government, each state was also to contribute 10% of its total revenue receipt to share of its constituent local government from its fund. The specially grant account was meant to cater for problems for problem requiring special attention, such as oil pollution, general national ecological degradation, national emergency and disaster . the report also recommended five (5) principles for sharing of revenue from the state joint account . The principles are:

(i) Equality and access to development opportunities.
(ii) National minimum standard for national integration;
(iii) Absorptive capacity
(iv) Independence revenue and minimum tax effort and
(v) Fiscal efficiency.

These principle represent a combination of equity and efficiency measures, allowing for the maximization of the development tax among state, the absorptive capacity of state to make full use of funds (an expenditure index), the ability of each tier of government to realize it potential taxable capacity in respect of those revenue sources within its jurisdiction and the minimization of cost of operating government functions. Finally, the committee recommended the establishment of a joint fiscal and planning commission for periodic reviews of the federal fiscal system.

On the horizontal allocation, the aboyade committee suggested that the thirty (30%) share of the state should be shared using the following criteria and indicated percentages:

- Equality of access to develop opportunities __ 25%
- National Minimum Standards For National Integration __ 22%

- Absorptive Capacity _ 20%
- Independence Revenue Tax Effort _ 18%
- Fiscal Efficiency __ 15%

Total __ 100%

The Aboyade committee report was rejected and taken to be too technical for practical implementation.

3.0.1 **The Okigbo Report (1979)**Barely a month of assuming office, president shagari, on November 21, 1979 appointed an eight man presidential commission to harmonize the deliberations and the representation to the constituent assembly by the three tiers of government on the need to ensure that each tier of government had adequate revenue to discharge its constitutional functions. The commission was also to examine the revenue allocation formula and make appropriate recommendations.

The commission use the level of expenditure by each tier of government (both recurrent and capital) as based for determining the relative weight for the allocation of revenue among the three tiers of government and, therefore , recommended that the federal account should be shared using the following percentages.

Federal Government __ 53%
State Government __30%
Local Government__ 10%

Special Fund to be applied as follows:
Initial Development of F.C.T - 2.5%
Mineral Producing Areas - 2.0%
Ecological and Other Disasters- 1.0%
Revenue Equalization Fund - 5%
Total - **100%**

It is important to highlight the view of okigbo commission that a satisfactory allocation system should strive to satisfy the twin objective of equity and efficiency , strengthen the effort of the federal government to manage the national economy, ensure adequate financial flow to the state and local government , and be capable quickly adapting to changing circumstances . the 1981 allocation of revenue federal account act but enacted by the national assembly following the government white paper .these account was amended in 1984 by a decree raising a share of state from 30.5% to 32.5% table one gives a summary of okigbos recommendation, the adjustment in the government white paper and subsequent amendment in the 1981 act and the 1984 decree.

On horizontal allocation the okigbo recommendation is as shown in table two. It is important to know that the government white paper, the 1981 account and the 1984 decree all accepted the okigbo recommendation with respect to horizontal sharing.

Table 1: vertical Allocation: the okigbos government white paper (GWP) 1981 account and 1984 decree.

1981 1984				
	Okigbo	GWP	ACT	Amendment
i. Federal Government	53	55.0	55.0	55.0
ii State Government	30.0	30.0	30.5	32.5a
iii Local Government	10.0	8.0	10.0	10.0
iv Development of F.C.T	2.5	-	-	-
v Mineral producing State Derivation	_	2.0	2.0	2.0b
vi Development Ecological producing Area	2.0	1.5	1.5	1.5c
vii General Ecological Problem	1.0	1.0	1.0	1.0
viii Revenue Equalization	1.5	-	-	-

Note: G.W.P=Government White Paper
Source: NRMA/FC Report, volume II (1989) P 81
Table 2: Horizontal Allocation: The okigbos GWP, 1981 Act 1984 Decree.

		%	**GWP**	**1981 ACT**	**1984** Amendment
I	Minimum responsibilities of government	40.0	40..0		40,0
Ii	Population	40.0	40;0		40.0
Iii	Social Development fact (a) primary school enrolment of which Direct enrolment Inverse enrolment	11,25 3,75	11,24 3.75		11,25 3.75
Iv	Internal Revenue Effort	5	5	5	5

Source: NRMA/FC, report. Vol2 (1989) P.81

The Oklgbo commission also recommended the use of the above criteria and ways for sharing revenue among the local government within a state each state government was to contribute to the state joint local government account (SJLGA) for sharing among the local government in the state and 5% of the state government total revenue.

The National Revenue Mobilization, Allocation and Fiscal Commission 1989

The National Revenue Mobilization, Allocation and Fiscal Commission (NRMAFC) was established by decree No. 49 of 1989.

Soon after its inauguration on 6 September, 1988, the National Revenue Mobilization, Allocation and Fiscal Commission started work on a new allocation formula which was approved by the Armed Forces Ruling Council (AFRC) and

became operational with effect from January 1990. The changes made to the commission recommendation were marginal. None the less, the changes brought into focus some of the issues raised earlier. Table three summarizes the commission recommendation and the approval of government on vertical application.

Table 3: vertical allocation: commission's recommendations and government approval.

	COMMISSIONS RECOMMENDATION			AFRC APPROVAL	
I	Federal Government		47%	I	50%
Ii	State Government		30%	Ii	30%
Iii	Local Government		15%	Ii	15%
Iv	Special Funds (a) FCT (b) Stabilization (c) Savings (d) Derivation (e) Development of oil mineral producing areas (f) Development of non oil mineral producing area (g) General ecology		 1%FA 05%FA 2.0%FA 2.0%FA 1.5%MR 05%NMR 0.5%FA	 (a) (b) (c) (d) (e) (f) (g)	 1% 0.5% 0% 1% 1.5% 0% 1.0%
	Total			100%	100%

SOURCE: NRMA/FC Report, volume two (1989) P81

Notes: FA = Federal Account
MR = Mineral Revenue
OMR = Oil Mineral Revenue
NOMR = Non Oil Mineral Revenue

The changes in the political, economic and social structure of the country prompted the federal government to call for a review in the current revenue allocation formula. The commission completed the review exercise and submitted it report to the government.

Horizontal allocation sharing among the state and local government

The commission was guided on the selected principle for sharing and among the state by the availability of data case of measurements, equity, and the applicability of the principle, as well of the avoidance of radical departure just for the sake of it, from the previous practice. As shown I n table 4 government accepted most of the recommendations on horizontal allocation. But however, reduced the internal revenue effort (IRE) from 20% to 10% and allocated land mass and terrain 10%. Using the approved formula and principles, we produce in table 4 summary of the

total revenue paid into the federation account and the allocation for 1990 and 1991.

Table 4: **Horizontal Allocation C**ommission's Recommendation and Government Approval.

COMMISSIONS RECOMMENDATION		AFRC APPROVAL	
Equality of State	40%	I equality of state	40%
Population	30%	Ii population	30%
Social Development factor (a) Education (b) Health (c) Water (d) Landmass & Terrain Inter. Revenue Effort	10%	Iii social development factor (a) education (b) health (c) water (d) land mass and terrain inter. Revenue effort iv internal revenue effort	10%
Total	20.0% 100%		10% 10% 100%

Source: NRMA/FC Report, vol ii (1989) p.81

Discussion on revenue allocation formula is inexhaustible, but what is to be understood is that the constituent units in the Nigerian federation had been tinkered with so many things at the state or local government level. With these increasing number of units and with what is to be shared , not varying much, greater pressure is put on available resources, hence , the national cake is fragmented among many units . With such fragmentation no unit really gets satisfied at the end of the day.

The present formula for sharing the federation account goes thus:
Federal government – 45%
State - 30%
Local government - 20%
Ecology and others – 05%
Total – 100%

Principles of Revenue Allocation

From the forgoing, if it is critically examined one will agree that revenue allocation in Nigeria has always been based on the principles summarized above. What can be observed from the review and the principle is that, revenue allocation in Nigeria is essentially a politically continuous issue. The most popular principles applied in the

allocation of revenue in Nigeria are Derivation, Need, Balanced Development, Financial comparability, Equality of State, Population, Minimum National Standard and Land area. We shall have a thorough analysis of these principles and possible look at their merits and demerits.

Derivation Derivation means more revenue should be allocated to the areas where the revenues are derived from. Before independence it was the basic formula adopted and it enriched the agriculture areas of western region especially. Before the military government came to power in 1966, the amount that went to the region on the basis of derivation was tool high. The military regime / it to an insignificant, figure and dump all the money formerly paid under derivation into the federal government, which is now shared with other principles. Presently the 1999 constitution approved 13% under derivation principles. Today most oil producing states believed that the thirteen percent given under derivation is not even enough hence the present slogan of resources control. But to other schools of thought, the issue is not of resource control, but resource management.

The problem from the use of derivation as a form from the disbursement of national revenue is principally the inability to determine how much is got from a state as start on the basis of commodity consumed. For instance, how do you know how much cigarette is consumed so that you can determine how much a state can get from a revenue accruing from the sale of tobacco.

Need this formula is also used for the disbursement of funds from the federal account. Need is often equated with population simply means to the money accruing to the state on the basis of the annual capitation tax derived from the state, I.e the tax per head- this is used as a raw estimate of what a population of such a place would be, then consequently the amount it would get from the federal account .

Balance Development Although in federalism, every component part should be, as much as possible, self supporting, the democratic spirit behind federalism demands that no component part should be left so far behind the union. As a result, weaker area experiences specific fiscal assistance paid out of the federation account. This formula has been criticized on ground that it encourages indolence and slow down more dynamic state.

Financial comparability this formula is a combination of Need and Even Development. It tends to look at how much it is derived from Personal Income Tax from funds . The usual criticism against the use of need prevails here. Besides, it is very subjective to value accurately the standard of service rendered by state.

Equality The military introduced it when the twelve state structures were established to distribute the common account of the former northern region. it later came into use as a national formula. This means that an equal amount of money is shared to all state irrespective of any obvious difference. The formula have been condemned that it makes more viable state suffer at the expense of the weaker ones.

Population Resource are shared also to the population of state. The ratio is worth out and areas with large population receive more while less populated areas receive less. The argument against this formula is the Nigerian has no current census figures. This criticism is on the basis that population could not determine the productivity of a given area.

Minimum National Standard this means that all state of federation should be able to maintain at least a given standard in the quality and quantity of services rendered to their citizens. As result, money is allocated much in backward areas. This has element of need. The formula is criticized because it does not encourage the spirit of hard work. It bothers on the assumption that the federal government must always come to the aid of backward state.

Land Area This principle appeared for the first time in Okigbo committee report in 1980. It implies that, state with large land masses should be given preference over their counterparts with smaller land masses. In other words, formula argued that it will be more interesting to note specifically how amounts are located in lieu of land mass were utilized than merely paying them out on the undeveloped land.

Over the year's successive government in Nigeria have adopted the various criteria in the light of the recommendation of the various revenue commission set up by government. Among the various criteria analyzed above, they are hardly any without advantages, but the most contention issue is the weight to be attached to the criteria that will be acceptable to the generality of Nigerian.
What can be observed from the review and the principles is that, revenue allocation in Nigeria is essentially a politically contentious and continuous issue.

4.0 State or Local Government Development and Revenue Allocation: What Impact?

Having given the highlights so far on the revenue allocation efforts and the principle involved, it will be necessary for the sake of relevance to raise the above question.
Common knowledge detects that, local government is a sub division of the state and thus, whatever affects the state affect the local government. Furthermore, local governments, to a large extent, depend on allocation to survive. Thus, no meaningful social, political and economic development can take place at the local government level without adequate revenue allocation, if the identified issues are not promptly tackled.

The impact of revenue allocation on local government development is very glaring with it attendant effects. Since the 1989 revenue allocation formula came into force (in 1990) Nigerians political image have witnessed a lot of changes. These changes have very serious implications on revenue transfer to the local government. For example, it is an observable fact that the equal factor in the number of local government has led to a significant reduction in the amount going to each local government the observable decline of share of revenue to local government based

on the equality factor means a corresponding decline on the ability of these levels of government to perform the minimum responsibility required of them.

It is also to be observed that, revenue allocation to the local government is tantermand to " gone with the wind" this is so especially when the initiation of federal programmes such as DFFRI, better life, MAMSER, SAP, family support programmes, FEAP, PAP, etc that are not initiated by the lower tier of government constitute a further drain on the resource available to the local government this constitute a great impact on the development of the local areas hence, the general feeling among the state and local government is that since the 1992 revision of the vertical allocation formula , they has been resultant revision in the shares of the federation account which have not been matched a corresponding decrees in their constitutional responsibilities. Indeed they have been arguing that the federal government has been shifting some of their responsibilities to them and these trends have created destruction in development at the lower level of government. in addition to the above , the impact of policy on the development of local government is great, especially because that jurisdiction for all the high revenue sources of taxation are retain by the federal government. This does not augur well for fiscal federalism in Nigeria. After all it is the state and local government that create the enabling environment for this lucrative tax sources to prosper.

Summary

The impact of policy involve in revenue of allocation on the development of local government cannot be over emphasized because of the following factors:

1. The politics of more local government creation in the face of scarce resources means a reduction in revenue shared among the local government.
2. The persistent shift of bulk of the high building revenue to the federal level has serious implication for development at the state and local government level.
3. conversely , they is continuous shift of more burdens in the form of executing federal projects and the practice of presidential system of government to the local government without the corresponding increase in their revenue. This development has created a serious imbalance in the execution of local government development program. After on, the issue of revenue allocation is a political issue. More importantly it centres more on the sharing of the national cake than baking it. And since resource are scarce coupled with a further transfer of responsibility to the local government , the rate and impact of development at the third tier of government can only be imagined . For instance, such a situation can breed unrest and political instability, since the local government can not meet their demands of the local masses. it is my opinion that increase in the responsibilities of the local government should be matched by a corresponding increase in funds from the federal government, even if it means making grants to the local government to meet up the demands for the local development.

Recommendations

As earlier stated, the issue of revenue allocation is a controversial issue. We should

however, not be frustrated by this on the strength of this statement. The following recommendations are suggested.

1. In a highly dynamic country like ours, laws affecting revenue allocation should be reviewed regularly.A situation where all the high yielding sources of taxation are retained by federal government does not augur well for fiscal federation it is therefore recommended that the federal government should direct itself of some of the tax jurisdiction it has accumulated that to enable state and local government become less dependent on the centre.
2. The shift of some of the constitutional federal body to the state and local government should be backed up with additional input in funding or grant.
3. There should be adequate devolution of powers to the lower levels of government in the spirit of co-operating federalism. The over concentration of power at the centre which has almost 67 areas of jurisdiction in the exclusive federal list have made it as central of attraction where everyone wants to be. This can be minimized through the process of devolution of Power.

Conclusion

In conclusion, the issue of revenue allocation is no doubt a political one just like Ogbonayo has rightly observed and the impact of politics of revenue allocation on the development of the Nigerian state cannot be over emphasized. However, one must note that the whole gamut of revenue allocation system in Nigeria is subject to continuous debates. Finally, the stability of government in the new millennium will be better guaranteed if the three tiers of government operate efficiently through adequate revenue allocation and political compromise.

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THE DEVELOPMENT OF A CHATBOT FOR CUSTOMER SERVICE

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Abstract

The integration of artificial intelligence (AI) into customer service has transformed how organizations engage with their clients. Chatbots—AI-powered conversational agents—provide real-time responses, improve service efficiency, and reduce operational costs. This study focused on the design, development, and evaluation of a chatbot system tailored for customer service. The modified waterfall methodology was employed, ensuring systematic analysis, design, implementation, and testing. Primary data were obtained from customers and ICT experts through questionnaires and interviews, while secondary data were gathered from existing literature. The findings revealed that the chatbot significantly enhanced response speed, reduced wait time, and improved customer satisfaction. Hypothesis testing confirmed that chatbot adoption has a statistically significant effect on customer service efficiency. The study concludes that chatbots represent a strategic tool for institutions and businesses to improve customer relations, and recommends integration with existing systems, periodic updates, and user training for optimal results.

Keywords: Chatbot, Artificial Intelligence, Customer Service, ICT, Modified Waterfall Model

Introduction

Customer service has long been recognized as a critical determinant of organizational success (Parasuraman et al., 1988). With the increasing demand for immediate responses in the digital age, traditional human-based customer support often struggles to meet expectations. Long queues, limited service hours, and inconsistencies in information delivery remain persistent challenges.

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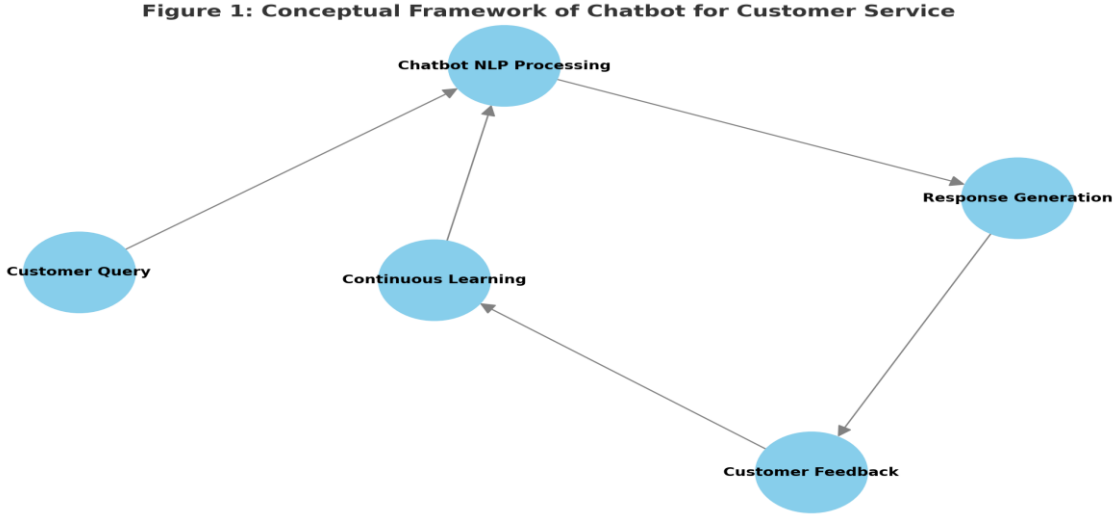
Advancements in artificial intelligence and natural language processing (NLP) have paved the way for chatbot technologies that mimic human conversation while providing round-the-clock service (Colby, 2021). Chatbots offer instant responses, multitasking abilities, and seamless integration into web platforms, mobile applications, and social media. The conceptual framework of a chatbot for customer service is grounded in artificial intelligence, natural language processing, and human-computer

interaction theories, positioning the chatbot as a digital intermediary that enhances customer engagement and organizational efficiency. According to Shawar and Atwell (2007), chatbots function as conversational agents that interpret user queries and generate relevant responses based on structured rules or AI models. More recent studies highlight that effective customer service chatbots rely on intent recognition, knowledge base integration, and continuous learning to improve personalization and response accuracy (Adam, Wessel, & Benlian, 2021). Vlahu-Gjorgievska and Zdravevski (2022) further emphasize the role of feedback loops in improving system performance and user satisfaction, illustrating how customer interactions can refine chatbot intelligence. Thus, the conceptual framework situates the chatbot within a dynamic ecosystem where customer input is processed by an AI-driven engine, linked to a knowledge base, and refined through feedback, ultimately creating a responsive, adaptive, and scalable service delivery model.

Figure 1: Conceptual Framework of Chatbot for Customer Service



Customer service is central to organizational survival and growth in today's competitive global economy. It serves as the primary interface through which businesses engage, retain, and satisfy their clients. Traditionally, customer service relied heavily on human agents, telephone lines, and physical interactions. However, this model has proven to be limited due to long waiting times, high operational costs, and inefficiency in managing large volumes of inquiries (Okonkwo, 2019). With increasing customer expectations for immediacy, personalization, and convenience, organizations have sought technological solutions to improve service delivery.

Artificial Intelligence (AI) has emerged as a transformative force in this regard, particularly through the adoption of chatbots. A chatbot is a conversational agent designed to interact with users through

natural language, providing instant responses to queries without direct human intervention (Dale, 2016). Chatbots can operate via text or voice interfaces on websites, mobile applications, and messaging platforms, making them versatile tools in customer service.

The deployment of chatbots has become popular across industries, including banking, e-commerce, healthcare, and education, because they provide round-the-clock support, reduce workload on human agents, and ensure greater consistency in communication (Følstad & Brandtzaeg, 2017). In Nigeria, financial institutions, telecommunication companies, and online retail platforms are increasingly adopting chatbot technologies to enhance customer experience (Adepoju & Olayinka, 2019).

Despite their advantages, chatbots also face challenges such as limited contextual understanding, cultural and linguistic diversity, technical infrastructure constraints, and resistance from customers who prefer human interactions (Nuruzzaman & Hussain, 2018). These issues are particularly significant in developing countries where infrastructural limitations may hinder the smooth adoption of AI technologies (Okonkwo, 2019).

This study, therefore, focuses on the development of a chatbot for customer service with emphasis on its effectiveness, benefits, and challenges. It also seeks to contribute to the growing body of knowledge by exploring how chatbot systems can be tailored to the Nigerian context, addressing specific cultural and technological constraints.

Research Questions

1. To what extent does the use of chatbots improve customer service efficiency?
2. What is the impact of chatbot adoption on customer satisfaction?

Research Hypotheses

- **H_{11}:** Chatbots significantly improve customer service efficiency.
- **H_{12}:** Chatbot adoption has a significant effect on customer satisfaction.

Literature Review

The application of chatbots in customer service has attracted growing scholarly attention worldwide, with researchers highlighting both opportunities and limitations. Chatbots are widely defined as conversational systems that use natural language processing (NLP) and artificial intelligence (AI) to simulate human dialogue (Shawar & Atwell, 2007). They serve as digital assistants capable of

handling routine queries, providing personalized responses, and offering 24/7 support (Jain, Kumar, Kota, & Patel, 2018).

Globally, studies emphasize the transformative impact of chatbots on service delivery. Følstad and Brandtzaeg (2017) observed that customers appreciate the immediacy of chatbot responses but remain cautious about their ability to fully replace human interactions. Xu, Liu, Guo, Sinha, and Akkiraju (2017) noted that chatbot adoption in organizations improves efficiency but is limited by challenges of contextual understanding. Similarly, Adam, Wessel, and Benlian (2021) argued that while AI-based chatbots increase compliance and satisfaction, poor design can lead to customer frustration.

In the African and Nigerian context, digital transformation is reshaping customer service delivery. According to Ayo (2011), Nigeria has experienced significant growth in e-commerce, creating demand for efficient customer interaction platforms. Chatbots, in this regard, are seen as tools to bridge service gaps caused by infrastructural limitations and shortage of skilled manpower. Adepoju, Oyelere, and Suhonen (2019) highlighted that AI technologies in Nigeria are still in their early stages, but adoption in sectors like banking and telecommunications is steadily rising. For example, Nigerian banks such as Access Bank ("Tamara") and United Bank for Africa ("Leo") have deployed AI-powered chatbots to handle customer requests, illustrating practical relevance (Ogunyemi, 2020).

Furthermore, Olaleye, Adepoju, and Akinbode (2021) emphasized that Nigerian customers increasingly prefer digital interaction platforms due to convenience, affordability, and accessibility, especially on mobile devices. However, issues such as internet instability, low AI literacy, and lack of local language support limit chatbot effectiveness. This aligns with global findings by Brandtzaeg and Følstad (2018), who observed that personalization and context-awareness remain major challenges.

Comparative studies also reveal that while developed countries focus on enhancing customer experience through sophisticated chatbot designs, developing economies prioritize cost reduction and accessibility (Ajah & Nweke, 2019). This indicates a research gap: most chatbots deployed in Nigeria lack advanced NLP capabilities for indigenous languages such as Yoruba, Hausa, and Igbo, making inclusivity a challenge.

Overall, literature shows that chatbots are valuable tools for modernizing customer service, offering benefits such as reduced operational costs, faster responses, and greater accessibility. However, their success—particularly in the Nigerian context—depends on cultural adaptability, integration with existing business systems, and the ability to process local languages effectively.

Evolution of Chatbots

The history of chatbots reflects the broader trajectory of artificial intelligence, progressing from simple rule-based systems to advanced AI-driven conversational agents. The earliest chatbot, ELIZA (1966**),** created by Joseph Weizenbaum, demonstrated the potential of simulating human conversation through pattern-matching techniques, albeit in a limited and scripted manner (Weizenbaum, 1966). This was followed by PARRY (1972**),** designed by Kenneth Colby, which attempted to mimic the conversational style of a patient with paranoid schizophrenia, offering a more psychologically informed interaction model (Colby, 1975). The 1990s introduced ALICE (Artificial Linguistic Internet Computer Entity**)**, which employed AIML (Artificial Intelligence Markup Language) to provide structured, though still rule-based, responses and went on to influence early chatbot development significantly (Wallace, 2009). With the rise of the internet and instant messaging platforms in the 2000s, chatbots became increasingly integrated into customer service environments. The release of intelligent virtual assistants such as Apple's Siri (2011), Amazon's Alexa (2014), and Google Assistant (2016) marked a paradigm shift, incorporating natural language understanding, speech recognition, and machine learning. More recently, the advent of transformer-based large language models, including OpenAI's GPT series, has enabled unprecedented contextual awareness and naturalness in human–machine dialogue (Vaswani et al., 2017; Brown et al., 2020). Today, chatbots serve as critical tools across education, healthcare, e-commerce, and customer service, showcasing their evolution from novelty experiments to indispensable AI-powered assistants.

With advancements in natural language processing (NLP) and machine learning, modern chatbots now leverage deep learning to generate more human-like and context-aware responses (Jain et al., 2018). The evolution from rule-based to AI-driven chatbots marks a shift towards systems that can learn from large datasets and adapt dynamically to user needs.

Chatbots in Customer Service

The integration of chatbots into customer service has been widely studied. Brandtzaeg and Følstad (2017) observed that chatbots provide convenience by offering 24/7 customer engagement, reducing wait times, and enhancing the overall user experience. Følstad and Skjuve (2019) also highlighted that businesses adopt chatbots primarily for efficiency, scalability, and cost reduction.

In the Nigerian context, Adepoju and Olayinka (2019) found that banks and e-commerce companies have deployed chatbots for services such as balance inquiries, transaction histories, complaint

resolution, and order tracking. This reflects the growing recognition of chatbots as valuable tools in emerging economies.

Benefits of Chatbot Deployment

The literature highlights several advantages of chatbot integration:

- Operational Efficiency: Chatbots reduce the burden on human agents by automating repetitive tasks (Adam et al., 2020).
- Customer Satisfaction: Jain et al. (2018) argue that chatbots improve service delivery by providing prompt responses and ensuring consistency.
- Data-Driven Insights: Logs from chatbot interactions can be analyzed to reveal customer preferences and service gaps (Davenport & Ronanki, 2018).
- Cost Reduction: Organizations reduce labor costs by minimizing reliance on human staff for basic inquiries (Følstad & Brandtzaeg, 2017).

Challenges and Limitations

Despite their potential, chatbots face several limitations:

- Language Ambiguity: Dale (2016) noted that chatbots often fail to interpret user intent accurately, especially in complex conversations.
- Trust and Acceptance: Some customers perceive chatbots as impersonal and prefer direct interaction with human agents (Følstad & Brandtzaeg, 2020).
- Infrastructure Challenges: In developing countries, poor internet connectivity and low digital literacy remain barriers to adoption (Okonkwo, 2019).
- Ethical Concerns: Issues of data privacy and security remain significant when chatbots handle sensitive customer information (Nuruzzaman & Hussain, 2018).

Theoretical Foundations

The adoption and use of chatbots can be understood through several theoretical models:

- Technology Acceptance Model (TAM): Davis (1989) explains that perceived usefulness and ease of use significantly influence technology acceptance.
- Diffusion of Innovation (DOI): Rogers (2003) emphasizes how innovations spread through communication channels, influenced by factors such as compatibility and relative advantage.

- Service-Dominant Logic (SDL): Vargo and Lusch (2004) argue that value is co-created between organizations and customers, which aligns with chatbot systems designed to enhance service interactions.

Research Gaps

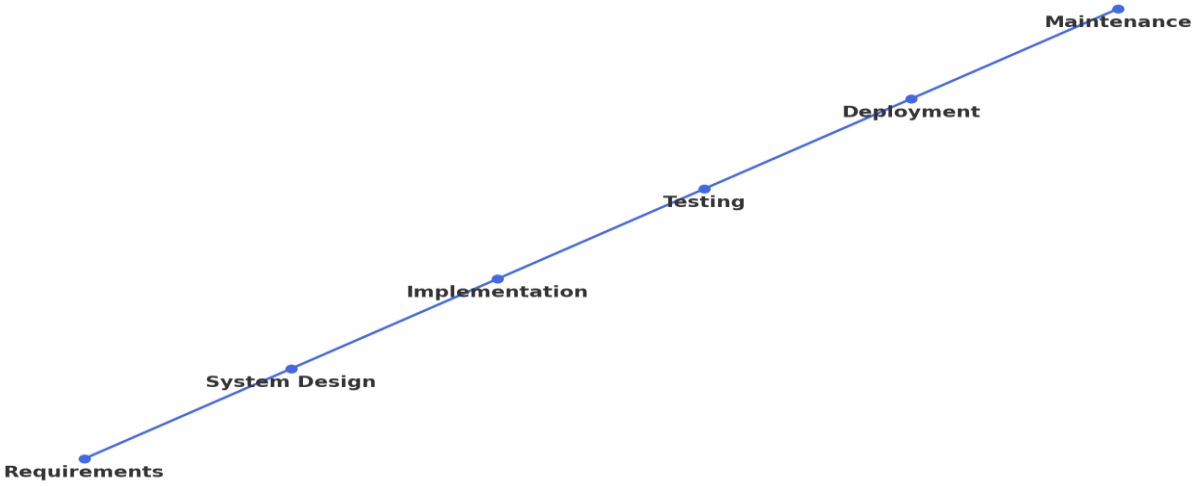
While much research has explored chatbot adoption in developed economies, limited empirical studies exist on their deployment in Nigeria and Africa. Most existing works focus on technical design rather than user experience, cultural adaptation, and infrastructural constraints (Adepoju & Olayinka, 2019). This gap underscores the need for research like the present study, which addresses both the technological and socio-cultural dynamics of chatbot deployment in customer service.

Methodology and Data Collection

Research Design

This study adopted a **descriptive and experimental research design**, combining both qualitative and quantitative approaches to ensure a comprehensive evaluation of the system. The **modified waterfall model** was employed to guide the system development process, providing a structured framework that ensured systematic progression from requirements analysis through design, implementation, testing, and deployment. This model was particularly suitable as it allowed for iterative modifications while maintaining detailed documentation, which is essential in academic and institutional contexts. To assess the effectiveness of the developed chatbot system, **surveys were administered** to capture users' perceptions of satisfaction, ease of use, and overall efficiency.

Figure 2: Modified Waterfall Model for Chatbot Development



Population and Sample

- **Population:** Customers and ICT staff of selected institutions.
- **Sample Size:** 100 respondents (80 customers, 20 staff) selected using purposive sampling.

Data Collection Instruments

1. Structured questionnaires (efficiency and satisfaction measures).
2. Interviews with ICT staff.
3. System testing (response time, error rate, task completion).

Data Analysis

- Descriptive statistics (mean, frequency, percentage).
- Hypothesis testing using chi-square and t-test.

Results and Analysis

Hypothesis One Analysis

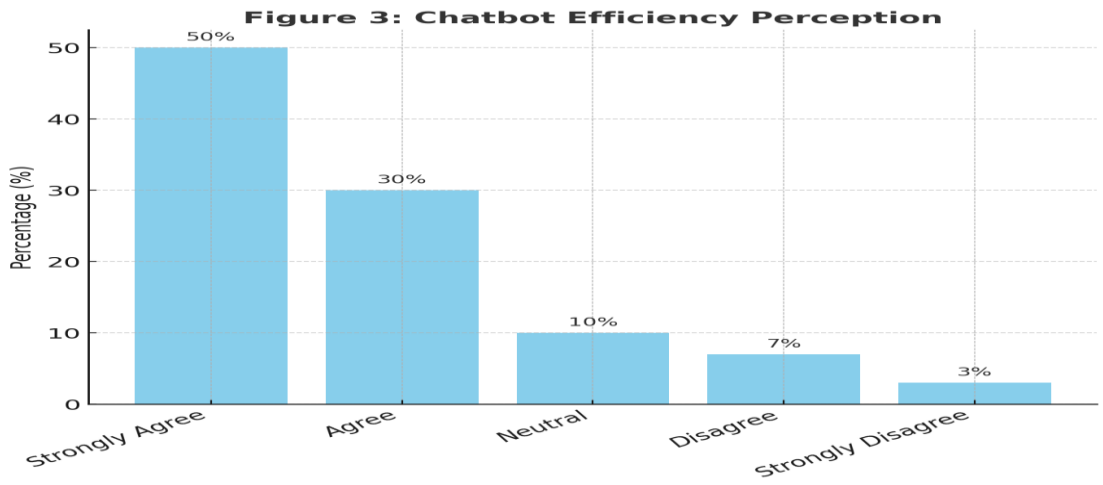
H_{11}: Chatbots significantly improve customer service efficiency based on respondent perception.

Response	Frequency	Percentage (%)
Strongly Agree	50	50%
Agree	30	30%
Neutral	10	10%
Disagree	7	7%
Strongly Disagree	3	3%

Table 1: Respondents' Perception of Chatbot Efficiency: The analysis reveals that 50% of respondents strongly agree and 30% agree that chatbots significantly improve customer service efficiency. This indicates a strong positive perception among respondents, suggesting that chatbots are effective in enhancing customer service.

Chi-square test result: $p < 0.05 \rightarrow$ Reject H_{01}.

Conclusion: Chatbots significantly improve efficiency.



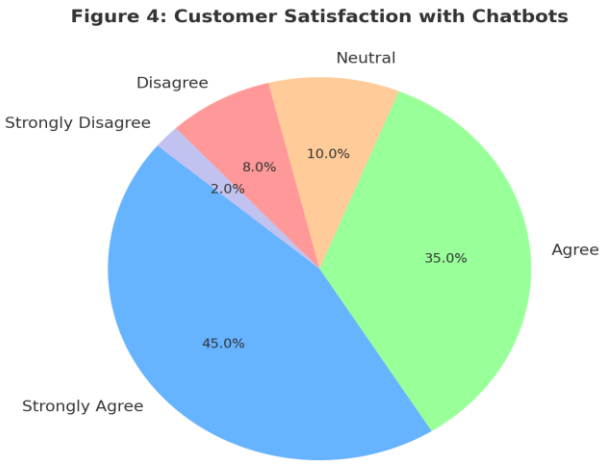
Hypothesis Two Analysis

H_{12}: Chatbot adoption has a significant effect on customer satisfaction: The analysis reveals a significant positive correlation between chatbot adoption and customer satisfaction. As shown in the table below:

Response	Frequency	Percentage (%)
Strongly Agree	45	45%
Agree	35	35%
Neutral	10	10%
Disagree	8	8%
Strongly Disagree	2	2%

Table 2: Respondents' Perception of Chatbot and Customer Satisfaction: The results indicate that 45% of respondents (45% strongly agree and 35% agree) reported a positive experience with chatbot adoption, while only 10% were neutral and 8% expressed disagree. This suggests that chatbot adoption has a substantial impact on enhancing customer satisfaction.

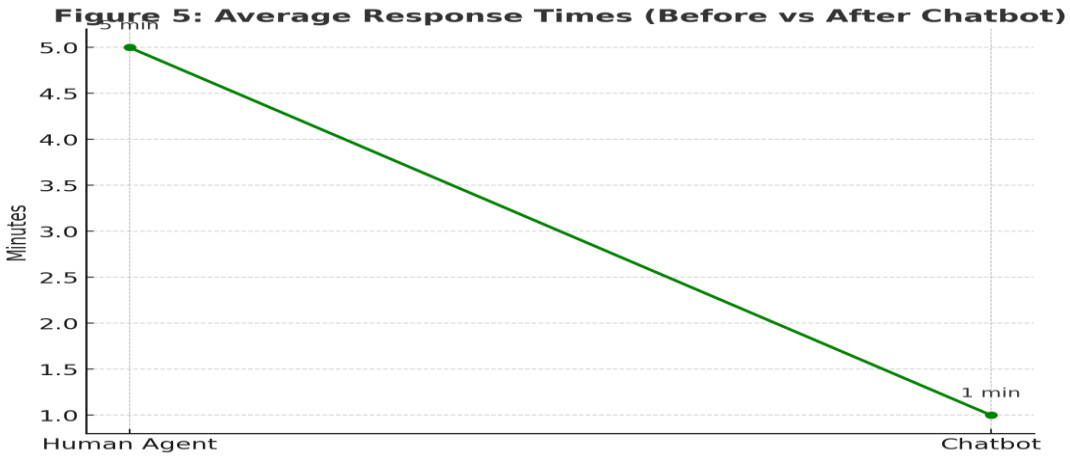
Chi-square test result: $p < 0.05 \rightarrow$ Reject H_{02}.
Conclusion: Chatbots significantly enhance customer satisfaction.



Research Question One Analysis

RQ1: To what extent does the use of chatbots improve customer service efficiency?

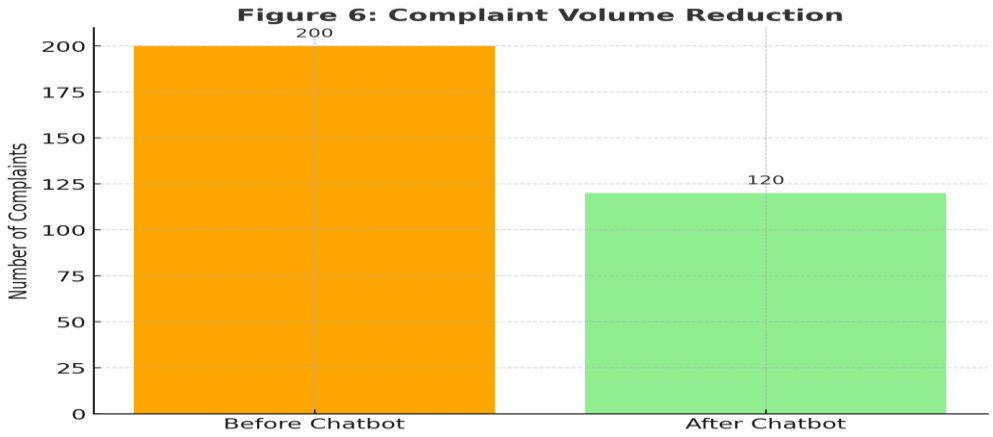
- 80% of respondents agreed efficiency was improved.
- Average response time reduced from 5 minutes (human agents) to less than 1 minute (chatbot).



Research Question Two Analysis

RQ2: What is the impact of chatbot adoption on customer satisfaction?

- 70% of respondents rated chatbot service as “satisfactory” or “highly satisfactory.”
- Customer complaint volume reduced by 40%.



In RQ1 the above chart described the use of chatbots significantly improves customer service efficiency, with 80% of respondents agreeing that efficiency has improved. Notably, the average response time has drastically reduced from 5 minutes with human agents to less than 1 minute with chatbots. This substantial reduction in response time highlights the potential of chatbots to enhance customer service efficiency. While RQ2 also mention the adoption of chatbots has a positive impact on customer satisfaction, with 70% of respondents rating chatbot service as "satisfactory" or "highly satisfactory." Furthermore, the implementation of chatbots has led to a 40% reduction in customer complaint volume. These findings suggest that chatbots are effective in improving customer satisfaction.

Discussion of Findings

The findings showed that 80% of respondents agreed that chatbot use improved efficiency, reducing average response time from five minutes (human agents) to under one minute (chatbot). Hypothesis testing confirmed statistical significance, supporting the argument that chatbots improve service delivery efficiency.

In terms of customer satisfaction, 70% of respondents reported satisfaction with chatbot services, and complaint volume decreased by 40%. These results demonstrate that chatbots provide consistency and reliability, enhancing customer experience.

The findings align with Hill et al. (2015) and Gnewuch et al. (2017), who also observed efficiency improvements, as well as Jain et al. (2018), who linked chatbots with higher satisfaction levels. Although some respondents expressed reservations, likely due to chatbot limitations in handling complex queries, the overall effect was positive.

Recommendations

1. Organizations should adopt hybrid systems, combining chatbots and human agents for optimal performance.

2. Chatbots must undergo continuous training and dataset updates to reflect evolving customer needs.
3. Structured feedback mechanisms should be implemented to improve system responsiveness.
4. ICT staff should receive training to manage and refine chatbot systems.
5. Privacy and security policies must be enforced to protect customer data.
6. Chatbots should be integrated into Customer Relationship Management (CRM) and Enterprise Resource Planning (ERP) systems for seamless operations.
7. In Nigeria, chatbots should support local languages and dialects to improve accessibility.

Conclusion

This study demonstrated that chatbots enhance customer service by improving efficiency, reducing response time, and increasing satisfaction. While they cannot fully replace human agents, chatbots are effective in managing routine queries and providing round-the-clock support.

The findings confirm that chatbots are a strategic necessity for organizations that wish to remain competitive in a digital environment. For long-term effectiveness, organizations must invest in continuous system upgrades, hybrid adoption strategies, and staff training.

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