7TH INTERNATIONAL INTERDISCIPLINARY RESEARCH & DEVELOPMENT CONFERENCE

THEME: DEVELOPMENT CHALLENGES & SUSTAINABILITY IN AFRICA: MULTI-DISCIPLINARY DISCOURSE

CONFERENCE PROCEEDINGS

Wednesday 14th - Thursday 15th December, 2022
Benue State University - Nigeria

7TH INTERNATIONAL INTERDISCIPLINARY RESEARCH & DEVELOPMENT CONFERENCE

OBJECTIVE

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THEME

Development Challenges & Sustainability in Africa: Multi-Disciplinary Discourse

DATE: Wednesday 14th - Thursday 15th December, 2022

VENUE: Benue State University, Markurdi - Nigeria

TIME: 9:00am

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CONFERENCE PROGRAMME

DAY ONE – Wednesday 14th December, 2022

OPENING SESSION/PLENARY

Conference Registration	- 8:00am – 9:00am
Opening Prayer/Welcome Remark	- 9:00am – 9:15am
Institutional Brief/Chairman's Opening Remark	- 9:15am – 9:30am
Research Training	- 9:30am – 12noon
Launch Break/Group Photograph	- 12noon – 1:00pm
Plenary Session	- 1:00pm – 4:00pm
Policy Review Session	- 4:00pm – 5:00pm

DAY TWO – Thursday 15 December, 2022

OPENING SESSION/PLENARY

Conference Registration	- 8:00am – 9:00am
Opening Prayer/Welcome Remark	- 9:00am – 9:15am
Institutional Brief/Chairman's Opening Remark	- 9:15am – 9:30am
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Launch Break/Group Photograph	- 12noon – 1:00pm
Plenary Session	- 1:00pm – 4:00pm
Policy Review Session	- 4:00pm – 5:00pm

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1. The Plenary/Technical session is compulsory for all conferee. You are advised to note the comments pointed out by the Chairman of the Technical Session and other members of the plenary group. This will help you effects corrections as expected.

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Re-Evaluating Technological Innovations and Public Sector Performance in Nigeria: A Study of Central Bank of Nigeria, 2005-2021

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Abstract

The study examined the influence of technology adoption on public sector performance of Central Bank of Nigeria, 2005-2021. E-banking, automation, communication devices and work computerization were used as the dimensions of technology adoption in this study. The study used productivity to measure organisational performance of Central Bank of Nigeria. The study adopted descriptive and inferential statistical tools to analyze the data and test the hypotheses. The study used a questionnaire to elicit information from the respondents. The target population of the study consisted of all the 154 of CBN staff identified by this study. The study sampled 154 respondents from Central Bank of Nigeria and validly used 133 respondents representing 86.36% response rate for data analysis. The study found that Central Bank of Nigeria uses e-banking, automation, communication devices and bank computerization to conduct their technology adoption activities in the manner of promoting banking operations and persuasion of customers to patronize them and these activities enhance organisational performance of banks. The study revealed that e-banking has positive but significant effect on productivity. The study discovered that automation has positive and significant effect on productivity. The study revealed that communication devices have positive and significant effect on productivity. The study found that bank computerization has positive and significant effect on productivity. The study concludes that as banks use e-banking, automation, communication devices and bank computerization to perform banking operations their productivity is significantly and positively boosted. The study therefore recommends that Central Bank of Nigeria authorities should use e-banking, automation, communication devices and bank computerization to their advantage by encouraging their staff and not just the e-banking department to participate in technology adoption which in turn covers more ground for the enhancement of productivity leading to organisational performance of Central Bank of Nigeria.

Keywords: *Technology adoption, Productivity, Organisational performance, E-Banking, Bank Computerization, Central Bank of Nigeria*

Introduction

Technology adoption activities have changed significantly of recent because of internet-based possibilities. The traditional marketing model and marketing approaches do not adequately and efficiently utilize the possibilities of the Internet. The technology adoption is one approach that uses the new potentials on the internet (Järvinen and Karjaluoto, 2015). Some of the channels being utilized by technology adoption include e-banking, communication devices, bank computerization, websites, automation, Instagram, Google+ among others to reach the customer satisfactorily (Enyioko, 2019). Technology adoption is the marketing process of gaining attention on website traffic through digital applications that help the company to publicize its products and services. It is used for promotion of products or services in different social networks in form of advertisements or in form of content. The basic goal is to increase sales of a product/service or to build brand awareness (Ryan, 2014).

Technology adoption is defined by Elena (2016) as a new era- revolutionizing - tool that allows communication/transactions between individuals, companies and different groups from all around the world to share and exchange information and ideas in an interactive way for the purpose of attracting customers to patronize their companies. Technology adoption platforms such as automation, Instagram, communication devices, bank computerization, Facebook, and E-banking have offered the opportunity for clients to discuss their online programmes, projects, reviews, recommendations and agree or disagree regarding different aspects of products or customer services. With the opportunities offered, technology adoption has had a major impact on how companies transact with their distributors and customers on the Internet (Elena, 2016; Kumar Solo, 2016).

This study investigated the effect of technology adoption on organisational performance of deposit money banks in Nigeria. Based on this, the study achieved the following specific objectives: 1). Determine the extent to which e-banking affects organisational performance of banks. 2). Investigate the extent to which automation affects organisational performance of banks. 3). Find out the extent to which communication devices affects organisational performance of banks. 4). Explore the extent to which Bank computerization affects organisational performance of banks.

In line with this, the following research questions have been raised and investigated in this study:

1. To what extent does e-banking affect organisational performance of banks?
2. To what extent does automation affect organisational performance of banks?
3. To what extent do communication devices affect organisational performance of banks?
4. To what extent does bank computerization affect organisational performance of banks?

Research Hypotheses

This research investigated the effect of Technology adoption on organisational performance of deposit money banks in Nigeria. Accordingly, the following hypotheses relating to the purpose and problems of the study were formulated and investigated:

$Ho_{1:}$ E-banking has no significant effect on productivity of banks
Ho_2: Automation has no significant effect on productivity of banks
Ho_3: Communication devices have no significant effect productivity of banks.
Ho_4: Work computerization has no significant effect on productivity of banks.

Literature Review

Theoretical Framework (Social Exchange Theory)

An understanding of the real motive behind users' participation in banking operations is fundamental since banking operations depends on the user providing contents. Social exchange theory has its base from sociology studies and explores the exchange and relationship shared between persons or minor clusters (Emerson 1976). It utilizes the cost and benefit analysis framework and comparison of alternative actions and their outcomes to explain how human beings communicate with, form relationships and bonds with each other, and how to use communication exchanges to form communities (Homans 1958). Social exchange theory states that individuals engage in behaviours they find rewarding and avoid behaviours that have too high a cost. In other words, all social actions and behaviour are based on an individual's subjective assessment of the cost-benefit contribution to a social exchange.

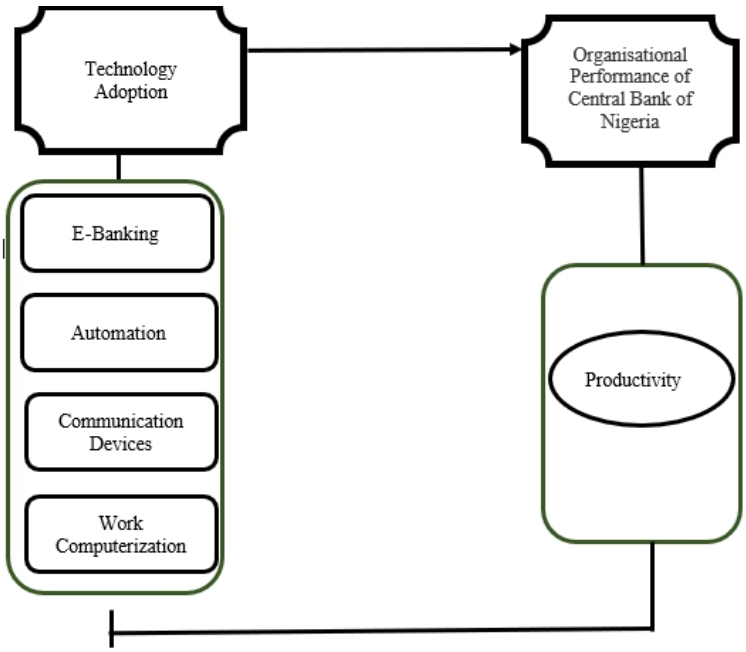
Homans (1958) summarized the theory by stating that it is an exchange of goods - material goods and non-material goods such as the symbols of approval or prestige. Persons that give much to others try to get much from them, and persons that get much from others are under pressure to give much to them. This process of influence tends to work out a balance in the exchanges that is best seen as a give and take relationship. According to Homans (1958) for a person in an exchange, what he gives may be a cost to him, just as what he gets may be a reward, and his behaviour changes less as the difference of the two, profit, tends to a maximum.

Conceptual Framework

This study evaluated the effect of Technology adoption strategies on organisational performance of deposit money banks in Nigeria. In carrying out the study, four dimensions of Technology adoption strategies (independent variables or predictor variables) namely; E-banking, Automation, Communication devices and Bank computerization were examined. These dimensions were adopted in line with the works of Schiavi and Behr (2018) and Hennayake (2020). Also, organisational performance of banks served as the key dependent or criterion variable under which a measure of productivity was appraised.

The study adopted part of the classification of organisational performance of banks espoused by Enyioko (2019) and Nwokah and Irimagha (2017) in organisational performance evaluation involving performance and effectiveness rating instruments. The imperative of the usage of these elements to measure organisational performance of banks has become obvious as could be seen from the conceptual framework of the Study- "Technology adoption and organisational performance of deposit money banks", (see figure 1).

Figure 1: Conceptual Framework of Technology Adoption and Organisational Performance of Central Bank of Nigeria



Sources: Schiavi, and Behr, (2018), Hennayake, (2020) and Enyioko, (2019).

Concept of Technology adoption

There is no precise or an inclusive definition of Technology adoption because of the dynamic nature of Technology adoption today as different definitions of Technology adoption have been developed by different scholars. Nevertheless, Elena (2016), considers technology adoption as a new observable fact of traditional marketing which allows marketers to speed up their communication with their customers. Technology adoption is also seen by (Ryan, 2014) as an interaction between the marketers and their consumers through a two-sided digital platform. Technology adoption also pertains to the use of technology-based marketing tools in order to promote fast and efficient communication and delivery to the product users. It is well known that Technology adoption has technology as its bottom-line to enables easy communication with the customers, as well as facilitates 'the interaction' phase of marketing. For Nwokah and Aeenee (2017), Technology adoption is the use of internet marketing channels like E-banking, communication devices, mobile phones, etc, to reach the customer satisfactorily.

Technology adoption is carried out on banking operations which is seen as internet and mobile-based social networking platform built on the foundations of webs that allow users to exchange information, interact, and socialize with others, as well as share opinions and content. It also deals with the building of networks and encouragement of user participation, engagement and content creation (Chaffey 2013; Charlesworth, 2014). Currently, banking operations constitutes as one of the most significant toolkits obtainable in digital marketing

communications. Hennayake (2020) state that today, many businesses have made banking operations central to their technology adoption activities

Technology Adoption

Banking operations is any type of electronic communication of an online service where a person can share content (Nwokah and Gladson-Nwokah, 2015). Elena (2016) opines that top management should establish the right roles and processes, set clear goals and relevant measures and review progress at every stage. Innovation experience and opportunities may occur through unexpected occurrence, ingenuity, process needs, industry and market changes, demographic changes, changes in perception and new knowledge. All these when properly understood and managed promote technology adoption.

Babatunde and Salawudeen (2017), consider Web 2.0, 3.0 and 4.0 as the platforms for the development of banking operations containing online review/rating sites, virtual game worlds (e.g. World of Warcraft), video sharing sites (e.g. YouTube), virtual social worlds (e.g. Second Life), collaborative project (e.g. Wikipedia), online communities and e-banking (Offei and Nuamah-Gyambrah 2016). It also includes Social Network Sites (SNS) such as Automation, which will be further elaborated in this study. Within these online communities, consumers produce, design, publish or edit content (Ryan, 2014). Banking operations aim to keep the fans/ followers interested and to create interaction with them in order to increase eCommerce (Hennayake, 2020).

Banking operations can be categorized into two classifications. The first is based on the richness of the medium' and the extent to which social presence is granted. The second classification is based on the extent to what self-disclosure is needed and which type of self-presentation is granted. The self-presentation and self-disclosure vary from low to high whereas the presence and Media richness medium varies from low to medium to high (Offei and Nuamah-Gyambrah 2016).

Organisational performance of Central Bank of Nigeria

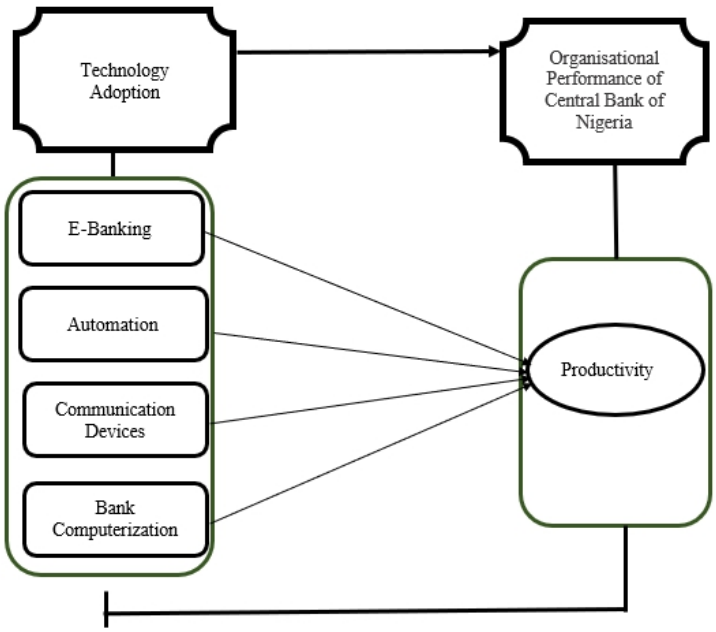
The rightful and prompt use of online key performance indicators to improve customers' delivery outcomes with the grounded understanding that each step of a customer's purchasing journey is harnessed and attended to sharply in order to optimize customer's satisfaction and maximize organisational performance of banks. The variables used in this study to measure organisational performance of banks include productivity, web traffic and customer engagement (Hennayake, 2020). Drucker (1963) has practically stated the variation between performance and effectiveness. He refers to "doing things right" as performance and "doing the right thing" as effectiveness (p.53). In his definition of this term, a measure of performance appraises the organization 's ability to achieve the output(s) considering the minimum input level. Likewise, Hennayake (2020) pointed out that performance principally links to costs in minimum level and refers to allocating resources across optional uses. On the other hand, the ideal position that Central Bank of Nigeria would desire to locate itself is the performance level platform for which Technology adoption has come to play significant roles in the present dispensation (Taiwo and Agwu, 2017).

Productivity

Most often, the productivity is utilized as a key performance index (KPI) to appraise the effectiveness and performance of e-commerce sites. Naturally, all site managers and owners want to know, "how their productivity compare?" (Babatunde and Salawudeen, 2017). The productivity is used in this work to measure the performance of the surveyed banks. Offei and Nuamah-Gyambrah (2016), say that when benchmarking productivity, the belief is that its importance is explained to marketing managers so that they could go beyond headline productivity to segment conversion by different types of visitors on the Taiwo and Agwu (2017), have indicated in their study that productivity should be used to measure the performance of a marketing organization that is engaged in both B2B and B2C technology adoption activities.

The understanding gotten from the review of relevant literature in this study has provided the footing for the operationalization of the conceptual framework of Technology adoption and organisational performance of banks as shown in figure 2

Figure 2: Operationalized Framework of Technology Adoption and Organisational Performance of Central Bank of Nigeria



Sources: Schiavi and Behr, (2018), Hennayake, (2020) and Enyioko, (2019).

Operational Framework and Variables (Empirical Studies)

E-banking and Productivity

E-banking has been studied over the last 10-15 years because of its tremendous potential for global business enhancement (Taiwo, and Agwu, 2017). Much literature exists, for example, in the usage of Web 2.0 and e-banking platforms in the electronic word of mouth advertising

(Hennayake, 2020) and e-banking operations (Babatunde and Salawudeen, 2017). Okoye et al. (2019), as well as Taiwo and Agwu (2017) have further studied the use of e-banking instruments or platforms for global buying and selling activities in banks.

The relationship between e-banking and productivity have been discussed and debated in trade publications, corporate and consumer e-banking journals, and a host of professional publications over the last ten years (Oira and Kibati, 2016).

Automation and Productivity

Taiwo and Agwu (2017), contend that digital customers have a feeling of proprietorship among the banking operations networks, and they at times deny organizations to attack their own particular space simply for the expansion in productivity. Without a doubt, Oira and Kibati (2016), posit that customers esteem security and dread long-range informal communication destinations which affect chosen companions through productivity. Then again, Kumar and Salo (2016) in their examination revealed that the people who partake in long-range casual correspondence are more genuine brave individuals than the people who just all over appreciate individual to individual correspondence to assemble productivity, deriving that individuals thought about the insurance concerns and approved of the related threats.

Communication devices and Productivity

Communication devices offer businesses a great platform for improving their brand awareness, boosting their engagement, and getting more traffic, among other benefits. But some of the more overlooked uses of communication devices for banking are traffic intensity, lead nurturing and boosting of productivity. Communication devices with respect to banking experience as enunciated by Okoye et al. (2019), are some of the best platforms for reaching customers and enhancing productivity in the sector. Elliot (2015) insists that before starting to optimize the communication devices for productivity, they need to be tracked. Appreciatively, Elliot (2015) elucidates that communication devices makes this easier with the 'productivity enhancing' tool. Oira and Kibati (2016), pieces of advice reveal that setting productivity up involves effective utilization of communication devices in bank accounts, clicking on tools at the top of the dashboard, and then selecting the best marketing tools for customer attraction and satisfaction leading to bank's productivity.

Work Computerization and Productivity

The one-stop shop for everything a sophisticated banking needs to know about getting the most value from work computerization for themselves and their company is the determination of the productivity (Elliot, 2015). Okoye et al. (2019) assert that bank computerization is not an instruction manual, but more of a strategic guide full of interviews and tips from marketing thought leaders combined with expert insights from the Bank computerization marketing solutions' team on how to market to who matters.

Technology adoption and Banking Sector in Nigeria

Today's banking organizations should expand their marketing strategies via mobile, internet

and banking operations networks. Applications as web-based communication channels have continued to spread mass information to customers. For technological disruptions and increased product complexity, employees' personal relationships with customers have considerably declined, affecting customer perceptions and attitudes related to their bank (Okoye et al., 2019). Banks could alleviate customer abrasion and dormancy by creating alternative operational platforms whenever personal interactions are relevant. In addition, banks should get their customers involved in their marketing campaigns so as to improve the brand and achieve competitive advantages. Leveraging the human touch has proved to be a vital means of improving overall banking experience (Ohiani,2020).

Methodology

The research design that was adopted for this study is a survey approach. This method emphasizes quantitative analysis whereby data is collected through questionnaire, interviews, or from existing documents. Based on the information from CBN, Statistical Bulletin, 2022, there are 154 ICT staff all over Nigeria working in Central Bank of Nigeria. Therefore, the target population of the study was considered as 154 staff.

The sampling technique used in this study was the simple random technique. The choice of this method is predicated on the fact that every element in the study shall have an equal chance of being studied. A total of 154 respondents were sampled. The sample elements of the study were drawn from the Managers/Accountants, Operations Managers/Supervisors, Bank Clearing Service Officers, E-Banking Managers/Officers and ICT Development Managers. The primary data was sourced through the use of the questionnaire, observations, and personal/oral interviews. A questionnaire was used to elicit data from respondents on whom they were administered to.

Regression analysis was used to test the extent of the effect individual and collective variable(s) on the other. Also, regression analysis was used to test the hypotheses formulated in the study. All these analyses were computed through the use of statistical package for social sciences (SPSS) IBM SPSS Statistics 25.0 version.

Model Specification

$Y = b_o + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + e$ ---------- {for testing H_1, H_2, H_3, H_4}

P = f (E-b, A, CD, WC)

Where;
P = Productivity
E-b = E-banking
A = Automation
CD = Communication devices
WC = Work computerization

Results and Discussion

Effect of Technology adoption on Productivity

Four hypotheses have earlier been raised to determine the effect of Technology adoption on productivity. In line with this objective, the study formulated the following hypotheses:

$Ho_{1:}$ E-banking has no significant effect on productivity of banks

Ho_2: Automation has no significant effect on productivity of banks

Ho_3: Communication devices has no significant effect productivity of banks.

Ho_4: Work computerization has no significant effect on productivity of banks.

The data in Table 1 have been used to test hypotheses one, two, three and four in this study.

Table 1: Results of Technology adoption (TA) and Productivity (P)

Technology adoption (Independent Variables)	Unstandardized Coefficients		Standardized Coefficients	t - value	Significant/ Probability Value	Decision
	B	Std. Error	Beta			
(Constant)	2.127	0.185		11.495	0.000	
E-Banking	0.030	0.081	0.349	3.373	0.002	Significant
Automation	0.224	0.063	0.431	3.570	0.001	Significant
Communication Devices	0.220	0.084	0.294	2.621	0.010	Significant
Work Computerization	0.028	0.080	0.333	3.349	0.002	Significant

a. Dependent Variable: Productivity

b. Predictors: (Constant), E -banking, Automation, Communication devices, Work computerization.

Source: Survey Data, 2018, and IBM SPSS Statistics 25 Window Output

$Y_1 = b_o + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + e$ ----------(1) {for testing H_1, H_2, H_3, H_4}

Y_1(Productivity)$_=$ 2.127 +0.030E-banking +0.224Automation +0.220CD +0.028BC +e

t = (3.373) (3.570) (2.621) (3.349)

Table 1 above shows the results of the test of hypothesized statements - H_1, H_2, H_3 and H_4. The result of the hypothesis 1 tested, show positive and significant effect of e-banking on productivity with t- value outcome of 3.374 @ p0.002< 0.05, meaning that e-banking has positive effect which is significant on productivity, indicating that the alternate hypothesis 1(Hi_1) has been accepted and null hypothesis 1(H_{O1}) rejected hence – "E-banking has significant effect on productivity of Central Bank of Nigeria". The result of hypothesis 2 (H_2) revealed strong positive and significant effect of automation on productivity with t- value outcome of t = 3.570 @ p0.001<0.05. By this result the null hypothesis 2(H_{O2}) has been rejected and alternate hypothesis 2(Hi_2) accepted hence – "Automation has a significant effect on productivity of Central Bank of Nigeria". With respect to hypothesis 3 (H_3), the result in Table 7 revealed strong positive and significant effect of Communication devices on

productivity with t-value outcome of 2.621 @ p0.010<0.05, therefore, the null hypothesis 3 (H_{O3}) has been rejected and alternate hypothesis 3(Hi_3) accepted hence – "Communication devices has a significant effect on productivity of Central Bank of Nigeria". In the case of work computerization and productivity which is hypothesis 4 (H_4), the result of the hypothesis 4 (H_4) tested, show positive and significant effect of work computerization on productivity with t- value outcome of 3.349 @ p0.002 < 0.05, denoting that work computerization has a positive effect which is also significant on productivity, therefore, the alternate hypothesis 4 (Hi_4) has been accepted and null hypothesis 4(H_{O4}) rejected hence – "work computerization has positive and significant effect on productivity of Central Bank of Nigeria".

Discussion of Findings

Effect of E-banking on Organisational performance of banks

The findings linked to the effect of e-banking on organisational performance of banks revealed that banks use e-banking to conduct their technology adoption activities and that this elicits organisational performance of banks. A critical appraisal of the finding reveals that e-banking has positive but insignificant effect on productivity. In all, e-banking has strong positive and significant effect on organisational performance of banks. The full import of this finding is that banks use e-banking software that provides a variety of social features, including comments, e-banking, trackbacks, and subscriptions that make it possible for the productivity of the banks to be improved (Okoye et al., 2019). In asserting this position, Edesiri and Promise (2013), insist that e-banking now largely falls under the remit of internal marketing so there is little disbelief that the intended audience and overall objectives differ little from traditional marketing. Also, Mehmet and Clarke (2016) observe that the goal of e-banking is to create messages that reach present and future customers. For the surveyed banks there is a secondary target, the broader local community the study has revealed.

Effect of Automation on Organisational Performance of Banks

The study found a positive and significant effect of Automation on organisational performance of banks and this points to the fact that, Automation is one of the biggest channels in the banking operations to enhance productivity of banks that are digitally vibrant. A diagnostic examination of the findings reveals that the effect of Automation on productivity is positive and significant. To support this assertion Nwokah and Gladson-Nwokah (2017) contend that Automation as a dimension for social network site is one of the best platforms to mobilize online community to banks brand and products. Nwokah and Aeenee (2017) also found that a strong and significant relationship exist between Automation as dimension of social networks and customer engagement as a dimension of customer acquisitions

Automation is considered as the most popular and widely used network among other banking operations networks (Enyioko, 2019). In America 30% of perusing time is represented by Automation while it is only 11% for Good and YouTube together (Okoye et al., 2019). Its massive number of users encourage business firms to use it in order to reach their target customers. Thus 92% of companies worldwide currently use Automation as a marketing tool (Agwu and Murray, 2015; Taiwo, and Agwu, 2017).

Effect of Communication devices on Organisational performance of banks

The result with regard to the effect of Communication devices on organisational performance of banks, points to the fact that, Communication devices provides prospects and customers with a medium of getting information about the bank's products and services. A critical evaluation of the finding reveals that the effect of Communication devices on productivity is positive and significant. In line with this, Nwokah and Gladson-Nwokah (2015), insist that there is a very strong and significant relationship between Communication devices as dimension of social networks and customer engagement as a dimension of customer acquisitions.

This finding confirms the position of Nwokah and Gladson-Nwokah (2015) and Nwokah and Aeenee (2017) that a very strong and significant relationship exist between Communication devices as dimension of social networks and customer engagement as a dimension of customer acquisitions. Customer engagement which is the means by which a company creates a relationship with its customer base to foster brand loyalty and awareness has been used in this study as one of the measures of organisational performance of banks.

Effect of Work Computerization on Organisational Performance of Central Bank of Nigeria

The finding of the study relating to the effect of work computerization on organisational performance of Central Bank of Nigeria is positive but insignificantly inclined. Critical examination of the findings reveals that Bank computerization has positive but insignificant effect on productivity. To support the study's finding, Okoye et al. (2019), say that banks are looking for a safe and compliant solution that can monitor, analyse, filter and control the accelerating banking operations needs but work computerization has not been found to be a good ally in this respect. Customers are expecting real time immediate acknowledgement or responses, or they can 'intensify publicly and virally' related to complaints or matters of concern if auto-reply provisions are not made by that banks (Enyioko, 2019).

Nwokah (2018), portrays the vital employment of bank computerization in building connections, understanding prospects, handpicking particular prospects, pulling in prospects to a specific brand, and tuning in to customers. Work computerization gives organisations a chance to interface on a more individual level empowering organisations to all the more likely comprehend and target fitting groups of onlookers (Enyioko, 2019).

Conclusion

Technology adoption is a powerful tool for engaging new audiences, building a brand identity, and strengthening clients contacts in Central Bank of Nigeria. It has the ability to impact on the growth and productivity of banks and other businesses when developed with efficiency in mind. As Central Bank of Nigeria uses e-banking to operate optimally in the competitive environment, their products and services are enhanced on the internet and their productivity is positively and significantly boosted. As Central Bank of Nigeria customizes the use of automation to operationalize their products and services digitally, their productivity is boosted in significant and positive manner.

Recommendations

This study empirically examined the effect of technology adoption on organisational performance of Central Bank of Nigeria. Based on the findings and the conclusion of the study, the following recommendations have been made:

1. Technology adoption is a recent phenomenon; it has proven to be very effective and efficient tool and should be viewed as a major actor in creating awareness. Central Bank of Nigeria managers should use e-banking to their advantage by encouraging bank staff and not just the e-banking department to participate in Technology adoption which in turn covers more ground for the enhancement of productivity, web traffic and customer engagement leading to organisational performance of Central Bank of Nigeria.
2. The study recommends that banking operations of automation orientation should equally be used by Central Bank of Nigeria managers as a tracking system; traffic on organization pages can be monitored comparing the attention given to a particular product or campaign on the profile pages to the sales of that product or brand, auto reply system helps in this regard. Polls concerning the success of bank products and services can also be useful in this direction.
3. Communication devices can also be good platforms for building goodwill and improving corporate image, the study recommends that Central Bank of Nigeria engages clients and stakeholders in friendly competitions, hosted on their communication devices pages and also take part in self-promotion by uploading photos of events i.e., charity events, efficient public services delivery.
4. Central Bank of Nigeria should update its knowledge domain with respect to technology adoption and the opportunities provided by digital measurement solutions so as to be able to assess the efficiency and performance of technology adoption. Naturally, the technology adoption should be linked with the Central Bank of Nigeria's stakeholders' public relationship administration system so as to form a complete picture of public sector performance reminiscent of efficiency and effectiveness.

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Integrating Basic Primary Education Curriculum into Qur'anic Education for Children for Sustainable Development in Bida, Niger State

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Abstract

The purpose of this study was to integrate universal Basic Education programme into the Qur'anic education for children for sustainable development in Bida, Niger state. The study was guided by two research questions and two research hypotheses. Survey research design was used to investigate the opinion of Qur'anic education teachers and UBE teacher in Niger State. The population for this study is all the Qur'anic education and UBE teachers in Niger state while simple random sampling was used to select 80 teachers of Islamic Studies and 15 teachers of Basic primary Education Schools. Some literature related to the study was reviewed. A structured questionnaire which consists of thirty-five (35) items divided into five parts was used to collect data to answer the research questions formulated to guide this study. This instrument was validated by three experts and the Cronbach's Alpha method was used to establish their internal consistency. Data was arranged and analyzed according to the research questions and the formulated hypotheses. Data collected for research questions were analyzed using means and standard deviation scores, while the Hypotheses were tested with t-test at 0.05 level of significance. Chief among the findings of the study is that the respondents agree on most of the elements of Universal Basic Education to be integrated in to the Qur'anic system of Education for an age group of five years and above. Based on these findings, the researcher concludes that there is need for elements of Universal Basic Education to be integrated in to the Qur'anic system of Education for an age group of five years and above. Efforts should be made by the government to equip Qur'anic schools with basic facilities like libraries and vocational centre to provide children with basic tools for further educational advancement, including preparation for trades and craft of the locality as proposed in the National Policy on Education.

Keywords: *Curriculum, Sustainable development, Primary education, Qur'anic education*

Introduction

The Qur'anic schools everywhere in the world impact knowledge to people at different levels. However, due to increase in population of human beings on the surface of the planet earth, the population of the Almajiris has also increased tremendously as a result of the search for Islamic knowledge. Qur'anic schools have been in existence in Nigeria even before the advent of western education and in the northern part of the country since the introduction of Islam. The Qur'anic School is the pre-primary and the primary levels of Islamic Education (Jibrin, 2008). It is an institution which has its origin traced to the prophetic period of Islamic education. It was Umar IbnKhattab who first organized children and young adults in the reading of the Holy Qur'an. The word Almajiri means children who beg around the street; these children are sent to learn in Qur'anic schools Almajiri (singular) according to Dukku (2016) is a corrupt Hausa word which originated from the Arabic word Almuhajirun meaning immigrants in search of knowledge like Qur'anic teacher and his pupil. However, the Qur'anic schools becomes a problem when the search for knowledge is not properly coordinated, planned and organized by the parents and the teachers of the schools due to various short comings. Research has shown that the sub-Saharan African has the highest number of Alimajiris who are either under fed or not properly educated (Jibrin, 2010).

The integration of UBE and Qur'anic schools will perhaps help the Almajiri to have access to basic education and equip them with skills necessary for self-employment upon graduation. Meanwhile, integration involves teaching literacy to Qur'anic school learners (almajiris) or having the two forms of education provided hand in hand in the same school. Suleiman (2013), defines integration as a means of diversifying the curriculum to allow the core- courses of basic education to be taught at the Qur'anic school level. Education for Sustainable Development allows every human being to acquire the knowledge, skills, attitudes and values necessary to shape a sustainable future. Education for Sustainable Development means including key sustainable development issues into teaching and learning; for example, climate change, disaster risk reduction, biodiversity, poverty reduction, and sustainable consumption.

The search for knowledge is an undeniable right of every child because; it is through knowledge that the child could appreciate and develop his/her potentials, that is, capability of what the child can do to earn a living, know his/her rights, that of his/her creator and others. The western (modern) form of education is regarded with suspicion by most Muslim parents because of some perceived misconception that include fear of conversion to another religion other than Islam and loss of morals. Junaid, Dukku and Umar, (2015) opined that the 1994 NTI/ UNICEF conference on Qur'anic schools was particularly instrumental in prompting government into action on the future status of Qur'anic schools. The period following this conference witnessed the emergence of a non-formal education curriculum for Qur'anic schools, approved by the National Council on Education, NCE in 2001; the formulation of an action plan and implementation guidelines for the integration of Qur'anic schools into conventional Nigerian school curriculum. Programme was set up for this purpose in 2002. Subsequent actions of government and other stakeholders are hinged on providing the institutional and infrastructural needs of the Almajiri child. However, these efforts seem not to have realized the potentials of this integration as a bridge between the tenets propagated by the UBE and the values embedded in Qur'anic schools.

The integration of Qur'anic and UBE curriculum may expand the horizon of the Almajiris and widen their skills. It is also being expected that at the end of the nine years of continuous UBE education, every almajiri child would have acquired appropriate level of literacy, numeracy, communication, manipulation and self-skills so as to be employable, useful to himself and to the society at large by possessing the relevant ethical, moral and civic values. The need to research on the integration of Qur'anic education into UBE for children in Minna motivated this study.

Statement of the Problem

The Almajiris are pupils enrolled in traditional Quranic schools that are prevalent in many parts of northern Nigeria. Although Quranic schools are highly revered religious institutions that have played vital roles in Muslim societies in pre-colonial northern Nigeria, the challenging demands of modernity tend to put the future of these schools at risk. Pupils enrolled are consequently denied effective participation in formal basic education, and are not adequately catered for by either the state or their communities. Concern over the future of millions of children enrolled in Quranic schools has led to the official adoption of integration policy by the Federal Government intended to position them within the framework of the Universal Basic Education (UBE) programme for the purpose of attaining Education for All (EFA) and Millennium Development Goals (MDGs).

Although the integration policy is widely accepted by stakeholders of the Qur'anic schools, there are contentious issues which seem to devolve on the implementation of this policy visa-a-visa the peculiarities of these schools, their pupils, and the socio-economic rhythms of their local communities which have the tendency to exclude rather than integrate them into the regular schools.

Therefore, the study is to find out ways that could be adopted for integrating Universal Basic Education (UBE) curriculum into the Quranic education for sustainable development in Bida, Niger State?

Purpose of the Study

1. Determine the elements of basic education that can be integrated into qur'anic schools.
2. find out the prevocational skills that can be integrated into qur'anic schools

Research Questions

To guide the study, the following research questions will be posed:

1. What are the elements of basic education that can be integrated into Qur'anic education?
2. What are the pre-vocational skills that can be integrated into qur'anic schools?

Hypotheses

To guide the study, the following null hypotheses are formulated and will be tested at 0.05 levels of significance.

Ho_1: There is no significant difference between the mean responses of Qur'anic education teachers and UBE teachers on the subjects to be integrated.

Ho_2: There is no significant difference between the mean responses of Qur'anic teachers and teachers in UBE schools on pre-vocational skills that will be integrated into Qur'anic schools.

Research Methodology

A descriptive survey research design was used for this study. The study was carried out in Bida, Niger State. The population of the study comprises all the head teachers of the qur'anic schools and UBE schools within the study area, numbering 177 Mallams in the qur'anic schools and 28 head teachers in UBE schools, which gave a total of 205 Mallams/head teachers. The sample size for the study consist of 177 Mallams who are the head teachers of the qur'anic, schools and 28 head teachers of UBE schools totaling 205. Census sampling techniques was adopted in selecting all the head teachers of the qur'anic and UBE Schools because the number was manageable. The head of the schools are involved in the administration of the schools and can help in identifying the need for integrating UBE Schools programme into qur'anic schools and the basic subjects for integration. The instrument is titled Integrating Basic Primary Education Curriculum into Qur'anic Education Questionnaire (IBPECQEQ). The instrument for data collection was designed by the researcher and was validated by three experts. One of the validates was from childhood education, one from psychology and another one from measurement and evaluation department all in university of Nigeria Nsukka.

Thirty copies of the developed instrument were trial tested at Minna in Niger State. The choice of Minna was because Minna has the same demography with the study area. Data collected was analysed for determine the reliability of the instrument using Cronbach Alpha. Cronbach Alpha is applied to instruments that are not scored dichotomously. The reliability coefficients for the instrument is .86. The IBPECQEQ, which is a structured questionnaire, was administered in two forms. First, by self-response questionnaire to the head teachers and secondly, through verbal interpretation of the questionnaire to the Qur'anic school Mallams (teachers) who do not understand English was administered by the researcher with the help of a research assistant who were employed and trained by the researcher. The completed questionnaire was retrieved back from the respondents and returned to the researcher immediately. Descriptive statistics such as mean was used for answering the research questions, while t-test was used to test the null hypothesis at 0.05 level of significance. The response of head teachers and Mallamson the integration of UBE and Qur'anic schools were interpreted using real limit of numbers as follows; 0 – 1.49 (strongly disagree), 1.50 -2.49 (disagree), 2.50 -3.49 (agree) and 3.50 -4.00 (strongly agree).

Results

Research Question One: What are the elements of Universal Basic Education to be integrated into the Qur'anic system of Education for an age group of five years and above?

Table 1: The mean ratings and standard deviations of teachers of Qur'anic Education and teachers of Basic Primary Education on elements of Universal Basic Education to be integrated in to the Qur'anic system of Education are as follows:

S/N	Items	X	SD	D
1	English Language curriculum	3.34	.45	A
2	Mathematics curriculum	3.61	.57	SA
3	Basic Science curriculum	3.33	.37	A
4	Social Studies curriculum	3.30	.41	A
5	Agriculture curriculum	3.53	.34	SA
6	Cultural and creative arts curriculum	3.34	.25	A
7	Physical and Health Science curriculum	3.34	.46	A
8	Computer Education curriculum	3.74	.53	SA

Key: N = Number of Respondents; SD = Standard Deviation; df = Degree of Freedom; NS = Not significant at 0.05 probability level.

Data on table one shows the mean scores and standard deviations of teachers of Qur'anic Education and teachers of Basic Primary Education on elements of Universal Basic Education to be integrated in to the Qur'anic system of Education. The mean scores of the respondents are: 3.34, 3.61, 3.33, 3.30, 3.53, 3.34, 3.34 and 3.74, with corresponding Standard Deviation of .45, .57, .37, .41, .34, .25, .46 and .53. This shows that they agree that items 1, 3, 4, 6 and 7 be integrated into the Qur'anic system of Education. As they strongly agree that items 2, 5 and 8 be integrated into the Qur'anic system of Education.

Research Question Two: What are the pre-vocational skills to be integrated into the Qur'anic system of Education for an age group of five years and above?

Table 2: The mean ratings and standard deviations of teachers of Qur'anic Education and teachers of Basic Primary Education on the pre-vocational skills to be integrated into the Qur'anic system of Education for an age group of five years and above are as follows:

S/N	Items	X	SD	D
9	Welding	3.21	.40	A
10	Tailoring	2.20	.42	A
11	Cap making	2.32	.41	A
12	Computer operator	3.68	.38	SA
13	Agrarian	3.22	.41	A
14	Furniture making	3.24	.43	A
15	Barbing	2.36	.48	D
16	Weaving	3.40	.50	A
17	Tie and dye	3.42	.49	A
18	Trading	2.42	.48	D
19	Embroidery	3.42	.49	A

Key: N = Number of Respondents; SD = Standard Deviation; df = Degree of Freedom; NS = Not significant at 0.05 probability level.

Data on table 2, shows the item Mean scores (X) and Standard Deviation (SD) of teachers of Qur'anic Education and teachers of Basic Primary Education on pre-vocational skills to be integrated into the Qur'anic system of Education for an age group of five years and above. The mean scores of the respondents on the items are: 3.21, 2.20, 2.32, 3.68, 3.22, 3.24, 2.36, 3.40, 3.42, 2.42 and 3.42, with corresponding Standard Deviations of .40, .42, .41, .38, .41, .43, .48, .50, .49, .48 and .49. This shows that they agree that items 9, 10, 11, 13, 14, 16, 17 and 19 are pre-vocational skills to be integrated into the Qur'anic system of Education. The above table also shows that the respondents strongly agree that the prevocational skill in item 12 be integrated while they disagree that item 15 and 18 to be integrated into the Qur'anic system of Education for an age group of five years and above.

Hypothesis 1:
There is no significant difference in the mean scores of Qur'anic Education teachers and UBE teachers on elements of Universal Basic Education to be integrated in to the Qur'anic system of Education

Table 3: T-test analysis of mean scores on elements of Universal Basic Education to be integrated in to the Qur'anic system of Education are as follows:

Respondents	**No**	**Mean**	**SD**	**t-cal**	**df**	**Prob. level**	**Sig (2tailed)**	**decision**
Qur'anic teachers	80	3.97	.473	-2.74	93	0.05	0.10	Significant
UBE teachers	15	3.36	.462					

Key: N = Number of Respondents; SD = Standard Deviation; df = Degree of Freedom; NS = Not significant at 0.05 probability level.

The t–test result in table 3 revealed the opinions of Qur'anic teachers and UBE teachers on elements of Universal Basic Education to be integrated in to the Qur'anic system of Education. The table shows that t–calculated value is -2.74 and the Sig. (2-tailed) is .010, while the probability level is 0.05. Since Sig. (2-tailed) of .010 is less than Probability level of 0.05, it is significant. Therefore, there is a significant difference between the mean scores of Qur'anic education teachers and UBE teachers on elements of Universal Basic Education to be integrated in to the Qur'anic system of Education.

Hypothesis 2
There is no significant difference in the mean scores of Qur'anic Education teachers and UBE teachers on pre-vocational skills to be integrated into the Qur'anic system of Education for an age group of five years and above.

Table 4: T-test analysis of mean scores on pre-vocational skills to be integrated into the Qur'anic system of Education for an age group of five years and above is as follows:

Respondents	No	Mean	SD	t-cal	df	Prob. level	Sig(2tailed)	decision
Qur'anic teachers	80	3.12	.443	0.40	93	0.05	0.97	Not significant
UBE teachers	15	3.93	.412					

Key: N = Number of Respondents; SD = Standard Deviation; df = Degree of Freedom; NS = Not significant at 0.05 probability level.

The t – test result in table 4 revealed the opinions of Qur'anic Education teachers and UBE teachers on pre-vocational skills to be integrated into the Qur'anic system of Education. The table show that t–calculated value is 0.40 and the Sig. (2-tailed) is 0.97 while the probability level is 0.05. Since Sig. (2-tailed) of 0.97 is greater than Probability level of 0.05, it is not significant. Therefore, there is no significant difference between the mean scores of Qur'anic Education teachers and UBE teachers on pre-vocational skills to be integrated into the Qur'anic system of Education for an age group of five years and above.

Discussion

The result of research question one indicates that teachers of Qur'anic Education and teachers of Basic Primary Education agrees that English Language, basic Science, social Studies, cultural and creative arts and physical and Health Science curriculum are elements of Universal Basic Education to be integrated in to the Qur'anic system of Education. They also strongly agree that Mathematics, Agriculture and Computer Education curriculum be integrated in to the Qur'anic system of Education for an age group of five years and above as in line with Suleiman (2013), the Qur'an has been the core-curriculum of this system of education since its inception not only because it is a Holy book but also it is playing a central role in the life of a Muslim politically, socially, spiritually and economically. However, these findings show that the entire subject curriculum taught in the UBE need to be integrated into the Qur'anic system of Education. This is not surprising given that these UBE subjects are reconcilable and complementary to the goals of Qur'anic system of Education. Similar to the observations of Suleiman, they also have practical significance in the day to day functioning of the child and the society. Thus, when planned and integrated into the Qur'anic system of Education, the child (product of Qur'anic system of Education) will be well equipped with basic tools for further educational advancement, including preparation for trades and craft of the locality as envisaged in the National Policy on Education 2004.

These findings that suggest the integration of the entire UBE subjects curriculum is also consistent with the conclusion of Yabo (2014) that the role of education in Islam to be that of producing well-disciplined, highly skilled and reasonable human beings who are conscious of their duties to Almighty Allah (God) and committed to the service of their society. This is because one of the basic objectives of UBE is to produce highly skilled and functional men in

the society. Hence, integrating these UBE subjects' curriculums will complement the Qur'anic system of Education. As in line with Dukku (2016), integration in this respect entails strengthening of the existing Qur'anic and Islamiyya schools to achieve their goals and accommodate the introduction of basic education elements of literacy, numeracy, life and vocational skills subjects into their curriculum.

The findings of this study also indicated that there is a significant difference between the mean scores of Qur'anic Education teachers and UBE teachers on elements of Universal Basic Education to be integrated in to the Qur'anic system of Education. The mean scores of the Qur'anic Education teachers were found to be significantly higher than the mean scores of UBE teachers. This suggests that the Qur'anic Education teachers who are major stakeholders in the implementation of Qur'anic system of Education are in dare need of this integration. The hypothesis formulated to guide this study in this respect is therefore rejected.

The results of research question two showed that the pre-vocational skills to be integrated into the Qur'anic system of Education for an age group of five years and above include welding, tailoring, cap making, computer operator, agrarian and furniture making. Others are weaving, tie and dye and embroidery. These pre-vocational skills are consistent with the objective of Qur'anic system of Education which intend to equip the learner with life and vocational skills that will assist them in their day-to-day activities and also equip them with generative skills (Jibrin, 2010). The primary purpose of vocational education is to prepare persons for employment in recognized occupation. Hence, the central purpose of vocational educational is to get the people in to jobs requiring specialize training. The findings of this study therefore suggest that integrating the above pre-vocational skills can aid in achieving that. In that sense, when these pre-vocational skills are successfully integrated for an age group of five years and above, the objective Qur'anic system of Education producing functional members of the society will be realized. On the other hand, the result show that barbing and trading as pre-vocational skills are not to be integrated into the Qur'anic system of Education for an age group of five years and above. This suggests that these pre-vocational skills are not amenable to the Qur'anic system of Education.

The findings of this study also indicated that there is no significant difference between the mean scores of Qur'anic Education teachers and UBE teachers on pre-vocational skills to be integrated into the Qur'anic system of Education for an age group of five years and above. The hypothesis formulated to guide this study in this respect is therefore accepted.

Conclusion

This study intended to integrate universal Basic Education programme into the Qur'anic Education for children in Bida, Niger state. The following conclusions are made on the basis of the findings of the study:

1. That the entire subject curriculum taught in the UBE need to be integrated into the Qur'anic system of Education.
2. Most of the pre-vocational skills to be integrated into the Qur'anic system of Education for an age group of five years and above can equip children with life skills to

be functional members of the society.

3. Therefore, there is a significant difference between the mean scores of Qur'anic Education teachers and UBE teachers on elements of Universal Basic Education to be integrated in to the Qur'anic system of Education
4. There is no significant difference between the mean scores of Qur'anic Education teachers and UBE teachers on pre-vocational skills to be integrated into the Qur'anic system of Education for an age group of five years and above.

Recommendations

1. Universal Basic Education curriculum should be integrated into the Qur'anic system of Education for an age group of five years and above through curriculum reform.
2. Qur'anic Education teachers should be adequately motivated by adequate remuneration.
3. In-service training and seminars should be held from time to time to improve the teaching methods and style to teachers to acquaint them with the current teaching methods that can be used to reconcile the UBE curriculum with the Qur'anic system of Education.
4. Qur'anic schools should be provided with ICT equipment and laboratory to lay sound basis for scientific and reflective thinking in children.

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Globalization and Job Creation in Nigeria

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Abstract

The study examines the effects of globalization on job creation in Nigeria. Globalization is a multi-faceted concept that includes economic, telecommunication, trade, finance, etc. For convenience, the study contracted globalization to economic globalization and x-ray its effect on job creation in Nigeria. Unemployment has been attributed as a nightmare to global economic growth; recently Nigeria's unemployment rate has astronomically increased without interruption. This uninterrupted increase of unemployment rate has resulted to decrease in household income and standard of living, consequently, increasing the level of poverty and insecurity. The study employed an econometric model to test a long run relationship between globalization and job creation. The study found that openness of the economy and foreign direct investment tends to enhance job creation, whereas exchange rate improves the level of unemployment. Therefore, economic globalization is employment friendly. The consequence of this is sharp productivity increase to domestic industries, which culminated into decline in unemployment and poverty in the country.

Keywords: *Globalization, Job Creation, Nigeria*

Introduction

Globalization is a multidimensional concept which includes economic, finance, trade, telecommunication etc. each dimension has effects on employment level of any economy. According to Peterson Institute for International economics (2018 and 2021), "globalization is the word used to describe the growing interdependence of the world's economies, cultures and populations, brought about by cross-border trade in goods and services, technology, and flows of investment, people and information". Jason (2022) sees globalization as the spread of products, technology, information and job across nations. Today both advance economies and developing economies rely on the global economy for the sell and buy of products and services. Many far reaching products and services have become available and cheap across the globe. The demand for "cheap labour and race to the bottom" has emerged as one of the fundamental success formulas of international business (Bose and Mudgal, 2018). The movements of jobs across different borders as a result of some relaxation on trade barriers have created some jobs loss in one place and job gain in another location. Therefore, employment has become more secure and insecure in some economy. The argument of the effect of globalization on job creation in an economy is relevant, that requires a systematic and thorough study to evaluate what extent globalization has been able to encourage and hamper job creation. Some scholars have argued that globalization has widened inequalities between the high skilled paid labour and low and medium skilled paid labour in the world. A leading argument for rising inequality is that technology is reducing demand for certain job for low-paid and middle-paid skilled workers and increasing demand for high-paid skilled workers (Peterson Institute for International economics 2018 and 2021). This could be seen clearly in what is happening in the banking, telecommunication and petroleum sectors in Nigeria. Few works has been conducted in this area in Nigeria despite the importance of the subject. The reason according to Ghose (2000) as cited in Kareem (2009) is that it is difficult to define and measure the relationship due to various dimension of globalization.

Relating the above, most of the work or studies in this area mostly examine the effects of globalization on various economics of the world (see Gurgu and Lach, 2014; Warner, 2003; Levine, 2001; Rodriguez and Rodrik 2000; Calderon and Poggio 2010; Vadlamannati, 2011; Bhasin, 2008). In Nigeria, some studies were associated to Ogochukwu and Okoro (2017), Ahmadu (2013), Kareem (2009)

Most studies that subsist on the effects of globalization on job creation were carried out mostly on developed economy and some developing economy outside Africa. (see Bose and Mudgal, 2018; Alexander, 2011; Overhalt, 2005; Revenga, 1997; Currie and Harrison, 1997). Therefore, studies on the effects of globalization on job creation were few in Africa, mostly in Nigeria. The work of Kareem (2009), Adewuyi (2005), Iyayi (2003) were credited to Nigeria. This could be attributed to lack of reliable data on essential variables connected to the study.

Therefore, it is imperative to investigate the effect of economic globalization on job creation in Nigeria. Meanwhile the questions that come up and demand empirical answer is that: does economic globalization decrease or increase the level of job creation in Nigeria? The question directs us to the aim of the study, which is to examine the effect of economic globalization on job creation in Nigeria.

Conceptual Literature

Globalization is not a simple phenomenon or a uniform process rather; it is a process that is complex and multifaceted (Onoja, 2020). Globalization represents different things to different persons. Majority of scholars sees globalization to mean the closer integration of economies through trade and flow of factors (Kareem, 2009). According to Onoja (2020) globalization is a "process where people, companies, and governments from different nations interact and integrate through international trade and investments that has effects on the environment, culture, political and economic development and on the human physical well-being in societies around the world". Some economist used growth rate of trade and factors mostly the flow of capital to measure globalization. O'Rourke and Williamson (2000) take the convergence of relative prices as the central measurement of globalization. Jason (2022) sees globalization as the spread of products, technology, information and job across nations. To me globalization is the flow of trade and investment among nations of the world that affects the indigenous people positively or negatively.

Positive Effects of Globalization on Nigeria Economy

Proponent of globalization has outlined some positive effect or advantage of globalization. The following are their argument.

1. Globalization has permitted foreign direct investments which has facilitated in providing resources, capital and technology that will enable and guarantee growth and development. This creates and generates employment, increases exports to a country and thereby improves macroeconomics variables of a country.
2. Globalization has helped to improve modern-day banking such as mobile banking, e-banking or Automated Teller machine Services (ATM) and Internet banking.
3. Via globalization, people access job opportunities throughout the globe. This has helped in labour mobility and outsourcing.
4. Access to institution of higher learning has been made easier. Nowadays, people can search for the best educational facilities in their comfort zone without any hindrance.
5. Globalization has helped in the improvement and transfer of technology, managerial capabilities and information among nation.
6. Globalization has improved foreign trade in the world. Products that were only found in developed countries can now be purchased in less developed countries. This is achieved and made possible via international trade whereby countries can exports and imports goods within countries. Quality products are now purchased or gotten at a cheaper rate.

   Globalization of markets in Nigeria is growing so fast. This has brought benefits which are economies of scale in production, reduced prices, distribution, marketing and management.

Negative Impact of Globalization on the Nigerian Economy

1. In the area of trade, importation of foreign goods is high without having our own demanded and purchased by other countries in a reciprocal manner leaving us at a disadvantage in terms of unfavorable terms of trade and deficit balance.
2. Due to globalization insecurity has increased, Nigeria for example, the issue of

banditry, Boko-haram and kidnappers has brought about fears and uncertainties forcing industries, businesses and professional investors to operate less optimally. Most of these bodies are linked to international terrorist organizations such as ISWAP, ISS, Al-shabaab, Al-Qaida etc.

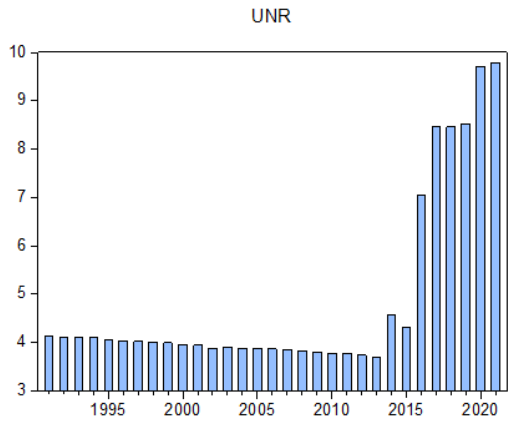
3. Nigeria continues to open up her Economy in competition with other advanced countries in the global market leaving the economy to remain stagnant and if not controlled, it is likely to worsen due to the weak capacity of the economy.
4. Globalization has allowed for developing countries like Nigeria to live at the mercy of the super powers of the developed countries in terms of military economic manipulations and even health.

Employment and Unemployment Trend in Nigeria

One of the greatest enemies of the global economy is unemployment. This menace has ravaged and stunted the growth and development of the world economies mostly the developing nation. In Nigeria, various authorities and government agencies has been struggling to mitigate the threat of unemployment rate. The developed nations have been curbing the rate of unemployment in their domain. But, in developing countries, mostly those of Africa, and Nigeria in particular, unemployment has been on a spiral increase which has resulted into a decrease in household income and standard of living, thus, increasing the poverty level (Kareem, 2009). Some even linked the high rate of insecurity in Nigeria and Sub-Sahara region of Africa to high unemployment rate. As at the second quarter of 2022 the unemployment rate in Nigeria has skyrocketed to double digits of 33.3% (NBS, 2022).

In economics, many scholars have argued and agreed that employment generation increases economic activities which translate into poverty reduction as well as increase in the welfare. Unemployment, according to Ahuja (2008) is defined as a state of affairs when in a country there are large numbers of able-bodied persons of working age who are willing to work but cannot find work at the current wage levels.

Figure 1: Unemployment rate in Nigeria



Source: International Labor Organization Statistics Data Base. ILOSTAT (2022).

Figure 1 above show the unemployment rate in Nigeria between 1991 and 2021. The statistics revealed that unemployment rate in Nigeria has been increasing at an increasing rate between 2015 and 2021.

Theoretical Review

Heckscher-Ohlin Theory: The appropriate theory adopted in this study is the new trade theory (Heckscher and Ohlin) model propounded in 1933. The model lay emphasis on two factors of production, labour and capital and assumed perfectly competitive market and production function with freely available technologies across countries. The model state that country that have cheap labour force should engage in the production of labour-intensive goods and services and country with cheap capital should focus primarily on the production of capital-intensive goods and services. The model indicates that an increase in trade increases the demand for labour intensive product in poor (labour surplus) countries. The model emphasized that ideally country's should export materials and resources of abundance and imports proportionately those material and resources of lack and need.

Many scholar view and interpret Heckscher-Ohlin model as labour market rigidity (Ghose, 2000) as cited in (Kareem, 2009), which means that a rise in manufactured trade between labour surplus (developing) and labour scare (developed) countries will eventually result to a rise in employment in the developing countries. With this, it clear that globalization enhance and encourages employment in countries with surplus labour force if manufactured trade take place between countries.

Empirical Review

Das and Ray (2020), explore the influence of globalization on employment of South Asian countries. They used the dynamic panel analysis to examine the work. The study was unable to establish any long-run relationships between globalization and employment of the countries of the region. However, in the short run, globalization launches a cause to employment in the panel format, which is highly unlikely to happen in case of the individual countries. Thus, extent of globalization and employment generation in the South Asian countries do not have strong inter relationships. Bose and Mudgal, (2018), examines the effect of globalization on universal job scenario (both in term of job- abolition and job creation and the impact on employment situation from a relatively neutral perspective. they conclude that globalization has caused deep impact on the area of employment, especially with job losses in formally protected sectors.

In the same vein, the study of Kiren and Awan (2018), shows that globalization has a positive significant impact on job creation in Pakistan. It is also revealed that workers' remittances and FDI have positive relationship with employment generation. Daly (2017) investigate the effect of globalization on unemployment in Pakistan and finds that economic, political and social aspects of globalization is beneficial in terms of employment generation in the short run in Pakistan; increase in long-run expected unemployment rate is also noticed. Economic integration appears to be beneficial in the short run marginally; undesirable long-run effect of globalization does not sound good for employment generation.

Vadlamannati (2011), examine the impact of globalization on growth rate of 21 African countries during 1970 -2005 using the bounds analysis. The result revealed a positive effect of globalization on growth. Kareem (2009) examines the effect of economic liberalization on job creation in Nigeria. He discovered economic liberalization is not employment enhancing in Nigeria. The implications according to him is that there will be productivity loss to the domestic industries as a result of economic liberalization, thereby, increasing unemployment and aggravating the level of poverty in Nigeria.

Jenkins and Sen (2005), examines the impact of international trade on employment in manufacturing sector in developing nations—Bangladesh, Kenya, South Africa and Vietnam. International trade seems to be associated with the net creation of jobs in Bangladesh and Vietnam; female workers are found to be the major beneficiaries. Edward (1998), who examined the impact of trade openness by using different index on economic growth. He found that openness is associated with more growth. Dreher (2006) examined the impact of globalization on economic growth using unbalanced dynamic panel of 123 countries between 1970 and 2000. His finding revealed a positive impact of globalization on economic growth. Meaning that globalization promotes economic growth.

Methodology

The study employed an econometric model to establish the long run relationship between globalization and employment in Nigeria. We employed openness (OPNS) which is measured by the addition of export and import and divided by the gross domestic product, foreign direct investment (FDI), and exchange rate (EXR) as independence variables to quantify globalization while the labour force participation rate (LPR) was used as an index of employment creation. We sourced an annual time series data from the CBN Statistical bulletin various issue, the national bureau for statistics (NBS) various issue, international labor organization statistics data base (ILOSTAT) and world development indicator (WDI) from 1986 to 2021.

To show the effect of globalization on job creation, the study adopted the model from the study of (Kareem, 2009). But some modification was made to include foreign direct investment (FDI) as one of the variables that measure globalization.

Therefore, the model is specified using the multiple regression equation using the natural logarithm of the variables.

$$InLPR = bo + b_1InOPNSt + b_2InFDIt + b_3InEXRt + et \quad (1)$$

Where LPR is the labour force participation rate, OPNS is the level of openness of the economy; FDI is the foreign direct investment while EXR is the exchange rate. b_0 is the constant and b_1, b_2, b_3 are the coefficients, while et is the stochastic or error term.

Meanwhile, there is no common agreement on the actual relationship between globalization and employment rate. Some scholars and policymakers believed that economic globalization

(liberalization) would lead to decrease in employment level or rise in unemployment rate mostly when local products lack the capacity to compete well with the imported products. Others speculate that it will create job through foreign direct investment in the domestic economy.

Before testing for the direction of causality between the time series, the normal procedure is to check the stationarity of the variables used in the model. The aim of the test is to ascertain if the time series have a stationay trend, and to show the order of integration if non-stationay.

The study used the Augmented Dickey Fuller (ADF) unit root test to test the stationarity of the time series. Specifying the ADF equation,

$$\Delta y_t = y_{t-1} + \chi_t \delta + \beta_1 \Delta y_{t-1} + \beta_2 \Delta y_{t-2} + \ldots\ldots + \beta_p \Delta y_{t-p} + v_t \qquad (2)$$

Where χ_t is the exogenous regressor, such as intercept and time trend, while δ and β are the parameters to be estimated and vt is the error term that is considered to be the white noise.

Theerafter, we test whether these time series can be used together to ascertain the autencity of the long run result and this is achieved through the cointegration test. Johansen co-ntegration test which was developed by Johansen in 1995 was used to test for the cointegration. The study shall test for the involement of error term as an equilibrium error. We uses this error term to evaluate the short run behaviour of the dependent variable to its long run value. This test is referred as error correction model (ECM) which was made popular by Engel and Granger in 1987. Specifying it as follows:

$$\Delta InLPR = bo + b_1 \Delta InOPNS_t + b_2 \Delta InOPNS_{t-1} + b_3 \Delta InOPNS_{t-2} + b_4 \Delta InFDI_t + b_5 \Delta InFDI_{t-1} + b_6 \Delta InFDI_{t-2} + b_7 In\Delta EXR_t + b_8 In\Delta EXR_{t-1} + b_9 In\Delta EXR_{t-2} + b_{10} ECT_{t-1} + \rho_t \qquad (3)$$

Where Δ is the first difference and ECT_{t-1} is the error correction term lagged by one period while ρ_t is the error term.

In the same token the Granger causality method shall be applied to test the direction of causality between economic globalization and job creation in Nigeria. the technique test whether one variable, say A, causes another variable, say B, in other to decide the extent the current value of B can explained by its previous values alone and to check whether the inclusion of the lagged values of A can improve the explanation. Granger (1969) declared that B is said to be Granger caused by A if A assists in the prediction of B. In the same vein, A Granger causes B if only its lagged values are statistically significant.

The Granger causality equation is specified as follows:

$$Y_t = \alpha i + \sum \alpha i A_{t-i} + \sum \beta_t B_{t-j} + U_{1t} \qquad (4)$$

$$X_t = bi + \sum \lambda_i A_{t-i} + \sum \delta_j B_{j-1} + U_{2t} \qquad (5)$$

Where B and A represents economic globalization and job creation respectively. It was

assumed that the disturbances U1t and U2t are uncorrelated. The following three outcomes are possible in any Granger causality test. The first is bidirectional which occur when we reject both null hypotheses, which revealed that the set of globalization and job creation coefficients are statistically significant. Second is the unidirectional causality which occurs when we accept one of the null hypotheses and reject other, showing that either the causality runs from globalization and job creation. Thirdly occurs when we accept both null hypotheses, it means that there is independence. This revealed that the coefficient of the set of the independent and dependent are not statistically significant in both regressions (Gujarati, 1995).

Empirical Results and Interpretation

We commence the empirical analysis by viewing the association between globalization (as measured by level of openness (OPNS), exchange rate (EXR) and foreign direct investment (FDI) and employment using the multiple regression analysis.

Table 1: Multiple Regression Result

Variables	Coefficient	P.Value	R2 = 0.9132
C	5.5268	0.0000	AdjR2 = 0.8772
InOPNS	0.0237	0.0032	F.Stat = 92.3254
InEXR	-0.0651	0.0830	Prob(F.Stat) = 0.0000
InFDI	0.0113	0.0032	D.Watson = 1.872

Source: Author's Computation

Table 1 above shows the result of the OLS, and it revealed that there is a statistically significant positive relationship between labour force participation rate (InLFPR) and openness, as well as foreign direct investment. The implication is that, the high the level of liberalization of foreign direct investment, the more the level of employment in the country will increase. This means that as government lessen it regulatory tendency that impends foreign direct investment, it will encourage unlimited inflow of investments that will cause aggregate demand to shift upward thereby increasing output and employment accompanied by technology that would increase the level of economic activities. Same is linked when the country open it borders; it will permit the free inflow of goods and services which will increase economic activities and on the long run create employment and income. Also, it was observed that a negative relationship exists between exchange rate and labour force participation rate. The free depreciation of the country currency as a result of liberalization policy has render the country's export cheaper thereby promoting domestic production/output for export in so doing increasing employment opportunities mostly in export dependent sector. The result of the autonomous variable which is positive and significant shows that if the country refuse to globalize, that is does not permit outflow and inflow of goods and services, the country will still observer rise in employment level as revealed by the value of the constant, which is 5.5268.

Also, from the OLS result above, the degree of responsiveness of employment to openness as well as foreign direct investment is 0.0237 and 0.0113 respectively. This means that for every one percent rise in openness of the Nigeria's border there will be about 0.024 percent job opportunities and also for every one percent rise in FDI the level employment in the country will increase by 0.011 percent.

The coefficient of determination (R2) revealed that about 88 percent of the changes in the employment level in the country are captured by the degree of economic liberalization. The F-statistic that is the joint significance of the model which is 92.3254 revealed that the model is statistically significant.

However, it is necessary to test the reliability of the data used in this study. This we did using the Augmented Dickey-Fuller (ADF) stationarity test.

Table 2: ADF TEST

Variables	Level	First Difference	Second Difference	Integration Order
InOPNS	-2.7752	-4.954	-	1(1)
InFDI	-3.3843	-7.345	-	1(1)
InEXR	-3.4325	-6.896	-	1(1)
InLPR	-1.4563	-5.324	-	1(1)

Source: Author's Computation

Note: the 5% critical value for ADF Statistic at level, first and second difference are -3.5530, -3.557 and -3.6220 respectively.

The ADF test in table 2 above indicates that the variables that were used in this work were stationary at first differences, meaning they were integrated of order one variable, i.e 1(1). Having established no structural break in the model, it is imperative to determine whether using the variables together in the structural model would produce reliable result using the Johansen's cointegration test.

Table 3: Johansen's Cointegration test

Hypothesis	Trace Test Statistic	
Null Alternative	Statistic	Critical value 5%
r = 0 r = 1	87.3445	76.25
r < 1 r = 2	65.7641	59.76
r < 2 r = 3	34.8796	45.26
r < 3 r = 4	23.4621	28.21

Source: Author's Computation

The Johansen conintegration test result in table 3 above indicates that the value of trace statistic exceeded the value of critical value at 5% in two of the 4 hypotheses, which reveals two cointegrarting vectors. Therefore, since cointegration of the variables has been established, the implication is that there is existence of long run relationship between globalization and employment.

Table 4: over- Parameterized ECM

Variables	Coefficient	P.Value	R2 = 0.732
C	2.4232	0.0000	AdjR2 = 0.720
InOPNS	-0.0047	0.2132	F.Stat = 86.3254
? InOPNS(-1)	0.0491	0.0130	Prob(F.Stat) = 0.0000
? InOPNS(-2)	-0.0401	0.1061	D.Watson = 1.8012
InFDI	0.0021	0.0782	
? InFDI(-1)	0.0110	0.0011	
? InFDI(-2)	0.0233	0.0910	
InEXR	0.0013	0.0545	
? InEXR(-1)	-0.0188	0.0020	
? InEXR(-2)	0.1131	0.0600	
ECT(-1)	-0.8167	0.0002	

Source: Author's Computation

Table 5: Parsimonous ECM

Variables	Coefficient	P.Value	R2 = 0.732
C	5.2167	0.0000	AdjR2 = 0.720
ΔInOPNS(-1)	0.0482	0.0130	
ΔInFDI(-1)	0.0120	0.0011	
ΔInEXR(-1)	-0.0201	0.0020	
ECM(-1)	-0.7811	0.0002	

Source: Author's Computation

The over-parameterized and parsimonious error correction models (ECM) in table 4 and 5 above. The result of the over-parameterized regression revealed that all the variables in the model were statistically insignificant when the variables are not lagged and are in second difference. The relationship between the changes in InLPR to changes in InOPNS, InFDI and InEXR as well as the equilibrating error of the previous period is referred as the parsimonious model. The ECT(-1) describes the degree of adjustment in the direction of the long-run equilibrium. If the ECT(-1) coefficient is significant, the implication is that the disequilibrium in the $InLPR_t$ in each period is adjusted in the nest period (kareem, 2009).

The parsimonious result as shown in table 5 revealed that the changes in InOPNS and InFDI have a significant positive effect on employment (InLPR), while InEXR has a significant negative effect on employment (InLPR). The ECT(-1) coefficient shows that about 78 percent of equilibrium value of employment is adjusted each period. Meaning that the speed of adjustment from the short run disequilibrium to equilibrium in the present period is 78 percent, the statistical significant of ECT(-1) justifies the application of the error correction model in the study.

Meanwhile, to known the direction of causality that existed between globalization and employment, the Pairwise granger causality test was employed. Table 5 below show the results.

Table 6: Pairwise Granger Causality Test

Null Hypothesis	Obs	Prob. Value	Decision	Direction
InOPNS does not Granger cause InLPR	30	0.0203	Reject	Causality
InLPR does not Granger cause InOPNS	30	0.0724	Accept	No Causality
InFDI does not Granger cause InLPR	30	0.0211	Reject	Causality
InLPR does not Granger cause InFDI	30	0.0012	Reject	Causality
InEXR does not Granger cause InLPR	30	0.0032	Reject	Causality
InLPR does not Granger cause InEXR	30	0.0674	Accept	No causality

Source: Author's Computation

In table 6 above, the result of Granger Causality between InOPNS and InLPR, the causality run from InOPNS to InLPR. That is, openness does Granger cause employment, but employment does not Granger causes openness. The second hypothesis test revealed that foreign direct investment and employment Granger cause each other. This means that there is a bi-directional causality from InFDI and InLPR. The Granger causality between InEXR and InLPR indicates that there is unidirectional causality from InLPR to InEXR. This means that it is employment that Granger cause exchange rate.

The important observation noted from these results is that the variable, InOPNS and InFDI, that have positive relationship with employment did Granger cause it, While InEXR did not Granger cause employment. This indicates that the openness and foreign direct investment actually influences employment in Nigeria, whereas exchange rate limits employment in Nigeria.

Conclusion and Policy Recommendations

This study x-rayed the effects of globalization (economic liberalization) on the level of job creation in Nigeria. The paper employed econometric methods in order to ascertain this relationship. Various literature were reviewed which shows distinct arguments on the effects of globalization on job creation. Some favored a positive relationship while others believe that it is negative.

Based on the results obtained in this study, we discovered that economic liberation has been contributing in job creation in Nigeria. Variable such as FDI and OPNS indicated this direction. This is sensible, because if there is an increase in economic liberalization, there would be inflow of foreign direct investment that will translates into increase in domestic investment and employment. This result conforms to the work of Kiren and Awan (2018). .

Therefore, the study concludes that economic liberalization has contributed in expanding employment in the country. Thus, the current economic liberalization policy by the authority should be sustained in other to achieve an increase in job creation.

The study therefore recommends the following

1. Government should sustain and expand the current economic liberalization policy in the country in order to attract more foreign direct investment.

2. Government should bring on board, more policy that encourages ease of doing business in order to attract FDI so as to improve domestic production and employment.
3. The government and other stakeholders should take proactive steps to design measures that will reduce import, promote domestic production and export.

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Dynamic Linkages Between Foreign Direct Investment (FDI), Trade Openness (TOP) and Economic Performance in Nigeria: Do Quality Institutions Matter?

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Abstract

The present study attempts to explore whether quality institutions matter in the dynamic linkage between foreign direct investment, trade openness, and economic growth in the case of Nigeria. The study used preliminary tests of Augmented Dickey Fuller and Dickey-Fuller GLS unit root tests, with the Autoregressive Distributive Lag (ARDL) bounds testing approach as the main estimation technique. Time-series data was collected from the World Bank's Development Indicator and World Governance Indicator for the period 1992–2021. The results show that foreign direct investment interactions with control of correction (FDI*COC) had no effect on economic growth. However, the interplay of foreign direct investment with government effectiveness (FDI*GOE) has an adverse impact on economic growth. Furthermore, the trade openness association with control of corruption (TOP*COC) exhibits a deleterious effect on economic growth, while the trade openness link with effective government (TOP*GOE) exerts a positive influence on economic growth. This study concludes that the existing institutions that are supposed to ensure government function efficiently across various arms are still lagging behind and thus cannot engender significant growth in the economy. It is therefore recommended that the government and relevant stakeholders collaborate and put in place necessary and flexible laws that can serve as guarantees of capital investment and trading activities in the Nigerian economy.

Keywords: *Foreign direct investment, trade openness, quality institutions, economic performance, economic freedom index*

Introduction

Globalization and structural changes have greatly accelerated economic integration, which has significantly contributed to the opening of newer markets (Saidi et al., 2020). Following the modern transformation, FDI is regarded as one of the most important factors in a country's economic development (Zaman et al., 2021). To achieve stable economic performance, developing countries with a lack of capital rely on economically devolved nations for investment. By doing so, developing countries can achieve the most thrilling advantage of their enterprise, as it allows them to strengthen their fragile areas and form larger business opportunities (Zaman et al., 2021), through a variety of factors such as technology transfer, ripple effects, productivity gains, the introduction of new processes, and managerial skills (Bende-Nabende et al., 2003; Lee, 2013). These new technologies have enabled the opening of global markets, increased returns on investment, returns on value, and enhanced new investment opportunities for all economic stakeholders, potentially increasing global trade flows, foreign direct investment, and likely economic growth (Arvin, Pradhan & Nair, 2021).

Nigeria is a member of a number of bilateral and multilateral organizations, which has aided her global integration efforts and facilitated foreign capital inflows into the domestic economy. As a result, the economy has implemented various incentives and policies to increase trade openness as a precursor to attracting much-needed FDI inflows for economic development (Dauda, 2007). According to World Bank Development Indicators (WDI) (2021), Nigeria attracted approximately $89,570.52 million in FDI inflows with an average of 1.41 percent from 1996 to 2020. It is expected that these capital inflows will boost socioeconomic activities; however, taking trade as a percentage of GDP as an example, the average is 36.63 percent, which is far below expectations, especially when compared to countries such as South Africa, which has trade as a percentage of GDP at 51.59 percent, Egypt at 46.37 percent, Kenya at 48.89 percent, and Rwanda at 38.73 percent. In terms of economic performance, GDP growth averaged 4.87 percent, which is still below the level that can generate significant economic performance indicators, and is one of the reasons why unemployment (percentage of total labor force) and inflation averaged 5.00 percent and 12.21 percent, respectively.

Surprisingly, the Nigerian economy witnessed significant appreciation of trade (percent GDP) and FDI (percent GDP) up until 2012 before it began trending downward from 44.53 percent, 1.55 percent (2012) to 25.39 percent and 0.55 percent (2020), while GDP growth fell from 4.23 percent to negative value of -1.79 percent, which is tagged recession episode. The implication is that each successive regime reduces trade appreciation and FDI inflows. Unumen and Oghi (2016) and Unumen (2014) express concern that Nigeria remains an underdeveloped country, with approximately 68 percent of its population living below the international poverty line of US$ 1.25 per day (Anwana and Affia, 2018). Some of these development impediments can be attributed to poor government effectiveness (Yildirim and Gokalp, 2016; Epaphra and Kombe, 2018; Owasanoye, 2019; Sule, 2020). Despite the remarkable trends of ups and downs in Nigerian economic performance, it is undeniable that a number of economic policies, reforms, and programs that have been implemented may have

influenced Nigerian economic performance, which is sensitive to the quality of the existing governance structure and institutional setting to sustain economic reforms.

Existing research on FDI, TOP, and economic performance (e.g., Shahbaz et al., 2017; Saidi and Hammami, 2017, Samir and Mefteh, 2020) has been inconclusive, owing to their inability to use institutional quality indicators as an interactive variable, which strongly motivates researchers to conduct more in-depth investigations into this phenomenon. This study specifically seeks to understand the dynamics of the linkages between foreign direct investment, trade openness, and economic performance in Nigeria under different institutional quality indicators, as well as to test whether the bidirectional hypothesis of the nexus of foreign direct investment, trade openness, and economic performance in the context of interaction with different institutional quality indicators holds true.

The study is divided into five sections; section two follows this introduction with a brief literature review. Section three deals with the materials and method of the study, while sections four and five deal with results and discussion, and, conclusion and policy remarks respectively.

Brief Literature Review

The first section focuses on the conceptual clarification. The term "foreign direct investment" (FDI) refers to a type of cross-border investment in which a resident of one country takes a long-term stake in and exerts a sizable amount of control over a company that is located in another country (Lee, Kim & Le, 2015). The scholars emphasized that FDI fosters international trade by giving companies access to other markets and serves as a crucial means of technology transfer between nations and this also serve as a key tool for economic growth. Accavi and Ozturk (2012), emphasized that FDI is primarily motivated by two incentives—supplying resources to local markets or gaining access to low-cost production factors in the host country—it is anticipated that FDI will have an impact on trade flows.

The pioneer of the theory in institutional economics North (1981) describes institutions as a set of rules compliance procedures, and moral and ethical behavioural norms designed to constrain the behavior of individuals in the interests of maximizing the wealth or utility of principals. Yildirim, (2015), define institutions as habits that bring limitations to our actions through rules and organizations settled in social life, direct us on how we should behave, and lead social life. Institutional quality as those basic tenets that guide the operations of public and other private institutions in other to maximise wealth (Sule, 2020). The scholar further emphasized that the enforcement of these tenets is based on the act that establishes the institution, which most times conforms to global best practice.

The first hypothesis linking FDI and economic performance, the economy grows by boosting aggregate demand, as well as through the development of human capital and the efficiency of spillover effects (see, Zhang and Yang, 2016; Zhu and Chen, 2016; Shakar and Aslam, 2015). The second postulations accentuated that better economic performance may be a sign of better infrastructure and economic climates, which might boost the likelihood of higher

economic profitability via increased FDI inflows (Zhang, 2021). The third is the feedback theory, which holds that FDI and economic growth encourage one another and promote their coexistence (Seyoum et al. 2015; Sunde, 2017; Belloumi, 2014).

Scholars also suggested that the trade-growth nexus is supported by three pillars (Huchet-Bourdon et al. 2017; Keho, 2017). One is that increased trade openness may spur economic expansion by way of the international trade multiplier. This is related to the idea that increasing exports may help countries get the necessary foreign currency to trade on global markets and buy the inputs for economic production. Thirdly, export growth may help countries increase their market share, allowing them to take advantage of economies of scale and reducing their exposure to risks associated with currency fluctuations and other market volatility.

Literature demonstrates FDI and trade both are complimentary and substitutive in nature and this is based on four competing hypotheses (Pradhan and Arvin, 2015; Rehman and Ding, 2020; Seyoum et al. 2014). The first is the trade openness-led FDI theory, which opined that increasing trade openness between nations boosts FDI since doing so improves the business climate, which in turn stimulates higher FDI inflows. Secondly, the theory emphasized that increased FDI inflows would make it possible to invest in technological infrastructure, research and development, and physical infrastructure in order to produce more goods and services for trade and to import more intermediate goods and services in order to produce final products for the export market. The feedback hypothesis contends that FDI and trade openness reinforce one another. However, the neutrality hypothesis contends there is no connection between the two variables.

This section dwell on theoretical underpinning surrounding the series under investigation. Solow-Swan Neoclassical growth models place a strong emphasis on labor, capital, and technological advancement to increase economic production (Solow, 1956; Swan, 1956). Later, Mankiw, Romer, and Weil (1992) updated this by adding the development of human capital. However, this is no longer the case because institutional quality has taken center stage amid other drivers and is one of the forces promoting sustainable development. According to the "institutions' quality hypothesis," the institutional setting in which economic agents interact with one another in an economy influences economic development (Alexiou, Tsaliki, and Osman, 2014). This perspective holds that a society's "rules of the game," which are determined by the prevalent explicit and implicit behavioural norms and their capacity to provide suitable incentives for good economic behaviour, are what really count (Rodrik & Subramanian, 2003).

The focus of previous research (Wittman, 1995; Clague et al. 1999; Wu and Davis, 1999) was on the connection between political institutions and economic development, but as time has gone on, the emergence of new measures has led to the study of a variety of other institutional difficulties (Butkiewicz and Yanikkaya, 2006; Kostevc et al. 2007). Studies by Dawson (2003), Adkins and Savvides (2002), for example, demonstrated that organizations that support economic freedom have a favorable impact on economic performance. In a similar line,

studies by Bourguignon and Verdier (2000), Sylwester (2002), and Easterly and Levine (2003) reveal that per capita income equality occurs in nations with high levels of civil liberty. Additionally, Stiglitz (2001) is one of the most prominent proponents of good governance for nations to enjoy rapid development. The majority of current research on the factors influencing economic performance focuses on the role of institutions in the discussion and has shifted its attention from macroeconomic factors to the effectiveness of institutions (Alexiou, Tsaliki, and Osman, 2014). Also, sound working of institutions like the government, market, educational, and socio-cultural fitness are the four main pillars that support Wilhems and Witter (1998) theory, these institutions is crucial for creating an atmosphere where FDI can thrive. The ability of a nation to adapt, or to meet the internal and external expectations of its investors, is what gives it the advantage in luring FDI inflows. In light of these arguments, this study is being conducted.

This section reviewed some empirical studies. Ogieva and Ohiomu (2017) used panel regression analysis and the System Generalized Method of Moments (GMM) to examine the hypothesis that FDI and trade openness promote economic growth in the ECOWAS sub-region. by utilizing panel data from 2000 to 2016. The findings imply that trade openness and foreign direct investment have significant and advantageous links with economic growth in the subregion. Keho (2017) examined the effect of trade openness on economic growth for Cote d'Ivoire from 1965 to 2014 using the autoregressive distributed lag bounds test for cointegration and the Toda Yamamoto Granger causality tests. The findings suggested that trade openness has favourable long- and short-term benefits on economic growth. The findings also suggested a two-way causal relationship between capital formation and trade openness in fostering economic growth in Cote d'Ivoire.

Using a dynamic model and data from 1980 to 2012, Zahanogo (2017) investigated the relationship between trade openness and economic growth in 42 Sub-Saharan African nations, including Cote d'Ivoire, Ghana, and Nigeria. The study used the Pooled Mean Group (PMG) estimation technique for the heterogeneous panels. The empirical data showed that there is a cut off point below which increased trade openness boosts economic growth and above which the impact of trade on growth falls. Using the Granger Causality Test, Dutta, Haider, and Das (2017) investigated the causal link between foreign direct investment, domestic investment, trade openness, and economic growth in Bangladesh from 1976 to 2014. Findings show that, there is a one-way causal relationship between foreign direct investment and growth, a two-way relationship between domestic investment and trade openness and growth and foreign direct investment.

The causality tests and the autoregressive distributed lag approach were used by Egbulonu and Ezeocha (2018) to analyze the association between trade openness and economic growth in Nigeria from 1990 to 2015. The causality test demonstrates that GDP and FDI, trade openness and FDI, gross fixed capital creation and trade openness, and exchange rate and gross fixed capital formation exhibited unidirectional causation. The findings also showed a correlation between trade openness and economic growth that was positive, but a correlation between gross fixed capital formation and economic growth that was negative. Using a vector

error correction model (VECM), Abdebary (2018) evaluated the causal link between Egyptian governance and economic growth. A substantial bidirectional causal link was discovered by the investigation.

Sule (2020), looked at the relationship between institutional quality and economic growth in Nigeria using the Johansen Cointegration methodology as well as the Ordinary Least Square (OLS) method. The cointegration test reveals a joint relationship between the variables, and the OLS model demonstrates that economic growth responds favourably to institutional quality (contract-intensive money) and is significant, whereas the effective governance index has a positive but negligible impact on the economy. Other research indicates that the effects of domestic investment and foreign direct investment have a considerable positive and negative impact on economic growth. Zaman, Pinglu, Hussain, Ullah and Qian (2021) adopts the two-step system GMM technique to estimate the impact of IT exports, gross capital formation, FDI, and trade openness on sustainable economic growth with regional integration of BRI countries from 2013 to 2018. The moderating variable is regional integration, while the trade freedom index, investment freedom index, real interest rate, and inflation are control variables. Finding shows that FDI and gross capital formation have a substantial positive impact on economic growth, whereas IT exports and trade openness have a negative, insignificant impact.

Aust, Isabel, and Pinto (2019), used an ordered probit model and multivariate analysis to estimate the contribution of foreign direct investment to the achievement of the Sustainable Development Goals in 44 African nations. The findings show that the presence of foreign investors raises SDG scores. Although FDI benefits sectors like basic infrastructure, access to clean water and sanitation, and renewable energy, there could be some negative environmental effects for host nations. In an effort to establish the causal links between trade openness and foreign direct investment in Romania, Mudiyanselage, Epuran, and Tescasiu (2019) used the Granger causality test and the auto Regressive distributed Lag (ARDL) Bounds test. The findings indicate that trade openness has unidirectional long-run and short-run associations with FDI inflows. While FDI exhibit significant and negative correlation with trade openness.

Su et al. (2019), investigate the effect of economic institutions and trade openness in the development of Vietnam using GMM estimators. The results demonstrate that trade openness and foreign direct investment have a favourable effect on the nation's economic performance. Also, the combined impact of trade openness and FDI in enhancing the nation's economic performance is greatly influenced by economic institutions. Using the ARDL model, Tahir and Hayat (2020) contend that domestic investment and natural resources, in addition to trade openness, have a favourable and significant impact on Brunei Darussalam's economic development. Adegboye, Osabohien, Olokoyo, Matthew, and Adediran (2020), used a fixed and random effect regression model to calculate the impact of foreign investment on economic growth from 2000 to 2018 while taking institutional quality into account. The quality of institutions is a determining factor to the inflow of FDI to the SSA sub-region and is found to be vital for economic development.

Using the Dixit-Stiglitz preference model to establish the productivity link between emerging and advanced economies from 1982 to 2018, Jaewon and Jung (2020), demonstrate that an increase in institutional quality in emerging economies causes pervasive technology-upgrading effects in advanced economies, which results in an increase in overall productivity. Malefane and Odhiambo (2021) used the ARDL bounds testing method to assess how trade openness affects economic growth in Lesotho. Finding show that trade openness has little to no long- or short-term influence on economic growth. The results show that in order to long-term reap the benefits of trade openness, policies that can improve infrastructure and human capital should be undertaken. Using ARDL and the threshold model, Kong et al. (2021) investigated the link between economic development and trade openness under exchange rate fluctuation in China from 1994 to 2018. The study emphasized that trade openness has improved the quality of economic growth in the long and short terms. The quality of economic growth can be kept consistent through automatic adjustment, even while the short-run variation departs from the long-run equilibrium.

Information and communication technology (ICT), international commerce, and foreign direct investment (FDI), which appear to have become drivers of economic growth in the G-20 countries between 1961 and 2019, were all examined by Arvin, Pradhan, and Nair (2021). The panel causality model, rooted to vector error-correction model (VECM), exposes a wide range of underlying temporal connections between the variables. The impact of institutional quality on foreign direct investment (FDI) of 117 nations worldwide from 2001 to 2018 was explored by Chen and Jiang (2021), who adopted the panel data approach. The findings show that institutional quality has improved, and that this has had a significant and positive impact on FDI. They also show that economic integration has enhanced institutional quality's role, and that this has led to a greater promotion of FDI in regions that have undergone economic integration. Wani (2022) used an autoregressive distributed lag (ARDL) bound testing approach to investigate the relationship between trade openness, capital formation, and economic growth in the case of India. The empirical findings show a negative relationship between trade openness and economic growth, both in the short- and long-term.

It's quite intriguing that studies on FDI, trade openness, and economic performance have yielded contradictory conclusions. The question of whether the degree to which institutional quality matters in the dynamics is sensitive to the governance structure interaction under consideration is still open because of their developmental stage, the econometric methods used, and the different time frame employed. Although Urama et al. (2019), Oyewale and Osadola (2018), Mary and Santos (2017), Zaman, Pinglu, Hussain, Ullah and Qian (2021) have studied the nexus between FDI, trade openness, and economic performance from different perspective, that is without incorporating quality institutions as moderating or interaction variable their models. The degree to which quality institutions impacts on economic performance differs under various governance structures available. In order to determine how trade openness and FDI inflows affect Nigeria's economic performance, this study connects these measures of governance structure.

Materials and Methods

The study first embarked on the informal test of descriptive statistics and preliminary tests of Augmented Dickey Fuller and Dickey-Fuller GLS unit root test, while the main estimation technique was the Autoregressive Distributive Lag (ARDL) bounds testing approach to cointegration (Pesaran et al., 2001) to interact institutional quality variables on FDI, TOP on economic performance indicator. Data for the study were sourced from World Governance Indicators, and World Bank's development indicators from 1992 to 2021. The dependent variable is gross domestic product (GDP) for economic performance while the explanatory variables includes foreign direct investment (FDI), trade openness (TOP), institutional quality indicators – government effectiveness (GOE) and control of corruption (COC). Control variables include consumer price index (CPI) proxied for inflation and economic freedom index (EFI). An EFI measures jurisdictions against each other in terms of parameters such as trade freedom, tax burden, judicial effectiveness, and more and EFI ranking ranges between 1 to 100, and based on the 2021 ranking, Nigeria is still under the category of mostly unfree. It is expected that interaction of institutional quality indicators (GOE, and COC) with foreign direct investment and trade openness will respond negatively to economic performance (i.e. GDP). This is in line with the postulation of the theoretical framework and empirical literature of the study.

Model Specification

The neoclassical model discussed here is based on the Solow and Swan (1956) model of economic growth, which has been well recognised in the literature as useful for different applications, including governance, which is the study's focus. As a result, our baseline model take cue from the study of Zaman, Pinglu, Hussain, Ullah and Qian (2021) with its functional model stated in equation (1).

$$EG = f(FDI, FDI * RI, TO, TO * RI, ITE, GCF, TFI, IFI, INF, RIR) \qquad \text{Eqn. 1}$$

Economic performance (EG) is hypothesised as a function of a combination of foreign direct investment (FDI), trade openness (TO), IT exports (ITE), gross capital formation (GCF), trade freedom index (TFI), investment freedom index (IFI), inflation (INF), real interest rate (RIR) and moderating variable of regional integration (RI).

However, in line with the model of Zaman, Pinglu, Hussain, Ullah and Qian (2021) with modification through the incorporation of quality of governance structure interacting with foreign direct investment, trade openness and their corresponding impact on economic performance.

Where X, which stands for governance quality, is a vector of many institutional quality indicators. To capture the potential impact of the quality of governance (X) on the impact of FDI and TOP on economic performance through interaction terms, we adjusted the model in order to avoid considering the inclusion of the X term as merely controlling for another variable in the model (i.e., $FDI*X$ *and* $TOP*X$). The linear ARDL model of this study becomes as expressed in equation 2:

$$\Delta GDP_t = \delta_o + \delta_1 GDP_{t-1} + \delta_2 FDI * GOE_{t-1} + \delta_3 FDI * COC_{t-1} + \delta_4 TO * GOE_{t-1} + \delta_5 TO * COC_{t-1} + \delta_6 EFI_{t-1} + \delta_7 CPI_{t-1} + \sum_{i=0}^{p} \varphi_1 \Delta GDP_{t-1} + \sum_{i=0}^{q} \varphi_2 \Delta FDI * GOE_{t-1} + \sum_{i=0}^{q} \varphi_3 \Delta FDI * COC_{t-1} + \sum_{i=1}^{q} \varphi_4 \Delta TO * GOE_{t-0} + \sum_{i=1}^{q} \varphi_5 \Delta TO * COC_{t-0} + \sum_{i=1}^{q} \varphi_6 \Delta EFI_{t-0} + \sum_{i=1}^{q} \varphi_7 \Delta CPI_{t-0} + \lambda ECM_{t-1} + \varepsilon_t$$

where $\delta_1 - \delta_7$ are the long-run parameters; $_1 - _7$ are the short-run parameters; δ_0 and ε are the intercept term and the white noise stochastic term respectively; λ is the parameter of the error correction mechanism (ECM); ln is the natural logarithm of the variables, and; Δ is the difference operator. A shock to any of the regressors may not result in an immediate long-run effect on GDP, which creates disequilibrium in the system and requires that the short-run adjusts to its long-run equilibrium through the error correction mechanism (ECM_{t-1}). The ECM_{t-1} is a one lag error correction term that accounts for the speed of adjustment to the long-run equilibrium.

Results and Discussion

In line with the objectives of this study, this section presents the preliminary and analytical analysis of the results.

Table 1: Descriptive/Summary Statistics

	GDP	FDI	TOP	EFI	CPI	COC	GOE
Mean	4.203789	1.649189	36.8296	52.93667	4.103953	-1.16044	-1.00746
Std. Dev.	3.844215	1.240433	8.868536	5.307541	1.144158	0.112446	0.100555
N_Std. Dev.	0.914464	0.752147	0.240799	0.100262	0.278794	-0.0969	-0.09981
Skewness	0.406511	1.740844	0.013883	-0.60643	-0.54426	-0.26389	0.063776
Kurtosis	3.697694	6.311986	2.287172	2.655974	2.680943	3.444735	2.91406
Jarque-Bera	1.434728	28.86425	0.636119	1.986728	1.608354	0.595431	0.029569
Probability	0.488037	0.000001	0.72756	0.370329	0.447456	0.742513	0.985324

Source: Extract from E-view 11 Output

In order to account for economic growth (GDP), we used annual time series data, including the series of gross domestic product growth rate (GDP), foreign direct investment as a percentage of GDP (FDI), trade as a percentage of GDP proxying for trade openness (TOP), and components of governance (government effectiveness (GOE) and control of corruption (COC) proxying for quality institutions). The other control variables are the economic freedom index and the consumer price index for inflation. All data covers the period from 1992 to 2021. The data were respectively extracted from the World Bank's Development Indicator (WDI), World Governance Indicators (WGI), and preliminary analysis in Table 1. For the time period under consideration, the average GDP growth rate is roughly 4.204 percent with a computed standard deviation of 0.914.

The average FDI growth rate was 1.649 percent, the TOP rate was 36.830 percent, and the calculated standard deviations were 0.752 percent and 0.241 percent, respectively. Both GDP, FDI, and TOP growth rates exhibit low volatility. The governance components (COC and GOE) exhibited average means of -1.160 and -1.01 with low computed standard deviations of --0.09 and -0.09. For EFI and CPI, their average mean values are 52.937 and 4.103. Their computed standard deviations are 0.100 and 0.278. With the exception of EFI, CPI, and COC, every other variable (GDP, FDI, TOP, EFI, and GOE) is positively skewed. The series of TOP, EFI, CPI, and GOE are platykurtic, having kurtosis values less than 3, while the series of GDP, FDI, and COC are leptokurtic, having excess kurtosis values above 3, which validate the property of normally distributed variables.

Table 2: Summary of unit root test

Panel A	**Augmented Dickey Fuller unit root test**				
Variables	**Level**	**Prob.**	**First Diff.**	**Prob.**	**Order of Integration**
GDP	-2.663947*	0.0924	-7.213543***	0.0000	I(1)
FDI	-0.872784	0.7799	-6.799060***	0.0000	I(1)
TOP	-2.869684*	0.0613	-6.384195***	0.0000	I(1)
COC	-1.956548	0.3033	-4.780651***	0.0007	I(1)
GOE	-3.455703**	0.0169	-	-	I(0)
EFI	0.470344	0.9814	-0.155075***	0.0000	I(1)
CPI	-4.857995***	0.0005	-	-	I(0)
Panel B	**Elliott-Rothenberg-Stock DF-GLS test statistic**				
GDP	-2.710796***	0.0113	-	-	I(0)
FDI	-0.859020	0.4005	-2.086759**	0.0493	I(1)
TOP	-2.928438***	0.0067	-	-	I(0)
COC	-1.984865**	0.0570	-	-	I(0)
GOE	-2.409055**	0.0228	-	-	I(0)
EFI	2.944233	0.1107	-5.656879***	0.0000	I(1)
CPI	0.484065	0.6324	-4.790904***	0.0001	I(1)

Source: Extract from E-view 11 Output
Note: ****, ** and * indicate statistical significance at 1%, 5% and 10%, respectively.*

The Augmented Dickey-Fuller unit root test results in Table 2, Panel A show that only the variables GOE and CPI exhibit stationarity at the level [i.e., I(0)], while the remaining variables GDP, FDI, TOP, COC, and EFI exhibit stationarity at the first difference [i.e., I(1)]. However, to validate the outcome of ADF, the result of the Elliott-Rothenberg-Stock DF-GLS test statistic on Panel B displays stationary series of GDP, TOP, COC, and GOE at level [i.e., 1(0)], while FDI, EFI, and CPI became stationary at the first difference [i.e., I(1)].

Table 3: The Results of ARDL cointegration test

Diagnostic tests					
Estimated Model	Optimal lag length	F-Statistics	R^2	Ajd-R^2	D.W test
GDP_t =f(FDI_t*X TOP_t*X EFI_t, CPI_t)	1, 0, 0, 0, 0, 0, 0	2.375216	0.474974	0.474974	2.793752
CointEq(-1)*		-0.785332	0.156023	-5.033452	0.0001
Bounds testing to cointegration					
Significant Level		Critical Values			
		Lower bounds I(0)		Upper bounds(I(1)	
1% level		2.88		3.99	
5% level		2.27		3.28	
10% level		1.99		2.94	
Post-Estimation Results					
Linearity test	Autocorrelation test			Heteroscedasticity test	
Ramsey RESET	LM Test			Breusch-Pagan-Godfrey	
0.240829 (0.1185)	0.288176 (0.4345)			0.753642 (0.6309)	

Source: Extract from E-view 11 Output

This study is an impact analysis; thus, the appropriate lag selection criterion is the Schwarz information criterion (i.e., 1, 0, 0, 0, 0, 0, 0), as displayed in Table 3. The results reported in Table 3 reveal that our computed F-statistic is less than the lower critical bounds generated by Pesaran et al. (2001) at 1 percent, which is slightly greater than the lower bound at 5 percent, therefore connoting the presence of cointegration as inconclusive. This means that no strong cointegration exists amongst the six explanatory variables of interest, which is contrary to earlier findings by Mudiyanselage, Epuran, and Tescasiu (2019), and Malefane and Odhiambo (2021). This therefore implies that the interpretation of the level equation, which represents the long-run equation, is of no relevance for this work.

Table 3 holds the error correction term (ECT), which has a value of -0.78 or 78% and may be quickly observed to be substantial and negative. Accordingly, if there is a short-term disturbance, balance can be regained by 78% in the current year. The weakly adjusted R-squared reveals that the variable in the model accounts for 47% of the fluctuations that may be explained, which means that the remaining 53% of the explanations for the economic growth come from additional explanatory factors. Given this scenario, the appropriate approach is to rely on the conditional error correction regression, which represents the short-run equation for the analysis of the result. Table 4 below holds the results of the short-run analysis.

The Durbin-Watson Stat of 2.79, which is supported by the F-Statistic of 0.28 and Probability of 0.43 of the Breusch-Godfrey Serial Correlation LM test, reveals that the disturbance terms of successive periods are mutually independent. The Breusch-Pagan-Godfrey test for heteroskedasticity with an F-statistic of 0.75 and probability of 0.63 shows that the results meet the ordinary least squares assumptions of constant variance of the disturbance term. The null hypothesis of linearity is maintained, and the model is appropriately stated as "stable," as the Linearity RESET test verifies.

Table 4: Short run estimate

Conditional Error Correction Regression				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.270475	13.13029	0.325238	0.7482
GDP(-1)*	-0.785332	0.194737	-4.032787	0.0006
FDI*COC**	5.739302	3.104686	1.848593	0.0786
FDI*GOE**	-7.506383	3.938968	-1.905672	0.0705
TOP*COC**	-0.391757	0.205261	-1.908578	0.0701
TOP*GOE**	0.309643	0.264534	1.170524	0.2549
CPI**	2.158147	1.387062	1.555913	0.1347
EFI**	-0.308482	0.314425	-0.981097	0.3377

Source: Extract from E-view 11 Output

The conditional error correction regression, which stands for short-run equation, reveals that the interaction of foreign direct investment with control of correction (FDI*COC) has no contagion effect on economic growth during the study period. This outcome is in line with the findings of Ogieva and Ohiomu (2017); Dutta, Haider, and Das (2017); Su et al. (2019); Zaman, Pinglu, Hussain, Ullah, and Qian (2021). This finding further corroborates earlier submissions by Adegboye, Osabohien, Olokoyo, Matthew, and Adediran (2020), Arvin, Pradhan, and Nair (2021), and Chen and Jiang (2021), which emphasized that the quality of institutions is a determining factor in the inflow of FDI to emerging economies, which is also vital for economic development. However, the interaction of foreign direct investment with government effectiveness (FDI*GOE) has an adverse impact on economic growth. This is in line with the finding of Sule (2020) but contrary to the outcome of Ogieva and Ohiomu (2017). This implies that government effectiveness matters to the attraction of foreign direct investment inflow inflows in Nigeria.

Further, the trade openness interaction with control of corruption (TOP*COC) exhibits deleterious effect on economic growth, which is against the outcome of Keho (2017) but conform to the finding of Zaman, Pinglu, Hussain, Ullah and Qian (2021), Malefane and Odhiambo (2021), Wani (2022). This study result might be connected to that earlier point, in which impact of trade on growth falls to be associated with weak governance structure and infrastructural gap in addition to inadequate human capital development (Zahanogo, 2017, Malefane and Odhiambo, 2021). However, trade openness interaction with government effective (TOP*GOE) exert positive influence on economic growth, which conform to the finding of Keho (2017), Su et al. (2019), Tahir and Hayat (2020), Kong et al. (2021).

Complimentary variables of the consumer price index proxied for inflation have a positive effect on economic growth, contrary to theoretical postulation, whereas the economic freedom index has a negative effect on economic growth, negating principles such as trade freedom, tax burden, and judicial effectiveness, among others, which can also inhibit capital inflows, as seen in the earlier FDI*GOE interaction on Table 4.

Conclusion and Recommendations

The present study attempts to explore whether quality institutions matter in the dynamic linkage between foreign direct investment, trade openness, and economic growth in the case of Nigeria. To achieve the objective of the study, time-series data was collected from the World Bank's Development Indicators for the period 1992–2021. The empirical literature was unable to link governance components with FDI and trade openness. The only available study by Zaman, Pinglu, Hussain, Ullah, and Qian (2021) was able to interact the variable of regional integration (RI) with FDI and TO on economic growth in India. Following the adoption of this approach, the empirical findings show that foreign direct investment interactions with control of correction (FDI*COC) failed to have a contagion effect on economic growth. However, the interplay of foreign direct investment with government effectiveness (FDI*GOE) has an adverse impact on economic growth. On the other hand, the trade openness association with control of corruption (TOP*COC) exhibits a deleterious effect on economic growth, while the trade openness link with effective government (TOP*GOE) exerts a positive influence on economic growth.

Based on the negative interaction between foreign direct investment and government effectiveness, trade openness, and corruption control, this study concludes that the existing institutional framework, which is supposed to ensure efficient government across various agencies and parastatals, is still lagging behind and thus cannot generate significant economic growth. Similarly, the available institutions that fight crime and other related offenses need to be strengthened with a modern approach, which will go a long way in inducing capital inflows and international trade. It is therefore recommended that the government and relevant stakeholders collaborate and put in place necessary and flexible laws that can serve as guarantees of capital investment and trading activities in the Nigerian economy.

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Strategies for Improving the Available E-Learning Devices for Teaching Technical Drawing in Technical and Vocational Schools in Niger State, Nigeria

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Abstract

This study investigated strategies for improving the available e- learning devices for teaching technical drawing in technical and vocational schools in Niger State. Three research questions and one null hypothesis tested at 0.05 level of significance were used for the study. The design of the study was a descriptive survey research design. The population of this study comprised all the 31 technical drawing teachers in eight technical and vocational schools in Niger State. A 26-item questionnaire structured and validated was used to generate data for the study. Data obtained were analyzed using percentage, mean and standard deviation to answer the research questions while t-test statistic was used to test the hypothesis. The findings revealed that most schools have computer laboratories, laptops, some computers and standby generators but lack some e-learning devices such as slides, projectors, among others. The study also revealed that technical drawing teachers encounter a lot of problems in the use of available e-learning devices such as poor power supply and illiteracy. However, some strategies were suggested by the researcher for improvement of e-learning devices by technology teachers such as provision of adequate ICT infrastructure. Some recommendations were made such as organizing seminars and workshops for technical drawing teachers and improving power supply.

Keywords: *E-learning, E-learning devices, Teaching and learning, Technical drawing subjects and Technical drawing teachers.*

Introduction

Information and communication technology (ICT) have been generally adopted by all levels of education in the country as an innovative system in teaching and learning. The new technology has reduced the world to a global village with significant impact in the field of education leading to electronic teaching and learning known as e-learning. With e-learning there is now a shift away from the traditional approach in which the teacher directs the learning process in a conventional classroom and more modern and flexible method assisted by computers and allied information and communication technologies (ICTs) (Chuma, 2018). With the aid of these e-technologies, many students now teach themselves and study independently using certain technologies. Consequently, learners/students can connect to the classrooms from anywhere and receive lectures without seeing their classmates and teachers/lecturers. This innovation comes under the ambits of electronic learning (e-learning) and e-learning technologies

E-learning could be defined as the utilization of technologies or electronic devices such as desktop/laptop computers, CD/DVD players, smart phones, and other modern-day tools, to enhance traditional face-to-face method of learning (Abuhamdeh, 2010; Ahmad, 2012). It is the use of electronic educational technology in learning and teaching to enhance and support the process of knowledge dissemination (Oye, Salleh and Lahad, 2011). According to Moe and Blodget (2010), the e-learning has opened up opportunities for individuals to access information and learning programmes through the internet. This implies that e-learning is revolutionizing education by removing distance and making knowledge more accessible to all. All branches of education have accepted this emergent technology as a veritable tool for education services delivery. Due to its importance, technology subjects have to align with this emergent ICT. This is necessary because according to UNESCO (2011), ICT provides teachers and students access to vast stores of knowledge beyond the school, as well as multi-media tool to add to this store of knowledge.

The huge growth of computers, the internet and other electronic devices provide opportunities for the development of quality teaching and learning of technology subjects. Technology subjects taught in the secondary schools include basic technology, technical drawing, building construction, woodwork, applied electricity/electronics, auto-mechanics, general metalwork, home economics, food and nutrition, physics among others (FRN, 2014). The teaching of these technology subjects are confined to the classrooms with few ill-equipped workshops and laboratories using the teacher centered method. Teachers are the key factors in any educational innovation. They need training in the use of the new technology (e-learning devices) to enhance teaching and learning of technology subjects. E-learning simply means electronic learning. Adeosun (2010) refers to e-learning as comprising the combination, implementation and relationship of teaching and learning via different ICT media such as computer, internet, multimedia, projector, video tapes, CD-ROM, flash drives, satellite, telephone, television among others. Some of the technologies that can be used for e-learning include: computers, the Internet, telecommunications, www, CD-ROM, electronic databases and e-mail. Other e-learning resources are magnetic tapes, optical disks, CD/DVD, radio and television which increasingly pervade various aspects of work, business, leisure, teaching and

learning (Abidoye and Omotunde (2015). According to Marriot (2015) e-learning enables teachers to combine traditional methods of teaching with the internet facilities. Matogo (2013) agreed that e-learning compliments the work of teachers because extra materials and questions could be provided on-line for students.

As the world is increasingly getting technologically driven, globalized, competitive and competent-based, the role of teachers for effective e-learning programmes becomes critical. Just as the students need media competence to manage knowledge independently, teachers on the other hand have to be willing to structure content differently and put the students at the center of activities (Osuala, 2014). By so doing, e-learning centres on the students. In this case, the teacher acts as a resource person or facilitator meeting students at continued contact and increased guidance and feedback. Hedge and Hayward (2014) opined that e-learning offers well designed, learner centered and interactive learning environment to anyone, anyplace and anytime by utilizing the internet and digital technologies in connection with instructional design principle. There is no gain saying the fact that teachers are the key factors in e-learning programs which requires competence in managing the required e-learning devices. However, Jegede and Owolabi (2013), lamented the infrastructural deficiencies and shortage of e-learning facilities such as online classroom, software, telecommunication facilities and inadequate power supply for teaching and learning in secondary schools. However, they advised that certain infrastructures like computers, internet facilities, sustainable power supply, human capacity development and political-will by the government should be put in place to make e-learning a reality in schools.

To design and develop on-line courses, teachers require a thorough knowledge of the main components of on-line teaching and learning. Khan (2011) identified such components as content development, multimedia, internet tools, computers, storage devices, service providers and browsers. Uzodimma (2016), however, pointed out that the problem is that teachers lack necessary competencies for utilizing the computer and operating other educational software and connecting to the internet to source information on education. E-learning devices make teaching and learning less burdensome, effective and result-oriented by providing avenue for sharing ideas and information (Adeosun, 2010). E-learning comprises of all forms of electronically supported teaching and learning, which are procedural in nature and aim at construction of knowledge with reference to an individual experience and practice.

Statement of the Problem

With advancement in digital technologies, colleges and institutions are progressively searching for the potential utilization of information and communication technologies (ICT) to facilitate flexible teaching needs (Aboderin, and Kumuyi, 2013). Inspite of the proliferation of ICT and benefits of e-Learning Management System (eLMS) in most developing countries, its effective use and operation has been a major concern to stakeholders. According to Stockley (2013) e- learning is the delivery of a learning, training or education programme by electronic means which involves the use of a computer or electronic device in some way to provide

training, educational or learning material. The teaching of technical drawing in technical and vocational schools require instructional materials such as ICT facilities. ICT facilities are set of tools that help one work with information and perform tasks related to information processing. There are various forms of ICT facilities in the society ranging from computer, laptops, internet, digital calculators, among others (Adeosun, 2010). According to Uzodinma (2016) some technical drawing teachers in this schools cannot effectively use ICT facilities in teaching due to lack of competence in basic ICT. However, Uzodinma noted that the emergence of e-learning applications in educational delivery services in technical and vocational schools pose a lot of problems to the teachers. Notably, some of the technical drawing teachers in these technical schools lack the adequate knowledge and skills required for effective e-learning instructional delivery. There are also problems associated with erratic power supply, poor funding, inadequate bandwidth, insufficient computers, low literacy, weak and inadequate infrastructures, shortages and inadequate teaching materials among others. The existences of these problems challenge the full utilization of e-learning applications in teaching and learning of technical drawing as a subjects. In the nation's quest for technological development, technology education has an important role to play. One innovation that may boost the teaching and learning of technical drawing as a subjects is the use of modern technologies which help bring knowledge to the door steps of every Nigerian. The degree of efficiency of technical drawing teachers in carrying out their function is to a great extent dependent on the availability and usage of the necessary ICT facilities in the classrooms. It therefore becomes necessary to investigate the available e-learning devices and strategies for their improvement for teaching technical drawing in technical and vocational schools in Niger state.

Purpose of the Study

The purpose of this study was to investigate the strategies for improving the available e-learning devices for teaching of technical drawing in technical and vocational schools in Niger state. Specifically, the study intends to find out

1. The e-learning devices available for teaching technical drawing in technical and vocational schools.
2. The problems encountered by technical drawing teachers in the use of e-learning devices.
3. Strategies for improving the use of e-learning devices in teaching technical drawing subjects in technical and vocational schools.

Research Questions

The following research questions guided the study:

1. What is the e-learning devices available for teaching technical drawing subjects in technical and vocational schools in Niger State?
2. What are the problems encountered by technical drawing teachers in the use of e-learning devices?

3. What strategies could be used to improve the use of e-learning devices by technical drawing teachers in technical and vocational schools in Niger State?

Hypothesis

The following null hypothesis was tested at 0.05 level of significance.

Ho1: There is no significance difference between the mean rating of male and female technical drawing teachers on the problems encountered in the use of e-learning devices.

Methodology

The study adopted a descriptive survey research design aimed at investigating the strategies for improving the available e-learning devices for teaching of technical drawing in technical and vocational schools in Niger State. The population of the study consisted of all the 31 technical drawing teachers teaching in both the technical and vocational schools in Niger State, they include Government Vocational Training Centre (GVTC) Minna, GVTC Pandogari, Sabon Bwari, GVT Jebba, and Muhamad Bawa Rijau Vocational Training centre Rijau, GTC Minna, New Bussa and GTC Suleiman Barau Technical College Suleja in Niger State (Niger State Sciences Technical Schools Board, 2014) these schools were purposively selected based on the availability of technical drawing teachers. All the 31 technical drawing teachers in the eight (8) technical and vocational schools formed the population of the study. A 26- item structured questionnaire developed by the researcher and based on the three research questions titled "Improvement of E-learning Devices Questionnaire" (IEDQ) was used for data collection.

The first section of the questionnaire contained nine e-learning devices to which the respondents were to rate whether they were available or not. The second and third parts of the questionnaire on the problems encountered and strategies for improving the use of e-learning devices respectively had four-point response scale option of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) which the respondents responded to. The instrument was face and content validated by two (2) experts from Niger state college of Education Minna school of technical education and one (1) from computer science department which is not part of the study area. The data collected were analyzed using Cronbach Alpha and a reliability coefficient of 0.79 was obtained which was considered adequate. The researcher distributed 31 copies of the questionnaire directly to the respondents and had a 100% return. Percentages, mean ratings and standard deviation were used to analyze data from the research questions while the t-test statistic was used to indicate the existence of significant difference at 0.05 level of significance. A mean of 2.50 and above indicated that the respondents agreed with an item while a mean of 2.49 and below indicated that respondents disagreed with the item.

Results

The findings of the study based on analysis of data to the research questions and hypothesis are presented in the tables below

Research Question 1: What is the e-learning devices available for teaching technical drawing in technical and vocational schools in Niger State?

Table 1: Mean Responses of Technical drawing Teachers on the E-learning Devices Available for Teaching and Learning Technical drawing

SN	Items	Available	Not available	% Availability
1.	Computers	29	2	93.5
2.	Laptops	25	6	80.6
3.	Standby generators	24	7	74.4
4.	Internet facility	14	17	45.2
5.	CD-Roms and flash Drives	12	19	38.7
6.	Computer laboratories	30	1	96.8
7.	Projectors	12	19	38.7
8.	Slides	10	21	32.3
9	Audio- Visual devices	9	22	29.0

Table 1 showed the percentage availability of e-learning devices. This shows that some e-learning devices such as computers, laptops, standby generator, and computer laboratories with percentage values of more than 50 each were available in these technical and vocational schools. However, items 4, 5, 7, 8 and 9 with percentage values of less than 50 were indicated as e-learning devices that were not available. This showed that e-learning devices were lacking in these technical and vocational schools in Niger State.

Research Question 2: What are the problems encountered by technical drawing teachers in the use of e-learning devices in these technical and vocational schools?

Table 2: Mean Responses of Technical Drawing Teachers on Problems encountered on the use of e- learning Devices in Teaching and Learning Technical drawing.

S/N	Items	X	SD	Decision
1.	Lack of fund	3.64	0.82	Agree
2.	Irregular power supply	4.52	0.99	Agree
3.	Low computer literacy level of technology teachers	3.75	0.91	Agree
4	Lack of support from the government	3.07	0.73	Agree
5.	Lack of ready access to internet (insufficient bandwidth)	3.02	0.91	Agree
6.	Inadequate ICT infrastructure (computer software and accessories)	2.63	0.87	Agree
7.	Lack of time in use of ICT devices due to teaching load	3.18	0.92	Agree
	Grand Mean	**3.40**		

All the items in Table 2 had mean values above cut-off point of 2.50 showing that the respondents agreed to all the items. This implies that technology teachers encounter a lot of problems in the use of e-learning devices. The grand mean of 3.40 showed that technical drawing teachers are faced with a lot of challenges which hinder their effective use of the available devices.

Research Question 3: What strategies could be used to improve the use of e-learning devices by technical drawing teachers in both these technical and vocational schools in Niger State?

Table 3: Mean Responses of Technical Drawing Teachers on Strategies to be adopted to improve the use of e-learning Devices.

S/N	Items	X	SD	Decision
1.	Organizing seminars and workshops for teachers	3.56	0.67	Agree
2.	Bandwidth to be increased	3.12	0.97	Agree
3.	Erratic power supply should be addressed	4.00	0.88	Agree
4.	Adequate e-learning infrastructural facilities should be provided	3.61	0.86	Agree
5.	Public private partnership should be used in funding e-learning	3.75	0.91	Agree
6.	Employment of enough ICT teachers in the secondary schools	3.41	0.73	Agree
7.	Teachers to develop themselves in ICT	1.34	0.30	Disagree
8.	Monitoring team on the available e-learning devices should be set up	3.07	0.82	Agree
9.	Distributing laptops to teachers	3.39	0.62	Agree
10.	Computation of students' results using computer software	3.62	0.90	Agree
	Grand mean	**3.30**		

From the analysis in Table 3, all the items except item 7 had mean values of more than 2.50. This indicated that technology teachers strongly agreed on the identified strategies for improving the use of e-learning devices in this technical schools. The grand mean of 3.30 indicated that the respondents agreed to these strategies.

Ho: There is no significance difference between the mean rating of male and female technology teachers in the use of e-learning devices.

Table 4: Summary of T-test statistic on the Problems encountered by Male and Female Technical Drawing Teachers on the use of e-learning Devices in Teaching.

Respondents	N	X	SD	DF	t-cal	t-crit	Decision
Male Technical Drg Teachers	9	3.86	1.24	29	1.35	2.05	Not
Female Technical Drg Teachers	22	3.55	1.14				significant

From Table 4 above, it can be observed that the calculated t is 1.35 at 0.05 level of significance, which is less than the critical value of 2.05. Therefore, the null hypothesis was accepted

indicating that there is no significant difference in the mean ratings of male and female technical drawing teachers on the problems encountered in use of e-learning devices in teaching.

Findings of the Study

Based on information gathered from this research and analyzed, the following discoveries were observed:

1. The e-learning devices that were not available in our technical and vocational schools
2. Finding showed that technical drawing teachers are faced with a lot of challenges which hinder their effective use of the available devices.
3. The technical drawing teachers strongly agreed on the identified strategies for improving the use of e-learning devices in our technical and vocational schools in Niger state
4. The null hypothesis was accepted indicating that there is no significant difference in the mean ratings of male and female technical drawing teachers in this technical and vocational schools still encountered a lot of problems in use of e-learning devices in teaching

Discussion Finings

The result obtained from Table 1 showed that the technical and vocational schools in Niger State have some e-learning devices and infrastructure such as computers, laptops, computer laboratories and standby generators while some other devices like CD-ROMs/ flash drives, projectors, slides and audio-visual devices were not available for teachers to work with. The findings are in line with the works of Evoh, (2011), Jegede and Owolabi (2013) who lamented that e-learning facilities such as on-line classrooms, slides and projectors for teachers were not available for teaching. In agreement with the above finding electronic software's used for teaching learning technical drawing are Computer- Assisted Instruction (CAI), Video-Based Instruction and Game-Based Instruction (Abidoye and Omotunde, 2015). Finding by Anumkua, Uwa and Unagha (2016), identified the specific softwares used in technical and vocational colleges for teaching technical drawings to include, among others: ArchiCAD, AutoCAD, Ms Excel, Ms Word, Ms Access, Power Point and CorelDraw. The frequency at which these technologies are used seems to differ in individual institutions. Two

Table 2 sought to find out the problems encountered by technical drawing teachers in the use of e-learning devices. Such problems as lack of fund, irregular power supply, low computer literacy, lack of support from the government, insufficient bandwidth, inadequate ICT infrastructure and lack of time in the use of ICT devices affect the use of available e-learning devices. This finding agreed with the view of Uzodimma (2016), who pointed out that teachers lack necessary competencies in using and operating educational software as well as connecting to the internet so as to source information on education. That is why Garrison and Anderson (2013) advised that all the teachers should be trained to be familiar with e-leaning experiences as ongoing professional development. Research question 3 addressed the strategies that could be adopted to improve the effective use of e-learning devices by

technology teachers for teaching. Also, in agreement with the submission by Onasanya, (2010) to the effect that whilst some technical drawing teachers have enthusiastically integrated e-technologies like computers and Internet in the discharge of their responsibilities, others have been cautious in their welcome while some simply reject these technologies. He pointed out the major challenges to the use of e-technologies for teaching and learning in our colleges are insufficient infrastructure and poor funding. Al-Suqri (2011), also reported the issue of poor Internet connection speed and the constraints of public power supply emphasizing that electronic resources can be destroyed by frequent power failures and hacking.

From the analysis on Table 3, it was found out that the respondents strongly agreed that seminars and workshops for technical drawing teachers, employing enough ICT teachers in technical and vocational schools, involving public private partnership in funding e-learning programs, improving power supply and bandwidth as well as setting up monitoring team to monitor the use of available devices are effective strategies for improving the use of e-learning devices in teaching technical drawing. This finding is in line with the view of Hedge and Hayward (2014) who stated that certain things are needed to enable e-learning programmes spread fast. Such things according to Hedge and Hayward include adequate funding, increased power supply, sufficient bandwidth as well as well-trained ICT teachers. In agreement with Hedge and Hayward finding Tagoe (2012), heightened emphasis on the Internet as a facilitator of teaching and learning to be reinforced and he says further that e-learning is a type of learning supported by information and communication technology (ICT) via the Internet, intranets, extranets or many others to improve the quality of teaching and learning and for this internet to be effective a wide broadband is needed. Ajuwon (2013) also drew attention to the challenges arising from the high cost of e-technologies. Singh and Hardaker (2014) points stressing that high cost e-learning devices a lot of funds are needed to purchase, install, service/maintain and update various electronic devices for optimal performance. The hypothesis stated that there was no significance difference between the mean ratings of male and female technical drawing teachers in the use of e-learning devices. The result in Table 4 showed that the calculated t- value was less than the critical value of 1.96 at 0.05, level of significance and so the null hypothesis was upheld. This implies that male and female technical drawing teachers did not differ in their mean responses on the problems encountered in the use of e-learning devices. This means that both male and female technical drawing teachers encounter the same problems in the use of e-learning devices.

Conclusion

The study addressed the strategies for improving the available e-learning devices for teaching of technical drawing in technical and vocational schools in Niger state. The findings showed that some of the devices needed in e-learning are still lacking such as internet connectivity, laptops for teachers as well as basic software. Even where computers are found in these technical and vocational schools, the teachers encounter lot problems in their usage. Such problems include irregular power supply, low computer literacy on the part of teachers, and

lack of internet connection. However, the use of e-learning in teaching technical drawing subjects in these technical and vocational schools in Niger State would be realized if certain strategies are put in place. Such strategies as seminars and workshops for teachers, increasing bandwidth, improving power supply, provision of adequate e-learning infrastructural facilities, setting up a monitoring team to monitor the use of available devices as well as involving public private partnership in the funding of e-learning programs. As Nigeria joins the rest of the world in the transformation of the education sector through e-learning, it has become imperative for teachers of technical drawing subjects to be adequately prepared in the area of ICT. ICTs and other e-learning technologies does not only extend and expand peoples' ability to access information, they provide new opportunities for both teachers and students to transform conventional schools or colleges and university systems and bring advantages and other benefits to the entire country. Students go online to complete teacher-directed research activities and support the attainment of summary is that availability of electronic information resources tremendously improve the quality of research.

Recommendations

Based on the findings, the following recommendations are made

1. Seminars and workshops should be organized regularly by Niger State ministry of education and science and technical schools board for pre-service and in-service teachers to make them develop positive attitude towards e-learning.
2. Federal and State Governments should partner with schools to fund e-learning programmes.
3. The State ministry of education and science and technical schools board should set up monitoring team to monitor the use of the available e-learning facilities.
4. Efforts should be made by the Federal Government to supply of electricity continuously to schools.
5. Niger State Government should make Laptops readily available to all the technical and vocational school teachers.
6. Adequate e-learning facilities should be provided by the State Government to improve teaching and learning of technical drawing in both technical and vocational schools.

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An Assessment of Industrialization in Nigeria

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Abstract

This study aims at investigating of industrialization in Nigeria. Industrialization is the process by which an economy is transformed from a primarily agricultural one to one based on the manufacturing of goods. The structure of the Nigerian economy is typically an underdeveloped one which rely on the oil and gas sector. Nigeria today, likes other developing countries making its hopes for the rapid economic growth through industrialization. This research used literature review to collect information on the subject matter, based on the information gathered, it was found that the present level of industrialization in the economy is very small in the sense that, in 2011 manufacturing industries only contributed (4%) to Gross Domestic Product (GDP). While in present situation were estimated to have (9 – 11%) respectively. Since, west African Countries depend heavily on subsistence agriculture, industrialization will provide more employment opportunities for both skills and unskills workers.

Keywords: *Industrialization, Development and Nigeria.*

Introduction

One of the ultimate goals of West African Countries and other developing countries in general is to industrialize their economies. The establishment of industries in Nigeria gradually developed during the era of colonialism (1943 – 1959) with the aim of processing primary products. First, there is a relationship between the degree of industrialization and the level of development. The developed countries of the world are basically industrial countries. Secondly, there is the need for diversification of the economy (Emeh, 2013). Industrialization will provide more job opportunities and help in solving some of the employment problems. Industrialization is a process of manufacturing consumer goods and capital goods in order to provide goods and services to both individual and business (Ghazali Ado, 2001). Adejugbe, (2004), defines industrialization as the process of channeling human and materials resources with increasing application of science and technology to the production of goods and services. Most of the large and medium industries in Nigeria are located in a few metropolitan centers such as Lagos, Ogun, Kano, Kaduna, Port Harcourt and other state capitals.

Nigeria is among the favorable part and areas in the world, because of its tremendous materials and human resources, high land to man ratio, show space of urbanization, abundant agricultural raw materials and many other, factors for industrial development (Emeh, 2013). Nigeria has so many problems that hinder the industrial development: Inadequate capital, limited market, inadequate supply of industrial manpower, lack of knowledge, lack of infrastructure facilities, dumping etc (Lawal, 1982). According to observation of "Adam Smith" in his book "An inquiry into the nature and cause of wealth of nations" States that, if all these factors are present in the country, the industrial sector of the economy would not contribute anything to economic development.

Literature Review

Industrialization involve a process by which traditionally nonindustrial sectors (such as agriculture, education, health), of an economy become increasingly similar to the manufacturing sector of the economy (Friedman, 2006). In another perspective industrialization is the process in which a society or country (or world) transforms itself from a primarily agricultural society into one based on the manufacturing of goods and services (Cap, 2002). In fact, industrialization is recognized as development process, as comprise a service of complex long – range economic policy as (Abdullah, 2020). These economic policies cover the following;

1. The need to lead people to change from low Nigerian production capacity into an industrial capacity
2. The need to lead people to save and capital formation, which is vital for industrial capacity
3. The need to coordinate development strategies and policies to establish a "society that is a just egalitarian, free and democratic.

Industrialization as a complex process requires consideration of good location. According to prof. Kumari M. R (2021). The following are considered in locating of an industry;

i. Nearness to market

ii. Nearness to be transport facilities
iii. Nearness to raw materials
iv. Nearness to power supply
v. Nearness to labour supply

Furthermore, industries were classified into the following groups based on the previous study by Ghazali Ado (2001).

i. Craft industry
ii. Mining industry
iii. Processing industry
iv. Manufacturing industry
v. Construction industry
vi. Commercial industry

i. **Craft industry:** In the rural areas of West Africa craft industry such as leather works, dyeing, blacksmithing, Calabash Carving and cloth weaving are common. This is because this type of industries needs little capital and can be done either on sole trader or partnership.
ii. **Mining Industry:** These include tin, Coal, gold, diamond and petroleum mining.
iii. **Processing Industry:** These types of industries include the processing of palm oil, groundnut, cocoa, cotton, rubber, fish etc.
iv. **Construction Industry:** These are industries that concerned with assembling different component to form final products.
v. **Manufacturing Industry:** These are the industries, which combine raw materials to produce new product.
vi. **Commercial Industry:** Are those activities that are directed towards ensuring that goods produced are made available to those who need them. Such activity include packaging, branding, warehousing, transportation, insurance, banking etc.

Empirical Review

The early development economist has stressed the importance of the industrialization in the last 1940s and 1950s. That has been analyzed critically with a view to encourage, the industrial proliferation. This study intends to pick out some major arguments that could be use in subsequent theoretical development. According to Adejugbe (1995), the major determinant of the stage of industrialization or real growth of the economy is the manufacturing sector. In another study by Akpan (2001). A pure desk research was conducted on industrialization and Nigerian's economic development. He posited that investment in physical capital, skills accumulation and utilization of existing technologies in the world among other factors, will transform Nigeria's Industrial sector. Clunies-Ross et, al, (2010) states that the industrial growth or basically industrialization has two different meaning. It can be perceived as a change in a country's form of production and workforce towards producing or minor industries. There are works relating industrial development and economic growth. Blomstrom et, al, (1994) suggest that industrial development through foreign investors can have a positive influence on economic growth level.

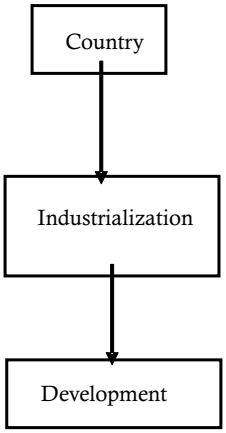
Theoretical Framework

Industrial development is a driver of structural change which is key in the process of economic development. Megan and Joshua (2013), suggest that economic development requires structural change from low to high productive activities and that the industrial sector is a key engine of growth in the development process. Virtually all cases of high, rapid and sustained economic growth in modern economic development have been associated with industrialization, particularly growth in manufacturing production (Szirmai, 2009).

Dependency theory is a popular theory within the social sciences to explain economic development of states. Dependency theory can be seen as a critique based on the following questions or problems: why do some countries become rich while others remain poor? This question is posed against the previously held conception that economic development was beneficial to every country within the international system. Despite the widespread poverty of the countryside and the urban shantytowns, the ruling elite of most third world countries are outrageously wealthy (woldu, 2000). The thrust of the dependency theory is the position that third world or peripheral countries are underdeveloped and poor because their economy were fused into center capitalist economy thereby leaving them dependent on the core economies (Eme, 2013).

Dependency is seen as a situation whereby external factors significantly influence domestic polities (Eme, and Emeh, 2013). Dependency theory maintains that developing countries are poor because they have been systematically exploited through imperial neglect, over dependence upon primary product as exports to developed countries, foreign investor's malpractices which crowds out domestic firms.

The following diagram shows the relationship between industrialization and economic development which was found that industrialization has positive impact on economic development.



Source: Researcher (2022).

However, Industrialization in Nigeria provides some positive effects on the economic development. It will also provide employment opportunities and standard living of people and many more.

Conclusion

The importance of industrialization to the Nigerian economy has been proven. The concept of industrialization is surely very important as per as economic development in concern. The problems of industrial sector are the main reason that made the Nigeria economy backward. It is important to note that industrializations are part of our life. It can be seen that, industrialization has been affected in Nigeria by so many factors: the capital for investment are not available, the market for the goods produced at home is too slow, the provision of social amenities is not enough etc.

Recommendation

As the research discovered that, the problems are present in the industrial sector. The study recommends the following:

1. Creating good business atmospheres to all industries
2. Provision of social amenities/infrastructure everywhere in the country
3. Allowing tax – Holiday on the infant industries
4. Closing the border for the foreign goods
5. Increasing the budget on industrial sector
6. Finally, all industries in Nigeria should be properly equipped with all they need for their production activities through loans and grants.

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Extent of Adoption of Inspection and Testing Practices in Domestic Electrical Installation in Minna, Niger State

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Abstract

This study was designed to assess the extent of adoption of inspection and testing practices in domestic electrical installation in Minna, Niger State. Two objectives and two research questions were raised. A cross sectional survey research design was adopted. The population of the study consists of 165 electricians. A 26 – item questionnaires developed by the researcher, validated by three experts was used for data collection. Mean and standard deviation were used in answering the research questions. The findings of the study revealed among others that; verifying that switch or receptacles are installed correctly at their correct position and verifying the functional testing of residual current devices were practices adopted at high and a low extent respectively. Based on the findings, it was recommended among others, that the Niger State Government should organize Capacity Building Workshop for the electricians on practices for ensuring safety of lives and installations.

Keywords: *Domestic electrical installation, Inspection, Testing, Electrical fire*

Introduction

One of the major problems facing developing countries like Nigeria which has defied all solutions is frequent fire incidences which affect lives and properties worth billions of Naira in different states of the federation. Linsley (2008), opined that, fire is a chemical reaction which will continue if fuel, oxygen and heat are present. Generally, fire incidents can be classified in many ways depending on the cause of the fire outbreak. Specifically, fires are divided into five classes namely; class A, B, C, D, and K (University of Pennsylvania, 2014).

In Nigeria, there are several electrical fire related incidences, some of which include; the Westminster Market located in the Trinity area of Apapa Lagos, the Sabon-Gari Market at Kano State as well as the Kure Market in Minna, Niger State, all gutted by fire which most a time had been attributed to electricity (Ochiaka, 2016). In March, 2008 an estimated cost of properties worth 9.8Million Naira were lost to electrical fire in Minna (Niger State Fire Service, NSFS, 2016). The persistent fire outbreaks recorded by occupant in Minna by NSFS has lead to the need for proper assessment to ascertain its cause.

Assessment according to Allen (2014), involves the use of empirical data on certain group of individual to refine programs and improve performance. In this study, assessment is the process of gathering and discussing information from multiple sources among a group of electricians in order to develop a deep understanding of what the individual know, understand and can do with their knowledge as a result of their practical experiences. The assessment has led to the identification of the factors responsible for the persistent electrical fire incidence. Babrauskas (2008), identified the factors responsible for electrical fires into two namely; (i) nature of the physical mechanism that led to ignition; and (ii) causative factors responsible for the fire incidence. The causative factors responsible for fire incidence are classified into two types: (i) distribution system and; (ii) domestic electrical installation practices (Hampson, 2011). This study focuses on domestic electrical installation practices as it deals specifically with the practice of the electricians.

Domestic electrical installation according to Piranshanthan (2008), is the putting together of associated electrical equipment in a building, installed to fulfill a specific purpose or purposes and having coordinated characteristics. According to Linsley (2005), domestic electrical installation practices consist of Designing, Selecting of Materials and Equipment, Installing, Inspecting and Testing of Equipment. This paper delimited to inspection and testing practices. An inspection practice according to Scaddan (2003), is a detailed physical check-up made to ensure the following: all equipment is to a relevant British or Harmonized European Standard; erected/installed in compliance with the IEE Regulations; not damaged in such a way that it could cause danger.

The inspecting practices visually carried out in an electrical installation includes: connection of conductor; identification of conductors; routing of cables in safe zones; selection of conductors for current carrying capacity and volt drop; connection of single - pole devices for protection or switching in phase conductors only; correct connection of socket outlets, lamp holders among others. If such inspection of electrical installations were not carried out,

incorrect practices such as poor connections, defective design, wrong polarity of conductor, earthing as well as presence of short-circuit among other faults cannot be ascertained which invariably can lead to an electrical fire disaster (Patel, 2005). The electrical installation must be visually inspected by the electricians, before testing commences.

Testing practices according to Scaddan (2003), implies the use of instruments to obtain readings. The testing practices that are carried out in a sequentially order includes: Continuity of protective conductor; testing for continuity of ring final circuit; insulation resistance test; polarity test; earth electrode resistance test; polarity-supply connected; earth fault loop impedance – supply connected; functional testing of Residual Current Devices (RCD)-supply connected. The absence of certain test or testing practices in an electrical installation such as main equipotential and supplementary bonding conductors among others may lead to a dangerous situation vis-à-vis electrical fire (Patel, 2005).

If reasonable provision were not made in the installation process, there is a likely risk of injury to person or fire. So therefore, on completion of an installation or an extension of an installation, appropriate inspection and tests shall be made to verify so far that the requirements of the Wiring Regulations have been met (Electrical and Mechanical Services Department (EMSD), 2015). The coordinated characteristics are carried out to prevent the occurrence of electrical fire incidence and to provide safety. Against this backdrop, a need arouses for the assessment of the extent of adoption to domestic electrical installation practices related to inspection and testing practices responsible fire incidence with a view to using this study for identifying appropriate method of addressing the menace.

Statement of the Problem

Electricity is a basic part of residential life in Minna, Niger State, Nigeria. It provides the energy for most powered items in a contemporary home, from lights to heating systems and to electrical appliances (Topical Fire Report Series, 2014). Today it is hard to imagine a residence without electricity as it has been part of our homes and our activities (Adekunle, *et al.,* 2016). However, no Nigeria citizen, Niger State, Minna in particular, is expected to lose their life and properties while assessing this electricity for their business and homes (Fashola, 2016).

However, evidence from available literature reviewed that Minna town in Niger State has been recording tremendous increase in fire incidence while assessing electricity. The statistical data provided by the Niger State Fire Service (2016), for the period of six years commencing from 2010 to 2015 indicated that an estimated 362 fire incidence were reported, with electrical fires incidences having the highest incidence rate of 193 constituting 53 percent while 69 fire incidence constituting 19 percent are non-electrical fire whereas 28 percent representing 100 fire incidence are un-known fires. This increased trend according to Timothy (2016) might be attributed to practices in domestic electrical installation work.

Against this backdrop, a need arises for the assessment of the extent of adoption to domestic electrical installation inspecting and testing practices responsible for this fire incidence.

Therefore, the problem of this study pose as a question is; what are the extent of adoption of inspection and testing practices in domestic electrical installation in Minna?

Aim and Objectives of the Study

The aim of this research work was to assess the extent of adoption of domestic electrical installation practices by electricians, with a view to ascertaining whether it is responsible for the rising incidence of fire in Minna, Niger State. Specifically, the objective of the study was to assess the extent of adoption of inspection and testing practices in DEI in Minna.

Research Questions

The following research questions were formulated to guide the study:

i. To what extent are the inspection practices adopted by electricians in Minna?
ii. To what extent are the testing practices adopted by electricians in Minna?

Methodology

The study adopted a Cross sectional survey research design. The study was carried out in Minna, Niger State, Nigeria. The population for the study was made up of 165 registered electricians practicing domestic electrical installation work. No sampling was done due to the manageable population. A structured Questionnaire titled; An Instrument for Assessing Domestic Installation Inspection and Testing Practices (IADIITP) were used to answer the research questions. The instrument used for the study was content validated by three experts. Cronbach Alpha Statistics was used to determine the reliability coefficients of the pilot tested instrument which was found to be 0.89.

A total of 165 instruments were distributed and 98.2 percent were retrieved by the researcher made up of 6 technicians, 35 craftsmen and 121 artisans. The data was analysed using mean and standard deviation obtained from responses on the four-point response categories as follows: very high extent adopted, high extent adopted, low extent adopted and very low extent adopted representing 4, 3, 2 and 1 respectively. The standard deviation was used to decide on the closeness or otherwise of the respondents to the mean in their responses. The decision for answering research questions was based on real limit of numbers.

Decision Rule

Table 1: True Limits of Real Numbers

Limits	Designation	Interpretation
3.50 – 4.49	VHEA	Very High Extent Adopted
2.50 – 3.49	HEA	High Extent Adopted
1.50 – 2.49	LEA	Low Extent Adopted
0.50 - 1.49	VLEA	Very Low Extent Adopted

Source: Spiegel, 1972

Results and Discussion

Research Question One

To what extent are the inspection practices adopted by electricians in Minna?

Table 2: Mean Responses of Electricians on the Extent of Adoption of Inspection Practices.

S/N	ITEM	X_A	SD_A	RMK
	Inspection Practices			
1	Check lighting fixture outlet boxes for suitability, correct positioning and correct alignment.	2.81	0.63	HEA
2	Verify that residuals current devices is provided at the correct place in bathroom, in kitchen, near sinks, on roof tops, in door wet areas, in locker room with shower and in garages.	2.33	0.53	LEA
3	Check for continuity and completeness in metal or PVC raceways and enclosure.	2.35	0.59	LEA
4	Check lighting and installation boxes used for support of ceiling suspended (paddle) fans.	2.38	0.71	LEA
5	Verify that switch or receptacles are installed correctly at their correct position.	3.00	0.90	HEA
6	Verify that metal switch boxes, switches and metal face plates are properly grounded.	2.86	0.64	HEA
7	Verify that service disconnection means provided, suitable and located outside or inside nearest the part of entrance of the service conductor.	3.07	0.77	HEA
8	Verify that service over current protection is provided, properly sized, and part of or adjacent to the disconnection means.	3.52	0.82	VHEA
9	Check service conductor for adequate size and cable.	3.29	0.69	HEA
10	Verify that the electrical equipment's on meter board are securely fastened and supported	2.94	0.65	HEA
11	Verify that boxes are securely fastened and supported.	2.80	0.64	HEA
12	Verify that earth rod is properly connected to bonding conductor	2.44	0.58	LEA
13	Check the presence of danger notices and other warning notices.	2.40	0.51	LEA
14	Check the presence of diagrams, instruction and similar information in the distribution board	2.22	0.65	LEA
15	Verify the labeling of circuit, fuses and switches.	2.28	0.57	LEA
16	Verify the closure of the earth chamber using concrete slab	2.47	0.62	LEA
GRAND MEAN		**2.69**		**HEA**

VHEA = Very High Extent Adopted; HEA = High Extent Adopted; LEA = Low Extent Adopted; VLEA = Very Low Extent Adopted.

Table 2 shows the similarities and differences of respondents' views on the extent of adoption of inspection practices. The respondents adopt item 8 to very high extent with mean value of 3.52. The respondent extent of adoption is high with items 1, 5, 6, 7, 9, 10, and 11, with mean scores ranging from 2.51 to 3.41. The extent of adoption is low with items 2, 3, 4, 12, 13, 14, 15,

and 16 with mean scores ranging from 2.22 to 2.49. The grand mean of 2.69 indicated that an inspection practice was adopted to high extent. The standard deviations ranged from a highest of 0.90 to a lowest of 0.51 which shows that the respondents mean responses do not differ significantly. The 26 items had their standard deviations less than 1.96, showing that the respondents were not far from the mean and were close to one another in their responses. The closeness of the responses add value to the reliability of the mean.

Research Question Two

To what extent are the testing practices adopted by electricians in Minna?

Table 3: Mean Responses of Electricians on the Extent of Adoption of Testing Practices

S/N	ITEM	X_A	SD_A	RMK
	Testing Practices			
17	Verify the test continuity for protective conductor.	2.38	0.67	LEA
18	Verify the main and supplementary bonding test.	2.48	0.76	LEA
19	Verify the continuity test of all ring circuit.	2.92	0.86	HEA
20	Verify the insulation resistance test.	3.41	0.68	HEA
21	Verify the Live polarity using continuity method or carries out Live polarity test.	3.51	0.67	VHEA
22	Verify the rechecking of the polarity using voltmeter.	2.51	0.66	HEA
23	Verify the earth electrode resistance test.	2.48	0.75	LEA
24	Verify the functionality of the earth fault loop-impedance test.	2.25	0.67	LEA
25	Verify the functional testing of residual current devices.	2.49	0.88	LEA
26	Verify the functional testing of earth leakage circuit breaker.	2.46	0.63	LEA
	GRAND MEAN	**2.68**		**HEA**

Table 3 shows the similarities and differences of respondents' views on the extent of adoption of testing practices. The respondents adopt items 21 to very high extent with mean value of 3.51. The respondent extent of adoption is high with items 19, 20 and 22 with mean scores ranging from 2.51 to 3.41. The extent of adoption is low with items 17, 18, 23, 24, 25 and 26, with mean scores ranging from 2.22 to 2.49. The grand mean of 2.68 indicated that testing practices was adopted to high extent. The standard deviations ranged from a highest of 0.90 to a lowest of 0.51 which shows that the respondents mean responses do not differ significantly. The 26 items had their standard deviations less than 1.96, showing that the respondents were not far from the mean and were close to one another in their responses. The closeness of the responses add value to the reliability of the mean.

Findings of the Study

The following findings emerged from the study based on the data collected and analyzed:

1. The following inspection practices revealed that the respondents: verify that service over current protection is provided, properly sized, and part of or adjacent to the disconnection means and to verify the live polarity using continuity method were practices adopted at very high extent. While to verify that boxes are securely fastened and supported and to verify the continuity test of all ring circuit were practices

adopted at a high extent respectively. Whereas, check the presence of (diagrams, instruction and similar information) in the distribution board and to verify that: residual current device (RCD) is provided at the correct places in bathroom, in kitchen, near sinks, outdoors, on roof tops, in door wet areas, in locker room with shower and in garages; earth rod is properly connected to the bonding conductor; were practices adopted at a low extent.

2. The following testing practices revealed that the respondents: Verify the Live polarity using continuity method or carries out Live polarity test were practices adopted at very high extent. While to verify the continuity test of all ring circuit; Verify the insulation resistance test; and Verify the rechecking of the polarity using voltmeter were practices adopted at a high extent respectively. Whereas, and to verify that: residual current device (RCD) is provided at the correct places in bathroom, in kitchen, near sinks, outdoors, on roof tops, in door wet areas, in locker room with shower and in garages; earth rod is properly connected to the bonding conductor; the test for continuity of protective conductor; the functional testing of residual current device; functional testing of earth leakage circuit breaker were practices adopted at a low extent.

Discussion of Findings

The answer to the research question one is presented in Table 2.0. The findings show that the extent of adoption is very high on this inspection and testing practices; verify that service over current protections provided, properly sized, and part of or adjacent to the disconnection means and to verify the live polarity using continuity method or carries out live polarity test. Very highly adoption of these practices is in line with Scaddan (2003) which identifies polarity test and to verify service over current protections provided, properly sized and part of or adjacent to the disconnection means as practice that is paramount after mains is connected.

The findings revealed that, checking of lighting fixture as well as service conductor, and to verify that; switches or receptacles are installed correctly at their correct position, service disconnection means provided, suitable, and located outside or inside the nearest part of entrance of the service conductor, electrical equipment's on meter board are securely fastened and supported, boxes are securely fastened and supported, continuity test of all ring circuit, insulation resistance test and the rechecking of the polarity using voltmeter were practices adopted at high extent.

These high adopted practices were in-lined with the work of Scaddan (2003) and Suruhanjaya (2008), which both opined that, the following inspection and testing practices were recommended and relevant as they include; continuity of ring circuit conductor, insulation resistance and polarity test among others. In support of the findings, Linsely (2005) also suggested that, all new installation should be inspected and tested before connection to mains, and all existing installation should be periodically inspected and tested to ensure that the are safe and meet the stipulated regulation. Such inspection and testing include the following; correct connection of sockets outlets, lamp holder, accessories and equipment; testing for continuity of ring final circuit conductor, insulation resistance test and polarity test among others.

The findings revealed that, the extent of adoption of these practices; verify that Residual Current Devices (RCD) is provided at the correct places in bathroom, in kitchen, near sinks, outdoors, on roof tops, in door wet areas, in locker room with shower and in garages, verify the functional testing of residual current device and to verify the functional testing of earth leakage circuit breaker were low. These findings reveal that protective devices (RCD) were adopted to Low Extent in terms of inspection and testing of the installation work, and as such, if fault arises, the outcome will result to electrical fire, if no protective devices like (RCD) is been installed.

The findings are in harmony with the work of Masterson (2012), which stated that the absence of RCD's is evident in most installation work and this give rise to electrical fire hazards. This result is in line with the findings of Orovwode (2006) which stated that, lack of installing protective devices contributes to electrical fire incidence. Orovwode, further stated that many electrical consumers look at the cost of installing electrical protective devices as a waste, since its functions is not evident on daily basis. Those who manage to install at the beginning do not bother to inspect, repair or replace them when they are faulty.

The findings also revealed as follows; verify that earth rod is properly connected to the bonding conductor, verify the closure of the earth chamber using Concrete Slab, Verify the test for continuity of protective conductor, Verify the Main and supplementary bonding test, Verify the earth electrode resistance test and to Verify the functionality of the earth fault loop-impedance test were practices adopted at a lower extent. Findings from these inspections and testing practices indicates improper earthing system in most domestic electrical installation work given rise to low extent of adoption which can definitely result to disaster if fault arises.

Improper earthing system is among one of the causes of electrical fire outbreak. This finding is in line with the findings of Linsley (2008), which stated that, lack of proper earthing system causes danger which often arises from inadequate connections such as; an earth clip which has worked loose, a poorly made conduit connections or corrosion of parts of the earthing system. This finding is further supported with the work of Masterson (2012), which stated that, the earthing system in most buildings are inadequate and even to the untrained eye this is obviously an extremely dangerous situation that leads to electrical fire incidence.

Masterson (2012) concluded that, Earthing and equipotential bonding are intrinsic in terms of electrical safety. Earthing clamps may be rendered useless if water-pipes are painted. Paint may run between the pipe and the clamp connection, since most paints have insulating properties, this can in effect electrical conductivity and prevent fault current and spurious faults currents from flowing; these fault currents enable protective devices to operate. As such, if the fault current is unable to flow, such case invariable leads to electrical fire.

The findings further revealed that, the Presence of danger notices and other warning notices, to Check the Presence of (diagrams, instruction and similar information) in the Distribution Board and to verify the labeling of circuits fuses and switches were practices whose extent of adoption were low. If such information is not putting in place, this will lead to danger in terms

of maintenance except handle by professionals. This finding is in consonance with the opinion of Masterson (2012), who reported that, there is no labelling present in practicing domestic electrical installation to indicate to the consumer the functionality of the protective devices (distribution board) and its danger. The findings are further supported by the work of Sulieman (2015) which stated that over 94 percent of practicing domestic electrical installation does not have instructional manual and other similar information as well as danger notice.

Conclusion

The alarming destruction of lives and properties of the citizenry by electrical fire in Minna Niger State is disheartening and it remains a drawback to the socio-economic development of Minna, Niger State. This inferno is also having negative impact to the environment (pollution) through the burning of combustible materials. In other to ascertain the factors responsible for domestic installation practices resulting to this fire outbreak, this study was carried out. Based on the findings of the study and the discussions, the following conclusions were drawn. Firstly, the domestic electrical installation (inspection) practices were adopted to High Extent by electricians in Minna. Secondly, some of the practices were adopted to low and very low extent and these are practices responsible for providing safety to installations. Consequently, this enabled the researcher to conclude that it contributes to the increasing fire incidence in Minna.

Recommendations

Therefore, the study made the following recommendations in line with the findings:

1. The Niger State government should organize a Capacity Building Workshop for the electricians on those safety practices that were adopted to Low Extent.
2. NEMSA should assist in terms of procurement of electrical testing equipment's and training of members of the profession (LECAN) drawn from each association on how to carry out electrical inspection and testing in a domestic electrical installation.
3. LECAN members (Electricians) should adopt the practice of concrete chambers in burying of Earth rod so as to prevent corrosion/rusting and provide a better continuity to the electrical installation.

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Development of Pre-Primary Education in Niger State: Challenges and Recommendations

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Abstract

Before the official recognition of Pre-Primary Education in the National Policy of Education, pre-primary education was considered to be the foundation of Nigerian Educational System. Presently, pre-primary level of education is recognized in Nigeria National Policy on Education (FRN, 2012) as the basis of education in Nigeria. Qualitative pre-primary education had been proven to give wide range of opportunities to children, especially those from low socio-economic background. This article looked at how pre-primary schools in public schools in Niger State developed. In the course of the development, some challenges were faced, among the challenges identified in this study are inadequate professionally trained caregivers/teachers, lack of conducive learning environment and inadequate learning materials. It was also recommended in this study that in-service training should be organized for the available teachers. Conducive learning environment should be set up in all public pre-primary schools.

Keywords: *Development, Pre-Primary Education, Challenges.*

Introduction

Pre-Primary education covers all forms of organized and sustained centre-based activities such as, kindergartens and day-care centres which are designed to promote learning, emotional and social development in children with some early childhood education. These programmes are generally offered to children from the age of three until the age of primary school entry. This type of education provides a bridge between home and school environments. Pre-Primary education is characterized by interaction with peers and educators through which children improve their use of language and social skills, start to develop logical and reasoning skills and talk through their thought processes. Children are also introduced to alphabetical and mathematical concepts and encouraged to explore their surrounding world and environment. Teacher-guided gross motor activities (i.e. physical exercise through games and other activities) and play-based activities can be used as learning opportunities to promote social interactions with peers and to develop skills, autonomy and school readiness (OECD,2020).

Education in early childhood is important because of its influence on development. The human brain grows rapidly during the first three years of life (EFA Global monitoring report, 2010). If adequate stimulation is not received at this period, development will be delayed, sometimes permanently. The early years provide an opportunity to lay the foundations for the healthy development of language, social ability, emotional balance, thinking and physical skills. There is concensus among researchers that early childhood education (ECE) should take a holistic look at children by promoting their learning, development and well-being. Areas of early learning that are of particular importance include: language and literacy; numeracy and other non-verbal cognitive skills; self-regulation; emotional health, social well-being and social and emotional skills (Shuey and Kankaraš, 2018). These domains are interrelated, meaning that ECE should aim at fostering children's development and learning in these multiple dimensions and lay the foundations for global competence to support positive individual and societal outcomes throughout life.

Pre-Primary education was first introduced into Nigeria education system in the 80s by private primary schools. The public or government own primary schools did not incorporate Pre-Primary education until later with some few model government schools running Pre-Primary education which comprised play class and later children graduate to nursery class. According to a survey conducted in 2003, it was discovered that more than two-fifth (42%) of the sampled Pre-Primary institutions in Nigeria was owned by private individuals. Government-owned accounted for 34%, and 21% by local communities (Education for All Global Monitoring Report, 2007). Subsequently the government deemed it very necessary to be more involved in pre-school education in the country. Later, there was enactment of UBE Act (2004) which has an expanded scope that includes programmes and initiatives for early childhood education and development (UNESCO-IBE, 2006). Therefore, in 2004, this aspect of education was incorporated into the Universal Basic Education programme by the UBE Act (2004). By this Act, all children within the pre-school age bracket were entitled to be admitted free without paying fees to any ECE center, which was planned to be integrated into all public primary schools according to National Policy Brief as cited by Osho, Aliyu, Okolie and Onifade

(2014). The UBE programme made provision for every public primary school to have a pre-primary school linkage to cater for children, and this resulted in increased government ownership and participation in ECE provisions (UNESCO-IBE, 2006). For the year 2003/2004, the gross and net enrolment ratios were 14.7% and 10.9% respectively. The normative age groups under consideration were 3 – 5 years of age (Education for All Global Monitoring Report, 2007). Considering the volatility of ECE, knowing that the products of the educational system of the country is largely tied to the effectiveness of pre-primary education, the need for more coordination cannot be overemphasized.

The Nigerian National Policy on Education (2004) document defined the roles of all stakeholders to ensure smooth implementation of ECE (Nakpodia, 2011). Osanyin (2012) noted that there was the development of National Minimum Standard for Early Child Care Centers in Nigeria, while in the same vein, Oguntuashe (2010), reported about the development of curriculum for in-service teacher training and IECD caregiver training manual. Another notable intervention is the development of a policy referred to as National Policy for Integrated Early Childhood Development that integrates interventions from various sectors to promote an integrated holistic approach to the development of the child (FGN, 2007). One other development that is worth mentioning is the development of a unified early childhood education curriculum which was all encompassing and divided into two sections to cater for age 0-3 and 3-5 years respectively. Furthermore, the federal government included ECCE programmes in curriculum of colleges of education. The most recent innovation seem to be the new National Policy on Education (2013) in which the programme of ECE is brought under Basic Education in Section 2. It is now divided into two programmes namely Early Childhood Care, Development and Education (ECCDE) and Kindergarten Education as stated by Akinrotimi and Olowe (2016).

Development of Pre-Primary Education in Niger State

Pre- Primary Education otherwise known as ECD started in Niger State under the mandate of the State Ministry of Health in the 1991-1995 Country Programme but the mandate was later transferred to the Ministry of Education in 1993. Prior to this development, only few model schools owned by government were operating Pre-Primary Education which was basically operated as play class and kindergarten to prepare much younger children who had not attained primary school age to get ready for primary school education. The Project was then only operational in six (6) focus Local Government Areas. At inception, there were just about ten ECD centres in all the selected LGAs with a matching number of caregivers. The programme got a boost with the UBE Act of 2004 which directed all states to introduce pre-primary classes in all public primary schools.

The State as at 2013 had two (2) ECD status: the school linked and the community based. During the period, the total number of Primary Schools in the State was 3,061, the total number of Schools with ECD linkage was 848 (27.7%) while the total number of Primary Schools without ECD was 2,213 (72.3%). On the issue of manpower, the number of caregivers was 879 males; 1126 females, totalling 2,005. Number of classrooms in all the Primary Schools was 11,610 and was shared by both ECD and Primary sections.

The total Population of the as at 2013 projection was 4,991,928 and the total number of children aged 3-5 years by 2013 projection was 286,161 (141,838 F). The total number of children enrolled in CBECCs was 714(330F), the total number of children enrolled in the school linked ECD is 70,537 and the total enrolment in private pre-primary was 37,576. Total number enrolled in public school-linked ECD, Private pre-school and CBECC all summed up was 108,827. The total number of out-of-school ECD aged children in the state at the time of this report was 177,334 with 91,123 to be female.

Table 1: Summary of ECD Data: 2010-2013

Year	Enrolment			Caregivers			No. of Centres
	M	F	T	M	F	T	
2010/11	23,305	25,932	49,243	854	1.059	1,913	810
2011/12	36,027	34,025	70,052	879	1,126	2,005	848
2012/13	37,454	33,083	70,537	879	1,126	2,005	848

Source: Academic Service Department, 2014

Community Based Early Child Care (CBECC) in Niger State

Community Based Early Childhood Care centres are a key service providing centres for early childhood programmes, especially in under resourced and developing context such as rural settings where access to education is very limited. This comes under Community-Based programme which provides scale for identifying and analysing educational issues and for prioritizing and managing educational activities at the local level. For this reason, it is characterised by accountability, efficiency as a result of taking ownership, community participation, empowerment and sustainability.

To strengthen Pre-Primary Education and make it accessible to all, the State, in 2011, as a strategy to enhance access, equity and quality early stimulation through community mobilization and empowerment, established Community Based centres. This is because different types of early childhood education opportunities are available in communities such as playgroups, day centres, mother and child groups and women self-help groups with child care. As early childhood education is generally non-compulsory, it is more flexible than primary education and offers an excellent chance for working with a variety of stakeholders: government, non-governmental organisations, the private sector, the society and faith-based organisations.

The programme started with two (2) pilot centres in the State: Kukpakpan in Edati Local Government Area and Mayaki in Lapai Local Government Area. At the onset, the initial enrolment was as follows:

- Kukpakpan-21 (12 Female)
- Mayaki-50 (27 Female)

As at the end of 2014 enrolment stood as follows:

- Kukpakpan -95 (50 Female)
- Mayaki-85 (35 Female)

There was transition of the children with whom the programme started over the years. The number of children who transited to primary school are as follows:

- Kukpakpan -53 (25 Female)
- Mayaki-48 (28 Female).

In regards to manpower, Kukpakpan had two (2) Caregivers (all males & employed by Local Government while Mayaki had one (1) Caregiver, a male and also employed by Local Government.

Table 2: The Pilot CBECCs

S/N	Communities	Initial Enrolment		Present Enrolment		Transition		Caregivers		Employed by	
		Total	F	Total	F	Total	F	Total	F	LGEA	Com
1.	Kukpakpan	21	12	95	50	53	25	2	-	2	-
2.	Mayaki	50	27	85	35	48	28	1	-	1	-
TOT	**2**	**71**	**39**	**180**	**85**	**101**	**53**	**3**	**-**	**3**	**-**

Source: Academic Service Department, 2014

The project had positively impacted on the lives of the children and the communities. Some of the impacts are:

1. The children received care and early stimulation from alternative caregivers while their parents were engaged in other activities.
2. The children could communicate in simple English.
3. Mothers had improved their practices of the Key House Hold Practices (KHHPs).
4. Access and the quality of early learning in the two communities had improved.
5. The mothers were contributing to the management of the centres (Academic Service Department, 2014).

All these results emanated from the sensitizations, supplies, capacity building and economic empowerment activities carried out in the two communities supported by the state and UNICEF. Furthermore, the following results were also achieved:

1. Increasing awareness on importance of and the need to support ECD implementation in the state was created.
2. Capacity of SUBEB/SCOE on implementation of one-year pre-primary curriculum was built.
3. Institutional and human capacities of SMoE/SUBEB/SCOE on effective planning and implementation of ECD policy in the state were strengthened.
4. Required actions to fast track ECD in the state identified (increased support for ECD is envisaged).
5. 248 (128F) children accessed early stimulation in the WECs.

6. Health/nutritional status of selected children promoted leading to increased child survival and growth. (Academic Service Department, 2014).
7. More CBECCs were established in the state-from 2 in 2011 to 25 in 2014 leading to increased access and enrolment (from just about 180 to 1,175).

The table below shows the list of more Community Based ECCs that were created as a result of success recorded in the pilot CBECCs according to senatorial zones:

Table 3: List of Cbeccs in the State by Senatorial Zone

ZONE A

S/N	Name of Centre	LGA	Enrolment			Caregivers		
			M	F	TOTAL	M	F	TOTAL
1	Kukpakpan CBCC	Edati	45	50	95	2	-	2
2	Mayaki CBCC	Lapai	50	35	85	1	-	1
3	Bitagi CBCC	Mokwa	22	18	40	1	-	1
4	Egunkpa CBCC	Agaie	90	54	144		2	2
5	Akwanu	Agaie						
6	Edotatsu	Agaie						
7	Kangi Makun CBCC	Bida	24	23	47	1	-	1
8	Binni CBCC	Gbako	27	31	58	-	2	2
9	Kashe CBCC	Katcha	26	15	41	-	1	1
TOTAL 9			284	226	510	5	5	10

Source: Academic Service Department, 2014

ZONE B

S/N	Name of Centre	LGA	Enrolment			Caregivers		
			M	F	TOTAL	M	F	TOTAL
1	Dobwa CBCC	Paikoro	35	20	55	-	1	1
2	Lupma CBCC	Paikoro	55	61	116	-	2	2
3	Ikushe CBCC	Rafi	09	11	20	1	-	1
4	Mailamba CBCC	Rafi	09	11	20	1	-	1
5	Dibbo CBCC	Chanchaga	19	8	27	-	1	1
6	Gurusu CBCC	Bosso	13	28	41		2	2
7	Daku CBCC	Gurara	27	23	50	-	1	1
8	Gwam CBCC	Paikoro	38	58	96	-	1	1
TOTAL			205	220	425	2	7	9

Source: Academic Service Department, 2014

ZONE C

S/N	Name of Centre	LGA	Enrolment			Caregivers		
			M	F	TOTAL	M	F	TOTAL
1	Attabo CBCC	Magama	50	45	95	1	-	1
2	Danauta CBCC	Mariga	20	18	38	1	-	1
3	Mariga CBCC	Mariga	241	273	514	2	1	3
4	T/Samai CBCC	Borgu	37	51	88	2	-	2
5	Machanga	Kontagora	39	10	49	1	-	1
6	Dankashimo	Kontagora	23	05	28	-	1	1
7	S/Gari	Rijau	28	27	55	1	1	2
8	Akare	Wushishi						
TOTAL 8			438	429	867	8	3	11

Source: Academic Service Department, 2014

As at 2021, according to the Academic Service Department of Niger State Universal Basic Education Board (SUBEB), there were about 1,107 ECCDE centres across the state, both public and Community Based and about 3,010 caregivers. From the database of Niger State Private Schools Board, there were 1,454 private schools with ECCDE centres as at November 2013. As at the time of conducting this study, the number of private schools with ECCDE centres is projected to be above 2,000. No exact record is available.

Challenges of Pre-Primary Education in Niger State

Despite all the successes and efforts by the government and the relevant stakeholders in developing Pre-Primary Education in Niger State, this level of education still faces some fundamental challenges. These challenges include inadequate professionally qualified teachers/caregivers, lack of regular monitoring and supervision as a result of poor funding, inadequate infrastructure and stimulation materials in most of the centres (private, school-linked and CBECCs) (Academic Service Department, 2021).

Inadequate Professionally Qualified Teachers/Caregivers

According to the National Policy on Education (FGN, 2004), among the responsibility of the government in ensuring development and proper implementation of Pre-Primary Education shall be to support the training of qualified pre-primary school teachers in sufficient number. Most of the teachers saddled with the responsibility of teaching at this level are not qualified. Many are secondary school graduates and are paid low wages, especially in remote areas and some private schools. More often, these inexperienced and poorly motivated teachers are over burdened with much work. This results in children receiving ineffective education and inadequate care which affects their growth and intellectual development (Olaleye and Omotayo, 2009; Ihuezu-Ogedu and Osinowo, 2013; Osho, et al, 2013). In some instances, it is some old female teachers with no qualification in ECCD Ewho handle children (Ibhaze, 2016).

Inadequate Infrastructure and Resource Materials

The quality of resources in both public and private pre-primary schools in the state is poor. Most of the classrooms available for ECE are not big enough and most often over crowded. The chairs are in some cases not age appropriate for pre- primary children. It was observed that where there are age appropriate chairs and tables, they often not enough. Other teaching materials are also not available or inadequate. Chukwubikem (2013), states that the quantity and quality of resources available for any educational programme would determine the system's capacity to implement the type of programme. In most instances, the resources are shared with primary pupils.

Lack of Regular Monitoring and Supervision

The aspect of monitoring and supervision is very crucial in the development of Pre-Primary Education not only in Niger State, everywhere else. The success of every programme depends on proper and regular monitoring and supervision. This is because no educational plan can be implemented successfully without if monitoring and supervision is ineffective. In regards to ECCDE, Awino (2014) observed that it is essential to supervise in order to get feedback from children, caregivers, and all stakeholders in ECCDE. Monitoring and supervision can be used to correct errors, modify practices where necessary and motivate. The government of the state does not allocate any fund regular monitoring. This has made it very difficult to check the implementation of Pre-Primary Education in Niger State.

Conclusion

This article, having looked at how Pre-Primary Education developed in Niger State over the years, has discussed some challenges this sector of education is facing. Among these challenges are inadequate qualified teachers/ caregivers, lack of regular monitoring and supervision and infrastructure and materials. The challenges are not limited to the ones mentioned above. There are other challenges such as lack of constant training, teacher to pupils ration and lack of interest in ECD by some parents and stakeholders.

Recommendations

The following recommendation were made:

1. Professionally qualified teacher should be employed /deployed to handled teaching and learning at pre- primary level. The teachers / caregivers who are already handling pre-primary children should be trained regularly to build their capacity and enhance their skills to handle children better.
2. ECD centres should be separated from primary schools and the classrooms should be built to meet up with ECD Requirement. Child appropriate chairs and tables should be provided in abundance. Relevant and adequate learning materials should also be provided in all ECD centres.
3. Adequate fund should be made available for regular monitoring and supervision of ECD activities across the state.
4. There should be continuous advocacy to all key ECD stakeholders at all levels.

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Analysis of the Syntactic Structure and Communicative Acts in Selected Online COVID-19 Communication Campaign Posters

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Abstract

This study analyses the syntactic structure and communication acts in selected online Covid-19 communication campaign posters. The aim is to explore, describe and explain the constituent structures of the messages and discuss their communicative acts. Qualitative method was employed in carrying out the study. The syntactic structures of the selected messages were analysed using the phrase structure rules of the X-bar theory, while the communicative acts were analysed using Searle's theory of speech acts. The results of the analysis of the syntactic structures showed that verb phrases are predominant and they function as imperative or declarative sentences. On the other hand, the result of the analysis of the communicative acts revealed that the locationary acts are clear and easy to comprehend. The illocutionary acts are predominantly directives, requests, instructions and advice. The study recommends that the messages be translated into many indigenous languages in order to reach out to a lot of Nigerians that do not speak or understand English well.

Keywords: *Coronavirus, Syntax, Structures, Communication campaigns and posters.*

Background to the Study

The novel Coronavirus popularly known as Covid-19 broke out in Wuhan city of China at the end of 2019. According to Cennimo & Bergman (2022), Coronavirus disease 2019(Covid-19) is an illness caused by a novel coronavirus called severe acute respiratory syndrome coronavirus 2 (SARS-CoV)-2, formerly called 2019 –nCoV), which was first identified amid an outbreak of respiratory illness cases in Wuhan City, China. Similarly, Steve, 2020, Sismat 2021, & Khotimah, Laksono, Suhartono, Pairin and Darni (2021) report that on 31 December 2019, the World Health Organisation (WHO) was formally notified about a cluster of cases of pneumonia in Wuhan City of China. On January 30, 2020, the WHO declared the Covid-19 breakout a global health emergency. Governments of different nations embarked on communicative campaign to sensiticise the people about the menace of the deadly virus as it was spreading very fast. On the 11th March, 2020, the WHO declared Covid-19 a global pandemic.

The United Nations Organisation Traces Coronaviruses (CoV) to a large family of viruses that cause illness ranging from the common cold to more severe diseases. The declaration of Covid-19 as a pandemic by the United Nations Organisation on the 11th March, 2020 resulted to global panic, threat to economy and human life. Many countries of the World shut down their borders and enforced lockdown to restrict external and internal movements as the disease was spreading too fast. Efforts to control the spread of the deadly virus and to find prevention and cure led to research by scholars from different perspectives. The field of language and communication was not left out as the need to reach out to the people became paramount. Khotimah et al (2021) for instance, maintain that the pandemic of COVID-19 has changed all aspects of social life. Changes in social context result in changes in the texts, which are realized in linguistic features. Changes occur in language meta functions, which specifically include changes in the coding of natural experiences (experiential function), logical (logical function), social (interpersonal function), and verbal (textual function). Similarly, sismat (2021) maintains that as the ways of communication change, the pandemic has also had an impact on society and language. The pandemic influenced the linguistic behaviours of the people in different contexts. The government and non-governmental organisations across the world had to devise ways of reaching the people separated by lockdown.

The most important factor in preventing the spread of the Covid-19 as Reddy & Gupta (2020) point out is to empower the people with right information. This can be achieved by the application of appropriate language style. Language as maintained by Chopra (2021) assumes importance as effective communication is the sine qua non for the success of preventive measures against the dreadful disease. Emerging trends in health communication were organized to enhance effective persuasion. The mass media (television, radio, newspapers, and magazines) and the social media (facebook, twitter and istagram handles, whatsapp and telegram platforms among others) were actively involved in the fight against the virus. Different Covid-19 campaign messages were share across different countries of the world through these media.

Besides the use of the mass and social media, campaign posters both off and online were also used to sensitize the people. Images combined with inscriptions often constitute the content of most communication campaign posters. Underlying the images and inscriptions are the intentions of the speaker or the writer. Austin refers to the process of making meaningful statement about a subject as locutionary act. He calls the linguistic act by which one does something such as making request, giving command, warning, apologizing, and promising, threatening, 'illocutionary acts', while he calls the effect of the illocutionary act on the interlocutor 'perlocutionary act'.

In this paper, attempt is made to analyses the syntactic structure and communicative acts of the messages on Covid-19 communication campaign posters. This is to explore the constituent structure of the messages and the illocutionary acts they convey. The explorations of both the syntactic structures and the communicative acts are intended to determine the relationship between language forms and their contextual meanings.

Statement of the problem

Covid-19 was officially declared a pandemic by the United Nations organization on the 11th of March. 2020. The fast spreading and devastating effects of the virus drew the attention of the government, non-governmental organisations on the need for preventive and curative measures. With communication campaigns through the mass and social media, language as a tool of communication is impacted in different ways. Researchers from the field of language and communication began research on different issues relating to language and the pandemic. Sismat (2021) for instance examined "How the language of Covid-19 pandemic has impacted and added to the English language." Piller, Zhang & Li (2021) investigated "Linguistic diversity in a time of crisis: Language challenges of the covid-19 pandemic." Chopra (2021) studied "How the pandemic has impacted and added to the English Language." Gambo, Umar, Moses and Garba (2022) researched on "Communication campaigns and the Covid-19 pandemic: An analysis of contradictions in online discourse."

Literatures available to the researcher on Covid-19 research from language and communication perspectives showed that little or work has been done on the syntactic structure and communicative acts of the covid-19 communication campaign messages. Against this background, this study analyses the syntactic structures and communicative acts of the inscriptions on selected Covid-19 awareness campaign posters to establish the relationships between language form and its functions.

Objectives of the Study

In carry out the study, three research questions were developed to guide the researcher in data collection, analysis, discussions and conclusion.

1. To identify the dominant syntactic structures of the inscriptions on the selected posters.
2. To explore the communicative acts underlying the inscriptions on the selected posters.
3. To discuss the possible perlocationary acts of the inscriptions on the audience.

Research Questions

In order to achieve the objectives, the following research questions were drawn from the research objectives.

1. What are the dominant syntactic structures of the inscriptions on the selected posters?
2. What are the communicative acts conveyed by the inscriptions on the selected posters?
3. What are the possible effects of the perlocutionary acts of the inscriptions on the audience?

Conceptual Review of literature

In this section, basic concepts underlying the research topic are reviewed to provide platform for understanding the topic. The following key concepts are reviewed below:

Coronavirus (Covid-19) Pandemic

Many literatures on Covid-19 breakout conformed those Chinese authorities notified the World health Organisation of pneumonia cases in Wuhan City, Hubei province, China on the 31st December, 2019. The virus was declared a pandemic by the World Health Organisation as global emergency on the 30th January, 2020 and as global pandemic on the 11th March, 2020. Covid-19 is a respiratory disease that spreads from one person to another through droplets from sneezing, coughing, or through human contact with surface that contain the virus. It is often referred to as novel virus noted first in Wuhan city of China towards the end of 2019.

Many studies have revealed that Coronavirus (CoV) existed prior to its noted case in Wuhan. Umakanthan, Sahu, Ranade, Bukelo, Rao, Machando, Dahal, Kumar, & Dhananjaya (2020) for instance posit that CoV was discovered during the 1960s. These scholars maintained that the Coronavirus Study Group under the International Committee on Taxonomy of Viruses used the principle of the comparative genomics to further assess and partition the replicative proteins in open reading frames to identify the factors differentiate CoV at different cluster ranks. Platto and Zhou (2020) maintain that the SARS-CoV-2 virus of the COVID-19 pandemic had been active well before January 2020 when its pathogenic potential exploded full force in Wuhan. It had caused the onset of small disease outbreaks in China, and probably elsewhere as well, which failed to reach epidemic potential. Similarly, Guo, Cao, Hong, Tan, Chen, Jin, Tan, Wang, & Yan, (2020) trace the history of the 2020 pandemic to December, 2019. They reported that a cluster of pneumonia cases, caused by a newly identified β-coronavirus, occurred in Wuhan, China. This virus was initially named as the 2019-novel coronavirus (2019-coV) on 12 January 2020 by World Health Organization (WHO). WHO officially named the disease as coronavirus disease 2019(covid-19) and Coronavirus Study Group (CSG) of the International Committee proposed to name the new Coronavirus as SARS, CoV-2, both issued on 11 February, 2020.

Covid-19 Communication Campaigns

Generally, communication campaigns are geared towards achieving desired set goals by the campaigner. Covid-19 communication campaigns are global communication embarked sensitise the people on the menace of the disease. Zhao (2021) opines that communication

campaigns are broadly defined as "purposive attempts to inform or influence behaviors in large audiences within a specified time period using an organized set of communication activities and featuring an array of mediated messages in multiple channels generally to produce noncommercial benefits to individuals and society.

According to MacKenzie (2022), some of the primary goals of health communication are to motivate people to take action, to facilitate certain health outcome, and to support community health. Health communication as MacKenzie further maintains prepares the public with skills, tools, and information so they are able to respond appropriately to health and risk issues, whether personal (e,g better nutrition or self-care for mental health challenges), community(e.g hazardous chemical spills or hurricane preparation), or international (e.g pandemic disease or refugee physical and mental health.

Covid 19-communication campaigns are within the context of health communication campaigns. Hub (2022) defines health communication as the study and use of communication strategies to inform, educate and influence individual and community decisions that enhance health. It involves the integration of components of multiple theories and models to promote positive changes in attitudes and behaviours

The declaration of Covid-19 as a pandemic by the United Nations on March 11, 2022, was followed by intensive communications by the Government and non-governmental organisations across the globe. Immediately after the declaration of Covid-19 as a pandemic in March 2020, government and non-governmental organization all over the world embarked on different forms of communication campaigns to reach out to the people. The mass media, (televisions, radio, newspapers, and magazines) and the social media (Facebook, twitter, instagram), were used to sensitize the people on the spread of the deadly virus.

Posters

Posters are large, printed sheet containing pictures and inscriptions meant to drive result. They are designed to influence the behaviours of large audience. As such, they are mostly posted in strategic public places. They are visual communication tools often used for commercial advertisement, religious propagation, political campaign, health campaign among others. Campaign posters are designed to influence the behaviours and attitudes of a target audience to convince them to take action. Words are often combined with pictures in order to get the right point, message or information to the audience. The pictures and the print are usually catchy in order to catch the attention of the target audience.

Covid-19 campaign awareness was launched by governments and non-government organizations throughout the world immediately the declaration of the virus as pandemic by United Nations Organisation on March 11, 2022. The campaign messages were geared towards safety and security of the public. Preventive messages put across were often accompanied with pictures in order to drive desired results. The audiences were persuaded to wash hands frequently soap or hand sanitizer, wear mask in public places, avoid coming into contact with people having colds and coughs, observe physical distance, refrain from hand shaking, hugging, kissing, stay home etc.

Fig 1.

The poster above contains image of coronavirus and hand washing pictures combined with two imperative sentences. The message is clear and straight forward.

Fig. 2

The poster above contains pictures of good coughing habits with clear and straight forward imperative sentences.

Fig. 3

The above poster contains images of covid-19 virus and mask wearing to stay safe from it. The pictures are combined with three straight forward imperative sentences.

Syntactic Analysis

The word syntax means arrangement of words to form larger grammatical units, such as phrases, clauses and sentences. According to Yule (2006), the word syntax came originally from Greek and literary meant 'setting out together' or 'arrangement.' Syntax in this sense refers to the structuring or patterning of words to communicate thoughts, ideas or emotions. Speakers of a language communicate not by using individual words but by patterning or arranging words in communication process based on the grammar of the language.

Finegan (2009), defines syntax as part of grammar that governs the form of strings by which language users make statements, ask questions, give directives, make request and so on. Finegan adds that the study of syntax addresses the structure of sentences and their structural and functional relationships to one another. Similarly, Fromkin, Rodman and Hyams (2003), describe syntax as part of the grammar that represents the speaker's knowledge of sentences and their structure. These scholars add that syntactic knowledge goes beyond being able to decide which strings are grammatical and which are not. It accounts for the multiple meanings or ambiguity of expressions. The study of syntax is therefore, geared towards understanding the constituents of sentences, their grammatical functions and the literal meanings.

Syntactic analysis is a linguistic analysis that explains the logical or literal meaning of a sentence or parts of it. It is the process of analyzing natural language with the rules of formal grammar. Syntactic analysis assigns semantic structure to parts of a sentence (Goyal, 2021). Yule (2006) opines that in the early description of syntax, there was an attempt to produce accurate analysis of the sequences of the ordering 'arrangement 'of elements in the linear structure of the sentence. Recent works in syntax as he further notes have rather taken different approaches in accounting for the arrangement. In this study, the x-bar theory is used to account for the phrase's structures.

Theoretical Framework

The employed the x-bar theory of Noam Chomsky and Austin and Searle's theories of Communicative acts. X-bar theory is a sub theory of Government and binding theory. The theory claims that every phrase in a sentence has the same core organization. Haegeman (1993) contends that X-bar theory brings out what is common in the structure of phrases. All phrases according to this theory are headed by one head, which projects the constituents of the phrase. The head of the phrases is referred to as a zero projection, labeled X or X0. Heads are terminal nodes; they determine words. It means that a constituent of type X' is made up of a head, which is also of type X, and its following complement, labeled YP. X' is the phrasal expansion of X. X and Y can then, stand for any of the four lexical categories used in the theory-N (noun), V (verb), A (adjective) and P (preposition). The values for X and Y in any particular structure will depend on which lexical item are projected into the structure. If for instance X is a transitive verb 'eat', then the value of x will be V, and consequently, X' will be V' (a verb phrase) and Y will be N since transitive verbs take nominal complements in the form of NPs (Cook and Nelson, 2007). Haegeman (1993) explains that there are two levels of projection distinguished in the x-bar theory. Complements combine with X to form X'-

projection; adjuncts combine with X' to form X' projection. The specifier combines with the topmost X" to form the maximal projection. The blueprint of the X-bar schema is as shown below:

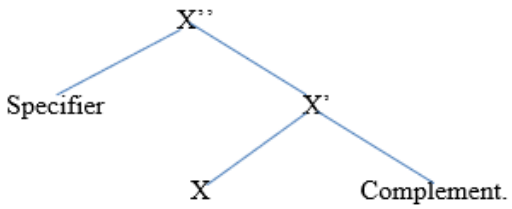


Fig. 4

The X", which is also represented as XP refers to a phrase of any category, such as the noun phases (N"), verb phrase (V"), Adjective phrase (V") and prepositional phrase (P"). While X" is the maximal projection, X' is the intermediary projection. X, which is zero bar, is a level where projection begins. It may or may not be followed by a complement depending on the category of the head. The verb as the head of a verb phrase for instance, may be followed by a complement depending on whether the verb is regular or irregular. A preposition as the head of a prepositional phrase is normally followed by a noun phrase as complement.

The specifier position represents the determiner-like elements such as determiners in noun phrases, auxiliary verbs in the verb phrases, and the adverbials of degree in adjective phrases. Specifiers in English differ from complement, because they precede the head. They can appear with any head of the relevant type of head and are not restricted by the head as in the case of complement. Other elements such as possessors, are in complementary distribution with the determiners, which means that both cannot be used in the same position, you can only have one.

Speech act or communicative act was first presented by the British philosopher John Langshaw Austin in his 1975 Harvard lecture entitled "How to do things with words". Austin argued that utterances have a variety different use. Austin identified three types of acts performed when utterances are made. The first is the locutionary act, the act of saying something or uttering certain expressions, syntactically well-formed and meaningful. The second act that comes as the result of performing locutionary act is the illocutionary act. Illocutionary act is the force of the utterance. It is what the speaker does by making an utterance such as issuing command, making request, asking questions, making promise, tendering apology, naming, and sentencing among others. Third act as the result of illocutionary act is the perlocutionary act. It is the effect of the illocutionary act on the feelings, thoughts, or actions of the participants in a discourse. In this study, these acts as further elaborated Austin's Searle were explored. The two theories are deemed appropriate as the study attempts uncover the relationship between syntax (language).

Methodology

This research employed a qualitative approach in order to explore, describe and explain the data in the corpus of the study. The data for the study were collected using random sampling.

This technique was adapted in order to give each of the numerous covid-19 communication campaign posters, a chance of being selected. Ten covid-19 campaign posters were browsed and downloaded without recourse to designer or origin. The posters were analysed qualitatively through description, exposition and explanation. Each isolated message for analysis was displayed on a phrase structure tree diagram using the X-bar notations. The phrase categories within each isolated messages constituted the object of analysis.

Data Analysis and discussion

Practice Physical Distance

The above construction is a verb phrase. Its syntactic constituents can be displayed on a phrase structure tree as follows:

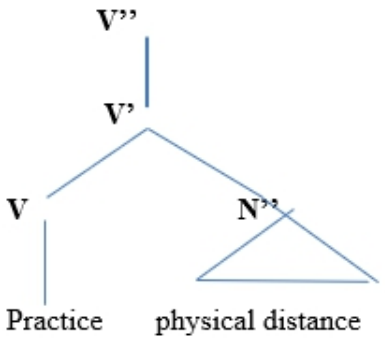
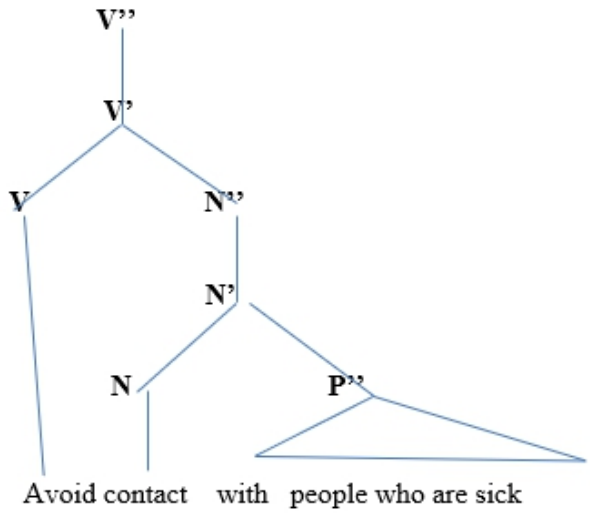


Fig. 5

The syntactic structure of the verb phrase (V'') *practice physical distance* as can be seen from the above phrase structure tree consists of the verb *practice* as the head of the phrase. The verb *practice* projects a noun phrase (N'') as its complement. The complement as the name suggests complements the meaning of the verb. It specifies what the target audience is to do-to practice physical distance. Practicing physical distance was one of the methods of preventing the coronavirus disease used across the globe. The entire verb phrase is an imperative sentence. An imperative sentence requires the target audience to do something. The subject is usually deleted but could be understood from the context.

The illocutionary acts conveyed are instruction, directive or request. The campaigners in this context persuade the target audience to maintain physical distance as one of the preventive measures. This campaign is based on the belief that having body contact with coronavirus patients may lead to contracting the disease. Avoid contact with people who are sick.

The above construction is a verb phrase. The phrase structure tree below displays the various constituents.

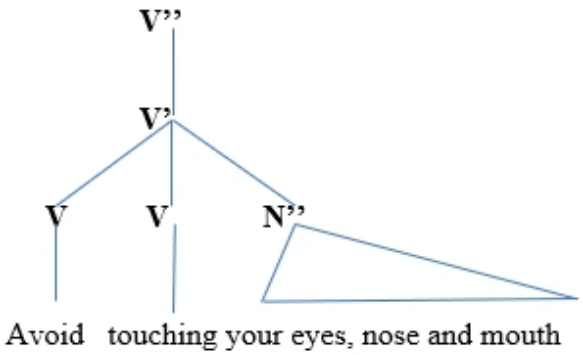


The verb phrase *avoid contact with people who are sick* consists of the verb (avoid) as the head. The verb *avoid* is a transitive verb, which projects an N" (contact) as its complement. The complement post modified the verb. It is in turn post modified by a prepositional phrase p" (with people who are sick). The P" consists of the head p (with), which projects an N" (people who are sick. While the verb expresses the key idea of the phrase, the noun phrases and the prepositional phrases provide details about the action donated by the verb.

The construction functions as an imperative sentence, whose subject can be deduced from the context as *you*. The illocutionary act conveyed is request or instruction. The target audience are requested or informed not to do a particular thing-coming into contact with people who are sick. This campaign presupposes that coming into contact with coronavirus patients may lead to contracting the disease.

Avoid touching your eyes, nose and mouth

The above construction is synonymous with 2 above. It also has the verb *avoid* as its head. The phrase structure tree below shows its constituents.

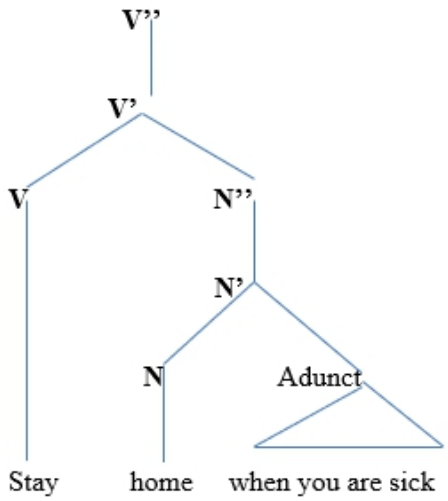


The above phrase structure tree above shows that the verb phrase *avoid touching your eyes, nose and mouth"* consists of the verbs *avoid* as its head. The verb *avoid* projects another verb *touching.* The verb *touching* in turn projects a noun phrase N" as its complement. The N" contains a determiner *you're* and the nouns *eyes, nose* and *mouth*. The nouns forming the complement name parts of the face that should not be touched. These are delicate parts through which the coronavirus can be contracted easily.

This verb phrase is an imperative sentence. Its subject can be understood from the context as the members of the public being the target audience for the message. It is an illocutionary act conveyed is a strong and authoritative order, which the target audience are expected to comply with. The campaign is therefore, aimed at informing and educating the target audience on the need to embark on personal hygiene.

Stay home when you are sick

The above construction is verb phrase. Its phrase structure is displayed in the syntactic tree below.

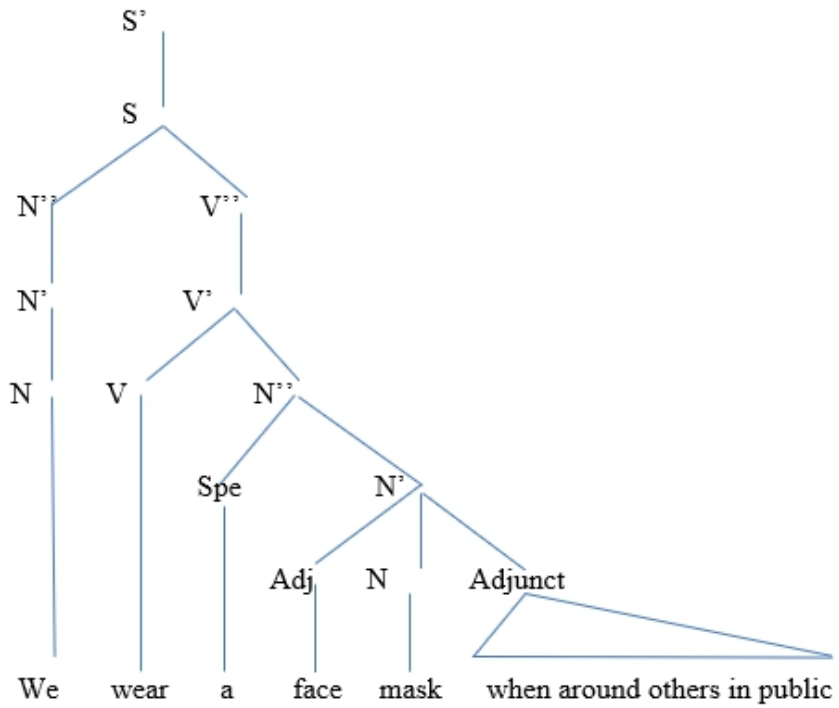


Stay home when you are sick

The above phrase structure tree shows the constituent structure of the verb phrase *stay home when you are sick."* The verb *stay* is the head of the phrase. It projects a noun phrase (N"), which consists of an adjunct as its complement. The adjunct is an adverbial phrase of time, which specifies when the target audience should stay at home. The construction is an imperative sentence, whose subject is implied but can be deduced from the context. The illocutionary act conveyed is an order or advice given to the target audience. The message is based on the fact that a coronavirus patient can spread through coming into contact with other people. It means that self-isolation is one of the methods of preventing or controlling the spread of the virus. While the noun phrases in the tree diagram identify the participants in the discourse, the verb communicates information about the noun phrases or describes their roles.

We wear a face mask when around others in the public

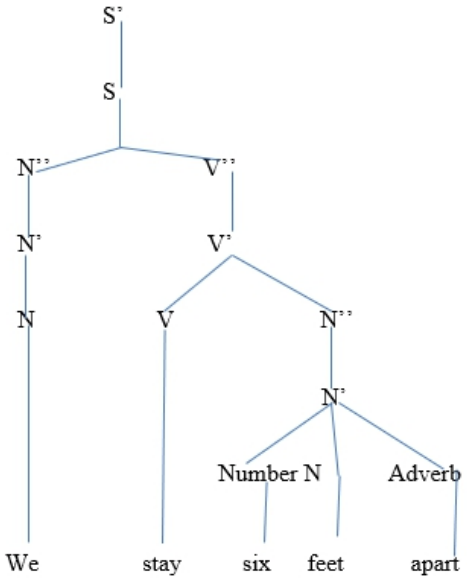
The above construction is a declarative sentence. It consists of the subject and the predicate Its constituents are displayed in the phrase structure tree below.



The above sentence is a complex sentence made up of an independent clause we *wear a face mask* and a subordinate clause *when around others in public*. The sentence consists of a noun phrase (N"), which is followed by a verb phrase (V") as its complement. The verb *wear* is the head of the verb phrase. It projects a noun phrase (N"), which consists of a determiner, an adjective and a noun. The noun phrase (N") projects an adjunct, which gives additional information about the wearing of face mask. The independent clause *we wear face mask* expresses all-inclusive statement, which means that everyone is expected to comply with the directive to wear face mask. The subordinate clause on the other hand gives additional information with regards to the appropriate place and time of wearing face mask. The illocutionary act conveyed is representative. It is a statement that serves as a gentle reminder or soft warning. The campaign presupposes the need for people to comply with the directive to wear face masks, once they are in public.

We Stay Six Feet Apart

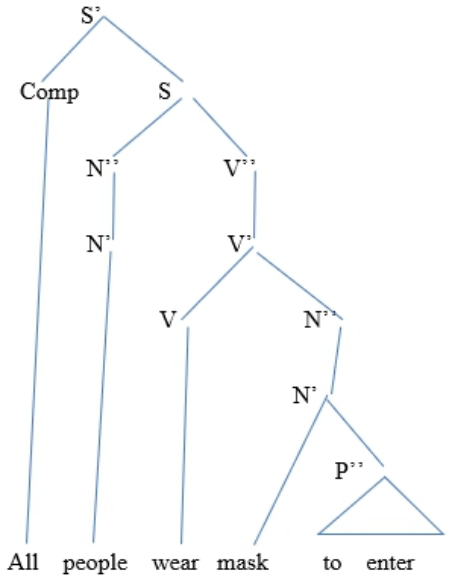
This campaign is synonymous with datum one. It is based on maintaining physical distance. The phrase structure is displayed in the phrase structure tree below.



The phrase structure tree above reveals that the construction is a declarative sentence. It consists of the subject (N''), which is the first-person pronoun *we* and a predicate or verb phrase as the complement. The head of the verb phrase, *stay* projects a noun phrase (N'') *six feet apart*, which consists of a number (six), a noun *foot*, and an adverb *apart.* The illocutionary act is a strong warning or instruction given to the target audience. Searle refers to this representative act-the act of making statement. In almost all the nations of the world, the people were requested to observe physical distance in public places like the financial institutions and health centres.

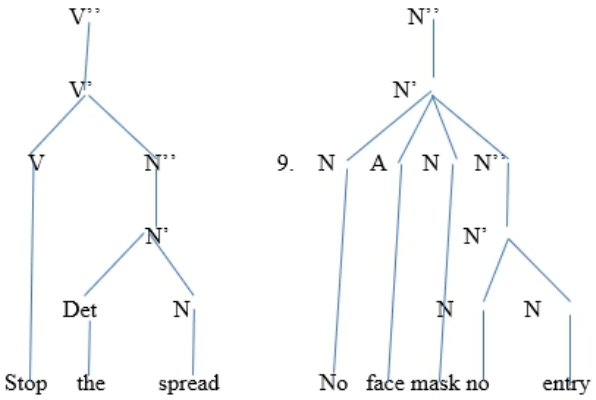
All people wear face mask to enter.

The above construction is a declarative sentence. Its phrase structure tree is displayed below.



The above sentence is a simple declarative sentence. The N" subject of the sentence is preceded by an all-inclusive pre-determiner *all.* The V" consists of a single verb *wear, which* projects an N". The N" consists of a single noun *mask*, which in turn projects a prepositional phrase *to enter.* The structure of the sentence as could be seen from the analysis is simple. The verb *wear* conveys only one proposition. The illocutionary act conveyed is an all-inclusive representative act, which could be insistence, meaning no exception.

The target audience is informed that the management of the building in question has zero tolerance to non-wearing of mask before entering. It simply means that wearing of a mask is mandatory for anyone going into the referred building. The campaign presupposes that people without mask can easily contract the virus in crowded places.



Stop the Spread

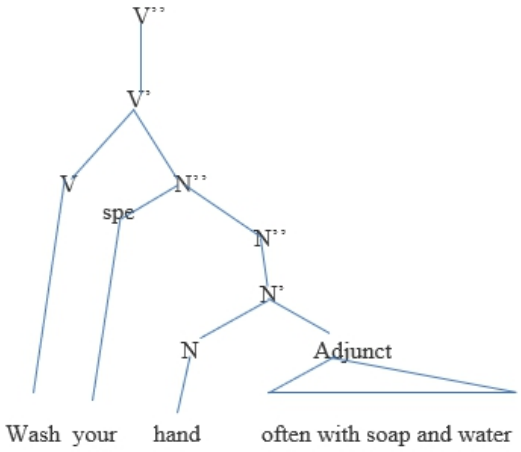
The construction above is a verb phrase. Its constituent structure as displayed in the tree above consists of the verb *stop* as the head. It projects a noun phrase, *the spread*. The N'' consists of a determiner, which pre-modifies the noun *spread.* The verb phrase is an imperative sentence. Its subject is understood from the context as the members of the public. The illocutionary act expressed is a command, an instruction or directive. The members of the public are requested to embark on actions that would put an end to the spread of the virus. The campaign presupposes that the disease is spreading.

No face mask, no entry

The Phrase structure tree 9 above consists of two noun phrases (N"s). *No,* which means not any, pre-modifies the noun phrase *face mask* and *entry* respectively. It is a verb less clause which functions as an imperative sentence. A verb less clause is a clause-like construction, whose verb is implied. The missing verb could be the *do* auxiliary, or the auxiliary verb *will.* The construction could mean: Do not enter without face or you will not enter without face mask. The illocutionary act expressed by the two phrases is prohibition. It means anybody without face would not enter the building. It could as well be interpreted authoritative or strong instruction given to the public.

Wash your hand often with soap and water

This construction is a verb phrase. It consists of the verb *wash* as the head of the phrase. The details of the phrase structure are displayed in the tree below.



The above phrase structure tree displays the syntactic structure of the imperative sentence *wash your hand often with soap and water*. The subject of this verb phrase can be understood from the context as members of the general public. The subject can be understood as *you,* a second person pronoun, which can be singular or plural. The verb phrase (V") consists of a single verb *wash* which serves as the head and projects an N" as its complement. The projected *N"* consists of a determiner *your* and a noun *hand.* This imperative sentence consists of an adjunct *often with soap and water.* This additional information is an instruction on how the people should wash their hands. The illocutionary acts conveyed are advise, directive or even command. The target audience are expected to comply.

Conclusion

This study has analysed the syntactic structures and communicative acts in online Covid-19 communication campaign posters. The data analysed revealed that Covid-19 communication campaign messages are designed to persuade certain the general public in order to influence their behaviour and attitudes. Imperative and declarative sentence were found predominately. These agree with the fact that both sentences used to be simple and convey clear and explicit information.

The imperatives are mostly agentless, but the subjects can easily be inferred from the context of the covid-19 campaigns as the general public.

The analysis of the syntactic structure of the verb phrases functioning as imperative sentences revealed that they contain noun phrases as their complements. These noun phrases complete the meanings of the verbs. Verbs of action were prevalently found as the heads of the verb phrase. This further justifies the assertion that covid-19 messages are designed to educate and persuade the audience to take all preventive measures. The verbs such as practice, stay, avoid, wash, stop, wear among others inform the audience to perform preventive actions.

The analysis of the declarative sentences showed that contain noun phrase in the subject and a verb followed by complements. Just like the imperatives, the declarative sentences contain verbs of action. The analysis of the communication acts revealed that locutionary acts are clear, straightforward and meaningful. The illocutionary acts they convey include directive, request, instruction, command or advice. These are acts committing the general public perform preventive actions.

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IoT-Driven Smart Cities: Enhancing Urban Sustainability and Quality of Life

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Abstract

As cities rapidly expand and face increasing challenges related to urbanization, the concept of smart cities emerges as a promising solution to address these complexities. This research delves into the role of the Internet of Things (IoT) in shaping smart cities and its impact on urban sustainability and quality of life. By leveraging IoT technologies, cities can become more interconnected and data-driven, leading to improved resource management, enhanced public services, and a higher quality of life for their residents. Through a comprehensive review of literature, case studies, and data analysis, this study examines the integration of IoT in urban sustainability efforts, including energy and resource management, waste disposal, transportation, and environmental monitoring. Additionally, the research explores the ways IoT-driven solutions positively influence residents' lives, such as through advanced healthcare services, smarter education systems, citizen engagement platforms, and increased safety and security measures. Findings from successful IoT-driven smart city initiatives are presented, showcasing real-world examples of how technology can be harnessed to create sustainable, resilient, and livable urban environments. The study also highlights economic implications and challenges that come with adopting IoT technologies on a city-wide scale. In conclusion, this research provides valuable insights into the potential of IoT-driven smart cities to enhance urban sustainability and elevate the overall quality of life for city dwellers. The implications of these findings extend to policymakers, urban planners, and technology innovators, as they seek to harness the power of IoT to build cities of the future that are both efficient and people centric. Additionally, this study identifies areas for future research and development, guiding the way towards further advancements in IoT-driven smart city initiatives.

Keywords: *IoT, Smart Cities, Urban Sustainability, Data-Driven Decision Making, Privacy and Security*

Background to the Study

With rapid urbanization and an ever-increasing population, cities worldwide are confronted with a multitude of challenges concerning resource management, environmental sustainability, and the well-being of their inhabitants (Smith, 2019). In response to these challenges, the concept of smart cities has gained prominence as a transformative approach to urban development, where advanced technologies, particularly the Internet of Things (IoT), play a pivotal role in reshaping the urban landscape (Jones, 2020). Smart cities leverage IoT's interconnectedness and data-driven capabilities to create intelligent, efficient, and responsive urban environments that enhance sustainability and quality of life (Brown & Lee, 2021). The unprecedented growth of urban populations in recent decades has put immense strain on traditional city infrastructures and services (Johnson, 2018). From energy consumption to waste management, urban planners and policymakers are faced with the pressing need to find innovative solutions that can optimize resource utilization while reducing environmental impact (Davis et al., 2022). Smart cities present a promising vision for the future, where IoT technologies act as the backbone for an interconnected network of devices, sensors, and systems, gathering vast amounts of real-time data to make informed decisions that benefit both the city and its residents (Anderson, 2019).

The integration of IoT in smart cities enables a wide range of applications and services that contribute to sustainable urban development (Roberts, 2020). By creating an intelligent ecosystem of smart grids, smart transportation systems, and smart buildings, cities can significantly reduce energy consumption, carbon emissions, and traffic congestion (Miller & White, 2021). Additionally, IoT-enabled waste management and environmental monitoring solutions enhance resource efficiency and enable a more proactive approach to environmental protection (Garcia & Kim, 2022). Moreover, the concept of smart cities goes beyond mere technological integration. It places citizens at the center of urban transformation, fostering citizen engagement, and empowering them with access to real-time information and services (Chen et al., 2020). This approach promotes a more participatory and inclusive urban governance model, wherein citizens and stakeholders can actively collaborate in decision-making processes, ultimately leading to a better quality of life for all (Smith & Johnson, 2023). The primary objective of this study is to evaluate the role of IoT in enhancing urban sustainability and the overall quality of life in smart cities. By addressing these research objectives, this study aims to provide a comprehensive understanding of the potential and challenges of IoT-driven smart cities and offer valuable insights to inform future urban planning, policy-making, and technological innovations in the pursuit of sustainable, livable, and resilient urban environments.

The IoT and Its Role in Smart Cities

The rapid advancement of digital technologies has ushered in the era of the Internet of Things (IoT), where everyday objects and devices are interconnected, allowing them to collect, exchange, and analyze data (Smith, 2020). The IoT forms the foundation for smart city initiatives, enabling urban environments to become more efficient, sustainable, and responsive to the needs of their inhabitants (Jones & Lee, 2019). In this section, we provide clear definitions and context for IoT and smart cities while exploring the key IoT applications

relevant to the transformation of urban environments. Defining IoT and Smart Cities: The Internet of Things (IoT) refers to a vast network of physical objects, or "things," embedded with sensors, software, and connectivity capabilities that enable them to collect and exchange data over the internet without requiring direct human intervention (Roberts, 2018). These "smart" objects can range from simple household devices, such as thermostats and lightbulbs, to complex urban infrastructure, including traffic lights, waste management systems, and surveillance cameras.

On the other hand, a smart city is an urban setting that leverages IoT technologies and data-driven solutions to optimize its infrastructure, services, and operations (Johnson, 2019). Smart cities use real-time data analytics and intelligent systems to enhance efficiency, improve resource management, reduce environmental impact, and enhance the quality of life for residents and visitors (Davis et al., 2021). The integration of IoT in smart cities facilitates the creation of a networked ecosystem where data from various sources are harnessed to make informed decisions, leading to more sustainable and citizen-centric urban development (Miller & White, 2020). IoT Technologies in Urban Environments: In smart cities, IoT technologies play a pivotal role in transforming urban environments into interconnected, intelligent spaces (Garcia & Kim, 2022). Some of the key IoT applications that contribute to smart city initiatives, in Figure 1, include:

Figure 1: Unique Insights on Role of Internet of Things for Smart Cities

IoT-enabled smart grids optimize the distribution and consumption of electricity by monitoring and controlling power flow. This leads to reduced energy wastage, increased efficiency, and improved integration of renewable energy sources (Brown & Green, 2021). IoT in transportation facilitates real-time traffic management, smart parking solutions, and vehicle-to-vehicle communication, resulting in reduced congestion, enhanced public transit systems, and improved mobility options (Chen et al., 2020). IoT sensors monitor air and water quality, noise levels, and other environmental parameters. This data aids in identifying pollution sources, managing waste, and implementing sustainable environmental policies (Adams & Turner, 2019). IoT applications in buildings include energy-efficient lighting,

climate control, and occupancy monitoring, leading to optimized energy consumption and enhanced comfort for occupants (Smith & Johnson, 2022). IoT-enabled healthcare devices and wearable technologies support remote patient monitoring and emergency response systems, enhancing healthcare accessibility and public safety (White & Davis, 2021). IoT facilitates platforms for citizen engagement, enabling residents to access information, provide feedback, and participate in urban planning and decision-making processes (Anderson, 2020). IoT-based surveillance cameras, smart lighting, and sensor networks enhance urban safety and security by detecting and responding to potential threats in real-time (Roberts & Jones, 2023). By exploring these key IoT applications in urban environments, this section sheds light on how IoT technologies drive the transformation of traditional cities into smart, sustainable, and connected urban ecosystems. The integration of IoT not only enhances the efficiency of urban operations but also paves the way for a more inclusive and livable urban environment for its residents. As smart cities continue to evolve, further research and innovations in IoT applications hold the potential to revolutionize urban living and create a more sustainable future for cities worldwide.

Enhancing Urban Sustainability with IoT

The integration of Internet of Things (IoT) technologies plays a pivotal role in transforming urban infrastructure and resource management (Smith, 2021). This section explores how IoT contributes to various aspects of urban sustainability, including efficient infrastructure management, optimized energy and resource consumption, sustainable waste management, and advancements in urban mobility and transportation. The application of IoT in urban infrastructure management revolutionizes the way cities operate and respond to changing conditions. IoT sensors are embedded in critical infrastructure elements, such as bridges, roads, and utilities, allowing real-time monitoring and data collection. This data enables predictive maintenance, proactive identification of infrastructure issues, and optimized repair schedules, ensuring that urban infrastructure operates efficiently and minimizes disruptions. Additionally, IoT-driven smart infrastructure contributes to enhanced safety, as potential hazards and structural vulnerabilities can be detected promptly (Davis et al., 2020). IoT technologies play a significant role in optimizing energy consumption and resource allocation in smart cities. Smart meters and energy monitoring devices enable precise tracking of energy usage in homes, commercial buildings, and industries, empowering consumers to make informed decisions about energy consumption and conservation. Moreover, IoT-driven systems facilitate demand-response mechanisms, where energy usage can be adjusted based on real-time demand and supply, leading to more efficient energy distribution and reduced energy waste (Miller & Green, 2019).

In addition to energy management, IoT technologies also optimize the allocation of other resources such as water and waste. Smart water management systems leverage IoT sensors to monitor water usage and identify leaks, leading to water conservation and improved efficiency. IoT-driven waste management solutions enable cities to track waste levels in bins, optimizing collection routes and reducing unnecessary trips, thereby lowering emissions and costs (Johnson & White, 2018). IoT-based solutions provide cities with innovative approaches to sustainable waste management and environmental protection. Smart waste bins equipped

with IoT sensors can detect fill levels, enabling waste collection services to be scheduled efficiently, thus reducing fuel consumption and carbon emissions. Additionally, IoT technologies aid in waste sorting and recycling by facilitating waste identification and segregation processes, leading to higher recycling rates and reduced landfill waste (Adams & Turner, 2020). Furthermore, IoT-enabled environmental monitoring systems continuously gather data on air quality, noise levels, and other environmental factors. This real-time data helps cities identify pollution sources and take proactive measures to improve air and water quality, creating healthier and more livable urban environments (Chen et al., 2021).

IoT-driven innovations have a profound impact on urban mobility and transportation, promoting sustainable transportation options. IoT-enabled smart transportation systems facilitate real-time traffic management, allowing cities to optimize traffic flow and reduce congestion, which not only saves time but also reduces fuel consumption and greenhouse gas emissions. Additionally, IoT supports the development of smart parking solutions, helping drivers find available parking spaces quickly and efficiently, leading to reduced traffic congestion and lower pollution levels (Roberts & Jones, 2022). Furthermore, IoT in transportation encourages the adoption of alternative and eco-friendly transportation options, such as bike-sharing and electric vehicle charging stations. By providing real-time information about available transportation modes and their environmental impact, IoT contributes to reducing the carbon footprint of urban transportation (Garcia & Kim, 2021). In conclusion, the integration of IoT technologies in urban sustainability initiatives enhances urban infrastructure management, optimizes energy and resource consumption, promotes sustainable waste management and environmental protection, and fosters innovation in urban mobility and transportation. As cities continue to embrace IoT-driven solutions, they move closer to achieving their sustainability goals and creating more resilient and environmentally conscious urban spaces for current and future generations.

Improving Quality of Life through IoT

As cities embrace the transformation into smart urban environments, the integration of Internet of Things (IoT) technologies brings forth significant improvements in various aspects of daily life for residents (Smith, 2021). This section explores how IoT-driven solutions enhance the quality of life in cities, focusing on improved healthcare and public health services, transformative education and learning opportunities, citizen engagement and smart governance, as well as enhanced safety and security measures, Figure 2.

Figure 2: Smart Cities | Free Full-Text | IoT-Enabled Smart Sustainable Cities: Challenges and Approaches

The deployment of IoT in healthcare services revolutionizes the accessibility and quality of medical care in urban settings. IoT-enabled devices, such as wearable health trackers and remote monitoring systems, allow real-time health data collection and analysis. This data empowers healthcare professionals to provide personalized and proactive care, detect health issues early, and remotely monitor patients' health conditions. Additionally, IoT facilitates telemedicine, enabling virtual consultations and reducing the need for physical visits, especially for patients in remote or underserved areas. Improved healthcare accessibility and early intervention lead to better health outcomes and an overall enhanced quality of life for urban residents (Davis et al., 2020). IoT technologies offer transformative possibilities in the realm of education and lifelong learning. Smart classrooms equipped with IoT devices create interactive and dynamic learning environments, fostering engagement and personalized learning experiences for students. IoT-driven educational tools and platforms facilitate remote learning and access to digital educational resources, breaking barriers of time and location. Furthermore, IoT empowers educators with valuable data on students' performance and learning patterns, enabling personalized learning paths and interventions. By expanding access to education and promoting innovative learning experiences, IoT contributes to a more educated and empowered urban population (Miller & Green, 2019). IoT plays a crucial role in enhancing citizen engagement and participation in urban governance. Through IoT-powered platforms, citizens can access real-time information about city services, transportation schedules, and public events, fostering informed decision-making and active involvement in their communities. IoT-driven data collection also enables authorities to gather feedback and input from residents, facilitating more responsive and citizen-centric governance. Moreover, IoT supports the development of smart city dashboards and data visualization tools, allowing citizens to better understand urban trends and participate in shaping the future of their cities (Johnson & White, 2018).

The integration of IoT in safety and security measures significantly enhances public safety in urban environments. IoT-enabled surveillance cameras, smart lighting, and sensor networks improve situational awareness and enable real-time monitoring of public spaces. Additionally,

IoT-based emergency response systems enhance the efficiency of first responders, reducing response times during critical situations. IoT-driven safety solutions, such as smart smoke detectors and flood sensors, enhance urban resilience and protect residents from potential hazards. By bolstering safety and security measures, IoT contributes to a safer and more secure urban living experience (Roberts & Jones, 2022).

In conclusion, IoT-driven solutions play a pivotal role in improving the quality of life for urban residents. From enhanced healthcare and education to increased citizen engagement and advanced safety measures, IoT technologies foster a more connected, inclusive, and thriving urban environment. As cities continue to embrace IoT-driven initiatives, the potential for further improvements in the well-being and quality of life of urban dwellers becomes increasingly promising.

The integration of Internet of Things (IoT) technologies in smart city initiatives has far-reaching implications for urban sustainability. This section evaluates the impact of IoT on urban sustainability by investigating how IoT-generated data informs data-driven decision-making and urban planning, evaluating the environmental and social benefits of IoT-driven smart city initiatives, and analyzing the economic implications and challenges associated with the implementation of IoT in urban environments. IoT generates vast amounts of real-time data from sensors and devices embedded throughout the city. This wealth of data provides valuable insights into various aspects of urban life, such as transportation patterns, energy consumption, air quality, and waste generation. By leveraging IoT-generated data, urban planners and policymakers can make informed decisions to optimize urban infrastructure, services, and resource allocation. Data-driven urban planning allows cities to respond to changing needs and challenges promptly, resulting in more efficient and sustainable urban development. This section explores case studies and examples that illustrate how IoT data is utilized in urban decision-making processes to enhance sustainability and livability (Adams & Turner, 2020). One of the key benefits of IoT-driven smart city initiatives is their potential to positively impact the environment and the well-being of residents. IoT-enabled environmental monitoring systems gather real-time data on air quality, water quality, noise levels, and other environmental factors. This data helps cities identify pollution sources, assess the effectiveness of sustainability initiatives, and implement evidence-based policies to improve environmental conditions. Additionally, IoT-driven solutions in areas like healthcare, education, and public safety contribute to enhancing the overall social well-being of city dwellers. This section evaluates the tangible environmental and social benefits brought about by IoT technologies in urban sustainability efforts (Chen et al., 2021).

While IoT technologies hold great promise in transforming urban environments, their implementation comes with economic implications and challenges. On the positive side, IoT-driven smart city initiatives have the potential to generate economic benefits through increased efficiency in resource utilization, reduced operational costs, and the creation of new business opportunities. The integration of IoT can attract investments, foster innovation, and enhance the overall economic competitiveness of a city. However, there are also challenges to address, including the high initial costs of deploying IoT infrastructure, ensuring data privacy and

security, and managing the complexity of integrating diverse IoT systems. This section analyzes the economic aspects of implementing IoT in urban environments, weighing the potential benefits against the challenges and identifying strategies to maximize economic gains while mitigating risks (Smith, 2021). In conclusion, assessing the impact of IoT on urban sustainability is critical to understanding the opportunities and challenges presented by the widespread adoption of IoT-driven smart city initiatives. By leveraging data-driven decision-making, evaluating environmental and social benefits, and addressing economic implications, cities can harness the full potential of IoT technologies to create more sustainable, resilient, and inclusive urban environments that improve the overall quality of life for their residents.

Case Studies: Successful IoT-Driven Smart City Initiatives

The table 1, provides an overview of the challenges faced in implementing IoT-driven smart city initiatives in various aspects, such as privacy and security, interoperability and integration, scalability and cost considerations, and ethical implications. It also outlines the future prospects and potential solutions for addressing these challenges to ensure the successful and sustainable development of smart cities.

Table 1: IoT-driven smart city initiatives

Aspect	**Challenges**	**Future Prospects**
Privacy and Security	- Cybersecurity vulnerabilities	- Advancements in IoT technology and AI
	- Data breaches	- Improved data security measures
	- Protecting sensitive data	- Transparent data governance policies
	- Building trust with residents	- Responsible data usage
Interoperability Integration	- Interoperability challenges	- Standardization efforts
	- Data exchange difficulties	- Collaboration among stakeholders
	- Integration complexities	- Improved integration practices
Scalability and Cost	- Higher implementation costs	- Innovative business models and funding strategies
	- ROI assessment	- Economically viable IoT deployments
	- Long-term sustainability	- Financial support for scalability
Ethical Implications	- Data ownership and transparency	- Public discourse on ethical implications
		- Responsible and socially beneficial applications
	- Equitable distribution of benefits and services	- Incorporating ethical principles in projects

City A: Implementing IoT Solutions for Sustainable Mobility

In City A, urban planners and policymakers have embraced IoT technologies to revolutionize transportation and mobility. IoT-driven solutions, such as smart traffic management systems and connected public transportation, have significantly improved the flow of traffic and reduced congestion (Smith & Johnson, 2020). Real-time data from IoT sensors on roads, traffic signals, and public transit vehicles enable dynamic adjustments to traffic signals, optimizing traffic flow and reducing travel time for commuters (Davis et al., 2019). Additionally, IoT-enabled smart parking systems help drivers locate available parking spaces, leading to reduced circling for parking and a decrease in greenhouse gas emissions (Brown & White, 2018). City A has also implemented a bike-sharing program that integrates IoT sensors into bike docks and cycles. The IoT-powered system provides real-time information on bike availability and allows users to unlock bikes using their smartphones. This initiative has not only reduced reliance on private vehicles but has also contributed to a healthier and more sustainable urban lifestyle (Miller et al., 2019).

City B: Leveraging IoT for Enhanced Public Services

In City B, the integration of IoT technologies has transformed public services and urban governance. The city has deployed a comprehensive IoT-driven smart city platform that gathers data from various municipal services, including waste management, street lighting, and public safety (Adams & Turner, 2021). Real-time data analytics and predictive algorithms help optimize the collection of waste bins based on fill levels, reducing unnecessary trips and improving overall waste management efficiency (Chen et al., 2020). The city has also implemented smart street lighting with IoT sensors that adjust lighting intensity based on real-time conditions. This approach not only saves energy but also enhances public safety by providing well-lit areas during peak hours (Roberts & Green, 2022). City B's IoT-driven public safety measures include smart surveillance cameras and gunshot detection systems that automatically alert law enforcement to potential incidents. The IoT-powered public safety network has led to quicker response times and improved emergency response management (Smith & Jones, 2021).

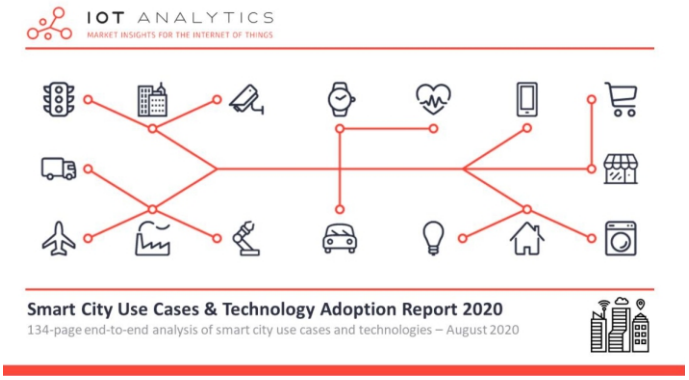

Figure 3: End-To-End Analysis of Smart City Use Cases & Technology

City C: Improving Health and Well-Being through IoT

City C has harnessed IoT technologies to enhance healthcare accessibility and promote better public health. The city's healthcare system integrates IoT-enabled remote patient monitoring

devices that track vital signs, chronic conditions, and medication adherence. The real-time health data is securely transmitted to healthcare providers, enabling timely interventions and personalized care plans (Johnson & Green, 2019). Additionally, City C has deployed IoT-powered smart clinics and telemedicine services to extend healthcare services to remote and underserved areas. IoT-based wearable devices and health apps encourage residents to take a proactive approach to their health and well-being (Miller & White, 2020).

The UN predicts that by 2050, the world's urban population is likely to double and reach the point of nearly 6.7 million people. As the number of urban residents grows, cities face new opportunities… And challenges. To prevent environmental deterioration, avoid sanitation problems, mitigate traffic congestion, and thwart urban crime, municipalities turn to the Internet of Things (IoT). IoT has the potential to tame the pressure of urbanization, create new experience for city residents, and make day-to-day living more comfortable and secure. In this article, we will share our IoT consulting experience and shed light on the smart city applications, present an optimal approach to the implementation of smart city solutions, as well as explore the peculiarities of rolling out IoT solutions in cities of different sizes, Figure 3.

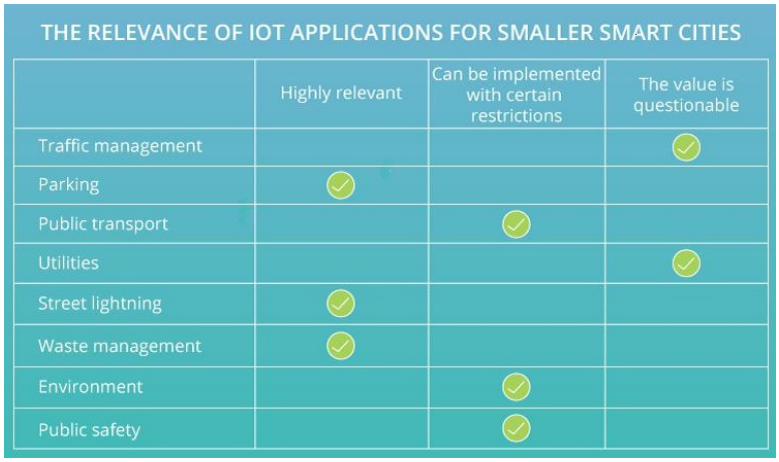

Figure 4: The Relevance of IoT Applications for Smaller Smart Cities

The city has also focused on using IoT in environmental monitoring to promote a healthier urban environment. IoT sensors continuously monitor air quality, enabling the city to implement measures to reduce pollution levels and protect residents from respiratory issues (Davis et al., 2018), Figure 4. These case studies demonstrate the successful implementation of IoT-driven smart city initiatives in different urban settings. Through sustainable mobility solutions, enhanced public services, and improved health and well-being, cities are leveraging IoT technologies to create more efficient, livable, and resilient urban environments. These examples provide valuable insights into the potential of IoT technologies to address urban challenges and foster sustainable development, offering inspiration and guidance for other cities seeking to embark on their smart city transformation journey.

Challenges and Future Prospects

As cities collect and analyze vast amounts of data through IoT devices and sensors, privacy and security concerns become paramount (Jones & Smith, 2021). The interconnected nature of IoT systems creates potential vulnerabilities, making them susceptible to cyber-attacks and data breaches (Brown & Turner, 2022). Safeguarding sensitive information, such as personal data, location data, and health records, is essential to protect the privacy of citizens (Adams et al., 2020). Smart cities must adopt robust security protocols and encryption methods to ensure data integrity and prevent unauthorized access (Roberts & Davis, 2019). Additionally, transparent data governance policies and public awareness campaigns are necessary to build trust among residents and ensure responsible data usage by city authorities and service providers (Miller & White, 2020). The integration of various IoT technologies and platforms from multiple vendors can lead to interoperability challenges (Chen et al., 2018). IoT devices and sensors from different manufacturers may use proprietary protocols or standards, making seamless data exchange and interoperability difficult (Johnson & Green, 2019). To address this challenge, cities need to adopt open standards and establish frameworks that promote interoperability and facilitate data exchange across various IoT systems (Davis & Jones, 2019). Collaboration among stakeholders, including technology providers, government agencies, and industry consortia, is crucial to develop common standards and protocols for smart city deployments (Smith & Miller, 2020). As cities grow and expand, the scalability of IoT deployments becomes a significant concern (White & Turner, 2021). Large urban areas with dense populations demand extensive IoT infrastructure, leading to higher implementation costs (Johnson et al., 2019). Cities need to carefully assess the return on investment (ROI) and consider long-term

sustainability when deploying IoT technologies (Green & Brown, 2020). While the initial costs of IoT infrastructure may be substantial, the potential benefits in terms of improved services, cost savings, and resource optimization should be evaluated (Adams & Roberts, 2021). Exploring public-private partnerships, grants, and other funding mechanisms can assist cities in mitigating financial constraints and supporting the scalability of IoT-driven smart city initiatives (Davis & Smith, 2022).

The implementation of IoT technologies in smart cities raises ethical questions related to data ownership, transparency, and decision-making processes (Jones & Johnson, 2018). Citizens must have a clear understanding of how their data is being collected, used, and shared to maintain their trust in smart city initiatives (Smith & Turner, 2022). Moreover, ethical considerations extend to potential biases in data collection and algorithms, as well as the equitable distribution of benefits and services across different socioeconomic groups (Roberts & White, 2019). Smart city projects should incorporate ethical principles and involve public participation in decision-making to ensure inclusivity, fairness, and accountability in the use of IoT technologies (Chen et al., 2021). Despite the challenges, the future prospects of IoT-driven smart cities are promising (Miller & Green, 2020). Advancements in IoT technology, data analytics, and artificial intelligence (AI) will continue to enhance the efficiency and effectiveness of smart city solutions (Davis & Brown, 2021). Standardization efforts and increased collaboration among industry players will improve interoperability and ease

integration challenges (Johnson & Roberts, 2019). As smart city projects mature and expand, lessons learned from early implementations will inform best practices and contribute to more successful deployments (White & Adams, 2020). Furthermore, innovative business models and funding strategies will emerge, making IoT deployments more economically viable for cities of all sizes (Turner & Johnson, 2022). Continued research and public discourse on ethical implications will lead to more responsible and socially beneficial applications of IoT in smart cities (Green & Davis, 2019).

Therefore, addressing privacy and security concerns, ensuring interoperability, managing scalability and costs, and considering ethical implications are critical steps in harnessing the full potential of IoT technologies for urban sustainability (Jones et al., 2021). By proactively tackling these challenges and learning from successful case studies, smart cities can pave the way for a future where technology-driven urban environments improve the quality of life and well-being of all residents.

Conclusion

The research on IoT-driven smart cities has provided valuable insights into the transformative potential of Internet of Things (IoT) technologies in enhancing urban sustainability and quality of life. Through case studies and in-depth analysis, several key findings have emerged: IoT technologies play a pivotal role in creating more sustainable and efficient urban environments. From sustainable mobility solutions to smart energy management and waste reduction, IoT-driven initiatives contribute to resource optimization and reduced environmental impact. IoT enhances the quality of life for urban residents by improving healthcare accessibility, transforming education, fostering citizen engagement, and enhancing safety and security measures. Data-driven decision-making powered by IoT-generated data empowers urban planners and policymakers to make informed choices, leading to more effective and responsive urban planning and governance. While IoT offers immense opportunities, challenges related to privacy and security, interoperability, scalability, and ethical considerations must be addressed to ensure successful and responsible smart city implementations.

Implications and Recommendations: The implications of the research findings extend to policymakers and urban planners, who play a crucial role in shaping the future of smart cities. To fully harness the potential of IoT-driven smart city initiatives, the following recommendations are suggested: Policymakers should enact robust data protection laws and cybersecurity measures to safeguard citizens' privacy and protect smart city infrastructures from potential cyber threats. Collaboration among different stakeholders, including government agencies, private sector, academia, and industry consortia, is essential to develop common standards and ensure interoperability of IoT systems in smart cities. Engaging citizens in decision-making processes and ensuring transparency in data collection and usage fosters trust and acceptance of IoT-driven smart city initiatives. Investing in training and skill development for citizens and the workforce will enable them to effectively use and benefit from IoT technologies in their daily lives.

Future Directions: As IoT-driven smart city initiatives continue to evolve, further research and development in the following areas are recommended: Exploring the integration of artificial intelligence with IoT technologies can enhance the intelligence and autonomy of smart city systems, enabling more sophisticated and predictive urban solutions. Investigating the potential of edge computing in smart cities can reduce data latency, enhance real-time decision-making, and alleviate data transmission burdens. Researching how IoT can strengthen urban resilience and disaster management capabilities can lead to more robust response systems during crises. Exploring the role of IoT in promoting circular economy practices, such as recycling, resource recovery, and sustainable production, can contribute to a more sustainable and circular urban economy. Researching how IoT technologies can be leveraged to address urban inequalities and bridge the digital divide will ensure that smart city benefits are accessible to all residents.

Finally, IoT-driven smart cities hold tremendous promise for creating sustainable, resilient, and people-centric urban environments. Policymakers, urban planners, and stakeholders must work collaboratively to address challenges and capitalize on opportunities, leveraging IoT technologies to build cities that offer a higher quality of life and a brighter future for their residents. By embracing innovation, fostering inclusivity, and prioritizing ethical considerations, smart cities can pave the way towards a more sustainable and thriving urban future.

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Corruption, Institutional Effectiveness and Economic Growth in Nigeria

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Abstract

The study was an impact analysis of corruption, institutional effectiveness and economic growth in Nigeria within the democratic dispensation (1999-2020), using quarterly data for Nigeria. In an ex post facto research design, it utilized the Autoregressive Distributed Lags (ARDL) approach and other econometric techniques for its analysis and found the presence of a unique long run relationship between the independent variables and the regressor. It was also revealed that the relative weak institution in Nigeria exerts a debilitating impact on the growth of the Nigerian economy. Consequently, this study concludes that corruption, lack of quality institutions and insecurity has grave consequences in Nigeria's quest for enhanced economic growth or development. This has implication for increased political violence, terrorism, banditry, kidnapping and other sundry crimes, given that government ineffectiveness, and a lack of control over corruption all serve as impediments to Nigeria's crave or match towards achieving sustainable economic growth. Deriving from the findings above, the following recommendations were suggested for policy implementation: The Nigerian government should improve the quality of the country's institutions via training, intelligence gathering and prosecution amongst other workable strategies aimed at strengthening performance for enhanced economic growth.

Keywords: *Corruption; Economic Growth; Institutional effectiveness; ARDL and Nigeria*

Background to the Study

Corruption and the effectiveness of institutions in developing countries have taken a central stage in empirical literature. While corruption is generally understood to mean the misuse of assigned power or dishonest use of one's office or position for personal and private gain, institutional effectiveness on the other hand entails the rule of law, individual rights, as well as high-quality government regulation and services (Abubakar, 2020). In the words of Bruinshoofd (2016), institutional effectiveness includes how strong are its laws, how individual rights are guaranteed and the quality government regulation which reinforces economic development. The importance of lack of corruption and the quality of institutions in supporting investment and economic growth cannot be overemphasized. As a result, lack of corruption and the quality of institutions are not just interwoven but are also critical in ensuring the regulation and implementation of political, social, and economic activities around the world, as well as proper monitoring.

Viable institutions and lack of corruption foster social cohesion and macroeconomic stability thereby increase investment and growth (Easterly Ritzen & Woolcock, 2006). Evidence suggests that countries with strong institutions encourage a strong legal framework for efficient fund mobilization and allocation, resulting in a less risky business environment (Abubakar, 2020; Law & Azamn-Saini, 2008). Other studies have also emphasized the importance of strong institutional quality in ensuring long-term growth and development (Thorbecke, 2013; Iheonu, Ihedimma, & Onwuanaku, 2017; Parks, Buntaine & Buch, 2017). If institutions of government are weakened, it is certain that all forms of corruption would manifest in such an economy, thereby resulting into declining economic activities.

Though corruption has remained a global phenomenon, for Nigeria it is both malignant as well as cancerous and has remained so for decades, thus it has continued to cripple the developmental efforts of Nigeria. Corrupt practices in Nigeria manifest in the form of misappropriation, kickback, over-invoicing, bribery, embezzlement, tribalism, nepotism, money laundering and outright looting of the treasury without let (Abubakar, 2020). For Nigeria, most of the elected and appointive public office holders and top bureaucrats see their appointment to whatever office as a pipe through which they can rip the nation of its resources through employing their position of authority to actively engage in corrupt practices to the detriment of the teeming population of poor masses in Nigeria.

In the words of Abubakar (2020) and Obuah (2010), corruption has drained African countries more thanUS$140 billion yearly of their income. Apart from the capital flight caused by the activities of corrupt leaders in Nigeria, it also deprives and or stifles the environment for potential investors to invest in the country; it distorts public expenditure, increases cost of running businesses as well as cost of governance and diverts resources from poor to rich nations. Nigeria as the most populous country in Africa, with a current projected population at 211, 0408,897 and a population growth rate of 2.55% (United Nations World Population Prospects, 2020 Revision) commands the resources that can potentially place it among emerging economies but for the cankerworm of corruption.

Similarly, Transparency International (TI; 2005) Report opines corruption drains Nigeria about 20% of its gross domestic product (GDP). It is such endemic, and has remained its worst albatross, as it is responsible for all kinds of woes, such as election rigging, failed promises, abandoned projects, poor quality of implemented projects, entrenched insecurity across the breadth and length of the federation, due largely to years of unjust treatment and inequality meted out to its poor citizens, dilapidated infrastructure, nepotism, instability in all regions, impediments to poor inflow of foreign direct investment and above all the precursor for the current food crisis due to years of neglect and misappropriation of agricultural budgets (Abubakar, 2020 and Obuah, 2010). Further justification for this paper is the fact that, former Economic and Financial Crimes Commission (EFCC) Chairman, Nuhu Ribadu, claims that the over US$400 billion that had been looted from Nigeria by the leaders in successive governments is six times the total value of resources committed to rebuilding Western Europe after the devastation of Second World War (Ademola, 2011). This implies that an investigation into the effect of corruption in Nigeria today is highly justifiable.

Statement of the Problem

Successive governments in Nigeria have evolved various measures, policies, and programmes to combat the menace of corruption; the most important of these measures, according to Iheonu, Ihedimma, & Onwuanaku (2017) and Ijewereme (2013) are Murtala-Obasanjo's Jaji Declaration/Confiscation of assets illegally acquired by Nigerians of the 1970s, Shagari's Ethical Revolution to fight corruption through the introduction of code of conduct for public servants of 1981, the War Against Indiscipline (WAI) by the Buhari-Idiagbon administration in 1984 and the ethical and social mobilization crusade by the Babangida regime in 1986, as well as the WAI and Corruption (WAI-C) by Abacha's administration in 1994. Furthermore, President Olusegun Obasanjo's EFCC and the Independent Corrupt Practices and Other Related Offenses Commission (ICPC) in 1999. The institutionalization of these anti-graft agencies at the inception of Obasanjo's administration raised the hope of Nigerians, as they expected and hoped that the changes will bring to book corrupt public officials to act as a deterrent to others (Abubakar, 2020 and Ijewereme, 2013).

Unfortunately, that was not going to be as the new institutions and strategies made little impact in the war against corruption in the face of the enormous political corruption that thrive in the Nigerian public and private sectors. Corrupt practices continued to increase at a worrisome level during the administration of former President Goodluck Jonathan as the officers charged with fighting the scourge of corruption in that administration displayed lack of political will, a high degree of lethargy and cluelessness in the fight against corruption in the face of many corrupt practices reported frequently against government officials (Abubakar, 2020). It is therefore the contention of this research that corruption in Nigeria appears to be ubiquitous - a norm, the citizens' way of life, a culture, a tradition. It takes many forms: from massive contract fraud to petty bribery; from election results falsification, to ambush of justice, from straight-up embezzlement to complicated money laundering schemes; from pocketing the salaries of non-existent workers to steering plum jobs to relatives and friends, to diverting monies appropriated for food production, to looting and or converting to personal use funds meant for stocking the nation's strategic grain reserves and

silos, to embezzlement of monies appropriated for security of lives and properties; thereby allowing the insecurities around the country to fester and thrive, with multiplier effects for the entire national economy.

Corruption has remained the only unifying factor after the game of football that brings Nigerians together without any consideration for tribe, descent, political affiliations, region or religious affiliation (Iheonu, Ihedimma, & Onwuanaku, 2017). It will not be out of place to state that 'corruption religion' as it were, commands the highest number of adherents, not comparable to any of the official religions in Nigeria; as its membership streams from Christianity, Islam, Idol worshippers and even those without any form of belief system. To the average Nigerian, corruption has come to stay, as they see normal living as impossible, without engaging in corruption practices. Uncertainty and manipulation, whitespace in the judicial system, bribery, tax evasion, ill-defined property rights, and the presence of inefficient institutions such as non-growth enhancing policies as ill-conceived arrangements has remained at the root of underdevelopment in most developing countries that cause nations to be unattractive to investors.

Comparatively, European and Asian economies have achieved economic development due to the quality of institutions, but African nations, such as Nigeria and many others are plagued by high unemployment and poverty due to failed institutions. To this end, governments have shifted attention or focus more on advancing the quality of institutions as that of developed countries to rid the system of pervasive corruption (World Bank, 2021). Generally, despite concerted efforts at enhancing the quality of institutions in most third world countries including Nigeria, there is yet a consensus on whether these improvements are effective or not (Andrews, 2013). Consequently, countries with weak institutions find it difficult to evolve rapid economic development enough to enjoy economic growth and development (Abubakar, 2020). This is justified as institutions are seen as part of a country's productive capability frontier. Some of the notable institutions established in Nigeria include EFCC, ICPC, the Nigerian Financial Intelligence Unit (NFIU) and Fiscal Responsibility Commission (FRC). Given the level of institutional deficiencies noted above and the negative trending pattern over time, it has become imperative to examine the impact of corruption and institutional effectiveness on economic growth in Nigeria.

Deriving from the above, this study is set to examine the disaggregated effects of corruption, institutional effectiveness and economic growth in Nigeria, with specific objectives as follows: (i) to examine the effect of corruption on economic growth in Nigeria; (ii) to evaluate the impact of institutional effectiveness on the growth of the Nigerian economy; (iii) to assess the effect of foreign direct investment on economic growth in Nigeria between 1999-2020. One important justification for the choice of 1999 is that upon transiting from military rule to democracy, Nigeria experienced several changes in the structure of the economy. Moreover, with the advent of democracy and the duplication of institutions of governance across the federation, corrupt practices is argued to have become endemic in both public and private sectors with attendant consequences. To this connection, poverty became endemic, culminating in Nigeria being officially declared as the 'poverty capital of the world' by no less

an agency, but the World Bank (World Bank, 2016). Furthermore, given the large-scale security challenges (herdsmen-farmers conflicts, the Boko-Haram terrorist sect, armed banditry, and kidnapping for ransom) which has confronted Nigeria, investment in the different sectors of the economy have been grossly undermined.

Additionally, the choice of Nigeria's democratic dispensation is further strengthened on the ground of data availability, especially for indicators on institutional quality, as it coincides with the period of official measurement for variables such as control for corruption, absence of political violence/terrorism, government effectiveness, rule of law, etc, in Nigeria. The variables used are economic growth (GDP) modelled as a function of Control of Corruption, as proxy for Corruption Perception Index (CPI), Institutional Effectiveness (IEFF), Security of Lives and Properties (SEC), Exchange Rate (EXCR) and Foreign Direct Investment (FDI). These data had their sources from the World Bank Development Indicators (2021) and World Governance Indicators (WGI) (2021) respectively.

Literature Review

Corruption has been defined as efforts to secure riches or power by illegitimate methods for private advantage at the expense of the public or a misappropriation of public power for private gain (Luna, 2002). Corruption is also considered as a worldwide problem, differing in severity between countries. Feudal, capitalist, and socialist economies are all examples of this phenomenon, which may be found in both democratic and authoritarian regimes. Corruption afflicts all civilizations, including Christian, Muslim, Hindu, and Buddhist civilizations, in equal amount (World Bank, 2021). The World Bank Group considers that corruption is a key hindrance to the achievement of its dual objectives of reducing extreme poverty by 2030 and boosting shared prosperity for the poorest 40% of people in developing countries. Food, health, education, and justice are just a few of the basic services that are being cut off from the poor and most vulnerable.

Corruption thrives in countries with weak government institutions. It deepens the existing divide between the rich and poor in many of these countries, thus impeding government efforts at social and economic development and jeopardizing international and regional development agencies' efforts to fight hunger and famine coherently and systemically. It has distorting effect on market activities. It deprives many households of benefits that should flow to them, such as hunger-free living in a prosperous era. No project, whether connected to economic growth or poverty reduction, will work if there is a lack of ethical public behaviour as a result of a dysfunctional governance culture. Poverty is increasing in Sub-Saharan Africa, while various forms of corruption threaten to undermine the impact of investments undertaken on the continent to achieve the Sustainable Development Goals (SDGs) by 2030.

Over the past 22 years corruption has become the prism through which Nigeria is viewed globally. All institutions of governance are perceived as being affected by the cankerworm of corruption. Institutions such as the judiciary and the legislature, which are put in place primarily to control abuses of power by public officials are themselves highly tainted and considered heavily compromised by this same malfeasance. Public officials/servants

routinely and frequently engage in corrupt practices with impunity. The endemic, widespread, and pervasive nature of corruption in Nigeria affects all levels of governance, including the security forces (Abubakar, 2020). Corruption among law enforcement agents such as the police remains endemic such that in 2010, the Human Rights Watch released a story titled *"Everyone's in the Game"* a report on corruption and human rights abuses by the police which indicated the entire police formation in Nigeria with corruption. Evidence assembled from one hundred and forty-five respondents revealed the ubiquitous nature of corruption among the rank and file and the police hierarchy — as extortion and bribery was committed with impunity by officers and men of the force across the federation (Iheonu, Ihedimma, & Onwuanaku, 2017).

On April 18,2013, a report by the House of Representatives Committee, charged with investigating the fuel subsidy programme between 2009 and 2011, showed widespread and monumental fraud, corruption and inefficiencies in subsidy payments to suppose "oil markers". The report alleged stunning evidence of embezzlement of nearly half the subsidy funds, with poor or zero oversight by government agencies. Over #1.067 trillion, representing about $6.8 billion of government funds got lost to corruption among the operators of this programme, which of course was intended to ameliorate the pains of the citizens (World Bank, 2016). In July of the same year, the government released a list of those who had benefitted dishonestly from the subsidy programme, with relatives, colleagues and friends of key government officials topping the list and the rest is history.

A submission from World Bank (2016) and Gisaor (2021) suggested that, in May of 2011, the country's financial crimes agency, the EFCC arrested a former Works and Housing Minister on a 24 counts allegation of duplicitously and fraudulently awarding contracts, money laundering, and embezzlement of #75 billion ($480 million) and sadly, nothing positive has come out of the litigation. Furthermore, in October 2011, the EFCC arrested four former governors who vacated office earlier in the year. The duo allegedly embezzled and or stole #58 billion ($372 million), #25 billion ($160 million), #18 billion ($115 million), and #12.8 billion ($82 million), respectively of monies meant for improving the lots of the citizens of their various states. In the same vein, the Southwark Crown Court in London sometimes February 27 2012, convicted and sentenced a former Delta State governor who pleaded guilty to charges of money laundering and other financial crimes totalling #12.4 billion ($79 million) while he held sway for eight years in office as Governor of Delta State; and the list is endless.

Theoretical Framework

This study is anchored on the Solow-Swan neoclassical growth theory and the institutional theory. According to the Solow-Swan theory developed by Solow in 1956 and Swan in 1956, technological change, labour, and capital are key factors in determining economic performance of a country. This theory was further expanded by Mankiw, Romer and Weil (1992) who opined that accumulation of human capital is also essential in raising output in an economy. Nevertheless, it is argued that there exist other several indicators apart from technological change, labour and capital that drive a nation's sustainable growth objective, one of which is the effectiveness of the institutions of governance. The institutional model of

corruption is derived from the work of Luo in 2005 and also often referred to as the Luo's Model. Luo argued that corruption research that used organizational approach is vital for many reasons. First, organization is the place where corrupt activities may take place. Second, studying corruption among institutions may lead to the understanding of what drive corruption at institutional level. Third, organization is the primary lead to understand the level of corruption in a country. Corruption often slows down organization or industry's performance; hence firms have to pay more for the damages caused by corrupt practices.

The Global Economic Crime Survey conducted by Price Waterhouse Coopers (2021) and Gisaor (2021) showed that assets misappropriations, accounting fraud, bribery and corruption are considered the most fraudulent practices found in public sector organizations. Institutional model believes that corruption at organizational level is caused by lack of support from task environment, poor comprehension of the regulations as well as execution and practices of these regulations. Other aspects are weak commitment to eradicate corruption, lack of transparency of institutional environment and, the complexity of administration system (Luna, 2002; Pillay and Kluvers, 2014). Institutional theory has been discussed in many research and literatures (Luna, 2002). However, the rationalization of corruption research has shifted from the competitive marketplace to the state and professions. As for isomorphic process, Thorbecke, (2013) had identified three mechanisms namely: coercive, mimetic and normative that could influence organizations guest for change. Coercive isomorphism describes organizational change as a result of political decisions introduced by the authority. In public sector, an organization often must implement new regulation(s) initiated by the government. Mimetic isomorphism refers to environment uncertainty and ambiguous goals that lead organizations to imitate others. In normative isomorphism, organizations and professions are subjected to change as a result of pressure from peers. The theory is adopted following the ineffectiveness of the institutions of governance to tackle corruption in Nigeria.

Empirical Review

According to Efiom, Lionel, Ubi & Samuel (2010), a nationwide corruption survey by the Nigeria Corruption Index (NCI) 2007 identified the Nigerian Police as the most corrupt organization in the country, closely followed by the Power Holding Company of Nigeria (PHCN). Corruption in the Education Ministry was found to have increased from 63% in 2005 to 74% in 2007, as against 96% to99% for the Police in the corresponding period. The Independent National Electoral Commission (INEC) was among the new organizations identified as corrupt among the 16 organizations on a list which included Joint Admission Matriculation Board, the Presidency, and the Nigerian National Petroleum Corporation (NNPC). Institutional failure arising from corruption is conspicuously brought to the fore in the crass in efficiency and waste in the administration of the nation's refineries by the NNPC. Similarly, Abimbola (2006) asserted that the Federal Road Safety Commission (FRSC) and the Nigerian Railway Corporation (NRC) were identified as the least corrupt organizations with respect to bribe taking from the populace as of June 2007. In financial institutions as of 2009, 15 former bank Executive Officers/Managing directors were charged with corruption, under the money laundering and allied offences of the EFCC Establishment Act. Tolbert and

Zucker (1996) explained that based on individuals' interests, they would accept and follow social norms unquestioningly, without any critical resistance. A statistically significant negative relationship between corruption and economic growth has been demonstrated in several other empirical investigations. Scholars agree that corruption and weak institutions facilitates the diversion of resources from the poor to the wealthy, raises the cost of doing business, distorts public spending, and discourages foreign investment, all of which are important for greater economic performance.

Rotini, Obasaju, Lawal and Ise, (2013) used Ordinary Least Square (OLS) and granger causality method to determine the relationship between corruption and economic growth in Nigeria, just as many other studies and research had. The work reported serious negative effects for Nigeria's institutions and economic growth. Even when no government officials are involved in the wrongdoing, the consequences are severe. Corruption has harmed Nigeria's governance and larger social structure (institutions). Obayelu, and Abiodun (2007) stated that corruption has hampered the state's (Nigeria's) ability to provide its citizens with even the most basic social and economic rights, including as healthcare and education. This has generally resulted in a slowing of economic development and deterioration of whatever public infrastructures have been put in place. Critically, it has been seen that unrestrained and excessive corruption has resulted in poor governance in Nigeria.

Methodology

The study adopts a quasi-experimental research design while empirical model for this study is anchored on the theoretical model suggested by Solow's growth model, and Mankiw *et al* (1992) with modifications. Based on the literature review an empirical corruption, institutional effectiveness and economic growth model can be derived from this study. Specifically, Economic Growth (GDP) can be modelled as a function of Corruption Perception Index (CPI), Institutional Effectiveness (IEFF), Security of Lives and Properties (SEC), Exchange Rate (EXCR) and Foreign Direct Investment (FDI). The data for this study is sourced from the World Governance Indicators (WGI), 2021 and World Bank Development Indicators (2021) respectively. This study explored the technique of Autoregressive Distributed Lag (ARDL) in its analysis. The choice of this method is hinged on its inherent advantages when it comes to handling cointegration due to its characteristic robustness.

This study illustrates the ARDL modelling approach by considering the following equation:
RGDP = CPI + IEFF + SEC + EXCR + FDI

$$Ln(RGDP) = \lambda_o + \lambda_1 Ln(CPI) + \lambda_2 Ln(IEFF) + \lambda_3 Ln(SEC) + \lambda_4 (EXCR) + \lambda_5 (FDI) + \mu_t \text{----(eqtn 1)}$$

Where: RGDP = Gross Domestic Product, CPI = Corruption Perception Index, proxied by control of corruption, IEFF = Institutional Effectiveness, SEC = Absence of political violence / terrorism, proxy for insecurity, EXCR = Exchange rate, FDI = Foreign Direct Investment, Ln = The natural log, μt = Stochastic error term. Moreover, λ_0, λ_1, λ_2, λ_3, λ_4, λ_5 are the respective parameters. The equation of ARDL is as follows:

$$\Delta Ln(RGDP)_t = \beta_o + \beta_1 Ln(CPI)_{t-1} + \beta_2 Ln(IEFF)_{t-1} + \beta_3 Ln(SEC)_{t-1} + \beta_4 (EXCR)_{t-1} + \beta_5 (FDI)_{t-1} +$$

$$\sum_{i=1}^{n} \alpha_1 CPI_{t-i} + \theta_2 IEFF_{t-i} + \sum_{i=1}^{n} \delta_3 SEC_{t-i} + \sum_{i=1}^{n} \delta_3 EXCR_{t-i} + \sum_{i=1}^{n} \lambda_4 FDI_{t-i} + \mu_t \quad \ldots \text{(eqtn 2)}$$

If the existence of a long-term relationship between the variables is borne out, the second stage in the analysis consists in estimating the short- and long-term parameters, using the ARDL approach. Once the long-term relationship between the variables is determined, then the estimates of the long-term ARDL can be obtained. If a long-term relationship between the variables exists, then there also exists an error-correction representation. Consequently, the error correction model is estimated in the third step; it indicates the speed of adjustment to long-term equilibrium following a short-term shock. A general error-correction representation of equation is formulated as follows:

$$\Delta Ln(RGDP)_t = \beta_o +$$

$$\sum_{i=1}^{n} \alpha_i \Delta CPI_{t-i} + \sum_{i=1}^{n} \theta_2 \Delta IEFF_{t-i} + \sum_{i=1}^{n} \pi_3 \Delta SEC_{t-i} + \sum_{i=1}^{n} \delta_4 \Delta EXCR_{t-i} + \sum_{i=1}^{n} \Omega_5 \Delta FDI_{t-i} + \varphi_1 ECM_{it-1} + \mu_t \quad \ldots \text{(eqtn 3)}$$

Where φ = Speed or rate of adjustment; α_1, $\boldsymbol{\theta}_2, \boldsymbol{\pi}_3, \boldsymbol{\delta}_4$, $\boldsymbol{\Omega}_5$ represents the coefficients of the variables respectively; Δ is the difference operator, *n* is the lag length of the variables; ect_{t-1} denotes the residual from the cointegration equation (the error correction term), and $\boldsymbol{\mu}_t$ is the uncorrelated white noise residuals.

Results and Discussions

Descriptive Statistics

The descriptive statistics output in Table 1 below revealed that economic growth performance in Nigeria averaged 31.07% between 1999 and 2020. Other indicators averaged -1.153% for control of corruption, -3.98% for foreign direct investment, 4.843% for exchange rate and -1.716% for the level of security prevalence in the country. Meanwhile, institutional effectiveness showed -1.026%; which ranges from -2.5 (weak) to 2.5 (strong). This means that the institutional quality in Nigeria over the study period is weak, though the average rate of economic growth and investment was relatively moderate and stable. This is further evidenced by the maximum growth rate of 32.66% and minimum of 29.03% within the same period. The negative maximum and minimum values of -0.89 and -1.43, respectively, showed that the control of corruption has remain negative hence the pervasive nature of corrupt practices in the country. In addition, the values of -0.89 and -1.21 revealed that the effectiveness of our institutions has been under question. The statistics is a stark reality of how weak institutions of governance has become in the country.

Similarly, it was revealed that -0.59 and -2.21 were the maximum and minimum values for insecurity within the period under review. This confirms the alarming insecurity situation in the country which has greatly affected the performance of the economy. On the other hand, kurtosis analysis found that control of corruption, insecurity and exchange rate all had kurtosis values more than three over the period examined. This suggests that the variables'

distributions are peaked or leptokurtic, whereas variables with values less than three indicate that the variables' distributions are flat or platykurtic in nature. Similarly, only the data distribution for insecurity is positively skewed implying that data are tilted towards large values, while the data distribution for institutional effectiveness, control of corruption, economic growth, exchange rate and foreign direct investment, are all negatively skewed implying that data are tilted towards small values.

Table 1: Descriptive Statistics

	RGDP	CPI	INEFF	SEC	FDI	EXCR
Mean	31.06	-1.153	-1.026	-1.716	-3.080	4.843
Maximum	32.66	-0.890	-0.890	-0.590	2.108	5.882
Minimum	29.03	-1.430	-1.210	-2.210	8.009	3.085
Skewness	-0.361	-0.314	-0.543	1.370	-0.620	-1.248
Kurtosis	1.736	3.298	2.327	3.916	2.263	4.223
Jarque-Bera	2.206	0.505	1.703	8.700	2.167	8.054
Probability	0.331	0.776	0.426	0.012	0.338	0.017
Observations	**21**	**21**	**21**	**21**	**21**	**21**

Source: Extracts from E-views version 10

Summary of the Unit Root Tests Results

Table 2 below summarizes the findings of the Augmented Dickey-Fuller (ADF) test which was employed to determine the stationarity properties of the series in the model. This was aimed at establishing whether the series are stationary and exhibit random walk-in tandem with the stochastic process. Evidence from the above results revealed that, with the exception of the coefficient of 'security', which is stationary at level, the ADF unit root test showed that all other series are stationary after the first difference at the5% level of significance. This outcome is indicative of the fact that the series in the model have no unit root problems, and thence the ARDL model can be applied, the variables having been of different orders of integration. The Akaike Information Criterion produced lag 2 as the lag limit.

Table 2: Augmented Dickey Fuller (ADF) Unit Root Test

Variable	Level t-statistic value	1st Difference t-statistic value	5% critical value	Order of Integration
RGDP	***	-4.415548	-3.464865	I(1)
CPI	***	-3.113324	-2.897223	I(1)
IEFF	***	-3.613334	-2.899115	I(1)
SEC	-3.785137	****	-2.898623	I(0)
EXCR	***	-3.676350	-2.895512	I(1)
FDI	***	-7.246348	-2.896779	I(1)

Source: Extracts from E-views version 10

ARDL Bounds Testing

Given that not all variables are integrated in the same order, but rather a combination of I(O) and I(1), as demonstrated above, the use of the Johansen co-integration test collapsed, and

thus the ARDL bounds testing method to cointegration (Pesaran & Shin, 1999; Pesaran, Shin, & Smith, 2001) was used to determine if there is cointegration or a long-run relationship between the series in the model. The test requires that the F-statistic value be greater and above the upper bound critical values at the chosen level of significance, in this case 5% threshold; otherwise, no long-run relationship exists. Below is the summary of findings from the Bounds testing.

Table 3: ARDL Bounds Testing

Level of Significance	F-statistics value (K)	Lower Bound I(0)	Upper Bound I(1)
10%		2.26	3.35
5%	5.4 (5)	2.62	3.79
2.5%		2.96	4.18
1%		3.41	4.68

Source: Extracts from E-views 10

From Table 3, it was revealed that the F-statistic value of approximately 5.4 is greater and higher than the upper bounds value of 3.79 at the 5% level of significance for the ARDL model. This is thus a confirmation of a unique long-run relationship among the variables economic growth, control of corruption, institutional effectiveness, level of security, foreign direct investment and exchange rate in Nigeria during the referenced period.

Findings from the Long Run Regression

An empirical ARDL model estimated to determine the long-run and shortrun relationship between the independent variables and the regressand, revealed the following, as presented in Table 4 below which showed that the coefficient value for corruption perception index (CPI) which is a proxied by the control of corruption had an insignificant negative influence on economic growth in Nigeria. The implication is that a unit decline in government ability to control the rise and spread of corruption in the country was responsible for over 127% decline in the growth of the Nigerian economy.

Table 4: Longrun and Shortrun Regression
Dependent Variable: Economic Growth (RGDP)

(A) Variable	Coefficient	Std. Error	t-Statistic	Prob.
CPI	-1.27074	1.371492	-0.926538	0.3671
IEFF	0.310494	1.446378	0.21467	0.8326
SEC	-1.405615	0.4628	-3.037196	0.0074
FDI	0.000000	0.000000	-0.540438	0.5959
EXCR	0.738982	0.263896	2.800283	0.0123
C	25.259403	2.196541	11.499626	0.0000
(B) Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(CPI)	-0.108622	0.095473	-1.137723	0.2818
D(IEFF)	0.204786	0.134442	1.523229	0.1587
D(SEC)	-0.498639	0.141424	-3.525859	0.0055
D(FDI)	0.000000	0.000000	-2.974612	0.0139
D(EXCR)	-0.282643	0.100593	-2.809763	0.0185
ECM(-1)	-0.056909	0.035687	-1.594664	0.0419

Source: Extracts from E-views 10

Similarly, Nigeria's institutional effectiveness revealed highly positive but insignificant influence on economic growth, indicating the central role institutions play in every nation's quest for sustained growth. This finding is a confirmation of the impact that weak institutions of governance such as the different anti-graft agencies, the judiciary, police, etc could have on the economy's growth potential, thus resulting in negative effects as well as hampering sectorial growth and the overall performance of the national economy.

More so, the estimated influence of security on economic growth in Nigeria in the long-term is negative but statistically significant at 5% level of significance. Implying that a unit fall in the rate of security of lives and properties exert a significant negative influence on economic growth in Nigeria. The estimated effect of foreign direct investment though positive but not statistically significant at 5% level of significance. This means that there is a lack of investment in Nigeria, which has failed to have a long-term impact on the country's economy. For exchange rate, a positive and statistically significant influence was revealed, meaning that the exchange rate policy in place exerts a significant effect on the performance of the Nigerian economy during the referenced period.

Implications of the Short-Run Dynamics

The results in Table 4(B) equally revealed that institutional effectiveness yet exerts positive, though insignificant influence on economic growth in the short-run. The implication is that the quality of Nigerian institutions is generally low, which has contributed to the economy's slowing growth. Similarly, it was indicated that the country's capacity to nib in the bud the cankerworm of corruption and the recurring cycle of political violence, terrorism, banditry, kidnapping for ransom and mass murders across the length and breadth of the federation are veritable tools that have stagnated growth in the different sectors of the economy. Foreign direct investment as it were, has remained at its lowest ebb, as investors are afraid of putting

their funds in an environment considered highly volatile and insecure. Consequently, there has been high scale divestment to safer African climes leaving the country barren of any meaningful economic growth.

Additionally, the negative but statistically significant influence of the coefficient of exchange rate on economic growth amplifies the fact that the exchange rate policy in place in Nigeria over the study period has been very fluid, unreliable, mostly borne out of improper policy decisions by the economic managers, hence the continuous slide and depreciation of the naira against major global currencies. This of course, is a harbinger for low economic growth. Similarly, the error correction model was estimated to examine the extent to which the variables would revert to long run equilibrium in the event of any shock in the system, and the result is as presented in Table 4(B).

Similarly, when the corruption, institutional effectiveness and economic growth equations are disturbed, the slope coefficient of the error correction term (-0.056909) indicates the extent to which the equations readjust towards long-run equilibrium. Given the requisite system innovation, the error correction term revealed a 17years and five months period of adjustable 5.69 percent convergence to long-run equilibrium. However, the achievement of these goals is conditional upon the effectiveness and efficiency of government policies in identifying appropriate solution to the myriad of economic challenges plaguing its economy. The adjusted R-squared is 88 percent and the F-statistics are significant at the 1 percent level, indicating that the model is well fitted and explained. That is, the model as captured or explained does indeed have a significant justification and hence valid for policy formulation.

Robustness Test

To confirm the robustness of the model estimates, the study examined the residuals tests for the ARDL model. The results are presented in Table 5. These tests were for serial LM correlation, heteroscedasticity, test for model misspecification and test for normality of series in the model.

Table 5: Extracts from Residual Diagnostic Tests

Description	F-Statistics	P-Value
Breusch-Godfrey Serial Correlation LM Test	1.461803	29%
Heteroskedasticity Test: B-Pagan-Godfrey	0.611967	79%
Ramsey test (Model Mis-specification)	1.431480	26%
Normality (Jarque Berra) Test	1.356903	50%

Source: Extracts from E-views 10

Table 5 above substantiate the fact that the results shown above are robust and valid. The model's residuals are homoskedastic and clearly lack a strong presence of serial correlation. As a result, heteroscedasticity is ruled out in the residuals, and they are concluded to be homescedastic. Additionally, the models were determined to be free of substantial concerns of multicollinearity based on the insignificant values of the RAMSEY RESET probability

values, indicating that they were appropriately defined, and thus one can conclude that the parameter estimations are legitimate and thus reliable.

Conclusion and Recommendations

The study utilized the Autoregressive Distributed Lags (ARDL) approach and other econometric techniques for its analysis and found the presence of a unique long run relationship between the independent variables and the regressor. It also found that the relative weak institutions in Nigeria have a debilitating impact on the growth of the Nigerian economy. Consequent upon the foregoing, the following recommendations are suggested for policy implementation:

(i) To achieve a high level of growth, the Nigerian government should improve the quality of the country's institutions in terms of training, intelligence gathering and effective prosecution amongst other workable strategies aimed at strengthening them for optimum performance.

(ii) A vigorous anti-corruption campaign and total overhauling of the various regulatory agencies such as the Economic and Financial Crimes Commission (EFCC), Code of Conduct Bureau and Independent Corrupt Practices and other Related Offences Commission (ICPC) towards improved service delivery is required for enhanced economic growth.

(iii) The study also suggests that policymakers prioritize enhancing national security and workable exchange rate policy regimes via appropriate support to local production and export in order to ensure Nigeria's stable and accelerated growth.

(iv) The government should go beyond liberal policies and develop good governance capabilities that can bolster investors' confidence towards accelerated productivity in all sectors of the Nigerian economy.

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Awareness of Covid-19 and Covid-19 Vaccination Among Students of Federal University Wukari, Nigeria

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Abstract

This study investigated the awareness of COVID-19 and COVID-19 vaccination among students of Federal University Wukari, Nigeria. COVID-19 is a pandemic that is currently affected most countries in the world. The information used in this study were as collected using the questionnaire specially designed for this research purpose. The responses received showed that exactly 96.7% of the respondents have heard about COVID-19 and COVID-19 vaccination, but only 13.3% has been vaccinated. About 53.3% of the respondent confirmed that people in their communities do not accept/believe in COVID-19 and COVID-19 vaccination. Only 35.0% of the respondents believe COVID-19 vaccination will prevent/protect them from having COVID-19, while only 21.7% confirmed that they will recommend COVID-19 vaccination to their friends and family members. More respondents practice the use of face/nose mask as a protective measure for COVID-19 more than other protective practices. Both government and health workers were rated low on their efforts in managing COVID-19. Fear and lack of trust on the government was rated as the highest (23.3%) major challenge/problem in COVID-19 vaccination. There is an average level of awareness of COVID-19 and COVID-19 vaccination among the respondents and in their communities. The responses confirmed that the level of awareness of most of the students on COVID-19 and COVID-19 vaccination are above average, while the students believed that the level of awareness of COVID-19 and COVID-19 vaccination in their communities are below average. There are more students that have not received the COVID-19 vaccine than those who have received the vaccine.

Keywords: *Awareness, COVID-19, Public health, Students, Vaccination*

Background to the Study

Coronavirus disease 2019 (COVID-19) is a contagious disease caused by a virus, the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The first known case was identified in Wuhan, China, in December 2019 (Page *et al.*, 2021). The disease has since spread worldwide, leading to the ongoing COVID-19 pandemic. Symptoms of COVID-19 are variable, but often include fever, cough, headache (Islam, 2020), fatigue, breathing difficulties, loss of smell, and loss of taste (Saniasiaya and Islam, 2021). Symptoms may begin one to fourteen days after exposure to the virus. At least a third of people who are infected do not develop noticeable symptoms (Oran and Topol, 2021). Of those people who develop symptoms noticeable enough to be classed as patients, most (81%) develop mild to moderate symptoms (up to mild pneumonia), while 14% develop severe symptoms (dyspnea, hypoxia, or more than 50% lung involvement on imaging), and 5% suffer critical symptoms (respiratory failure, shock, or multiorgan dysfunction). Older people are at a higher risk of developing severe symptoms. Some people continue to experience a range of effects (long COVID) for months after recovery, and damage to organs has been observed. Multi-year studies are underway to further investigate the long-term effects of the disease.

COVID-19 transmits when people breathe in air contaminated by droplets and small airborne particles containing the virus. The risk of breathing these in is highest when people are in close proximity, but they can be inhaled over longer distances, particularly indoors. Transmission can also occur if splashed or sprayed with contaminated fluids in the eyes, nose or mouth, and, rarely, via contaminated surfaces. People remain contagious for up to 20 days and can spread the virus even if they do not develop symptoms (CDC, 2020). Several COVID-19 testing methods have been developed to diagnose the disease. The standard diagnostic method is by detection of the virus's nucleic acid by real-time reverse transcription polymerase chain reaction (rRT-PCR), transcription-mediated amplification (TMA), or by reverse transcription loop-mediated isothermal amplification (RT-LAMP) from a nasopharyngeal swab.

Several COVID-19 vaccines have been approved and distributed in various countries, which have initiated mass vaccination campaigns. Other preventive measures include physical or social distancing, quarantining, ventilation of indoor spaces, covering coughs and sneezes, hand washing, and keeping unwashed hands away from the face. The use of face masks or coverings has been recommended in public settings to minimize the risk of transmission. While work is underway to develop drugs that inhibit the virus, the primary treatment is symptomatic. Management involves the treatment of symptoms, supportive care, isolation, and experimental measures. During the initial outbreak in Wuhan, the virus and disease were commonly referred to as "coronavirus" and "Wuhan coronavirus", with the disease sometimes called "Wuhan pneumonia" (Chan *et al.*, 2020). In the past, many diseases have been named after geographical locations, such as the Spanish flu (Shablovsky, 2017), Middle East respiratory syndrome, and Zika virus. In January 2020, the World Health Organization (WHO) recommended 2019-nCoV and 2019-nCoV acute respiratory disease as interim names for the virus and disease per 2015 guidance and international guidelines against using geographical locations or groups of people in disease and virus names to prevent social stigma. The official names COVID-19 and SARS-CoV-2 were issued by the WHO on 11

February 2020. The Director-General, Tedros Adhanom explained that CO stands for corona, VI for virus, D for disease, and 19 for 2019, the year in which the outbreak was first identified. The WHO additionally uses "the COVID-19 virus" and "the virus responsible for COVID-19" in public communications (Gover *et al.*, 2020).

Materials and Methods

Study Duration and Location

This research study was conducted for a period of three months from March, 2022 to June, 2022 at Federal University Wukari, Taraba State, Nigeria.

Study Population

This study was carried out with a random sample of one hundred and twenty (120) students (male and female) respondents.

The Inclusion Criteria

The following criteria were included in the study:

i. Adult male and female students of Federal University Wukari, Nigeria.
ii. Age ≥16 years.
iii. Agree to fill the questionnaire.

The Exclusion Criteria

The following criteria were excluded from the study:

a. Male and female students of Federal University Wukari below the age of 16 years.
b. People who refused to give consent.

Data Collection and Data Collection Instrument

All the information used were as collected using the questionnaire specially designed for this project research purpose. The questionnaire was tested for its readability and understanding to the public before distribution. All participants were asked to answer all questions.

Results

The results are presented below:

Table 1: Number and percentage of responses received from one hundred and twenty (120) respondents on selected questions on COVID-19

Question/information	**Number of responses as Yes**	**Percentage (%) of responses as Yes**	**Number of responses as No**	**Percentage of responses as No**
Have you heard of COVID-19 and COVID-19 vaccination? Yes / No.	116.0	96.7	4.0	3.3
Have you been vaccinated against COVID-19? Yes / No.	16.0	13.3	104.0	86.7
Do you know the name of any COVID-19 vaccine? Yes / No.	22.0	18.3	96.0	80.0
Do people in your community accept/believe in COVID-19 vaccination? Yes / No.	56.0	46.7	64.0	53.3
Do you know any drug used in managing COVID-19? Yes / No.	22.0	18.3	96.0	80.0
Do you believe COVID-19 vaccination will prevent/protect you from having COVID-19? Yes / No.	42.0	35.0	74.0	61.7
Will you recommend COVID-19 vaccination to your family members and friends? Yes / No.	26.0	21.7	78.0	65.0
Do you think many people are aware of COVID-19 and COVID-19 vaccination? Yes / No.	102.0	85.0	16.0	13.3

Exactly 96.7% of the respondents have heard about COVID-19 and COVID-19 vaccination, but only 13.3% has been vaccinated. About 53.3% of the respondent confirmed that people in their communities do not accept/believe in COVID-19 and COVID-19 vaccination. Only 35.0% of the respondents believe COVID-19 vaccination will prevent/protect them from having COVID-19, while only 21.7% confirmed that they will recommend COVID-19 vaccination to their friends and family members.

Table 2: Percentage of some categorized responses received from one hundred and twenty (120) respondents on selected questions on COVID-19

Question/information	**Percentage (%) of responses**				
Which personal protective practice do you adopt mostly against COVID-19?	Use of face/nose mask: 46.7	Washing of hands: 25.0	Use of hand sanitizer: 13.3	Social distance/ isolation: 13.3	---
How will you rate the effort of the health workers in your community in managing COVID-19?	0-20%= 23.3	21-40%= 33.3	41-60%= 16.7	61-80%= 18.3	81-100%= 1.7
How will you rate the effort of the government in managing COVID-19?	0-20%= 23.3	21-40%= 18.3	41-60%= 18.3	61-80%= 28.3	81-100%= 6.7
What do you consider to be the major challenge/problem in COVID-19 vaccination?	Lack of awareness= 15.0	Poor access to vaccination centre= 11.7	People are scared and do not trust the government= 23.3	----	---
What is your level/rate of awareness of COVID-19 and COVID-19 vaccination?	0-20%= 10.0	21-40%= 26.7	41-60%= 11.7	61-80%= 33.3	81-100%= 15.0
What do you think is the level/rate of awareness of COVID-19 and COVID-19 vaccination in your community?	0-20%= 16.7	21-40%= 25.0	41-60%= 25.0	61-80%= 20.0	81-100%= 8.3

More respondents practice the use of face/nose mask as a protective measure for COVID-19 more than other protective practices. Both government and health workers were rated low on their efforts in managing COVID-19. Fear and lack of trust on the government was rated as the highest (23.3%) major challenge/problem in COVID-19 vaccination. There is an average level of awareness of COVID-19 and COVID-19 vaccination among the respondents and in their communities.

Discussion

Following the distribution of questionnaire to some students of Federal University Wukari, responses were collected from one hundred and twenty respondents and information received were computed. Approximately 97% of the respondents declared to have heard of COVID-19 and COVID-19 vaccination, but only 13.3% stated that they have been vaccinated against COVID-19 (table 1). This implies that 86.7% of the students who responded are yet to be vaccinated. This shows that the population of students in their youth age that are yet to receive the vaccine is high. This means there are more students that have not received the vaccine than those who have received the vaccine. This may be one of the reasons why only 18.3% of the respondents attested to know the name of any COVID-19 vaccine or any drug used in managing COVID-19. It is required that proper sensitization programme should be carried out on issues relating to COVID-19 and COVID-19 vaccination. This will enable the students who are yet to be vaccinated to be properly educated on the need for the vaccination.

From the responses received, people in the communities where most of the respondents came from do not accept/believe in COVID-19 vaccination. Exactly 53.3% of the students confirmed this. This reveals that there may be more people who are yet to be vaccinated in

some communities than those already vaccinated. If people are not vaccinated, it may predispose them to COVID-19 which may cause death. It was reported that among patients admitted to hospitals due to COVID-19, the mortality rate ranged between 11% and 15% (Huang *et al.*, 2020). Although a good number (85%) of the students reported that many people are aware of COVID-19 and COVID-19 vaccination, the low number of those already vaccinated showed there may be several reasons why many seam not to be willing in being vaccinated. If people are vaccinated, it will save the high cost involved in treating the disease. Antiviral drugs such as oseltamivir combined with empirical antibiotic treatment have also has been reported to be used in treating COVID-19 patients (Huang *et al.*, 2020).

It is possible that some students do not believe in the potency or genuineness of the vaccines or of those involved in the processes of the vaccination exercise. This is because only 35% of the students declared that they believe COVID-19 vaccination will prevent/protect them from having COVID-19, while 74% of the students do not believe so. Also, only 21.7% of the students agreed that they will recommend COVID-19 vaccination to their friends and family members. Exactly 78% of the students did not agree to recommend COVID-19 vaccination to their friends and family members. This calls for a serious concern. When asked what they considered to be the major challenge or problem in COVID-19 vaccination, some of the students (23.3%) highlighted that people are scared and do not trust the government, some (15%) stated lack of awareness, while others (11.7%) stated poor access to vaccination centres. It is obvious that these challenges contributed to the poor positive response to COVID-19 vaccination. If these challenges are addressed properly, it is possible that more students will develop interest in COVID-19 vaccination.

Despite the various believes of the students, most of them practice different personal protective practice against COVID-19. These includes use of face/nose mask, washing of hands, use of hand sanitizer and social distancing/isolation. In 2019, the CDC published safety guidelines that may help in the prevention of infection in the public (CDCP, 2019). A greater percentage (46.7%) of the students practice the use of face/nose mask. There is the need to practice protective measure since a research study reported that similar to MERS-CoV and SARS-CoV, there is still no specific antiviral treatment for COVID-19 (Tang *et al.*, 2020). Also, another research study stated that isolation and supportive care including oxygen therapy, fluid management, and antibiotics treatment for secondary bacterial infections is recommended (Habibzadeh and Stoneman, 2020).

Most of the students rated the effort of healthcare workers in their communities in managing COVID-19 to be below average, while the effort of the government was rated to be approximately average. This showed that the students expected more effort from their various health workers and government in dealing with issues relating to COVID-19 and COVID-19 vaccination. More effort is therefore required from those concern to regain the confidence in the students. This view is in line with a research report which stated that is has been suggested that government efforts towards overcoming the pandemic and reducing COVID-19-associated mortality rates should be efficiently strategized to protect the elderly (Daoust, 2020).

The responses from the students confirmed that the level of awareness of most of the students on COVID-19 and COVID-19 vaccination are above average, while the students believed that the level of awareness of COVID-19 and COVID-19 vaccination in their communities are below average. There is therefore the need for more awareness campaign in various communities to educate people about COVID-19 and COVID-19 vaccination. This will help in curtailing the effects of the pandemic among students, especially, students of Federal University Wukari, Nigeria.

Conclusion

The responses confirmed that the level of awareness of most of the students on COVID-19 and COVID-19 vaccination are above average, while the students believed that the level of awareness of COVID-19 and COVID-19 vaccination in their communities are below average. There are more students that have not received the COVID-19 vaccine than those who have received the vaccine. The major challenge or problem in COVID-19 vaccination among the students include: people are scared and do not trust the government, lack of awareness, and poor access to vaccination centres. Proper sensitization programme should be carried out on issues relating to COVID-19 and COVID-19 vaccination. This will enable the students who are yet to be vaccinated to be properly educated on the need for the vaccination.

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Food Security and Households' Welfare in Nigeria: *Testing Sen's Poverty and Famine Theory*

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Abstract

Food is a universal human right, with no known substitute, thus Woolf (2016) stated that, "one cannot think clearly, reason well, love well, or sleep well until one has dined properly." This remark underscores the imperativeness of food to man, hence the main objective of this study was to determine the effect of food security and households' welfare in Nigeria, using Nigerian data. The study based its theoretical stand on the popular Sen's Poverty and Famine theory and utilized econometric techniques wherein it found that with the interaction between corruption and the disaggregated food security components, food insecurity was prevalent. Nevertheless, when the tools for the control of corruption were made effective, food security showed divergent or mixed results. These conclusions clearly aligns with the opinions of Sen (1981), who noted that famines in many countries did not occur solely as a result of a gap in food production or supply but also as a result of some other socio-economic influences, hence this study concludes that Nigerian households were food insecure between 1999 and 2021, especially when judged from the perspective of a corrupt system. These suggests that for Nigeria to overcome the incidence of food insecurity, the focus should be on curtailing corrupt practices by empowering the various anti-graft agencies to live up to their biddings. Similarly, the government's current poor and uninspiring approach toward appropriated funds for agricultural development must change, hence, to hedge against food insecurity; government expenditure on agriculture must be reviewed upward.

Keywords: *Food Security; Welfare; Corruption; Sen's Theory; ARDL*

Background to the Study

Mankind has faced the dilemma of food insecurity from time immemorial, posing a long-term threat to the existence of countless households. The United Nations Food and Agriculture Organization views food security as a condition or a state in which every person (families, communities, state and the nation) have unhindered and unobstructed physical, social and economic access to enough, safe, and nutritionally inclined food which guarantees their dietary requirements for an active, energetic and productive life. This implies that food insecurity refers to the absence or lack of access to enough, safe and nutritionally inclined food which guarantees a household's nutritional needs for an active, healthy and productive life (FAO, 2002; Barrett, 2002). Food security is commonly understood to comprise four important components: food availability, food access, food consumption (usage), and constant and sustained assurance of access to it.

The United Nation's Food and Agricultural Organization (FAO, 2021) estimates revealed that 828 million people globally were still malnourished as of 2021, which is an increase of 46 million since 2020 and 150 million since the outbreak of the dreaded COVID-19 pandemic. Out of this figure, an estimated 98 percent are said to be living in developing or third world countries, with South Asia presently having the highest total figure of the undernourished, estimated at 295 million hungry persons, whereas the country of Africa collectively has the biggest concentration of food insecure persons of any region. Food insecurity affects more than 2 billion people (29.3%) worldwide, with 1.03 billion living in Asia, 675 million spread across the Africa continent, 205 million persons distributed across Latin American countries and the Caribbean, while 88 million of these hungry people are in Northern America and Europe, with 5.9 million in the Oceania. Put succinctly, the vast majority of the world's hungry people are largely residents of poor countries, which as it were, accounts for 12.9 percent of the global population of the malnourished, daily in search and yearning for the true definition of food to be actualized in their lifetimes. Global food insecurity is further exacerbated by the ongoing conflicts between Russia and Ukraine, the two of the biggest global producers of staple cereals, oilseeds and fertilizer is disrupting international supply chains and pushing up the prices of grain, fertilizer, energy as well as ready-to-use therapeutic food for children with severe malnutrition. Furthermore, extreme weathers, especially in low-income countries are already adversely affecting supply chains with implications for global food security and nutrition (FAO, IFAD, UNICEF, WFP & WHO, 2021).

For Nigeria, food insecurity, as manifested by higher food spikes, has remained the norm, despite policies articulated by government and global food agencies such as the International Food Policy Research Institute (IFPRI), the International Institute for Tropical Agriculture (IITA), the International Fund for Agriculture Development (IFAD) and the International Institute for Sustainable Development (IISD). These food policies and agricultural initiatives / interventions have been ineffective, given that food productivity in Nigeria has remained low, leading to negative effects on access, usage, and stability of access, hence a drop in households' welfare has remained the norm (Babatunde, Omotesho & Sholotan, 2007). For example, the share of the population suffering from moderate to severe food insecurity in Nigeria increased to 58.5 percent between 2019 and 2021. Similarly, the (United Nations Report, 2021) asserted

that, a record 193 million people faced food insecurity in 2021, making the prevalence of undernourishment and food insecurity higher compared to the preceding periods of 2004 and 2006. Severe food insecurity among the Nigeria population has been increasing just as the demand for food is rising together with a very fast-growing population (Statista, 2022) and (FAO, 2021).

In this entire gloomy picture, corruption has kept an upward trajectory in the Nigerian State as it is argued that corruption could exert a major influence on a nation's food security aspirations; especially where the efforts of government in initiating policies that are critical to any sustained food security programme come in conflict with the incidence of corruption. Corruption accentuates disparities between the affluent and the poor. It exacerbates inequality and distorts government initiatives intended to aid the poor and vulnerable in society. It may divert national and international efforts to address famine and hunger. Luna (2002) defines corruption as "efforts to secure riches or power by illegitimate methods for private gain at the expense of the public" or "a misappropriation of public power for private benefit."

For Mauro (1995), Tanzi (1998), Mo (2001), Semenescu (2008) and Dridi (2013), corruption is commonly believed to thrive in countries with weak government institutions. It deepens the existing enormous divide that further alienates the rich from the poor in many societies, especially Sub-Saharan Africa and Latin America, thus impeding government efforts at social and economic development and jeopardizing international and regional development agencies' efforts to systematically and coherently combat the rising incidence of hunger, famine and deprivation. It also has a distorting effect on market activities as it deprives many households of benefits that should flow to them, such as hunger-free living in a prosperous era. There is therefore a widespread debate that the nexus between food security and households' welfare in Nigeria is accentuated within an environment rife with corruption– this is affirmed in studies by scholars such as Doki. Andohol and Ojiya (2020).

Several studies have been carried out to investigate the relationship between food security, corruption and households' welfare, with some believing that corruption has both positive and negative impact on food security. For instance, Mauro (1995), Tanzi (1998), Mo (2001), Semenescu (2008), and Dridi (2013) asserted that corruption hurts investment, particularly in the agricultural sector, by interfering with the proper allocation of resources, resulting in a loss in output. However, Leff (1964) stated that corruption might amplify the negative impacts of strict and inefficient management, hence promoting growth. This is referred to as "speed money" or "greasing the wheel effect." However, scholars, such as Doki et al (2020) have also alluded to the positives associated with corruption phenomenon, which serve as a grease that oils the bureaucracy to assist speedy up all economic transactions.

Therefore, it will be hasty to conclude that, no project, whether connected to food security or poverty reduction, will work in the absence of high moral standards in public behavior due majorly to government inability to deal adequately with normal social relations, perhaps due to institutional failure. Corruptions, as highlighted by (Nugroho; Cubillos-Tovar; Bopushev; Bozsik; Feher and Lakner (2022) accentuates developing countries malnutrition epidemic,

with the probable leading effects of such distortions expressed in reduced food production, access, usage and instabilities in access; which culminates in the adoption of several food coping strategies, climaxing in food rationing, hunger and malnutrition and hence calorie deficiency among many households. However, the magnitude differs among developing countries, most notably Nigeria, which justifies this study, as stemming this cankerworm will boost food production, which will improve citizen welfare, hence in the light of the foregoing, the most pressing economic policy option is to evolve ways to lessen the negative consequences of food insecurity on households' welfare, hence to this connection, the problematic of this research is to evaluate the extent of food security with the interactive component of corruption, and the concomitant effect this interaction has on the welfare of Nigerian citizenry. There is dearth in literature on this problematic, given that, to the best of the researcher's knowledge no such work exists in this regard for Nigeria and as such this research is undertaken to fill this knowledge gap.

Deriving from the foregoing, this study's main objective is to assess food security and households' welfare in Nigeria, while addressing the following specific objectives: (i) to examine the extent to which food security, within a corruption-rife environment had significantly affected households' welfare in Nigeria; (ii) to access the extent to which food security, operational in a corruption-free society had significantly imparted households' welfare in Nigeria.

Conceptual Clarification

Food Security

There are two ways to look at food and nutrition security: self-sufficiency and the ability to manage risk and vulnerability in food and nutrition supply. According to (IFPRI, 2004), for a long time in the 1970s and 1980s, the term "food security" referred solely to a country's ability to produce enough food to feed its population. As nutrition security was added to food security in the 1990s and risk management and risk coping became more important in the 2000s, the concepts of food and nutrition security were blended with these other concepts. Thus, according to the World Food Summit Report (1996), food security is achieved when all people have continuous economic, social and physical access to appropriate, safe, and healthy food combinations that meet their nutritional requirements for an active and healthy lifestyle, while also maintaining their cultural traditions. Moreover, in 2001's The State of Food Insecurity, this concept was redefined to mean a situation in which all people have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and provides them with food options for leading an active and healthy lifestyle (FAO, 2002). Four fundamental pillars underpin food security: food availability, food access, food consumption, and food stability, which imply removing the potential that any shock may cause any of the first three dimensions or pillars to be disrupted in any way. While food availability is required, it is not a sufficient condition for food accessibility, just as food accessibility alone cannot suffice without consumption (Sen, 1981).

Food security is mostly determined by two variables. These include guaranteeing enough food supply and, secondly, ensuring that households suffering from undernutrition or malnutrition

have the opportunity to access food, either via self-production or by the ability to purchase it. As a result of the disagreements and divergent views expressed by various scholars regarding the definition of food security, this study adopts, as its working definition and hence views food security as a fundamental human right, and the ability or capability of all people, to have unfettered access to a sufficient, safe, and nutritious food combination that satisfies, guarantees, and meets their food preferences and dietary needs for an active and productive life at all times, regardless of their financial means, as they could fall back on food aid.

Households' Welfare

The term "household" refers to the fundamental residential unit in which economic output, consumption, inheritance, child-raising, and housing are structured and conducted. It is not always synonymous with household. In many social, microeconomic and government models, the home serves as the fundamental unit of study. The notion encompasses all those who share a residence. Household welfare and standard of living can be measured in terms of wealth, income, the quality and availability of employment, comfort, material goods and necessities available to households, the number of vacation days available per year, class disparity, poverty rate, life expectancy, disease prevalence, the cost of goods and services, the quality and affordability of food and housing, as well as the hours required to purchase a home (United Nations Development Index, 2013); (Morattti and Natali, 2012).

From the 14th century, welfare was frequently used to refer to a condition of happiness, prosperity, or merriment. In economics, it relates especially to the utility received through the acquisition of tangible things and services. While Pigou (1920) and Morattti et al, (2012), defined welfare as an individual's consumption resulting from income (money), they argued that household welfare is generally defined as the amount of money required or expended to sustain a consistent level of utility. As a result, this study defines household welfare as the aggregate happiness or value that individuals, households, or communities obtain from the consumption of certain bundles of products (food) or services, given their available financial resources. It is a state of well-being, pleasure, and comfort, or the degree of prosperity and standard of living achievable by an individual or a group of individuals as a result of the satisfaction gained from their income and consumption of certain bundles of commodities (food inclusive). An excellent example of welfare is having access to the food combinations necessary to maintain a healthy lifestyle for a person or household, given the purchasing power available at the time.

Theoretical Review

Sen's Theory of Poverty and Famine: An Essay on Entitlement and Deprivation

Sen's Poverty and Famine theory as propounded by Sen (1981) tied its arguments to the fact that hunger and famine for a very long time have been largely rooted in postulations made by Thomas Malthus' food availability approach. Malthus' population-food theory remained until the early 1980s, when attention was shifted from national food availability to people's access to food, as argued by Sen (1981) in a dissertation on "entitlement and deprivation. The emphasis on food security in Sen's Entitlement Discourse was an insistence on each individual's entitlements to commodity bundles, including food, by viewing famine as a result of

households' failure to be entitled to the bundle(s) that assures them sufficient food to improve their welfare, but not whether food was available.

It is worth noting that Sen's interest in starvation stems from his personal experience during the 1943 Bengal famine, which led to the death of around 3,000,000 lives. Sen believed that this alarming loss of life was unnecessary because it was understood that the lack of adequate food supply in India at the time was not necessarily the cause, but that its distribution and accessibility were harmed and impeded as a result of certain groups of people, such as rural labourers losing their livelihoods and jobs, and thus their inability to purchase the food they so desperately needed for sustenance. This much was confirmed in Sen's Poverty and Famines: An Essay on Entitlement and Deprivation (1981), which revealed that in many instances of famine, except in cases of war and conflict affecting farming communities, food supplies were not necessarily reduced, but rather a combination of socio-economic factors, such as declining wages, corruption, poverty, changing climatic conditions, higher food prices, unemployment, poverty, a lack of government commitment to agricultural growth. The author's propositions influenced the thinking of many nations and other international organizations in handling food crises, given that many of these countries who were influenced by Sen's thinking and views encouraged policy makers to devote attention and emphasis not just to alleviating or reducing immediate sufferings among households but also to work towards finding workable ways to replace the lost income of the poor which triggers hunger.

Sen's Poverty and Famine Hypothesis - An Essay on Entitlement and Deprivation, which examined the socio-economic factors that influences food insecurity among nations *is considered as the theory that best provides answers to the discourse on food security and households' welfare in developing countries, particularly Nigeria. This is due to the robustness and logicality of its assumption; hence it is adopted for this study.*

Review of Related Literature

Nugroho, Tovar, Bopushev, Bozsik, Feher and Lakner (2022), drew a link between the impact of corruption control on the number of undernourished people in developing countries, wherein they employed secondary data from 57 developing countries of Africa, Asia and Latin America and the Carribean between 2002 and 2018. Using a one-step and two-step generalized method of moments (sys-GMM) models, the study revealed that corruption precipitated food insecurity, and thus suggested that when there is effective and efficient control of corruption within the study areas, food insecurity would be reduced leading to reduction in the number of malnourished households. Similarly, Chiwona-Karltun, Amuakwa-Mensah, Wamala-Larsson, Amuakwa-Mensah, Hatab, Made, Taremwa, Melyoki, Rutashobya, Madonsela, Lourens, Stone, and Bizoza (2021) conducted a pandemic survey, relying on quantitative data obtained by GeoPoll, to assess the influence of local spread and found that lockdowns have exacerbated anxiety over food security as a health, economic, and human rights/well-being issue. Using a probit model, the study discovered that concern about the local spread of COVID-19 and the virus' economic impact increased the likelihood of food concerns. The study argued for the use of government policies and other metrics to forecast the likely consequences of anticipated regulatory relief responses during the post-COVID-19 recovery process.

In a similar vein, Rabbi, Olah, Popp, Mate and Kovacs (2021) in their study on food security and the COVID-19 crisis from a consumer buying behaviour perspective utilized a point-analysis technique and concluded that the pandemic negatively impacted household's income as well as triggered higher food prices, thus accentuating unavoidable food insecurity in Bangladesh. The study thus recommended for the strengthening of the food system to stabilize food security.

Fraval, Yameogo, Ayantunde, Hammond, de Boer, Oosting and van Wijk. (2020), equally employed a descriptive statistics approach to examine food security in rural Burkina-Faso: the importance of consumption of own-farm sourced food versus purchased food and found that households were most differentiated by the income-earning capacities, and this dictated their food consumption patterns. It suggested for policies aimed at strengthening off-farm income and enhancing the economy for employment opportunities for households for enhanced food security.

Additionally, Osuji, Ehirim, Balogun, and Onyebinama (2017), examined food security among 144 farmers in Imo State, Nigeria, using descriptive statistics and a multi-stage random sampling technique. The study concluded that the study area is food insecure because the proportion of food insecure households exceeded the proportion of food secure households, and thus it was recommended that the government, in collaboration with other agricultural stakeholders, should strengthen existing policies on food crop production.

Furthermore, Ogunniyi, Omotoso, Salman, Omotayo, Olagunju and Aremu, (2021) examined the factors affecting household maize production in Nigeria using a cross-sectional survey and found that the value of output sold, education, credit access, and participation in government safety nets programs all had a significant effect on food security among maize farmers in the study area. Consequently, it was advised that efforts be stepped up to increase land productivity through improved production practices. Also using time series analysis on panel data collected from 75 countries between 2012 and 2016, Onder (2021) assessed the influence of corruption on food security in industrialized and developing nations, as well as in the United States. According to the findings of the inquiry, corruption exacerbates food insecurity. Accordingly, the study recommended that policymakers in the various countries take steps to reduce bureaucracy, further strengthen institutions for the purpose of promoting good governance in the society. In the same vein, Doki, Andohol and Ojiya (2020), employed time series econometrics to examine food production and national insecurity-corruption nexus in Nigeria between – a disaggregated analysis utilizing an autoregressive distributed lag model. The study's estimations revealed that despite the upward trajectory of corruption in Nigeria, its direct effects on food production have remained marginal to cause a major downturn in food production. It was recommended that, if indeed lip service is not to be paid to the fight against national insecurity, then the degree of corruptive activities in Nigeria must be decimated to the barest margins to instill confidence into farmers and other stakeholders in the food sector for improved food production.

Additionally, Anugwa and Agwu (2019), conducted a study to identify the perceived reasons of household food insecurity in six rural districts of Kano state, selecting 120 respondents through a multistage sample technique. Their study analyzed data using descriptive statistics such as frequency, percentage, and averages scores and discovered that, despite the fact that a greater number of households were engaged in food, cash crop production, and livestock rearing, they remained food insecure. The study showed that despite farmers' agricultural production activities, farmers remained more food insecure; consequently, policymakers in the state faced an urgent need to enact pro-poor agricultural policies that would lower farmers' vulnerability to food insecurity. Similarly, in a qualitative survey using descriptive statistics, Godson-Ibeji, Ogueri and Chikaire (2016) took a cursory look at some aspects of corrupt practices in agricultural sector and their attendant effects on food production. It was revealed in their studies that corrupt practices exerts significant negative impact on overall agricultural production, thus it concluded among others that to fight and eliminate corruption in the agric sector and achieve the objectives and goals for the implementations of the Nigerian Agricultural Transformation Agenda (ATA) as well as make agriculture demand-driven in Nigeria, all those who perpetuate the nefarious acts of corruption in the sector should be brought to book, reprimanded in accordance to the extant laws of the land and if need be be made to face the penalties, so as to serve as deterrent to would-be treasury thieves.

Finally, The International Institute for Sustainable Development (IISD) conducted a literature review and semi-structured interviews to examine Morocco's food security strategy and trade policy in order to ascertain the socioeconomic consequences of lowering import taxes on Canadian diets in 2013. The study concluded that meeting domestic demand for staple foods in the short to medium term would entail lowering import tariffs and other import restrictions. It also emphasized the importance of meeting domestic demand for basic necessities through the reduction of import restrictions and the continued narrowing of the gap between most-favoured-nation and preferential tariffs, while also taking into account the need to avoid unintended negative consequences of trade policy changes. The study's geographical scope is Morocco, which distinguishes it from the current work. Due to the fact that this was an institutional study, no time limit applies.

From the foregoing review, some gaps identified, either in terms of methodology, theory or empirical is covered by the ongoing research which is a quarterly data time series examination of the entire food security pairs of food availability, accessibility, utilization and sustainability of access vis-à-vis its effects on the attainment of households' welfare in Nigeria, within an environment-ridden with corruption. This is broadly expected to aid robust policy formulation.

Methodology

The utilization of the Auto-Regressive Distributed Lag (ARDL) technique is adequate for this study given that it is secondary database analysis with a finite sample size. Pesaran, Shin and Smith (2001) alluded to gains of this technique as it utilizes mixed order of integration but not of I(2) and beyond. This technique also enables simultaneous estimation of long run association amongst variables of interest, in the determination of long and short run estimates.

The validity and forecasting strength of the model is also determined via tests of heteroscedasticity, autocorrelation and model misspecification.

Model Estimation

Model Conceptualization

To aptly and clearly capture the effect of food security on households' welfare in Nigeria, two conceptual models are designed in tandem with the two objectives of the study. This is to clearly depict the relationship and interaction between the dependent (households' welfare) and the independent variables. The models are intended to demonstrate how food security within a corrupt system and food security within a corruption-free society affects the welfare of a typical Nigerian household.

MODEL 1(a): Food Security and Households' Welfare in Nigeria within a Corrupt Society

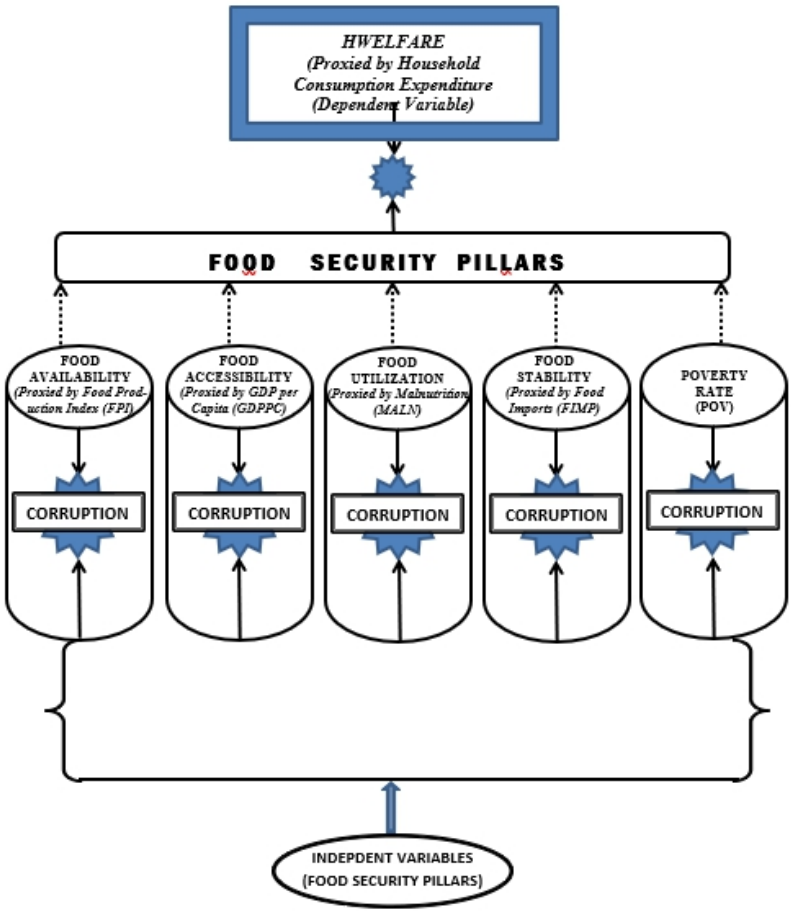


Figure 1(a): Food security and households welfare in Nigeria within a corrupt society
Source: Author's Design

MODEL 1(b): Food Security and Households' Welfare in Nigeria operating in a supposedly corruption-free society

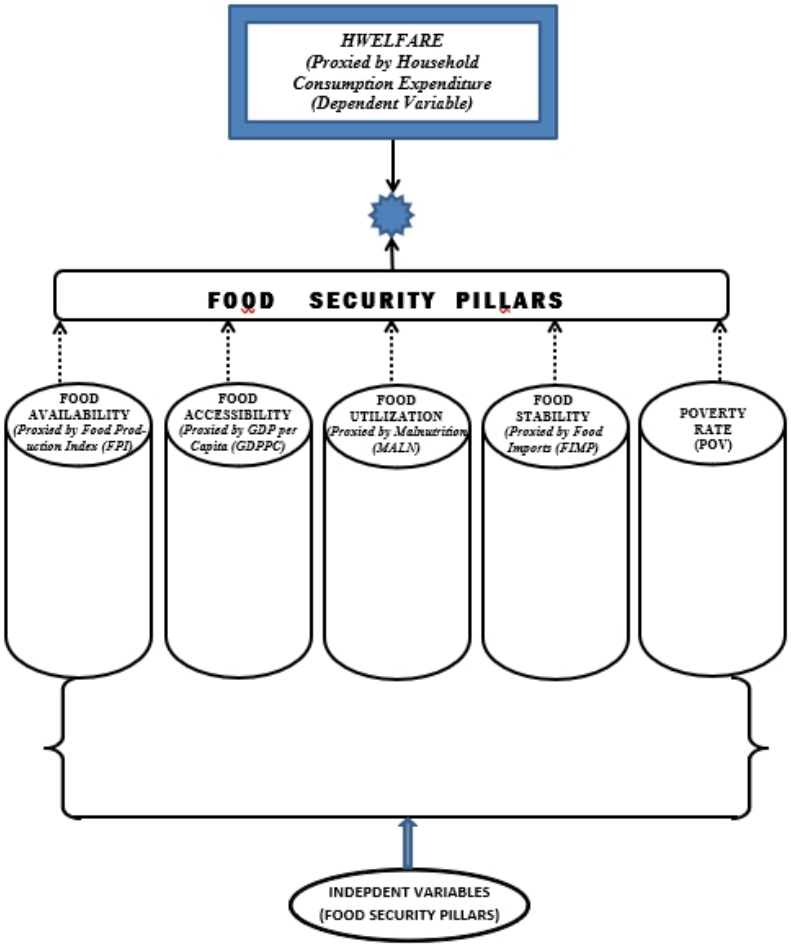


Figure 1(b): Food security and households' welfare in Nigeria operating within a supposedly corruption-free society
Source: Author's Design

The nexus between food security-corruption and household welfare in Nigeria is modelled using households' welfare as the dependent variable, which is proxied by household final consumption expenditure in Nigeria. The use of household consumption spending as a proxy for household welfare is predicated on the theoretical maxim that consumption is income-dependent. Furthermore, only the portion of income spent on consumption ensures welfare. Thus, the amount of income spent on utility maximization by a consumer is what constitutes welfare. It encompasses all purchases made by resident households for daily necessities such as food, clothing, electricity, and transportation. This assumption is supported by the well-known Keynesian consumption function (Keynes, 1939).

On the other hand, the study adopted proxies for each of the food security pillar of availability, accessibility, utilization, and stability of access vis-a-vis their impact on the welfare of

Nigerian households. Given the conceptual model, it is assumed that the parameter estimates for each variable will be skewed in favour of ensuring welfare gains for an average Nigerian household. This, however, is entirely contingent on the ceteris paribus assumption that all conditions surrounding the food security equation would optimally contribute to household welfare enhancement. However, in the real world, conditions have never been any perfect; thus, the researcher anticipates that, given the current circumstances in Nigeria and also taking into account the effect of poverty and corruption, the majority of variables' behaviors might not conform to a priori expectations; thus, welfare losses are not unexpected in the Nigerian food security discourse.

Theoretical Framework / Model Specification

This research model is based on Sen's (1981) theory of Poverty and Famine that gives credence to food crisis and welfare losses by households in developing countries. Two theoretical modelling / model specification were built for this study to provide answers to the research objectives outlined in the first section of this study. The theoretical models are as represented below:

Model 1(a): Food security and households' welfare in Nigeria in a corrupt system:

$$HW = f(FS) \quad \ldots\ldots \quad (Eqn\ \ 3.1)$$

But

$$FS = f(FAV, FAC, FUT, FST) \quad \ldots\ldots \quad (Eqn\ \ 3.2)$$

Substituting eqtn 3.1 into eqn 3.2, we have

$$HW = f(FAV, FAC, FUT, FST) \quad \ldots\ldots \quad (Eqn\ \ 3.3)$$

Therefore, deducing from Sen (1981) theory of Poverty and Famine, which stipulates that the causes of food crisis and famine among households in many developing nations around the world is not strictly a result of food supply–demand gap but as a result of several other socio-economic factors, thus this study adopts the corruption index, which is one of the several socio-economic factors alluded to by Sen (1981). This is given the preponderance of corrupt activities in the Nigeria as justified in studies by Andohol, Doki and Ojiya (2020). The study also includes poverty rate as a control variable, considering that it is also one of the social-economic factors alluded to by Sen (1981).

Therefore,

$$FS = f(Corr) \quad \ldots\ldots \quad (Eqn\ \ 3.4)$$

Adding eqn 3.3 and 3.4, we have

$$HW = f(FAV, FAC, FUT, FST, Corr) \quad \ldots\ldots \quad (Eqn\ \ 3.5)$$

The explicit form of eqn 3.5 becomes

$$HW = \alpha_0 + \beta_1 FAV + \beta_2 FAC + \beta_3 FUT + \beta_4 FST + \beta_4 Corr + \mu_t \quad \ldots\ldots\ldots (Eqn\ 3.6)$$

However, given the positive trajectory of corruption incidence in Nigeria which has remained unabated (Ijewereme, 2013; Obuah, 2010 and Aliyu and Akanni, 2008), and its interconnection with food security (see Andohol, et al (2020), eqn 3.6 is reformulated with 'poverty' also included as follows:

$$HW = \alpha_0 + \beta_1 FAV + \beta_2 FAC + \beta_3 FUT + \beta_4 FST + \beta_4 Corr + \mu_t \quad \ldots\ldots (Eqn\ 3.6)$$

Where:

HW = Household Welfare, proxied by households' final consumption expenditure Sen's (1981) and Keynes (1936) works confirms the adoption of household's expenditure as a proxy for welfare. An individual welfare is a function of how much portion of his money income used to procure the goods and services that guarantees him satisfaction.

FAV = Food availability, with food production index (FPI) used as a proxy.

FAC = Food accessibility, with GDP per capita (GDP-PC) used as a proxy.

FUT = Food utilization, with prevalence of malnutrition (MALN) used as a proxy

FST = Food stability, with food imports (FIMP) used as a proxy

POV = Poverty rate included here as a control variable

Corr = Corruption, with the index for control of corruption (Corr) used as a proxy

μt = Stochastic error term / time trend

While α_0, β_1, β_2, β_3, β_4, are parameters estimates respectively.

Substituting the proxies into eqn 3.6, we have,

$$HW = \alpha_0 + \beta_1 FPI * Corr + \beta_2 FI * Corr + \beta_3 MALN * Corr + \beta_4 FIMP * Corr + \mu_t \quad \ldots\ldots (Eqn\ 3.7)$$

Given that the unit root results have portrayed mix-order of integration, the research utilizes the Autoregressive Distributed Lags (ARDL) model in its analysis of objective one of the study. To this extent, the re-specified version of eqn 3.7 will become

$$\Delta HW = \alpha_o + \beta_1 FPI_{t-1} * CORR + \beta_2 GDP - PC_{t-1} * CORR + \beta_3 MALN_{t-1} * CORR + \beta_4 FIMP_{t-1} * CORR + \sum_{j=1}^{p} \pi_1 \Delta FPI_{t-j} * CORR + \sum_{j=1}^{p} \emptyset_1 \Delta GDP - PC_{t-1} * CORR + \sum_{j=1}^{p} \partial_1 \Delta MALN_{t-1} * CORR + \sum_{j=1}^{p} \delta_1 \Delta FIMP_{t-1} * CORR \sum_{j=1}^{p} \delta_1 \Delta POV_{t-1} * CORR + \mu_t$$

A general error-correction representation of the equations above is formulated as follows:

$$\Delta HW = \alpha_0 + \sum_{j=1}^{p} \pi_1 \Delta FPI_{t-j} * CORR + \sum_{j=1}^{p} \pi_1 \Delta GDP - PC_{t-j} * CORR + \sum_{j=1}^{p} \pi_1 \Delta MALN_{t-j} * CORR + \sum_{j=1}^{p} \pi_1 \Delta FIMP_{t-j} * CORR + \sum_{j=1}^{p} \pi_1 \Delta POV_{t-j} * CORR + \delta_i ECM_{t-j} + \mu_t \quad (Eqn\ \ldots\ 3.8)$$

A priori expectation

On *a priori* basis, it is expected that,

$\beta_1 < 0$, $\beta_2 < 0$, $\beta_3 < 0$, $\beta_4 < 0$,

This expectation is predicated on the understanding that the incidence of corrupt tendencies in the Nigerian economy has the potential to negatively impact households' food security, leading to welfare losses.

Model 1(b): Food security and households' welfare in Nigeria in a corrupt-free system:
In this model, the corruption variable is dropped. This is to enable a comparative analysis of the effect of food security on households' welfare in an economy presumably free of corruption. Consequently, the ARDL version for model 1(b) as represented in eqn 3.8 is re-specified as follows:

$$\Delta HW = \alpha_o + \beta_1 FPI_{t-1} + \beta_2 FGDP - PC_{t-1} + \beta_3 MALN_{t-1} + \beta_4 FIMP_{t-1} + \beta_4 POV_{t-1} + \sum_{j=1}^{p} \pi_1 \Delta FPI_{t-j} + \sum_{j=1}^{p} \emptyset_1 \Delta GDP - PC_{t-1} + \sum_{j=1}^{p} \partial_1 \Delta MALN_{t-1} + \sum_{j=1}^{p} \delta_1 \Delta FIMP_{t-1} + \sum_{j=1}^{p} \delta_1 \Delta POV_{t-1} \quad \mu_t$$

A general error-correction representation of the equations above is formulated as follows:

$$\Delta HW = \alpha_0 + \sum_{j=1}^{p} \pi_1 \Delta FPI_{t-j} + \sum_{j=1}^{p} \pi_1 \Delta GDP - PC_{t-j} + \sum_{j=1}^{p} \pi_1 \Delta MALN_{t-j} + \sum_{j=1}^{p} \pi_1 \Delta FIMP_{t-j} + \sum_{j=1}^{p} \pi_1 \Delta POV_{t-j} + \delta_i ECM_{t-j} + \mu_t \qquad (Eqn \ \ldots \ 3.9)$$

A priori expectation
On *a priori* basis, it is expected, all things being equal, that the explanatory variables in model 1(b) would reveal the following:
$\beta_1 > 0, \beta_2 > 0, \beta_3 > 0, \beta_4 > 0,$

Similarly, the above expectation is predicated on the belief that in an environment devoid of corrupt practices, all dimensions of food security viz: food availability, food accessibility, food usage and access stability would exhibit positive trajectory, hence households' welfare would be guaranteed.

Results and Discussion
Descriptive Statistics
Preceding the estimation of models in econometric analysis is the investigation of the variables' descriptive statistics properties. This allows for the understanding of the distribution from which the data used originated. The Jarque-Bera statistic was used to determine the normality of the variables, which was confirmed by their skewness and kurtosis values. Whereas skewness is the measure of the histogram's symmetry, kurtosis on the other hand is a measure of the histogram's tail shape. In other words, Kurtosis quantifies the 'peakness' or flatness of a series' distribution. Where the kurtosis is greater than three, the distribution is peaked or leptokurtic, whereas if it is less than three, the distribution is flat or platykurtic. Skewness should be zero for a symmetrical distribution, such as a normal distribution and kurtosis should be three. The descriptive statistics for the model of food security and household welfare in Nigeria areas tabulated below, using raw data.

Table 1: Model 1 (Food Security and Households' welfare in Nigeria)

	HW	FPI	GDP_PC	MALN	FIMP
Mean	25.82471	4.452865	7.381446	9.265218	2.803618
Maximum	26.69945	4.671868	8.049832	15.23125	3.472857
Minimum	23.99287	4.185427	6.133696	6.584375	2.004415
Skewness	-0.887208	-0.121709	-0.906549	1.401482	-0.258347
Kurtosis	2.476146	1.810369	2.425481	4.104033	2.752733
Jarque-Bera	13.12141	5.652149	13.86668	34.78938	1.257768
Probability	0.001415	0.059245	0.000975	0.000000	0.533186
Observations	**92**	**92**	**92**	**92**	**92**

Source: Extracts from E-views 10

The summary of descriptive statistics for objective 1 is as presented in Table 1. The data revealed that all parameters measured failed the Jarque-Bera (JB) test, with the exception of food production index (FPI), proxy for food availability and food imports (FIMP), proxy for stability of access. This implies that all the other variables deviate from normality. Their low probability values of below 5 percent validate this. On the other hand, the skewness of the variables is dominated by negative signals, indicating that the distribution was skewed to the left and right. This basically means that the data set evaluated was either dominated by negative values.

On the other hand, the kurtosis revealed that only the variable for malnutrition (food utilization) had a kurtosis bigger than three over the reviewed period. This suggests that the variables' distributions are peaked or leptokurtic, whereas variables with values less than three indicate that the variables' distributions are flat or platykurtic. As shown in Table 5.3.1, food security indicators in Nigeria revealed that on average, household total consumption expenditure, which is a proxy for household welfare, for each quarter examined stood at an approximate value of 25.82 billion Naira, while the index for food production, households' income (proxied by GDP per capita), the level of nutrition (food utilization), and households' assurance of continued access (proxied by food imports) stood at 4.45 kilocalories, 7.381 billion USD, 9.26 calorie intake and 2.80 billion USD respectively within the quarters reviewed.

Similarly, households' consumption expenditure (proxy for households welfare), increased by a maximum of 26 billion Naira and decreased by a minimum of 23 billion Naira respectively. On the other hand, aggregate food production peaked at a maximum of 4.7 kilocalories and ended with a minimum of 4.18 kilocalories during the referenced period. Additionally, the aggregate income available to households for the period remained at an approximate amount of 8 billion USD and a minimum of 6 billion USD, while the value of imports to complement local production averaged 3.47 billion USD, tallying at a minimum of 2 billion USD. Finally, the level of food utilization was at a maximum of 15.2 and a minimum of 6.6 kilocalorie per day respectively.

Augmented Dickey-Fuller (ADF) and Philips-Perron Unit Roots Tests

Unit root tests are conventionally used to define the stationary properties of time series data in order to determine the appropriate estimation technique. In practice, selecting the best appropriate unit root test can be challenging. Enders (1995) indicated that a prudent choice would be to employ both types of unit root testing — the Augmented Dickey–Fuller (ADF) (1981) and the Phillips–Perron (PP) (1988) tests. If they are mutually reinforcing, we can have faith in the findings. Thus, the Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) unit root tests are used in this study. For both procedures, the null hypothesis is that a variable is not stationary (i.e., has a unit root problem), whereas the alternative hypothesis is that the variable is stationary (has no unit root problem). The non-stationary null hypothesis is rejected if the ADF/PP test statistic in absolute terms exceeds the critical test value at a 5% level of significance. The following table summarizes the results of the ADF/ PP unit root testing.

Table 2: Augmented Dickey Fuller and Phillips-Perron Unit Root Test for Objective 1:

Variable		Level t-statistic value	1st Difference t-statistic value	5% critical value	Order of Integration
HW	ADF	****	-4.557921	-2.893956	I(1)
	P-P	****	-4.572839	-2.893956	I(1)
FPI	ADF	****	-4.083222	-2.897223	I(1)
	P-P	****	-4.306370	-2.893956	I(1)
GDPPC	ADF	****	-4.358357	-2.893856	I(1)
	P-P	****	-4.303926	-2.893956	I(1)
MALN	ADF	****	-4.644023	-2.893956	I(1)
	P-P	****	-4.617795	-2.893956	I(1)
FIMP	ADF	-3.554862	****	-2.893956	I(0)
	P-P	-4.074697	****	-2.893589	I(0)
POV	ADF	****	-3.535334	-2.897223	I(1)
	P-P	****	-5.953477	-2.893956	I(1)

Source: Extracts from E-views 10

To examine the extent to which food security had affected households' welfare in Nigeria, the stationarity properties of the variables of interest were evaluated using both Augmented Dickey-Fuller (ADF) and Phillips-Perron (P-P). As shown in Table 2, the unit root test confirms that the variables in the model are of zero-order I(0) or I(1) integrated, i.e. first difference stationary. This is in tandem with the rule of thumb, that if the critical value in absolute terms is less than the test statistic, the variable is believed to be stationary (has no unit root problem), hence it is concluded that the variables examined above have met the stationarity condition for empirical analysis.

Lag Selection Criteria

Before delving into the complexities of the cointegration test, it is crucial to choose a suitable lag length. Estimating the lag length is a critical step in many econometric analyses. To

determine the appropriate number of lags to be selected during model estimation, the lag length is selected using explicit statistical information criteria obtained through unrestricted VAR estimate. The study utilizes the Akaike Information Criterion as the appropriate lag selection criteria.

Table 3: Lag Length Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-2823.127	NA	1.21e+23	67.33635	67.48104	67.39452
1	-2172.023	1209.193	4.05e+16	52.42911	53.29726	52.77810
2	-2082.769	155.1307	8.83e+15	50.89927	52.49088	51.53908
3	-2072.806	16.13087	1.28e+16	51.25729	53.57235	52.18793
4	-2065.417	11.08340	2.01e+16	51.67660	54.71512	52.89806
5	-1916.276	205.9572	1.10e+15	48.72085	52.48283	50.23314
6	-1856.365*	75.60167*	5.19e+14*	47.88964*	52.37508*	49.69275*

Source: Author's extract from E-views 10;

LR: Sequential Modified Test Statistic; FPE: Final Prediction Error; AIC:Akaike Information Criterion

SC: Schwarz Information Criterion; HQ:Hannan-Quinn Information Criterion

Note: * indicates lag order selected by the criterion.

For the purpose of this research, the lag selection test indicates the following lag order: Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), and Hannan-Quinn Information Criterion (HQ).. The lag test is used to determine the amount of lags to include in the model estimation process, as well as the duration of the lag that produces the smallest critical value and most efficient parameter coefficients/estimates. The maximum number of lags that could be taken in this study was determined to be six, utilizing Akaike Information Criterion (AIC), and this was selected for the estimation of a parsimonious model.

Cointegration Testing Using ARDL Bounds

A cointegration test is one of the most certain ways to determine whether or not there is a long-run linkage between series in a model. Cointegration of two or more variables is defined as the existence of a long-run or equilibrium relationship between or among variables or series in the model (Gujarati, 2004:822). Given that not all variables are integrated in the same order, but rather a combination of I(0) and I(1), as demonstrated above, the use of the Johansen co-integration test collapsed, and thus the ARDL bounds testing method to cointegration (Pesaran and Shin, 1999; Pesaran, Shin and Smith, 2001) was used to determine if there is cointegration or a long-run relationship between food security - food availability, accessibility, utilization, and access stability vis-à-vis households' welfare in Nigeria during the referenced periods.

Consequently, the ARDL cointegration test is used to determine the longrun relationship between food security and household welfare in Nigeria. Following that, their long- and short-run dynamics are analyzed in order to determine their unique behaviors. As a first step, the

cointegration test devised by Pesaran et al. (2001) is used to establish the existence (or absence) of a long-term link between the variables. The results are as summarized in Table 1:

Table 4: ARDL Bounds Testing for Food Security and Households' Welfare in Nigeria

Test Statistic	**Value**	**K**
F-Statistic	3.806186	5
Critical Value Bounds		
Significance	***I(0) Lower Bounds***	***I(1) Upper Bounds***
1%	3.41	4.68
5%	2.62**	3.79
10%	2.45	3.52

Note: ** signifies rejection of the null hypothesis at 5 per cent level of significance
Source: Author's Extract from E-views 10

The Wald Test F-statistics computed using the ARDL Bounds Testing yielded a value of 3.806186, which is greater than the upper and lower bounds of the 95 percent critical value interval (2.62 – 3.79). This gives room for rejecting the null hypothesis that there is no long-run link between the variables and concluding instead that there is evidence of a unique long-run cointegrating relationship between food security and household welfare in Nigeria from 1999 to 2021.

The Longrun and Shortrun ARDL Estimates

After satisfying the fundamental pre-testing requirements for regression analysis, the study proceeds to estimate the long-run relationship and associated short-run dynamics, using autoregressive distributed lags (ARDL) technique. Thus, in accordance with the study's stated objectives, the ARDL static long-run and dynamic short-run estimations are estimated to provide answers to the previously expressed research concerns.

Regression Results for Model 1(a) and (b)

O**bjective one:** To interrogate the extent to which food security, within a corruption rife environment had significantly affected households' welfare in Nigeria.

Table 5: Model 1(a): Food Security and Households' Welfare in a Corrupt Society

Dependent Variable: Hwfare				
Variable	**Coefficient**	**Std Error**	**t-statistic**	**P-value**
A: Longrun Estimates				
FPI*Corr	-0.180089	0.343842	-0.523755	0.6022
GDPPC*Corr	0.577788	0.195634	2.953415	0.0044
MALN*Corr	-0.012625	0.021592	-0.584715	0.5607
Pov*Corr	0.010957	0.003129	3.501678	0.0000
Constant	-12.864137	3.157032	-4.074756	0.0001
B: Shortrun Estimates	**Coefficient**	**Std Error**	**t-statistic**	**P-value**
D(FPI*Corr)	-3.700919	0.689755	-5.365555	0.0000
D(GDPPC*Corr)	-2.011956	0.452425	-4.447044	0.0000
D(FIMP*Corr)	0.601089	0.093599	6.421978	0.0000
D(Pov*Corr)	0.003967	0.001805	2.197987	0.0315
ECM(-1)	-0.334476	0.073170	-4.571205	0.0000

Source: Author's computation from E-views 10

A cursory look at Table 5 model(1a), Panel 'A' revealed the coefficient values of food production index (FPI*Corr) and malnutrition (MALN*Corr) to have appeared as weak predictors of food security given their statistically insignificant value as indicated by their t-statistics values. However, due to their significance in the model, the strength of the joint significance as indicated by the F-statistics necessitates explaining their economic relationship, given that the variable FPI*Corr and MALN*Cor which represents food availability and food utilization are very germane in the analysis of food security and households' welfare in Nigeria. Consequently, from the short run estimates as reported in Table 5, panel (B), the interactive effect of corruption with food production index (FPI*Corr) indicated aggregate food production during the quarters examined to be negative, whereas the negative coefficient of malnutrition represents the fact that during the quarters reviewed, households' food utilization was imparted, given improvement in the quality or quantity of food consumed. It was also found that both in the short-term and longrun basis, poverty incidence played a debilitating role on the attainment of food security as it weakened the capacity of households' engagement in profitable and sustainable food production.

However, during the period under review, it was equally revealed that the index of food production (proxy for food availability) in the short-term exerted a significant negative effect on households' welfare in Nigeria, as the interactive effect of corruption on food production index signified the fact that for every one unit fall in aggregate food production, the number of food insecure households rose proportionally. Similarly, it was revealed that in the short-term (GDPP*Corr), which is a proxy for food accessibility exposed a statistically significant negative influence on households' food accessibility in Nigeria during the period under review. For instance, it was shown that for every one dollar decrease in household's income, occasioned by the recurring incidence of corruption in the country, there was a corresponding decline in households' ability to access their required food needs for enhanced welfare. It was however, the contrary in the long-term, as evidence revealed in Table 5(A), that for every one

dollar increase in household's income, there was a corresponding decrease in food insecurity, as they were backed with the purchasing power and hence access to their required food needs for enhanced welfare. However, since most food policies are geared towards addressing short-term challenges, the short-term result appeared more tenable, given that, in the longrun we are all dead (Keynes, 1936).

In addition, Tables 5(A and B) recognized rising poverty amidst rampant corruption in both the commercial and governmental sectors as intractable concerns obstructing any genuine government attempt in ensuring food security for its citizens. Similarly, Table 5, Panel (B) hand showed the interactive effect of corruption on the coefficient of food imports (FIMP*Corr) as a significant predictor of food availability, as it exposed a situation for improved aggregate food stock in the country, augmented by food imports. To be concise, it connotes that every dollar increase in the value of food imports adds to the aggregate stock of food available in the country, leading to improvements in the welfare of Nigerian households during the quarters examined.

Table 5: Model 1(b): Food Security and Households' Welfare in Corrupt-free Society

Dependent Variable: Hwfare				
Variable	**Coefficient**	**Std Error**	**t-statistic**	**P-value**
A: Longrun Estimates				
GDPPC	1.217871	0.080937	15.047157	0.0000
MALN	0.032331	0.014845	2.177942	0.0330
Constant	17.330762	1.590213	10.898390	0.0000
B: Short-Run Estimates	**Coefficient**	**Std Error**	**t-statistic**	**P-value**
D(FPI)	1.462519	0.616597	2.371922	0.0208
D(GDPPC)	0.787075	0.166523	4.726518	0.0000
D(MALN)	0.055300	0.015653	3.532759	0.0008
D(FIMP)	-0.078022	0.034309	-2.274082	0.0264
ECM(-1)	-0.165144	0.035938	-4.595274	0.0000

Source: Author's computation from E-views 10

Table 5, Model (1b), which is on the influence of food security on households' welfare in a corrupt-free society, threw-up the following empirical outcomes. It was revealed in Table 5(b), Panel (B), that all the explanatory variables or predictors of food security, in a society presumably free of corruption exerted significant influence on households' welfare in the short-term during the referenced period. However, in the long-term, only GDPPC (for households' income), proxy for food accessibility and food utilization proxied by the prevalence of malnutrition (MALN) exerted significant influences on the welfare of households during the periods examined. Specifically, it was shown in Table 5(b), Panels A and B that, under a corruption-free Nigeria, households' income, that is, per capita income, which is proxy for food accessibility revealed a statistically significant positive relationship with the dependent variable and hence had a considerable impact on food security and households' welfare during the quarters examined. The positive relationship showed that each additional dollar rises in the income of households exerted a proportionate increase in their ability to access food, leading to improved welfare gains.

Furthermore, Table 5(b), Panel (B) indicated that the index of food production within a corrupt-free society was positively related to the dependent variable, given that, every index rises in food production raised aggregate food availability in the country, leading to welfare gains among households. Conversely, it was shown in Table 5(b), Panel (B) that during the study period, malnutrition, was still the norm among several households. This is confirmed by its positive association with the dependent variable, which signifies that the incidence of malnutrition was heightened as several households became vulnerable to the challenge of food insecurity, which was occasioned by a persistent intake of low-quality foods, rendering them calorie deficient and thus occasioning welfare losses. Similarly, the coefficient value of food imports showed that, within the quarters examined, every one-unit decline in food imports, grossly impacted aggregate food stock available for households' access, leading to welfare losses. This is, however, arguable from the point of view of government policy on closure of borders.

(c) Error Correction Mechanism for Models (1a) and (1b)

The slope coefficient of the error correction term (-0.334476) and (-0.165144) represents the rate of adjustment for models (1a) in a corrupt environment and (1b) in an environment devoid of corruption respectively, which is also consistent with the long-run convergence hypothesis, whenever the food security and household welfare equations are disturbed. When household aspirations for sustainable food security is undermined through a culture of corruption as is evidence from Table 5(b), empirical result indicated that, given system innovation, the error correction term will take approximately 33.4 percent period for adjustment to attain equilibrium in the system. On the contrary, for food security under a corrupt-free society, it was revealed that, given innovation in policy, the error correction term will take approximately 16.5 percent for convergence to equilibrium path. Although the rate of adjustment in Table 5(a) is faster when compared to the sluggish speed to longrun equilibrium path evidenced in model (1b), it is, however, contingent on the effectiveness of government initiatives aimed at resolving the crisis surrounding the quest for food security in Nigeria. Additionally, the adjusted R-squared of 73 percent and statistically significant F-statistics at the 1% level indicate that the model is well fitted and explained. This means that the food security-corruption nexus and household welfare model is adequately explained by the predictors or independent variables.

Post-estimation Analysis

Robustness Test

To confirm the robustness of the model estimates for the food security equation (model 1-6), the results were subjected to various econometric and or parametric tests. These tests were for serial LM correlation, heteroscedasticity, Ramsey test for model mis-specification and Jarue Berra normality test as well as CUSUM/CUSUMS stability of the residuals. The diagnostic estimates are as summarized below:

Table 6: Residual Diagnostic Tests

Description	Prob. value (F-Statistic)	Decision
Breusch-Godfrey Serial Correlation LM Test	0.5161**	Ho accepted - No serial autocorrelation
Heteroskedasticity Test: B-Pagan-Godfrey	0.6336**	Ho accepted – Series are homoscedastic
Ramsey test (Model Mis-specification)	0.0614**	Ho accepted – No multicollinearity
Normality (Jarque Berra) Test	0.08323**	Ho accepted – Series are normally distributed

*** indicates rejection at over 5% significance level*

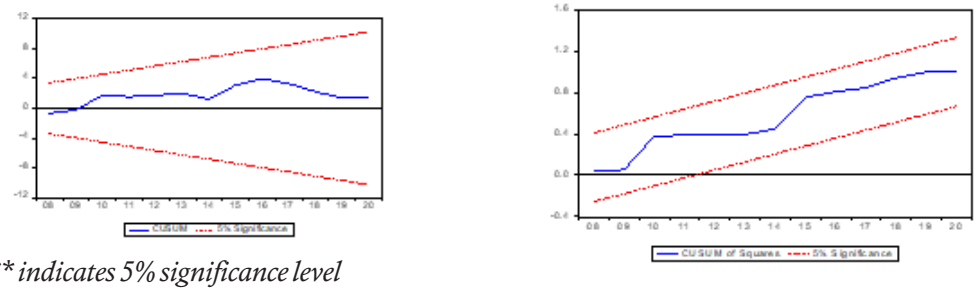
Source: Extracts from E-views 10

The results shown above highlight the equation's robustness and validity. The statistically insignificant probability values associated with the various measurements substantiate this. Thus indicating that they were appropriately defined, and thus the parameter estimates are deem to be reliable for policy formulations.

Examining Models for Structural Defects

To complete this investigation, it is necessary to determine whether the estimates remained stable during the study's duration. In doing this the recursive residuals (CUSUM and CUSUMSQ) were used to determine the structural stability of the equations in the models. Unlike the Chow test, which needs the specification of breakpoints, the recursive residual tests can be employed even if the break-points are unknown. Also, while the CUSUM test computes the cumulative sum of recursive residuals based on the first n observations and plots it against the breakpoint iteratively, the CUSUMSQ test employs recursive residuals squared. If the CUSUM and CUSUMSQ plots remain under the 5% significance level's critical bounds, the null hypothesis that all coefficients are stable cannot be rejected, other than that, the null hypothesis is rejected, especially if one or more of the parallel lines significantly cross the upper and lower bounds. Thus in observing the statistics in Figures 4, they confirm and validate the fact that the food security households' welfare model equations do not exhibit substantial instabilities enough to cause significant changes in the estimated parameters in the event of innovations, given that the trend is bounded within the 5% level of significance. In other words, the model is robust and fits the prerequisites for making unbiased statistical judgments, which qualifies it for policy formulation.

CUSUM/CUSUMSQ



*** indicates 5% significance level*

Figure 2: Recursive Residual Tests

Source: Extracts from E-views 10

Discussion of Findings and Policy Implications

Model 1(a): Food security and Households' Welfare in a Corruption-prone Society

To examine the extent to which food security, within a corruption-rife environment had significantly affected households' welfare in Nigeria, the regression estimates found the following: In Table 5(a), Panel (A and B), the interaction between corruption and the index of food production (FPI*Corr), which serves as a proxy for food availability had reported negative outcomes in explaining food security, which is in tandem with expectations, given the corruptive tendencies of some stakeholders in the food industry. It is not in doubt that the Nigerian government over the years has evolved several food policies and programmes towards changing the narrative in poor agricultural yields but such policies initiatives have remained uninspiring, due in part to the prevalence of corrupt tendencies of the stakeholders, rendering the intended outcomes from such government programmes unrealizable and ineffective. The absence of sufficient quantity of food stock for consumers bring with it a multiplier effect in terms of food prices as there is created an unavoidable supply-demand gap. Thus several households have continued to live in frustration of not being able to access their require food needs.

This becomes even more problematic, given that often times, appropriated funds meant to address such challenges as low investment in the sector, poor infrastructure (roads, irrigation facilities, construction of dams) in both urban and rural settings, including inadequate use of yield-enhancing technologies which could enhance food production are either diverted or outrightly misappropriated by corrupt contractors, civil servants, extension workers or bureaucrats manning the different ministries concerned with achieving government food security goals. Therefore, the Nigerian government must be decisive and evolve policies that would change the current narrative of inadequate food stock, which certainly requires funding, especially in input delivery such as fertilizer, improved seeds and other infrastructures required to accelerate overall output. Closely linked to the above is poor logistic support for farmers. In fact, more often than not, budgetary allocations for sectorial growth are mere paper works that end up as propaganda tools on radio and television stations, while only a meagre percentage of such appropriated funds are made available to support food production.

Furthermore, allowing politicians take charge of agricultural subsidies and soft credits to farmers has made it open for corruption to thrive, leading to embezzlement and misappropriation of such funds with food production left to suffer. The preceding conclusion is consistent with Ogunniyi et al's (2021) assertion that agricultural productivity increases household food insecurity. Similarly, it corroborates the findings of Anugwa et al. (2019) and Osuji et al. (2017) that farmers continue to face increased food insecurity notwithstanding their agricultural output activities. This assertion is also supported by the views expressed by Godson-Ibeji, et al (2016) on the influence of corruption on food security in developing countries.

Table 5(a), Panel (B) also found that, though there was a positive link between households' income (GDPP*Corr) in the longrun, the reverse was the case in the short-term, as consumer income (GDPPC*Corr), which is representative of households' food accessibility criteria

exerted negative but significant influences on households' ability to access their food needs, hence they remained food insecure during the periods examined. A household or country's food security is most substantially and positively influenced by its ability to purchase food. Unless otherwise stated, consumption is a function of income; hence, if citizen's sources of livelihood are negatively impacted, especially for an extended period, it will undoubtedly impair their purchasing power and thus their capacity to command the necessary food that guarantees them welfare.

Thus, it is argued that many Nigerian families are hungry and food insecure because they lack the purchasing power, given that they do not have sufficient money to afford enough food for their nourishment. Decline in income make consumers more stressed and concerned regarding potential food crises, food safety and food quality. There is also the possibility that food security and nutritional value would degrade as income falls, leading to eventual malnutrition and other unpalatable health outcomes, and since income defines people's standard of living, decreases in households' income influences the calories and nutrients available per capita. Thus when household's budget for food continue to suffer due to lack of income, their capacity and capability to effectively meet their food needs become imperiled, as their food access gets constrained, thus leading to irreversible food insecurity. The views expressed by Rabbi, et al (2021) and Fraval, et al (2020) support the conclusion that food accessibility is a function of income available to households. Also see studies by Etim et al (2017) and Muktar (2015), who identified household income as a valid indicator for food accessibility for enhanced welfare.

Similarly, food imports as referenced in Table 5(A and B) revealed significant positive effects on Nigeria's food stock during the period under consideration. The positive association between the dependent and independent variables (food imports-corruption nexus) exposed a situation for improved aggregate food stock in the country, augmented by food imports. No country in the world is self-sufficient and so cannot produced all her food needs, thus nations get involved in the importation of food to add to the aggregate stock of food available in the country. This view is reinforced by the International Institute for Sustainable Development's (IISD, 2013) findings that fulfilling domestic demand for staple foods in the short to medium term will entail lowering import tariffs and other import restrictions. It is further bolstered by Ahungwa et al (2014)'s study on the trajectory of food imports.

(b) Model 1(b): Food security and Households' Welfare in a Corruption-free Society

It is however heartwarming to note that Table 5(b) which is the analysis of the effect of food security and households' welfare in a corrupt-free environment threw up very fanciful and appreciable outcomes. For instance, it was revealed that the index of food production (proxy for food availability) was positive and accelerated in the absence of the pervasive corruption that was the norm in Table 5(a) which adversely altered food production, thus impacting households' welfare. Additionally, household income (GDPPC) revealed positive influences on households' welfare during the quarters studied. This has implication to positively impact food accessibility as it affords consumers the financial muscle (purchasing power) to access their food needs for enhanced welfare.

However, it was revealed that even in an environment free of corrupt tendencies, food insecurity remained an intractable challenge among Nigerian households, as Table 5(b), Panels (A and B) revealed that undernourishment was rampant among several households during the referenced period. This suggests that food insecurity caused by heightened and persistent low calorie food intake was manifest, causing untold distress and welfare losses to many homes. To be precise, the prevalence of undernourishment is the percentage of the population whose habitual food consumption is insufficient to provide the dietary energy levels that are required to maintain a normal active and healthy life. This confirms the fact that households' lack of access to their preferred food choices, would result to the multiplicity of malnourished lives. This outcome is bolstered by the views of Nugroho et al (2022) that food insecurity increased the number of undernourished persons in Africa.

The foregoing outcome might not be unrelated to the inverse short run relationship that was evident in the value of food imports vis-à-vis households' welfare as revealed in Table 5(b), Panel (B). Thus, it is the contention of this study that the short run negative but statistically significant relationship between food imports and the dependent variable may not be unconnected to government efforts at reducing food imports through various restrictive measures, such as border closures, increased tariffs, quotas, and occasionally outright bans on certain food items. Because, as it stands, these policy measures, though aimed at discouraging food imports with the goal of increasing domestic food production towards achieving food self-sufficiency for the country, might need to be reviewed to close the deficit in food production. The foregoing is bolstered by the findings of the International Institute for Sustainable Development's (IISD, 2013) that achieving domestic demand for staple foods in the short to medium term will require lowering import tariffs and other import restrictions to give room for additional food stock from abroad the locally produced food which, often than not, remained abysmally inadequate and insufficient to cater for local needs.

(c) Implications of Findings from Models 1(a) and (b)

By and large, some salient observations and differences between models 1(a) and 1(b) is worth pointing out. One of such striking and manifest difference is the fact that for a country-prone to corruption, food insecurity looms larger as revealed by the coefficients of food production index which was negative under a corrupt-system, implying a situation of general or abysmal food output– that is, a case of apparent and manifest food deficit existed as the trajectory of corruption thrived or increased. On the contrary, for a corrupt-free society, the index of food production (FPI) appeared positively related to households' welfare. This is indicative of the fact that average food production in a corrupt-free environment was impressive than it was in an environment laden with corrupt practices. On households' ability to access their food needs, model 5(a) and (b) which typifies a corrupt-prone and corrupt-free system all revealed a positive relationship to households' welfare in the long-term. However, while the lack of access was higher in a corruption infested society, it was minimal under a corrupt-free environment, where income levels were estimated to be stable both in the short-term as well as in the longrun. These arguments is substantiated and supported by the views expressed by Nugroho, et al (2022) that food security would be enhanced if developing countries government evolve policies to stem the tide of corruption.

Conclusion and Policy Recommendations

The main objective of this study was to undertake an empirical investigation of the effect of food security and households' welfare in Nigeria. The study based its theoretical stand on the popular Sen's Poverty and Famine theory and utilized econometric techniques wherein it found that with the interaction between corruption and the disaggregated food security components, food insecurity was prevalent. Nevertheless, when the tools for the control of corruption were made effective, food security showed divergent or mixed results. These conclusions clearly align with the opinions of Sen (1981), who noted that famines in many countries did not occur solely as a result of a gap in food production or supply but also as a result of some other socio-economic influences, hence this study concludes that Nigerian households were food insecure between 1999 and 2021, especially when judged from the perspective of a corrupt system. The findings of this study are therefore consistent with Sen's postulations in his Poverty and Famine Theory (1981), and in the light of the foregoing, a pressing economic policy concern, moving forward is to identify ways to mitigate the negative effects of food insecurity on household welfare in Nigeria; thus, relying on the study's theoretical and empirical findings, the following recommendations are made for policy implementation.

(i) For enhanced food production, increased government expenditure on the sector is a necessity. Thus in deference to global benchmarks, government should improve on its budgetary allocation to the agricultural sector for improved performance.

(ii) To achieve self-sufficiency in food production, the Nigerian government must improve on its commitments to the agricultural sector by implementing programmes and policies that have direct bearing on the growth of the food industry. Therefore, subsidy on fertilizers and other agricultural inputs should be improved upon.

(iii) The government must provide funding for the acquisition of sophisticated farm tools (harvesters, tractors, herbicides, and fertilizer), as well as the construction of irrigation, dams, and storage facilities, including the establishment of food processing industries throughout the country, in order to enable farmers to increase productivity, process, and preserve their food. This will further reduce the high incidence of postharvest losses.

(iv) The Nigerian government should urgently develop economic policies and programs that will jump-start the economy and transition a sizable portion of qualified Nigerians from the country's largely informal economy to a more formal and organized economy where their income is guaranteed, especially in the event of a pandemic like COVID-19. Creating formal employment opportunities and income-generating activities for all qualified Nigerians, holds the potential for lowering the existing poverty rate and empowering households to have adequate access to nutritious food.

(v) The incidence of rising and unmitigated corruption must be taken seriously in Nigeria. The connections between corruption and food insecurity arise when the risk of corruption is high and public institutions are weak and non-transparent in curbing same. The supposition of this research is that institutional failure and weak governance culture may result in increased corruption, which can strongly influence food security and enforce an unstable food supply situation. To this end, the various

anti-corruption agencies such as the EFCC, ICPC must live up to their biddings for a saner society.

(vi) Discipline precedes deterrent, thus, corrupt public officials, contractors, and bureaucrats who divert and misappropriate monies designated for growth in the sector must be penalized to serve as a deterrent to would-be treasury looters. To do this, the various financial crime agencies should be strengthened.

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Effect of Female Entrepreneur on Economic Development in Karu Local Government Area of Nasarawa State

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Abstract

Females play essential and dynamic roles in economic life; they adapt easily to change and are very creative. As agents of development in all societies female play tremendous roles through creativity and innovations both in the formal and informal sector although, highly prevalent in the informal sector. The work adopted a survey method in assessing the Role of Female entrepreneurship on Economic Development in Karu Local Government Area of Nasarawa State. As the instrument of data collection, oral interview and research questionnaires were used. The analysis of the questionnaire was done based on percentages, allowing the greater or less than factor to influence the judgment gotten from the responses. After which it was discovered that female entrepreneur has contributes to Gross Domestic Product, has helped in job creation in the Local Government Area and equally alleviate poverty in the community through wealth creation and human capital development. Although, lack of good access to finance is the challenges hindering the role of female entrepreneurship on economy development in Karu LGA. Based on the followings, the study suggests that government should support female entrepreneurship in their business activities since they have the potentials to create employment opportunities, create wealth state and generally grow the economy and the government should as a matter of great concern make adequate provision of funds for female who are going into business in order to make them tackled all the challenges faced by female entrepreneurs before taking the decision of going into business.

Keywords: *Entrepreneur, Entrepreneurship, Economic, Economic Development, Female.*

Background to the Study

The study of entrepreneurship is as old as the history of mankind, which has been proven to be an important catalyst for the world development, interaction and integration. Over the years, many academic scholars have shown in their study that there is a strong connection and relationship between entrepreneurship and economic development. However, in this 21 century, economic scholars have paid more attention to the development of entrepreneurship in relation with social well-being and development of the society Gonzalez-Sanchez, (2012). Thus, focusing closely the connection between economic development and female entrepreneurs in relation with social well-being and development will be looked into in this study.

Recently, female and entrepreneurship have become an important research domain (Nissan, Carrasco, & Castaño, (2012); Jennings and Brush, 2013; Carrasco, 2014; Welsh, Kaciak, & Thongpapanl, (2016). In fact, the female entrepreneurship has become a central topic in entrepreneurship research, and the creation of companies has become a real engine of economic development, it is now a fundamental element of economic and social development as a key factor in promoting economic growth and the fight against insecurity and poverty. Indeed, the entrepreneurship is regarded as a major determinant of economic performance; particularly with regard to progress due to its structural role innovation and dynamism that impulse in all economies is well established.

Female entrepreneurs represent the fastest growing category of entrepreneurship worldwide and the percentage of women who decide to pursue an entrepreneurial career is, however, lower than that of men (Elam, Brush, Greene, Baumer, Dean, and Heavlow,2019), and this difference is greater as the level of development of the country increases (Coduras and Autio, 2013).

Entrepreneurs everywhere in the world are selected individuals that boost economic growth by introducing innovative technologies, products, and services. Thus they are engine of economic growth and wheel that pedal the vehicle of economic development which has been an importance tool in the area of job creation, revenue generation, poverty eradication and wealth creation (Elam, Brush, Greene, Baumer, Dean, and Heavlow, 2019). Entrepreneurship is important for the support of small and medium enterprises (United Nations, 2006). Entrepreneurship is therefore a process that involves a willingness to rejuvenate market offerings, innovate, risks taking, trying out of new and uncertain products, services, markets and being more proactive than competitors towards exploring new business opportunities (Wiklund and Shepherd, 2005).

The importance of entrepreneurship integration of the people in a nation cannot be overemphasized especially, female who have been under appreciated for a long time in developing economies. Females play essential and dynamic roles in economic life; they adapt easily to change and are very creative. As agents of development in all societies female play tremendous roles through creativity and innovations both in the formal and informal sector although, highly prevalent in the informal sector. Females are therefore becoming increasingly

important in the socio-economic development of both developed and developing economies as they account for significant percent of the operators of Small and Medium Enterprises (Kjeldsen and Nielson, 2000).

Western society in the early nineteen century, dictated that the most suitable place for the female is her home. People believed that female can best serve the society by offering their energy to the creation of healthful and nurturing households. However, in the 1970s, female left home and entered the workforce in droves. Female today are once more leaving the workforce in droves in favour of being at home. Yet, unlike generations of female before them, these females are opting to work from home not as homemakers, but as job-making entrepreneurs. Many females are starting businesses that align with their personal values and offer freedom and flexibility when it comes to things like scheduling. The glass ceiling that once limited a woman's career path has paved a new road towards business ownership, where female can utilize their sharp business acumen while building strong family ties (Forbs 2012). In the last few decades, the attitudes of people have changed, and female entrepreneurs are considered significant in economic development and wealth creation.

Female entrepreneurs also recognized as social icons to motivate female in developing countries. The significant number of women headed businesses and their productive activities, particularly in the industry sector make them a force to be reckoned with and empower them in the overall economic development of their nations. Whether they are involved in small or medium scale production activities, or in the informal sectors, female's entrepreneurial activities are not only a means for economic survival, but they also have positive social repercussions for the female themselves and their social environment (UNIDO 2001). In the last couple of decades, there has been a change in attitude and entrepreneurs are considered to be important in relation to both wealth creation and economic regeneration. Indeed, the role and importance of female entrepreneurship and new business creation to both developed and developing economies have received increased attention from academics and policy makers in recent years. This growth in interest in the economic contribution of entrepreneurship has been reflected in an increased level and variety of public and private sector policy initiatives at local, regional and national levels to stimulate and support the development of the sector (Henry, Hill et al2003).

Today, many opportunities to start new businesses and international support is available to female entrepreneurs. Female-run enterprises are steadily growing all over the world, contributing to household income and growth of national economies. However, female face time, human, physical, and social constraints that limit their ability to grow their businesses. Female's development is directly related to the nation's development. Therefore, sustainable development of female's resources, their abilities, interests, skills and other potentialities are of paramount importance in this sector. Female entrepreneurship responds to increasing demands for best practices and tools to integrate gender in private sector development. In view of the growing importance of entrepreneurship-oriented development supported to find the fact that about 40% of enterprises in developing countries are owned and run by female (Zororo 2011). Observation and empirical evidence point to and reveal that the relationship

between female entrepreneurship and the sustainable development is positive. An entrepreneur offers some new value(s) to the society, sometimes in the form of innovative or novel things through the creation of a firm. Female entrepreneurship is a potential means of empowering people, developing rural female and solving other social problems. Female entrepreneurs can be positioned to play an important role in promoting sustainable practices in economics, social system and ecology, to reach sustainable development.

Statement of the Problem

Female entrepreneurs make a substantial contribution towards entrepreneurship development in Nigeria; however, the realization of these potential contributions has been flawed by a lot of challenges such as Government regulations, gaining access to finance, lack of access to information technology, lack of access to control property, family dependence, restriction to family business with limited leadership role, which has been the cause of the failure of many Female entrepreneurship in Nigeria. It is against this background that, the statement of problem is put in an interrogative form thus: what is the role of female entrepreneur in Karu LGA? And how has their impact affect economic development?

Generally, the study is therefore design to determine the Role of Female entrepreneurship on Economic Development in Karu Local Government, Nasarawa State.

Specifically, this study attempts to answer the research question above.

i. To find out the role of female entrepreneur in Karu Local Government Area.
ii. To determine whether the role of female entrepreneur promote employment generation in Karu Local Government Area.
iii. To find out whether female entrepreneur contributed to the reduction of poverty in Karu Local Government Area.
iv. To examine how female entrepreneur impacted on the per capital income of Karu Local Government Area.

Literature Review

Concept of Entrepreneurship

Entrepreneurship is the process of generating jobs opportunities that lead to economic development (Barot, 2015) (Hessels, & Naudé 2019).

Entrepreneurship is discipline (Croci, 2016). Croci (2016), also defined entrepreneurship with autonomous discipline that can operate independently as well as interdisciplinary.

Entrepreneurship is an art (Chang and Wyszomirski, 2015). He went further to say that the "art entrepreneurship is relatively new topic of research, and the focus area are exploring the management process of entrepreneurship such as creativity and autonomy, capacity for adaptability, and create artistic as well as economic and social value".

Entrepreneurship is the manifest ability and willingness of individuals, on their own, in teams, within and outside existing organizations, to: – perceive and create new economic opportunities (new products, new production methods, new organizational schemes and new

product- market combinations) and to – introduce their ideas in the market, in the face of uncertainty and other obstacles, by making decisions on location, form and the use of resources and institutions (Adeoye, 2015). According to Sunday, Iliya & Francis, (2015) they see entrepreneurship as the act of risk-taking, innovation, arbitrage and co-ordination of factors of production in the creation of new products or services for new and existing users in human society. Thus, entrepreneurship can be seen as the series of activities that involves an individual or group of persons who are willing to seek investment opportunities, set up and run an enterprise successfully by creating employments opportunity as well make wealth available in the economy for the common good of all.

Concept of Economic Development

Economic development entails increase in the wealth of a nation through expanded production of goods and services. It includes the rise in agricultural production, manufacturing and construction as a result of the introduction of better skills, techniques and technology. Also, it includes, but not limited to increase in GDP, rise in exports, job and wealth creation, high per capita income cum high standard of living. Economic development has also been defined as "the process by which a community creates, retains, and reinvests wealth and improves the quality of life" (David, 2010:24) cited in ecdi.wordpress.com (2011).

Broadly, economic development is taken to be the structural transformation of an economy by introducing more mechanized and updated technologies to increase labor productivity, employment, incomes, and standard of living of the population. Economic development should be accompanied by improvements in infrastructure, as well as social, political, and institutional factors to facilitate transformation of the economy (Myint and Krueger 2016). Thus, Economic development implies changes in income, savings and investment along with progressive changes in socio-economic structure of country (institutional and technological changes).

Female Entrepreneur and Economic Development

Female involvement in entrepreneurship is an element explaining and significant proportion of the growth differential between countries (Carrasco, 2014; Welsh et al, 2016). This is because female entrepreneurs around the globe have significant catapulted the economic development of the society by creating new employment opportunities to its citizens (Akehurst, G., Simarro, E. and Mas-Tur, A. 2012). Notable to this is the increasing number of female entrepreneurs who are entrepreneurship is an important indicator for world development. A country not making maximum use its entrepreneurial potential would not achieve its full growth potential as female entrepreneurs play a significant role in producing jobs, wealth, poverty reduction, human development, education, health and nation's development especially in developing countries.

Evidence from past study has shown that female-owned businesses are the world fastest growing businesses around the world and have made significant contribution in the form of innovation, employment and wealth generation, it is estimated that their total share in the development of economies is 40% (Brush and Cooper, 2012). Keeping in view above, it is a

dire need that the proper utilization of human resource ensured the development of the country but in least developed countries major portion of female workforce is either unused or unnoticed which can be a barrier of development. This barrier can be overcome with the encouragement and providing resources to female to setup their own independent businesses (Vinay and Singh, 2015). Thus, without female entrepreneurs, economies could not achieve the complete and sustainable success.

Role of Female Entrepreneur on Economic Development in Karu LGA

In Karu Local Government Area female play important roles in small enterprise development. They are mostly involved in;

i. Crafts,
ii. Weaving of sweaters for school children,
iii. Mat making;
iv. Farming both production of food crops,
v. Fish farming and poultry,
vi. Mortar and pestle making,
vii. Retail and whole scale trade.

Most businesses like skin scare and beauty businesses, cosmetics, restaurants, café, wholesale and retail shops are owned and run by female in Karu LGA.

Benefit of Female Entrepreneur on Economic Development in Karu LGA

Female entrepreneurship development has been recognized as important because of the contributions of females entrepreneurs to the economic development in both developed and less developed countries. Female entrepreneurs therefore enhance economic development through:

Employment Creation: Female entrepreneurship development can help female owned businesses generate more income which then can be used to support their households and improve their family welfare outcomes (Thomson, 2002). This income can help female to start and grow their businesses which will in turn help them to offer employment to others in their community.

Poverty Alleviation: Many female support themselves and their families through the income they receive from their entrepreneurial activities (Kantor, 1999). Female also are more involved in organizing programmes that focused on empowering female and youths for poverty alleviation. For instance, in Nigeria, Cowan is an Ngo formed by female and they are doing a lot in line with their set objective -to alleviate poverty among the Nigerian female.

Economic Vitality: Economic vitality is a necessary condition for achieving social vitality which improves the standard of living of the citizens of nation. Important factors that make living attractive are flow of information, education, health, housing and transportation which are developed and sustained through entrepreneurship. The easiest approach to economic vitality is through female entrepreneurship development. Female have been known for their

ability to combine different activities that have the potential to enhance the standards of living and quality of life of the citizenries. Floro (2001) argues that female are more likely to juggle their working time between the market sector and non-market economic activities. Non-market production whether it involves subsistence crop production, water and fuel gathering, food preparation and housecleaning or care for the children and elderly is a crucial element in determining the quality of life.

Economic and Socio-political Empowerment: Female now have access to and control over income and working conditions. This has empowered them for full involvement and participation in economic, social and political policy making that might result to changes in gender inequality and discrimination especially in the labour market. It is believed that with self-employment and entrepreneurship, female gained confidence, self-esteem and decision-making experience leading to greater control over their lives in social, economic and political spheres (Kantor, 1999).

Financial Sustainability: Small enterprises tend to have the flexibility and innovativeness that are critical business needs in developing economy. As female form micro and macro enterprises and bring their values, products and services to the marketplace, they become involved in changing the face of the nation's business. As Steinem (1992) notes, female entrepreneurs tend to take a holistic approach to balanced life, work, family, economic, and cultural values. They integrate economic techniques such as job training, job creation, marketing and management with workplace innovations such as flexible scheduling, childcare, language workshop for immigrants.

Economic Growth: The increase of female prominence in entrepreneurship has positive contribution to the country's GDP and Gross National Income (GNI) (Kantor, 1999). Statistically, more than 30% of the contributions of the country's GDP, comes from female that are self-employed especially in micro and small sized enterprises (Kerta, 1993). This sector of business and its entrepreneurial characteristics are viewed by many to be central to innovation and are considered the engine of economic growth.

Wealth Creation: Wealth creation and social vitality are the economic goals of both men and female entrepreneurs. To achieve this, female entrepreneurs usually combine their efforts to form a strong base either in the rural or urban areas and channel the same towards economic development. Teamwork, networking and managerial competence have been recommended as good promotional strategies that can be adopted by female entrepreneurs to pull their resources together towards best business practices, contacts, and references (Thomson, 2002).

Social: Female are contributing immensely to both their families and the communities. Most of the female-owned enterprises are serving not only the communities but also larger business organizations. They also offer female the possibilities of effectively managing their dual role as career female and as mothers at home.

Political: Although politically, there are few female in political position. Encouraging female enterprise will considerably help to reduce the disparities between female and men increase their autonomy and allow them to play a more active role in the political and economic life of their country (Thomson, 2002).

Challenges of Female Entrepreneur on Economic Development in Karu LGA

Although there are many contributions to be accredited to female entrepreneurs, a number of constraints have been identified as detriments to these contributors. Female entrepreneurs face many challenges, including government rules and regulations, gaining access to finance, and building an ICT infrastructure that enables efficiency and growth (United Nations, 2006). Female entrepreneurs require confidence, leadership and management skills and must find ways to access new markets. Kantor (1999) argues that female often experience greater constraints on their economic actions relative to men. Mayoux (2001) states that there are certain factors that limit the ability of female entrepreneurs to take advantage of the opportunities available to them in their environment and these factors have been identified as the reasons why female business fails. These include poor financial management, liquidity problems, management inexperience and incompetence, problems in coping with inflation and other external economic conditions, poor or non-existent books and records, sales and marketing problems, staffing, difficulties with unions, the failure to seek expert advice, limited social and business networks, a low level of demand in the local economy, the value and system of tenure for housing, constraints in access to finance, lack of work experience and lack of role models (United Nations, 2006). In spite of the potentials and contributions of Female entrepreneurship to economic development, the activities of Female entrepreneurship in Nigeria have been flawed by the following challenges.

Lack of access to control of property: The restriction of female from having access to and control of property constitutes a fundamental constraint on female entrepreneurs. The legal system in most countries has not been able to recognize and enforce female equal right to property and ownership. Statistically, International Labour Organisation (ILO) has on record that only 1% of the worlds assets are in the name of female (Mayoux, 2001). Property in this context includes; land, houses, lockup-stores, production plants, equipment, motor van etc. Legal backing on females access to and control of property will help female in setting up their own firms without much stress.

Lack of access to and control over income: Another constraint that faces female entrepreneurs is lack of access to and control over income. Low income, low investment and low profit may limit females ability to save. More than 65% of the poor and rural settlers in Nigeria are female. Female usually face discrimination in the labour market (both in their remuneration and the nature of job they are offered). This affects their income, investment, and savings. Inability to save, can affect their start-up capital there by discouraging them from owing businesses. Mayoux (2001) observes that Female have limited control over the incomes they earn. Gendered rights and responsibilities between man and female within households invariably operate to constrain females' ability to control their own income and access to male income. Even when female have opportunity to earn high income, by virtue of culture and

tradition, they are subjected under their husbands who have control over them and their money.

Lack of information on Female Entrepreneurship: there is little information available on female entrepreneurship or female owned business in Nigeria in particularly and in the world generally.

Age Limit: Unlike men, there are certain periods in a woman age/time that she cannot do business for instance, during pregnancy, labour period, child nursing and such other times that are peculiar to woman. Due to this, entrepreneurship therefore tends to be a midlife choice for female. Hence, majority of female start up business after the age of 35 (Dane, 1984).

Family Dependence: Most of the family members depend on female for care and hospitality, thereby limiting their full involvement and participation in business.

Restriction to family business: Most female entrepreneurs are somehow restricted to family business because of their family commitment. This affects their level of ingenuity, creativity, innovativeness and competitiveness.

Inaccessibility to required funds: Female also may not have equal opportunity to access finance from external sources such as banks, and other finance institutions as a result of this, they tend to prefer using personal credit/saving in financing their business. This discourages a lot of female from going into entrepreneurship.

Religious predicament: Some religion prohibits female from coming out of their homes and environments thereby restricting them from getting involved in business.

Noninvolvement of female in decision making: Female all over the world and in all sectors are usually marginalized, especially in the planning stage of development. The decision for the execution of projects done in Nigeria such as construction of roads, building of markets, building of civic center's etc are done without consultation of the female by their men counterparts (Okunade, 2007).

The Offensive of the economic planner: The female is totally neglected in the economic planning process. The opinion of the men assumed to be the same with that of female. Even the work they do in most cases, is not giving economic value.

Much emphasis on domestic role: No matter the role of a woman in the society, she is mainly remembered for the domestic role. A woman, whether a director of a company, an educationalist, an entrepreneur, or a professional, must go back to the kitchen. The popular saying that a woman education ends in the kitchen- tends to prohibit female from going into business.

Limited leadership role: Female especially in Nigeria have always been assumed not to be matured for leadership position. They are usually given the seconding position in company's

meetings and as government functionaries. For instance, in meetings (not female meetings) a female cannot move motion, but she can second it (Mayoux, 2001).

Mayoux (2001) observes that there are certain factors that limit female entrepreneurs' ability to take advantage of the opportunities available to them in their environment and these factors have been identified as the reasons why their business fail. These factors include:

i. Poor financial management
ii. Liquidity problems
iii. Management inexperience and incompetence
iv. Poor or non-existent books and records
v. Sales and marketing problems
vi. Staffing
vii. Difficulties with unions
viii. The failure to seek expert advice
ix. Limited social and business networks
x. A low level of demand in the local economy
xi. The value and system of tenure for housing
xii. Constraints in access to finance
xiii. Lack of work experience and skill,
xiv. Lack of role models.

Empirical Literature

Deborah, and Agu, (2015). There paper is on the contribution of female entrepreneur towards entrepreneurship development in Nigeria. Specifically, the study seeks to assess the factors that motivate female into entrepreneurship, ascertain the challenges facing female towards entrepreneurship development, and assess the contributions of female towards entrepreneurship development in Nigeria. The study was carried out in four cooperative societies in Enugu State, Nigeria. The study had population size of 335 out of which a sample size of 182 was realized using Taro Yamanes formula at 5% error tolerance and 95% level of confidence. Instrument used for data collection was primarily questionnaire and interview. The total numbers of 182 copies of questionnaire were distributed while 176 copies were returned. The descriptive research design was adopted for the study. Three hypotheses were tested using Pearson chi-square statistical tools. The findings indicate that need for independence and self-fulfillment will significantly motivate female into entrepreneurship, financial constraint and government regulations are the significant challenges facing female towards entrepreneurship development; and Job creation and poverty alleviation are the contribution of female towards entrepreneurship development. The study however recommends that government, private sector and NGOs should organize empowerment programmes that are geared towards encouraging female to start their own business. Female entrepreneurs should learn to take advantage of their environment whether favourable or unfavourable because environment has the potential of pulling or pushing female into entrepreneurship. Female entrepreneurs should also take out time to consider the challenges other female in business are facing and find out how best those challenges could be tackled before taking the decision of going into business.

Ambepitiya (2016), on the Role of Female Entrepreneurs in Establishing Sustainable Development in Developing Nations. He notice that the woman plays a significant role in the economic development of any country. This is a considerable factor with great emphasis on any developing scenario. Female contribute and support the economy extensively indifferent ways by being employed in many different sectors. Many successful businesses are run by female some of whom are very skilled in entrepreneurial activities. Objectives of this study cover an extensive range from the study of the development of female entrepreneurs to a sustainable economy, social system, and ecology. A descriptive research methodology has been used for this study and administered to a selected sample from a specific population that include female in businesses and executives who represent both private and public sectors of selected developing countries. The Study has been carried out over a period of six months and has used a questionnaire as the survey instrument. The survey has indicated how female entrepreneurs can be positioned to play an important role in promoting sustainable practices in the economy, the social system and the ecology. The researcher concludes the study by observing that given the positive effect made by female on the economy and development, female entrepreneurship is key to the developing world in promoting sustainable practices in business socially, economically and ecologically.

Abari, Mohammed, Rufai, & Akapo, (2017), wrote on Female Entrepreneurship Education: An Instrument of Economy Growth and Overcoming Gender Gap in a Competitive Economy. Female, however, are very often excluded from participation in entrepreneurial activities. But currently there is a growing recognition that development can be significantly promoted if more female could be encouraged to become entrepreneurs, and moreover that female as entrepreneurs need to be supported. The paper examines some issues like Characteristics of Female Entrepreneurs, Female Entrepreneurial Development and Environmental Factors, Female Entrepreneurs as Economic Drivers, Education and entrepreneurial success and Mobilizing Diaspora Entrepreneurship for Development. Female entrepreneurs are found to have an important impact on the economy, both in their ability to create jobs for themselves and to create jobs for others. Government should provide more incentives and support systems specifically designed for female entrepreneurs.

A study conducted by Muhammad Sajjad, Nishat Kaleem, Muhammad Irfan Chani and Munir Ahmed (2020) on Worldwide role of female entrepreneurs in economic development. The contribution of female entrepreneurs is still invisible and needs to be properly investigated. The purpose of the paper was to investigate the relationship by measuring female entrepreneurship and economic development at global level. Design/methodology/approach–Secondary data has been retrieved from Female Entrepreneurship Index Report 2015, Human Development Report 2015 and KOF Index of Globalization 2015. Cross-sectional data is used from 69 countries of the world. Multiple regression is applied to estimate the data. Findings–The results explained the significant impact of female entrepreneurship on the economies of the world. It was observed that female participation in entrepreneurial activities not only supports to their family income but also plays a significant role in economic development and social well-being of the society. Research limitations/implications–There is no information about total output of female entrepreneurs

in terms of new enterprises setups and established businesses of female except for year 2015. So, to measure the real contribution of female entrepreneurs around the globe is still a challenge. Practical implications–It is reality that when female would be empowered as entrepreneurs then whole society gets benefits from it, as female entrepreneurs are beneficial for not only economic development but also social development of society. Originality/value–This study uniquely addresses the contribution of female entrepreneurs in the world economy which is still an unseen but a powerful benefactor of development. The obvious gap this study set to fill is on the area of female entrepreneurs on economic development in Karu Local government of Nasarawa State as none of the above study was in this area and scope.

Theoretical Framework

For the purpose of this research project, Sociological theory and Economic Theory has been adopted as it theoretical framework. Sociological theory: The theory of sociology is another underlying factor behind the study of entrepreneurship. In furtherance of McClellands need theory, Hagen (1962) was more concerned with socio-historical process which produces the psychological needs behind the entrepreneurial disposition and less with the specific casual connections between such needs and the recruitment of performance of entrepreneurs. He also shows greater awareness of the gap between motivational disposition and actual behavour. In addition to achievement of McClelland, Hagen incorporates other needs such as intelligence, world news and environment (Akeredolu-Ale, 1975). Sociological theorists of entrepreneurship were preoccupied with the analysis of need distribution among members of a society but strongly criticized the notion that the most fundamental causal factors behind the emergence and performance of entrepreneurs are psychological.

Kirzner (1999), states that economic theorists see competition as a motivating factor for the acquisition of entrepreneurial skill. Female entrepreneurs are not exception from this economic perspective to entrepreneurial study. Female play a distinct role in the market system through their ability to manage and control other factors of production. Hence their motivation to entrepreneurship. The more their perception as agents for economic revolution, the more their motivation into entrepreneurship and vice versa. The theorists here saw an entrepreneur as an agent of economic change. They argued that changes either in the environment or organization are a transformation that can occur as a result of the reaction of some economic forces. Economists assume that entrepreneurs behave rationally towards some economic forces (business opportunities, resources etc.) that result to change in environment in form of enterprise. Entrepreneurship was seen as a process or positive event to every economic revolution. Without entrepreneurs, the other factors of production such as land, labour and capital cannot transform themselves into economic value (product and services).

Methodology

The study adopted survey method as its research design. The population of the study comprises of the entire females living in Karu Local Government Area. Its women population was put at 106,715 people (National population Commission [NPC], 2006) and had a projected population of 3,334,843 people in 2021 using an annual growth rate of 3.2%.

The technique used in drawing the sample size is Taro Yamane (1967) formula defined as:

$$n = \frac{N}{1+N(e)^2}$$

Where n = sample size
N = total population size
1 is constant

e = the assume error margin or tolerable error which is specified as 5% (0.05) in this study.

$$n = \frac{N}{1 + N\,(e)^2} = \frac{3{,}334{,}843}{1+3{,}334{,}843\,(0.05)^2} = \frac{3{,}334{,}843}{8338.1075} = 399.9$$

The sample of 400 was distributed in such a way that different categories of female working and doing business in Karu Local Government were represented and captured. Based on this distribution, the instrument of questionnaire was conducted in such a way that the entire respondents will be represented and interview. For the purpose of this research, data was collected from two main sources which are primary and secondary source of data.

Presentation of Data

The table below present results on the analysis of questionnaire administered to the various categories of respondents and the ones properly answered and were returned as well as the interview conducted with some respondents in the Karu Local Government Area. As shown on the table, the first threshold shows that out of the 400 questionnaires administered and interviews conducted only 327 were returned representing 81.75% of the targeted population, while 73 questionnaires were not returned representing 18.25% of the entire study population.

Table 1: Analysis of Questionnaire Administered

Questionnaires	Data of Respondent	Percentage (%)
Questionnaires returned	327	81.75
Questionnaires not returned	73	18.25
Total	400	100

Source: Field Survey, 2023.

The above table shows categories of the respondents who were sampled to respond to the questions which are in line with the research question and objectives of this study. Thus, these responses were complemented by the documentary evidence gotten from the Karu Local Government Area.

Table 2: How has the role of female entrepreneur affect economic development in Karu Local Government Area?

Option	No. of Respondents	Percentage (%)
Contributes to Gross Domestic Product	90	27.5
It has helped in job creation	84	25.7
poverty alleviation	7	2.1
wealth creation and human capital	43	13.1
All of the above	103	31.5
Total	**327**	**100**

Source: Field Survey, 2023.

As can be seen in table 2 above, 90 of the respondents, representing 72.4% of the population said that the role of female entrepreneur affect economic development in Karu Local Government Area has contributes to Gross Domestic Product, 84 respondents representing 25.7% that the role has helped in job creation in the Local Government Area. However, 7 respondents representing 2.1% that the role has alleviate poverty in the community. Also, 43 of the respondents, representing 13.1% were of the view that it has brought about wealth creation and human capital development were as a majority of the population 103 representing 31.5% believed that all the other factors are as the results of the role been played by female in the Local Government Area.

Table 3: Has the role of female entrepreneur promote employment generation in Karu Local Government Area?

Option	Number of respondents	Percentage (%)
Yes	293	89.6
No	34	10.4
Total	**327**	**100**

Source: Field Survey, 2023.

Table 3above, 293 respondents, representing 89.6% affirmed that female entrepreneur promote employment generation in Karu Local Government Area while 34 respondents, representing 10.4% said no.

Table 4: Do female entrepreneur contributed to the reduction of poverty in Karu Local Government Area.

Option	Number of respondents	Percentage %
Yes	291	89%
No	36	11%
Total	**327**	**100%**

Source: Field Survey, 2023.

Table 4 shows that 291 respondents representing 89% agree that female entrepreneur contributed to the reduction of poverty in Karu Local Government Area while, 36

respondents representing 171% said no that female entrepreneur do not contribute to the reduction of poverty in Karu Local Government Area.

Table 5: Female entrepreneur impacted on the per capital income of Karu Local Government Area

Option	No. of Respondents	Percentage (%)
Strongly Agree	71	21.7
Agree	122	37.3
Strongly Disagree	84	25.7
Disagree	7	2.1
Undecided	43	13.1
Total	**327**	**100**

Source: Field Survey, 2023.

As can be seen in table 5 above, when the respondents were asked how Female entrepreneur impacted on the per capital income of Karu Local Government Area. Thus, 71 of the respondents, representing 21.7% of the population strongly agree that Female entrepreneur impacted on the per capital income of Karu Local Government Area, 122 respondents representing 37.3% agree that Female entrepreneur impacted on the per capital income of Karu Local Government Area. However, 84 respondents representing 25.7% strongly disagree that Female entrepreneur do not impact on the per capital income of Karu Local Government Area, 7 respondents representing 2.1% of the population disagree with the statement while 43 of the respondents, representing 13.1% were undecided as whether Female entrepreneur impacted on the per capital income of Karu Local Government Area or not.

Table 7: What are the challenges hindering the role of female entrepreneurship on economy development in Karu LGA?

Option	Number of respondents	Percentage (%)
Lack of good access to finance	85	25.9
Failure to acquire new skills, knowledge and abilities	28	8.6
Religious predicament	37	11.3
Government regulations	32	9.7
Lack of access to information and technology	73	22.3
Inability to set a conducive working environment	61	18.6
Poor creativity and poor self-confidence	11	3.4%
Total	**327**	**100**

Source: Field Survey, 2023.

Table 7 shows that 85 respondents representing 25.9% are of the view that Lack of good access to finance are the challenges hindering the role of female entrepreneurship on economy development in Karu LGA, 28 respondents, representing 8.6% said that the challenges hindering the role of female entrepreneurship on economy development in Karu LGA is

failure to acquire new skills, knowledge and abilities also, 37 respondents representing 11.3% said that is religious predicament. However, 32 respondents representing 9.7% said that the challenges hindering the role of female entrepreneurship on economy development in Karu LGA, is government regulations, 73 respondents representing 22.3% said Lack of access to information and technology has been the challenges hindering the role of female entrepreneurship on economy development in Karu LGA, Abuja, 61 respondents representing 18.6% of the targeted population agree that inability to set a conducive working environment is the challenges hindering the role of female entrepreneurship on economy development in Karu LGA is while 11 respondents representing 3.4% agreed that poor creativity and poor self-confidence is the challenges hindering the role of female entrepreneurship on economy development in Karu LGA.

Conclusions

This study has enhanced our understanding on the effect of the Role of Female entrepreneur on Economic Development with reference to Karu Local Government Area as a case Study and in view of findings of this study, it is clear that the contributions of female entrepreneurs in today s entrepreneurship development cannot be underestimated. Their contributions mostly are in the areas of job creation, poverty alleviation, economic growth and financial sustainability. Female entrepreneurs face a lot of challenges which may discourage them from going into business, yet they are being motivated to start their own businesses.

Based on this, a conclusion could be made that the contribution of female entrepreneurship is becoming more crucial for the economic development of many countries. Female entrepreneur could even become one of the remedies to the current economic crisis. Female entrepreneurs have potentials to create employment opportunities, create wealth state and generally grow the economy. Females constitute half of the population. Therefore, if the economic status State woman is improved through entrepreneurial development, the socio-economic well-being will be attained. The results provide institution alizing policy framework that targets female entrepreneurship development, capacity building programme on business management for female entrepreneurs.

Recommendations

Based on the findings of the study, the following recommendations were made:

i. Female should understand that they play important role in economic development, they should therefore be prepared to start up entrepreneurial activity whether they are supported or not. This will help in building up their self- confidence and self-esteem which are important factors in taking the risks involved in starting and growing entrepreneurial ventures as they partake in positive creativity in the community, they also provide the needed inputs and materials for large enterprises while other sever as an agent of poverty reduction in the society.
ii. Since their contributions mostly are in the areas of Gross Domestic Product, job creation, poverty alleviation, economic growth and financial sustainability. The government should support female entrepreneurship in their business activities since they have the potentials to create employment opportunities, create wealth state and

generally grow the economy. Female constitute half of the Nigerian population. Therefore if the economic status State of female is improved through entrepreneurial development, the socio-economic well-being will be attained.

iii. The Nigerian government should as a matter of great concern give attention to female entrepreneur in the country as majority of employment today is created by entrepreneur whether small, medium or large scale for the citizens of Nigeria. Thus female entrepreneur in Nigeria have helped to reduce the rate of unemployment in the country and thereby helped the country to achieve their aims and objectives.

iv. Though this study reveals that female entrepreneur contributed to the reduction of poverty in Karu Local Government Area, thus, there is need for the country to invest more on upcoming female entrepreneur as their activities as been a big push to the formal and informal sector of the economy towards economic development of the country.

v. Female should endeavour to take advantage of all business opportunities in their environment by seeking advice and counseling from those women who are already succeeding in various types businesses since they have greatly impacted on the per capital income of Karu Local Government Area.

vi. Since lack of good access to finance is the challenges hindering the role of female entrepreneurship on economy development in Karu LGA. Thus, the government should as a matter of great concern make adequate provision of funds for females who are going into business in other to make them tackled all the challenges face by female entrepreneurs before taking the decision of going into business. Because if female entrepreneurs are aware of the challenges they might face, they could better prepare mentally and strategically toward the challenges.

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