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E-COMMERCE ADOPTION AND THE PERFORMANCE OF SMALL AND MEDIUM SCALE ENTERPRISES IN GOMBE METROPOLIS.

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Abstract

This study evaluated the relationship between e-commerce and performance of SMEs, in Gombe State, Nigeria. Profitability and market share were used as measures of performance. The study adopted the cross-sectional survey in its investigation of the variables. Primary source of data was generated through self- administered questionnaire. The population of the study was the SMEs registered with SMEDAN. A total of 30,000 SMEs represent the sample frame. The sample size was obtained using the Krejcie and Morgan (1970) table for determining minimum returned sample size for a given population. For our population, the table placed our sample size at three hundred and eighty (380). The research instrument was validated through supervisor's vetting and approval while the reliability of the instrument was achieved by the use of the Cronbach Alpha coefficient with all the items scoring above 0.70. Data generated were analyzed and presented using both descriptive and inferential statistical techniques. The hypotheses were tested using the Spearman's Rank Order Correlation Statistics. Findings from the data analysis revealed that e-commerce positively and significantly related with performance of SMEs (profitability and market shares) in Gombe state. The result of the findings recommends that investments should be made in better infrastructural facilities and better strategies that will improve consumers' and businesses' technological literacy and ensure a favorable environment for the adoption of e-commerce because they will increase profitability over the long term.

Keywords: *E-commerce, Profitability, Market Share, Performance and Small and Medium Enterprises*

INTRODUCTION

The creation and advancement of data technology have changed the nature and dynamics of business while also enhancing daily life. Due to this, things that were formerly seen as impossibilities have now become feasible (Neamțu, Hapenciuc, & Bejinaru 2019). Additionally, technology has made formerly difficult and complex business processes simple and more effective. It has improved consumers' access to the goods and services being offered and further increased the visibility of businesses like never before (Esmaeilian, Sarkis, Lewis & Behdad 2020). The world has become a "global village" as a result of this growth, allowing trade to occur between parties that are geographically separated from one another. The term "e-commerce" refers to this specific aspect.

Similarly, Nigeria has not been excluded from the expanding e-commerce trends as numerous businesses there have benefited from the development of information technology to increase their visibility and accessibility (Yeganeh 2021). In a similar line, despite having limited resources, Nigerian SME's have been able to take advantage of e-commerce to enhance business operations and increase consumer visibility (Pu, Qamruzzaman, Mehta, Naqvi & Karim 2021). This has led to the perception of e-commerce as a contemporary "industrial revolution." E-commerce, commonly referred to as electronic commerce, is the practice of trading in products and services through the use of telecommunications and instruments based on telecommunications (Kwilinski, Volynets, Berdnik, Holovko & Berzin 2019).

According to Tan, Tyler, and Manica (2007), organizing a variety of business processes and technology for competitive advantage while employing telecommunication and relationship-improvement networks, e-commerce is a cost-effective way to reach global clients (Katsikeas, Leonidou & Zeriti 2019). Although the idea of e-commerce was first established more than 40 years ago, academic interest in it is relatively new. E-commerce has a number of benefits over traditional businesses, including the ability to be evaluated whenever and anywhere in the world (Costa & Castro 2021).

According to Okeke, Ezeaghaego, and Oboreh (2016), e-commerce either directly or indirectly affects numerous facets of the global market. They claim that by doing this, the restrictions on information accessibility have been lifted, ensuring that anyone with Internet access can access it from any location. Additionally, Dhir and Dhir (2018) contended that the emergence of e-commerce has provided merchants with new chances by lessening the significance of geography and expanding their ability to reach customers who are in need of their services. Major corporations today have benefited from e-commerce to increase their profitability and operational efficiency. Due to the incorporation of ecommerce into their business strategies, they have grown to be significant enterprises. As a result, they were able to increase their market share from domestic to international markets.

Due to the expansion of several internet enterprises, Nigeria has also seen an increase in business e-commerce usage. Khan and Uwemi (2018) claim that the accelerated development of information technology in Nigeria has enhanced e-commerce activity. People all throughout the country may now shop from the comfort of their homes via email, internet ordering, messaging, and calling. Furthermore, Okeke et al. (2016) pointed out that e-commerce has given Small and Medium Scale Enterprises (SME) opportunity to enhance their business operations and experience quick growth.

The adoption of e-commerce among SMEs is still modest, notwithstanding the evidence from these enterprises. This is important since, in accordance with Dhir and Dhir (2018), SMEs are essential to the growth of the economy and as such, possibilities like e-commerce that can foster their development and growth should be grasped upon. Therefore, the purpose of this study is to ascertain the connection between small business performance and e-commerce adoption.

The following research questions would be addressed by the study:

i. What is the relationship between e-commerce and profitability of SMEs in Gombe Metropolis?
ii. What is the relationship between e-commerce and market share of SMEs in Gombe Metropolis?

LITERATURE REVIEW

Theoretical Framework

As the twenty-first century progresses, the significance of the internet in electronic business has increased (White, 2019). Particularly MSMEs have profited from this progress to the point where they can now use E-commerce technology to overcome the majority of their obstacles, such as financial constraints, small size, technological and human resource limits, and restricted worldwide exposure (Chien, Ngo, Hsu, Chau, & Iram, 2021). There are a number of theoretical models that attempt to explain the trends in MSEs' adoption of E-commerce.

Theory of Reasoned Action

This idea, which was first proposed in 1967, sought to explain how behavior and attitude interacted (Fishbein & Ajzen, 1975). It makes an effort to elucidate how attitudes, intentions, beliefs, and behavior are related. The theory of reasoned action (TRA) makes the assumption that people are rational and consistently use the knowledge at hand while also taking the effects of their choices into account before deciding whether or not to engage in a particular behavior. This idea states that behavior intention is the primary predictor of behavior adoption. For speculating on behavior, it comprises of social influences, attitudinal impacts, and intention variables.

According to this hypothesis, a person's decision to engage in E-commerce, for example, is influenced by both his attitude toward the activities and the general perception of peers. This theory has drawbacks because it doesn't address the precise beliefs that predict a given behavior. It is widely used to assess consumer behavior, but because to the dynamic complexity of organizations and the multi-phase, multi-objective, multi-departmental, and multi-person character of the decision-making process in them, there are questions about its applicability in an organizational setting. However, this logic does not necessarily apply to MSEs when a single person dominates the decision-making process (Ramsey, Ibbotson, & Mccole, 2008).

Concept of SME Performance

Performance as a concept is unquestionably the dependent variable that has received the most research attention, according to Tamunomiebi, Adim, and Adubasim (2018). In fact, it is the ultimate problem variable that piques the interest of most researchers who are interested in just about any area of management.

The performance of SMEs has been evaluated in a variety of ways by various researchers using various proxies as factors. For instance, some academics employ qualitative methods to assess the success of SMEs, while others utilize quantitative variables to do so. There are problems with adopting a macro or micro perspective on SMEs' performance as well as monitoring it holistically or specifically. The European Commission (2016) views the macroeconomic performance of SMEs as a three-dimensional result that includes: the total number of SMEs, the total number of employees, and the added value of SMEs.

According to Didonet and Diaz-Villavicencio (2020), the performance of SMEs can be viewed at the micro level as the manner in which an organization or corporation achieves its financial and market-oriented goals. In a similar vein, Rashidirad and Salimian (2020) asserts that SMEs' performance refers to their capacity and ability to carry out their goals and objectives through the effective and efficient application of their various types of resources. According to Nasrallah and El Khoury (2022), SMEs' performance can be quantified in terms of effectiveness, financial results, volume of production, and customer base. Seiler, Papanagnou and Scarf (2020) identified market share, profitability, productivity, dynamics of revenue, cost, and liquidity as the metrics to gauge SMEs' performance. Bilan, Mishchuk, Roshchyk and Joshi (2020) used a wide range of indicators to evaluate the performance of SMEs in their study, including: brand recognition, productivity, employee satisfaction, profits, sales, on-time order delivery, adequate working capital, effectiveness in production operations, product quality, achievement of goals, clientele, ease of supervision, decrease in product cost, and product diversification.

Rashidirad and Salimian (2020) focused on SMEs performance utilizing elements including leadership style, staff behavior, and goal achievement, whereas Wahjoed (2022) saw SMEs performance as customer satisfaction. This contrasts with Iqbal, Moleiro Martins, Nuno Mata, Naz, Akhtar and Abreu (2021) who saw SMEs performance as goal achievement. Exposito and Sanchis-Llopis (2018) views the performance indicators for SMEs in terms of organizational, marketing, and product and process innovation.

Measures of Performance

Profitability

Profitability is the amount of money a business can make using the resources at its disposal. Most organizations aim to maximize their profits (Vătavu, Lobonţ, Para and Pelin (2018). Profitability is the ability of a corporation, organization, or entity to generate income from all of its operations (Vătavu, Lobonţ, Para and Pelin (2018). The entrepreneur typically receives a profit as compensation for his or her investment. In actuality, an entrepreneur's primary driving force behind starting a business is profit. Additionally, profit is employed as a performance indicator for businesses (Ogbadu, 2009). Profit is the difference between sales income and total costs, which include labor costs, material costs, and so forth (Stierwald, 2010). The primary objective of a company enterprise is profitability, which can be stated as either accounting profits or economic profits (Anene, 2014). Profitability shows how well management uses the firm's resources to generate profits (Muya & Gathogo, 2016). As a result, businesses stand to benefit greatly from higher profitability (Niresh &Velnampy, 2014). Profitability is a crucial prerequisite for any company's long-term survival and success (Adubasim, Unaam, and Ejo-Orusa 2018). Investors are drawn to profitable businesses because they are more likely to last a long time (Farah & Nina, 2016). Many businesses want to raise their profitability, and they do so by investing endless hours in meetings to find ways to lower operational expenses and boost sales (Schreibfeder, 2006).

HO_1: There is no significant relationship between e-commerce adoption and profitability of SMEs in Gombe Metropolis

Market Share

Market share is the percentage of sales that a company generates in a certain market during a specified period of time. Higher profits result from having a larger market share. An offensive or attack approach to raise the company's standing in the marketplace is to increase or develop market share (Sarkissian & Schill, 2010). A product's market share indicates how much buyers favor it over competing goods. A larger market share typically translates into better sales, less work to sell more, and a high barrier to entrance for rival businesses. A leader will benefit more than the others if the market grows if they have a larger market share.

Likewise, a market leader, as measured by market share, must grow the market in order to sustain its position as a leader (Akcigit & Ates 2021). There are numerous techniques to grow market share; businesses typically combine several of them. Sometimes something as simple as raising advertising or changing prices can have a significant impact. This percentage can also be raised by grouping products and aiming them at particular demographics, as well as by producing related goods. Although this can be challenging, another tactic is to enhance the product or service itself, which can draw customers away from rivals. However, many businesses choose to grow alongside a market that is expanding rather than trying to outcompete their rivals (Sliden, 2014).

Market share is a crucial metric for assessing a company's competitiveness in relation to its rivals. This statistic aids managers in assessing both primary and selective demand in their market, along with changes in sales revenue. It helps them to assess trends in consumers' preferences among rivals in addition to the overall market's growth or decrease. In general, primary demand-driven sales growth (total market growth) is less expensive and more profitable than sales growth attained through stealing market share from rivals. On the other hand, market share declines may indicate major long-term issues that call for tactical changes. Market share below a given threshold may make a company unviable. Similar to this, within a company's product range, market share movements for specific items are regarded as early warning signs of potential possibilities or issues in the future (Armstrong and Greene, 2007).

HO_2: There is no significant relationship between e-commerce adoption and market share of SMEs in Gombe Metropolis

Concept of E-commerce

E-commerce Adoption

E-commerce is the process of buying and selling or transferring information, products, and services over the internet and other paperless media, according to Rahayuab, Aslah, Azahari, Ahmad, and Kamarudin (2020). Any business or economic activity that uses ICT-based applications to support transactions between businesses, business-to-business (B2B), individuals, customers to customers (C2C), or business to customers is referred to as e-commerce by Kimana (2020). (B2C). Therefore, e-commerce is the general term for the incorporation of various current and emerging technical applications in commercial operations. E-commerce technology grew rapidly when the internet and the web were commercialized in the late 1990s, and it hasn't slowed down since (Christensen, Amato, Yanco, Mataric, Choset, Drobnis, & Sukhatme, 2021).

In many respects, e-commerce has changed business operations in various firms, and this trend is projected to continue in the future (Hussain, Shahzad, Hassan, & Doski, 2021). Access to a larger market, enhanced operational effectiveness, the potential to connect with suppliers, better customer service, flexibility, and accessibility are just a few of these advantages (Luo, 2021). The advantages of e-commerce have been divided into tangible and intangible benefits in a different study by Achiando (2019), with the concrete advantages being greater sales, the acquisition of new customers, cross-selling, and access to new markets. Reduced marketing, distribution, and advertising expenses are further advantages. The cost of the supply chain is also lowered as a result of a quicker ordering procedure and less inventory. Administrative expenses for businesses are also reduced.

While the intangible advantages of e-commerce include better marketing communication, elevated brand awareness, convenience in locating new partners, improved corporate image, improved product development process, quicker customer feedback, and enhanced marketing information effectiveness. Over the past few years, e-commerce has altered people's lifestyles, access to new fashion, and how businesses conduct their operations (Ingaldi, & Ulewicz, 2019).

METHODOLOGY

The generation of data for the study used the cross-sectional survey methodology. The expected number of SMEs in Gombe State is the study's target population. There are roughly 30,000, according to SMEDAN (30,000). The minimum returning sample size for a given population was calculated using the Krejcie and Morgan (1970) table. The chart indicated that our sample size for our population was three hundred and eighty (380). Purposive sampling, with a focus on owners and managers, will be the sampling technique used in this study. With the help of the SPSS Package version 23, descriptive statistics and Spearman's rank correlation were employed for data analysis and hypothesis testing.

RESULTS AND DISCUSSIONS

Bivariate Analysis

The Spearman rank order correlation tool was used to analyze the primary data with a 95 percent confidence level. The tests specifically address the null forms of hypotheses Ho1 and Ho2, both of which were bivariate. To conduct the analysis, we used the Spearman Rank (rho) statistic. The probability of accepting the null hypothesis at (p>0.05) or rejecting the null hypothesis at (p0.05) is determined by the use of the 0.05 significance level as the criterion.
We will start out by outlining a proof of current connections.

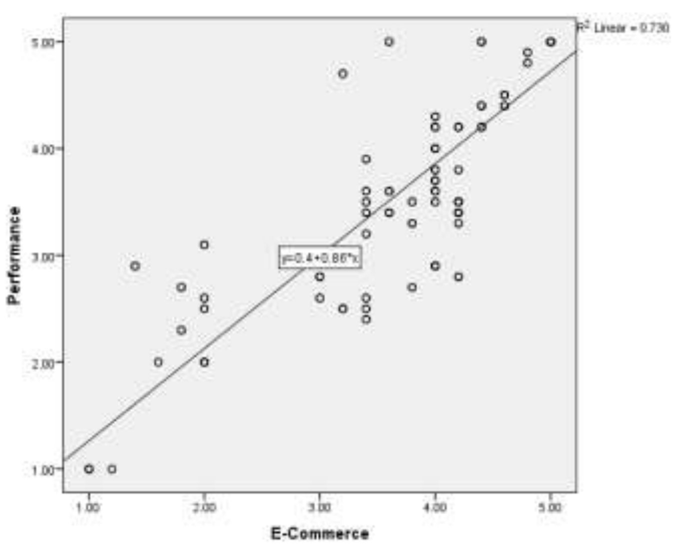

Figure 1: Scatter plot showing the relationship between e-commerce adoption and performance of SMEs

The scatter plot graph shows at R^2 linear value of (0.730) depicting a strong viable and positive relationship between the two constructs. The implication is that an adoption of e-commerce, simultaneously brings about an increase in the level of performance among SMEs. The scatter diagram has provided vivid evaluation of the closeness of the relationship among the pairs of variables through the nature of their concentration.

Table 1: Correlation Matrix Showing Relationship between E-Commerce Adoption and Performance of SMEs

			E-Commerce Adoption	Profitability	Market Share
Spearman's rho	E-Commerce Adoption	Correlation Coefficient	1.000	.798**	.801**

		Sig. (2-tailed)	.	.000	.000
		N	343	343	343
	Profitability	Correlation Coefficient	.798**	1.000	.754**
		Sig. (2-tailed)	.000	.	.000
		N	343	343	343
	Market Share	Correlation Coefficient	.801**	.754**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	343	343	343

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

Source: Research Data, 2022 (SPSS output, version 23.0)

The table above illustrates the test for the two previously postulated bivariate hypothetical statements.

HO_1: There is no significant relationships between e-commerce adoption and profitability of SMEs in Gombe Metropolis

The correlation coefficient (r) shows that there is a significant and positive relationship between e-commerce adoption and profitability. The *rho* value 0.798 indicates this relationship and it is significant at p $0.000<0.05$. The correlation coefficient represents a high correlation indicating a strong relationship. Therefore, based on empirical findings the null hypothesis earlier stated is hereby rejected and the alternate upheld. Thus, there is a significant relationship between e-commerce adoption and profitability of SMEs in Gombe Metropolis.

HO_2: There is no significant relationships between e-commerce adoption and market share of SMEs in Gombe Metropolis.

The correlation coefficient (r) shows that there is a significant and positive relationship between e-commerce adoption and market share. The *rho* value 0.801 indicates this relationship and it is significant at p $0.000<0.05$. The correlation coefficient represents a high correlation indicating a strong relationship. Therefore, based on empirical findings the null hypothesis earlier stated is hereby rejected and the alternate upheld. Thus, there is a significant relationship between e-commerce adoption and market share of SMEs in Gombe Metropolis.

Discussion of Findings

The findings revealed a strong and positive significant relationship between e-commerce adoption and SME performance using the Spearman's rank order correlation tool and at a 95% confidence interval. The findings of this study confirmed that e-commerce adoption has a significant positive relationship with profitability and market share. This finding is supports by the views of Okeke, Oboreh & Ezeaghaego (2016) who found that business-to-customer (B2C) exerts significant effect on the performance of small scale enterprises. It also revealed that E-commerce adoption has significant effect on growth of small scale enterprises. It was recommended that small scale enterprises yet to adopt ecommerce technology should do so to remain competitive in their industries.

Similarly, Akanbi & Akintunde (2018), concluded that e-commerce has potentials to improve the performance of SMEs operators and bring about expansion in business outlook if factors limiting the adoption of e-commerce like security issues, under developed infrastructures, poor delivery logistics and poor courier systems, infrastructure facilities, incompatibility of business with e-commerce etc., were eliminated.

Likewise, Kareem, Owomoyela, & Oyebamiji (2014), posits that e-commerce adoption has significant impact on service operations, cost operation reductions and profit levels. It was concluded that adoption of e-commerce by Nigerian supermarkets will reduce transaction cost, improve service operations, expand business base, better understand the needs of foreign customers, and increase profit levels.

Furthermore, Kabuba (2014), revealed that some of the challenges affecting online businesses but to a moderate extent are: potential customers reluctance to shop online due to desire to touch/interact with the product prior to making a purchase, lack of personal contact with customers which might be beneficial to business, e-commerce software incompatibility with existing infrastructure, customer distrust regarding privacy of personal data and finally, customers general lack of trust for online businesses..

In the same vain, Mutia, Ahmad, Aziz & Mohamad (2014), found that there is a correlation between organization performance with E-commerce business network, and E-commerce competency. The research contributed to both academic research and management practice as it provide comprehensive impact of how e-commerce adoption influence organizational performance at least in the case of Tourism industry in a small developing economy like Malaysia.

CONCLUSION AND RECOMMENDATIONS

Most SMEs are seeking for ways to stay resilient in the face of an ever-changing environment due to the expanding globalization and the necessity to accomplish corporate objectives. The advantages of adopting e-commerce outweigh the costs of investing since the emergence of e-commerce presents SMEs with significant opportunity to grow their client bases, access new product markets, and streamline their businesses. As a result, whether the investment expenses are large or low, SMEs who invest in e-commerce may continue to develop.

The study reveals that electronic commerce adoption had a strong association with the performance (profitability and market share) of Small and Medium Enterprises in Gombe State, demonstrating how important it was in reaching optimal performance in these SMEs.

The study makes the following recommendations:

i. Investments should be made in better infrastructural facilities and better strategies that will improve consumers' and businesses' technological literacy and ensure a favorable environment for the adoption of e-commerce because they will increase profitability over the long term.
ii. To increase their market share even further, SMEs' owners, operators, and employees should pursue more effective information technology (IT) training. This might be made possible by investing in high-quality IT equipment that will increase productivity and client loyalty.

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EVALUATION OF CIRCULATION STRATEGIES IN AN URBAN PUBLIC MARKET ZARIA, NIGERIA

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Abstract
Markets have been long known as a commercial platform and forms and integral part of many towns. Most markets in Africa as well as Nigeria have their transactions taking place in open-air. Over time some of the activities are now permanently situated in halls (covered market). The combination of open air market as well as covered market within an urban environment as can be found in Nigeria are bedeviled with a lot of circulation challenges. More also, market as an urban infrastructure offering the public a platform for continuous buying and selling attract traffic congestion, as any urban facility that draws inhabitant to congregate, causes traffic congestion. Planners have identified poor circulation as one of the nine infrastructure deficiencies within the public facility, and a common scene found in a public facility such as market is congestion due to poor traffic flow. Hence the need for proper circulation measures and strategies within a market, from various perspective most especially the residents (shop owners) and the users (customers). This research therefore embarked upon an empirical study of a market in Zaria Kaduna state with the view to explore the challenges of circulation with its antecedent challenges of both the shop owners and the customers using qualitative research approach. This entail participants' observation and conduct of interviews. The results of the findings which was content analyzed showed that circulation challenges in the market can be resolved through incorporation of spatial strategies that can hinder or promote effective circulation within the urban markets.

***Keywords**: Architecture. Behavior, circulation, congestion, design planning*

Introduction

The urban central markets are said to be the focal point of activities, which tends to give the city life. In a local setting, commercial activities such as market is done in open air with individuals advertising goods physically with a linear arrangement. (Onuorah , Mbah , & Okafor , 2021) In the past and until now most rural market are done under trees, thatched roof shelter, and temporary timber shops exposing both buyer and sellers to the adverse effect of weather, (Onuorah *et al,* 2021). However in some urban environment market activities are now carried out in halls (covered market), (Peter, David, & Daphne, 2007). Market host heavy traffic especially on market days as a result of human and vehicular movement in most cases causing congestion in the environment.

The daily necessity of individual desire to satisfy their needs has transform place like market to a point of high activities, characterized by heavy pedestrian traffic and vehicular movement this has largely boycotted the free flow of circulation and creating high congestion in such areas, (Onuorah *et al,* 2021). According to a study carried out by Organisation for Economic Co-operation and Development. (OECD), alongside the European Conference of Minister of Transport (ECMT) reveals in their study, that any form of attraction that draws inhabitants to congregate in multitude can also lead to congestion, (OECD & ECMT, 2007). According to Onuorah, (2013). Poor circulation within a facilities, tends to creates a lot of disordering causing congestion within the facilities and it surrounding, he further opined that one of the major resolve that should be considered in circulation is the conflict between human and vehicular circulation, because failure to consider that will hamper the proper efficient operation of the market.

Urban research reveals circulation congestion as one of the nine infrastructure deficiencies within a facility and it environment, (Jones, Moura, & Domingos, 2014). However in Zaria and in Nigeria as a whole most existing market are bedeviled with circulation challenges. Most urban market are characterized with lack of clarity disorderliness in spatial arrangement, poor transition and buffer zones, regular conflicting of human and vehicular movement, poor provision of parking spaces, lack of good display area, poor offloading point, spatial disorderliness and poor arrangement of stall and shops. Therefore the need to bring passive architectural solution to this ugly situations cannot be over-emphasized. Hence the study seeks to explore the challenges of circulation with it antecedent challenges of both the shop owners (sellers) and the customer (buyers).

LITERATURE REVIEW

According to Neil & Ryan. (2015), market is a social platform or a gathering were continuous transaction is being carried out between buyers and sellers based on mutual understanding between participants. Market provides a robust social platform for interaction, creativity, proximity, identity and diversity, (Guardia & Fava, 2010).Apart from being a major forum for commercial activities, market in local and rural areas are place for socio-cultural interaction. There are diverse documents with claims of pioneering the first central market. However one of the earliest predecessors of central market is known as “the Canton Bazaar”. Opened in 1842 by Chinese living in same neighborhood. The Canton Bazaar was renamed to Central Market and moved to the current site in 1850 In 1895, the Government rebuilt the former Central Market to a more elegant and western style, (Cheng, 2001).

According to Wood (1974), market in Africa evolved locally within communities and were found at communication nodes of maximum accessibility, for example at road junction. However, Mullur & Deblij. (1994), in their research on evolution and development of market in Africa, argued that development of traditional market in Africa started with the sub-saharan African trade and concluded that market institution in Africa evolved as a result of external trading. Several factors that supported evolution of trade in certain part of Africa includes; Peace in area, accessibility, increase in population density and administrative influence.

The presence of markets is desireable in any city or town due to the fact that commercial activities are the strength of several economies (Fakere & Fadamiro, 2012). Market afford society the platform to transact their business and create balance in the economic life of society. Market serve as a driving force for change in the cities cultural, social, and economics life, as it provides the urban environment with regeneration models as a system of sustainable living, (Schappo & Van Melik, 2017). According to Fabrizio (2013), expert on the future transformation of town and cities highlight on the importance of public market in the era of globalisation, as a platform which creates social interaction, security, identity, creativity and diversity, (See fig 1.0). Market is seen as the city’s original civic centres, this is because market provide space for social interaction with people from different ethnic, cultural and socio-economic communities (Sara, 2014).

Fig 1. Image showing benefit of public market

Source: Sara, 2014

Architectural Circulation of Market

Architectural circulation refers to how occupants traffic and move within a building and it surrounding, and how the relate with the physical space around them. Asya *et al.,* (2015) People by their inherent instinct determine where to go, however their behavior can often be determined by the nature of form and layout of space within the building, (Giovanni, 2018). In other to prevent people from creating a haphazard circulation path in a public facility like market a well define circulation path is of great necessity. The concept of movement through a building space is one of the core themes in architectural theory, design, and practice. According to Jiang & Liu. (2010), the circulation system is often referred to as a "skeleton" that forms the supporting structure of the building. Building circulation is a principal organizing mechanism of layout and communication space as it connects exterior and interior areas and reflects the overall spatial organization of the building. In a huge facility such as market proper circulation helps in making the destination evident to the user (occupants), so that users can easily direct their movement towards their goals. Thus, circulation reveals in an effective way how patterns of space and configuration affect users through movement, (Asya *et al.*, 2015).

Types of Architectural Circulation

According to Onuorah, Mbah, & Okafor. (2021), There are two main types of circulation in architecture, they are, horizontal circulation; this are transit path within a building and it surroundings that leads occupants from one space to another within a particular level. This paths are required to be adequate in size and proportion, and characterized with element such as railing, kerps, change in level. Vertical circulation this are building elements that helps convey occupants of a building from one level to another. They are in form of Elevators, stairs, ramps escalators.

Circulation as a Challenge in Urban Market

With the recent increase in population as a result of urbanization, cities in developing countries are beginning to experience high influx of people within the urban environment, such that public spaces such as market experience heavy pedestrian and vehicular traffic as a result of economic activities being carried out within and around it surrounding, (Garret, 2009). An important factor to consider in the design of market is the ease for pedestrian circulation and proper vehicular traffic. Fig 2. shows Congestion in a market as a result of poor circulation, which further buttress the need for proper circulation measures and strategies within public space such as market. A research carried out by Mustafizur, Shahidul, & Mohammad. (2016), a market redevelopment process is expected to meet up with proper security, increase economic returns, and reduce congestion, hence a proper market circulation. The research further reveals that circulation within the internal part of the market need to be considered in the design for easy access of customer. This makes circulation a phenomenon to consider in the design of public facility such as market.

Fig 2: Showing congestion due to poor circulation in market
Source: Adeke and Aper (2018)

Causes of Congestion in Market

According to Agyapong *et al.* (2018), one of the major phenomenon that have bedevilled the urban environment especially market centres, is traffic congestion. This is as a result of continuous inflow and outflow of people into the market. With the increase of population (urbanization) within an environment such situation has a negative implication on the growth and the socio-economic development of the community causing delay, waste and loss of money (Baffour , 2010). Yildrim (2001) in his research asserted that any urban facility that is economically active will scarcely avert congestion. Congestion becomes an unavoidable situation resulting from scarce circulation facilities such as, inadequate walk ways, inadequate stairs, lifts and escalators, inadequate parking spaces, way finding signals and ineffective traffic management, spatial disorderliness, (Blanco, *et al*., 2009).Traffic congestion also results from pressure on the use of circulation facilities beyond it capacity, poor market management.

METHODOLOGY

A qualitative research method was adopted in this study; this involves a descriptive research employed as a scientific method that can be used in observing and describing the nature of a subject.

A desk study was done on relevant material related to proper circulation in public buildings especially markets. After that, case studies were carried out as a primary source of data collection method adopted in this study, were relevant information was obtained through physical observation. An observation guide was drafted by the researcher. This gave the researcher more focus on needed parameters to observe and information to extract. Table 1 contains the parameter that were observed

Table 1. Checklist for observation and assessing sampled market
Source: Author's field work

S/No	Variables
1	Site accessibility
2	Parking Spaces (For different vehicle)
3	Circulation Path (Movement pattern for both pedestrian and vehicle)
4	Spatial arrangement (stalls and stores)

5	Circulation elements (Stairs, Ramps, Escalators, Elevators)
6	Circulation Buffer Zones
7	Defined Goods display area

A non-random sampling techniques was adopted in this study, which involves intentional selection of specific samples relevant to the subject of judgement. These samples were selected to be subjected under observation by the researcher in line with the drafted observation schedule, in order to extract information relevant to the study. The following are listed samples(markets) selected to be observed as shown in table 2.

Table2: List of Sample Markets
Source: Author's field work

S/No	Samples	Locations
1	Sabon-gari market	Zaria
2	Kure Market	Niger State
3	Ariaria Market	Abia State
4	Sokoto Central Market	Sokoto State
5	Kejetai Kumasi Market	Ghana, Kumasi

DATA ANALYSIS

In this research, data gotten have been analysed using qualitative data analysis principles. The data gotten by the researcher using the observation guide was analysed using the Microsoft excel software, and the results were presented using plates and figures.

Evaluation of Circulation Strategies in Markets

i. Site accessibility

Accessibility into the site is an important factor to consider, because it define how pedestrian, and vehicle such as bicycle, motorcycles, tricycles, cars and even trucks traffic in and out of the market. The urban markets observed shows that 60% of the whole market observed has define entrance point and 40% don't have.(See fig.3)

Table 3: Site accessibility
Source: Author's field work

Markets	Present	Absent
Sabon-gari market zaria	✓	
Kure market	✓	
Sokoto central market		✓
Ariaria central market Aba		✓
Kejetai central market Kumasi	✓	

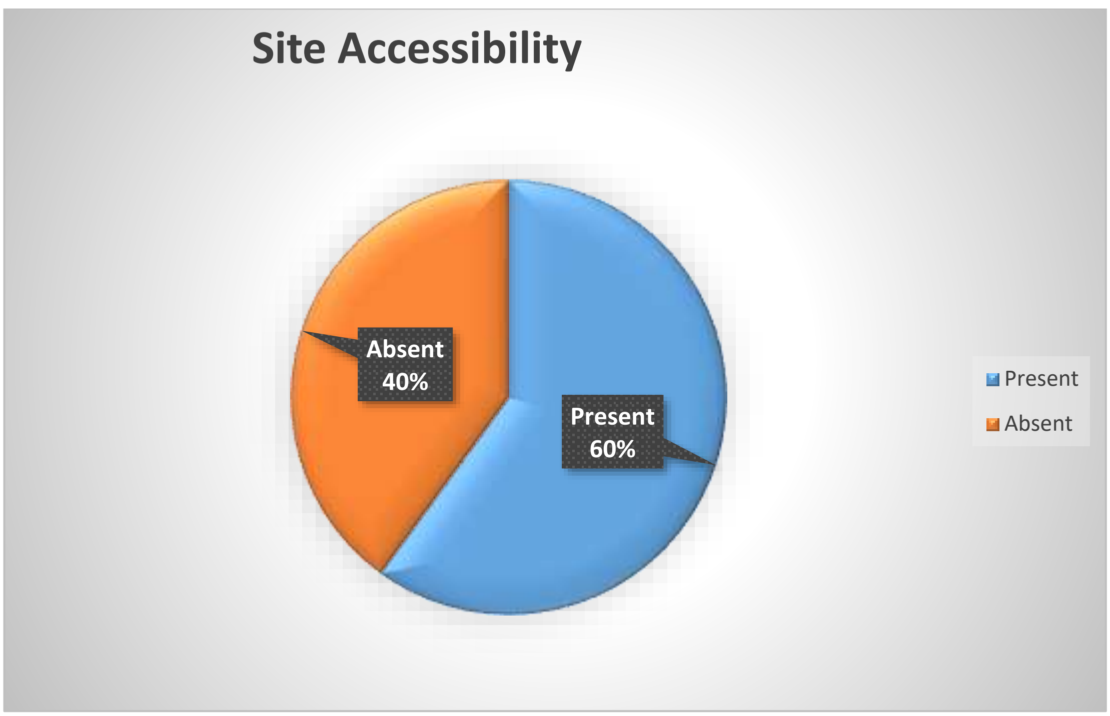

Fig 3: Percentage distribution Site accessibility
Source: Author's field work

ii. Parking Spaces (For different vehicles)

Presence of vehicular parking space is of paramount importance in creating proper circulation within a facility such as market, as it help prevent irregular and haphazard parking within the market and it surrounding. From the observation carried out in different market 20% of the market has adequate parking while 80% is lacking in parking spaces (See fig.4)

Table 4: Parking spaces
Source: Author's field work

Markets	Adequate	Inadequate
Sabon-gari market zaria		✓
Kure market		✓
Sokoto central market		✓
Ariaria central market Aba		✓
Kejetai central market Kumasi	✓	

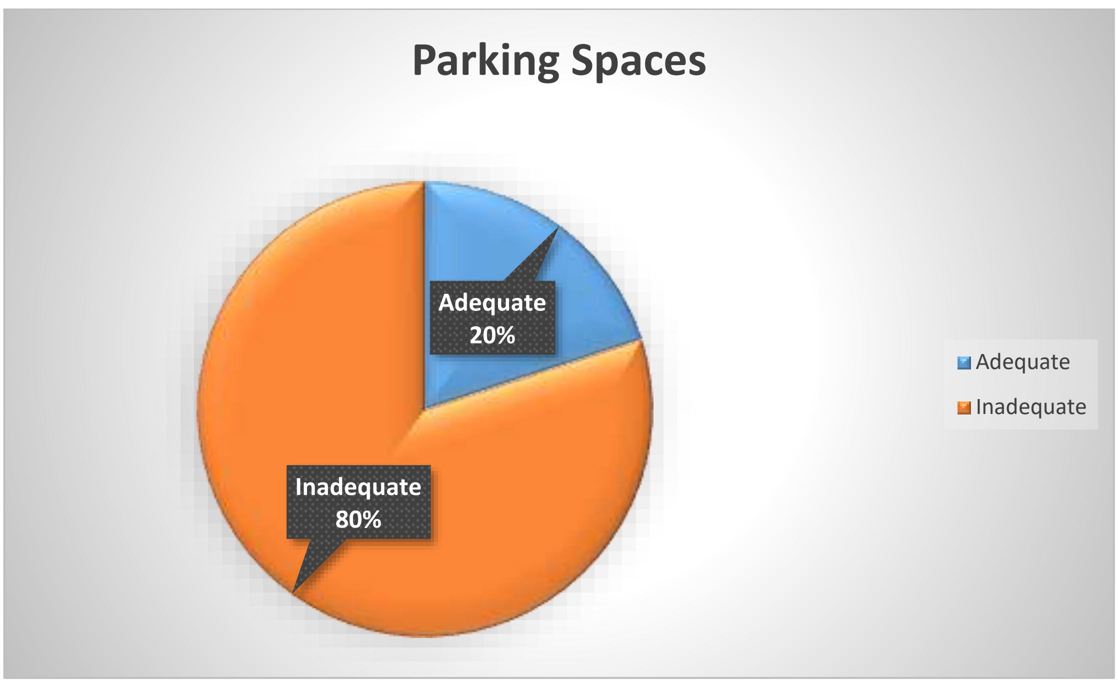

Fig 4: Percentage distribution adequate parking space
Source: Author's field work

iii. Circulation Path (movement pattern for both pedestrian and vehicle)

Circulation path shows the predefined paths and pattern of movement for both vehicle and pedestrian, were a tarred road is made for vehicles and pedestrian path are interlocked. From the observation carried out, 80% of the market experience inadequate parking space while only 20% have adequate parking space for various vehicles (See fig.5)

Table 5: Circulation Paths (pedestrian and vehicular)
Source: Author's field work

Markets	Adequate	Inadequate
Sabon-gari market zaria		✓
Kure market		✓
Sokoto central market		✓
Ariaria central market Aba		✓
Kejetai central market Kumasi	✓	

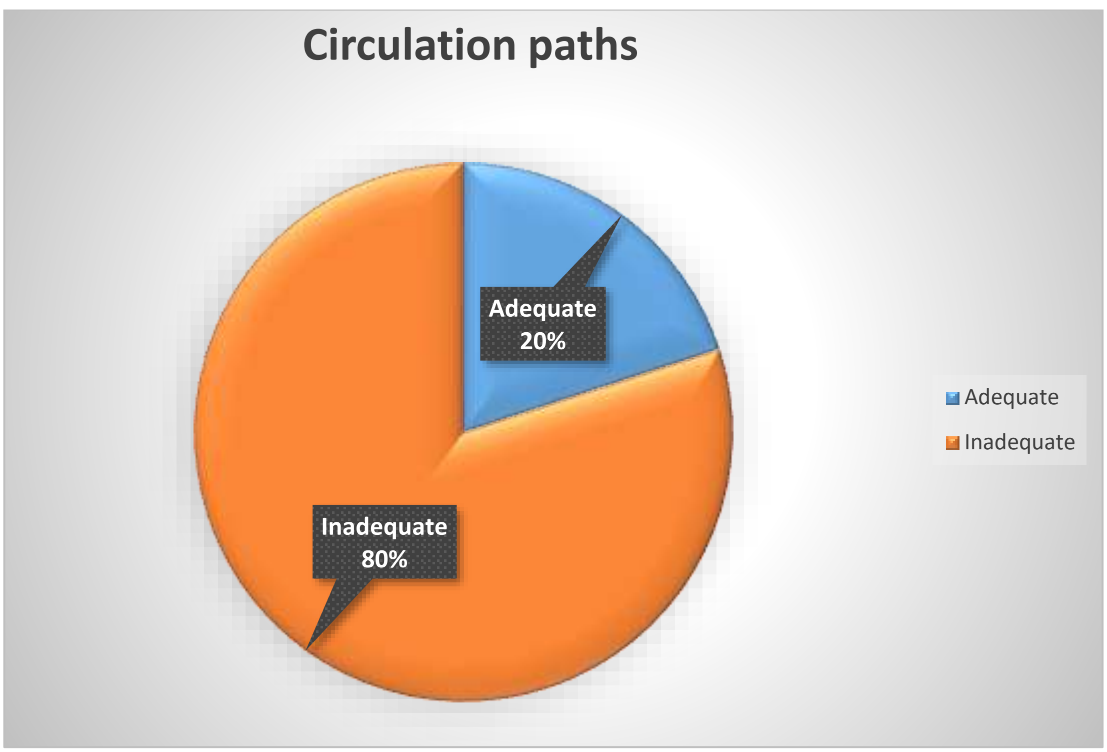

Fig 5: Percentage distribution Site accessibility
Source: Author's field work

iv. Spatial Arrangement (Stall and store)

Proper spatial arrangement of stores and stalls in markets helps a lot in circulation and helps reduce congestion. Proper spatial arrangement also helps prevent development of unwanted stall springing up within the market facility. In the observation carried out 60% of the total market lacks proper spatial arrangement and only 40% have proper spatial arrangement (See fig.6)

Table 6: Spatial arrangement of stores and stalls

Markets	**Adequate**	**Inadequate**
Sabon-gari market zaria		✓
Kure market	✓	
Sokoto central market		✓
Ariaria central market Aba		✓
Kejetai central market Kumasi	✓	

Source: Author's field work

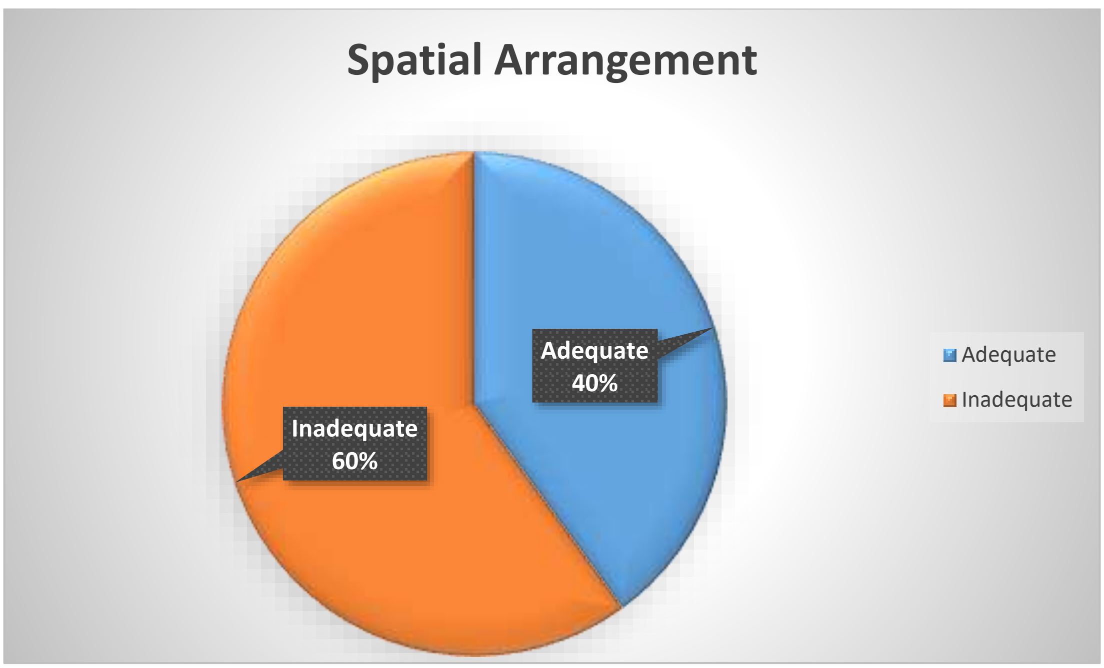

Fig 6: Percentage distribution spatial arrangement
Source: Author's field work

v. Circulation Elements (Stairs, Ramps, Escalators, Elevators)

The 26th Musltidisciplinary Academic Conference Proceedings of Mediterranean Research and Publications International on Sub-Sahara African Resources for Sustainable Development: Multidisciplinary Approach, Vol. 26 No. 1, 29th July, 2022- Gombe State University, Gombe, Gombe State, Nigeria.

The importance of circulation element such as stairs, escalators ramps, elevators cannot be over emphasized, as it aids vertical movements of occupants in buildings, especially ones with suspended floors. Circulation elements such as ramps and elevators also helps better movement of walking impaired occupants. In the study carried out only 20% of the market observed have proper circulation elements (See fig.7)

Table 7: Circulation elements
Source: Author's field work

Markets	**Adequate**	**Inadequate**
Sabon-gari market zaria		✓
Kure market		✓
Sokoto central market		✓
Ariaria central market Aba		✓
Kejetai central market Kumasi	✓	

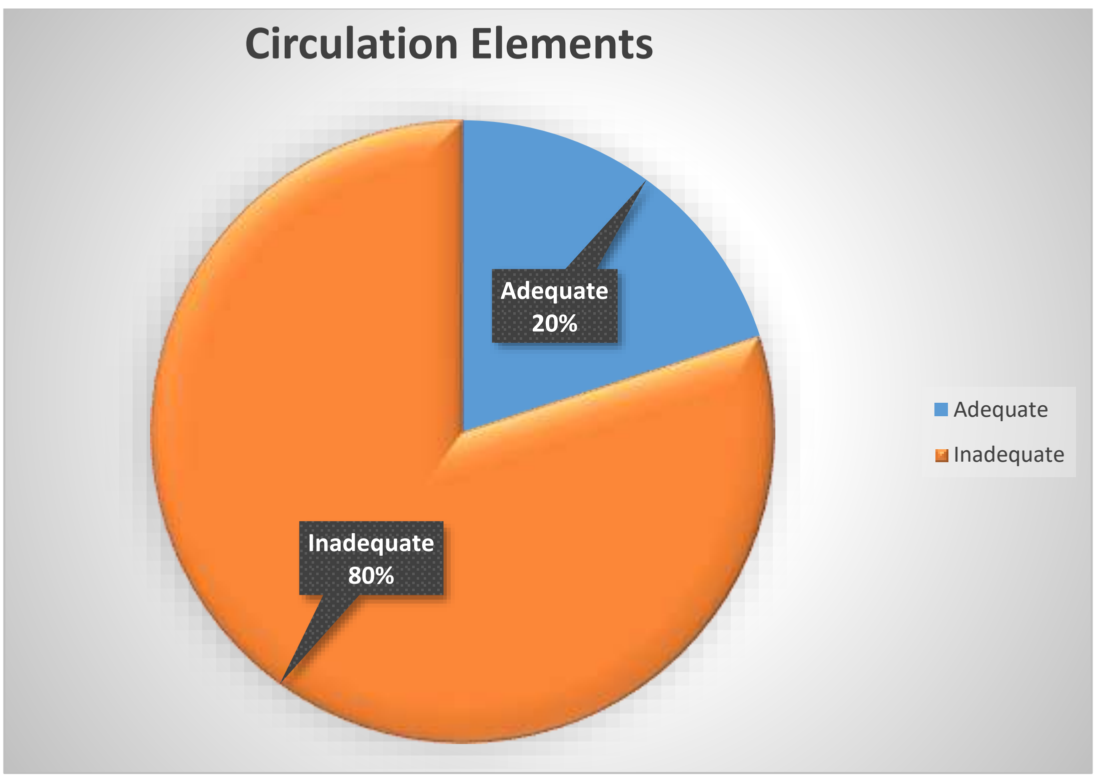

Fig 7: Percentage distribution circulation elements

Source: Author's field work

vi. Circulation Buffer zones

Proper circulation buffer zones within a public facilities such as recess from active circulation paths, leisure sitting areas, landings on stair cases and ramps and elevator waiting areas, is necessary and helps to compliment circulation elements within the facility. From the study only 20% of the market observed have buffer zones while the remaining 80% totally or partially lacks buffer zones. (See fig.8)

Table 8: Circulation buffer zones

Markets	Adequate	Inadequate
Sabon-gari market zaria		✓
Kure market		✓
Sokoto central market		✓
Ariaria central market Aba		✓
Kejetai central market Kumasi	✓	

Source: Author's field work

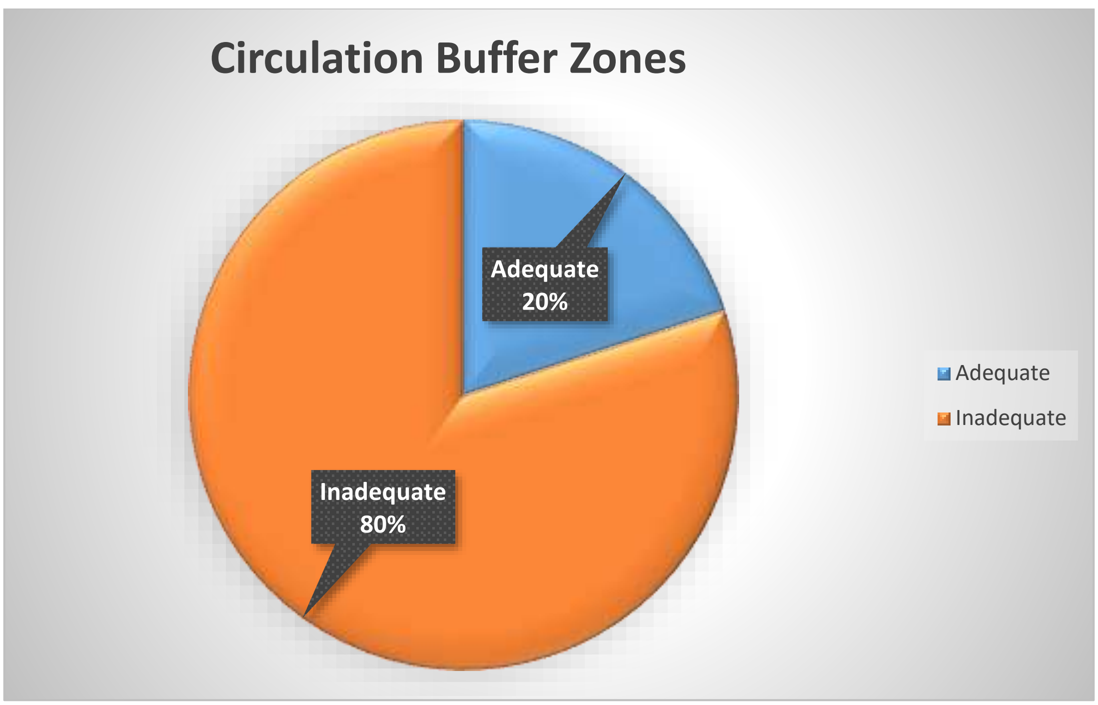

Fig 8: Percentage distribution of buffer zones in markets
Source: Author's field work

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vii. Defined Goods Display Areas

A well defined goods display area will help in complimenting circulation positively within the market, as lack of this has only forced occupants to display their good on path made for circulation. From the study carried out 100% of the markets observed lack a well define space for goods display for seller to display their goods. (See fig.9)

Table 9: Defined goods display areas
Source: Author's field work

Markets	Adequate	Inadequate
Sabon-gari market zaria		✓
Kure market		✓
Sokoto central market		✓
Ariaria central market Aba		✓
Kejetai central market Kumasi		✓

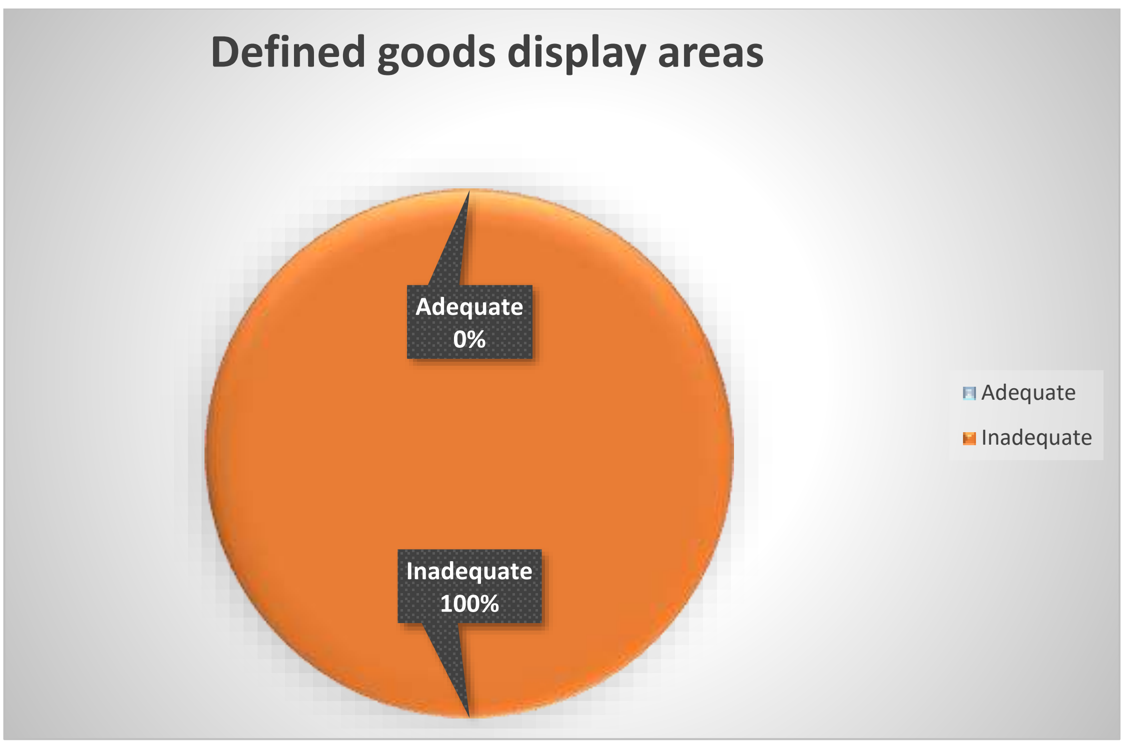

Fig 9: Percentage distribution of buffer zones in markets
Source: Author's field work

Summary of Analysis and Findings

From the analysis carried out it is seen that most of the market being observed are lacking majorly on the variables considered for proper circulation within a market large percentage of analysis is on the negative side of the variables considered for proper, for proper circulation. This has resulted to poor circulation within our market facilities, causing high congestion and creating high disorderliness in commercial activities being carried out.

CONCLUSION AND RECOMMENDATION

The study revealed that majority of the market are plagued with circulation problem, as result of negligence in considering various vital factors of circulation that needs to be put in place for a facility such as market to experience proper circulation for both pedestrian and vehicles. Meanwhile some of negative effect that causes poor circulation within they are as result of poor market management.

Therefore this research recommends market designers and planner to consider without negligence various factors that facilitates proper circulation within public facilities such as market, especially creating proper spatial arrangements of stores and stalls and also adequate goods display areas for sellers as it is observed that due to lack of goods display area; many sellers are force to display their goods on the well designed circulation paths, there by reducing the efficiency of the circulation path. Market officials should also set proper standards that helps boycott springing up of unwanted stores and stalls within the market.

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ASSESSMENT OF CROWD CONTROL DESIGN STRATEGIES FOR POST COVID CONFERENCE CENTRE IN MINNA, NIGERIA

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ABSTRACT

COVID-19 virus created a new challenge to all the major industries around the world, being an air burn disease coming together of a large group of people can increase the risk of spread of COVID-19. This has brought about the need for building experts to come up with a way to minimize the spread of the disease in large spaces such as a conference centre. This paper seeks to minimize the spread of COVID-19 virus using building itself. The goal of this paper hence, is to identify the processes in the use of a conference centre, areas where the spread is eminent and then provide the necessary building design strategies to minimise the spread of the disease. In order to archive this, major areas such as the meeting areas, as well as crowded areas, walk ways and rest rooms would be looked into. A quantitative research method was used where questionnaires was disturbed and a sample size was taken from Minna, Nigeria. The data collected was analysed using descriptive statistical tool. It was discovered that public building that are existing have not been able to find a solution to the spread of the disease, although temporary solutions were provided which is not as effective to reduce the spread. The use of face masks and placement of basins to wash at strategic points was adopted. The implementation of layered approach for indoor spaces, proper ventilation of large spaces as well as air condition spaces is recommendeds. In conclusion, the size of a building does not matter when it comes the reduction of COVID-19, what matters is the how ventilated the space is.

Keywords: COVID-19, Architecture, Conference centre

INTRODUCTION

Crowds consists of companions clusters (Kenny, *et all,* 2001), hence, they do not all assume the same sense of anonymity, even if they do act the same it does not last for long. The reason for crowd control is firstly to ensure the safety of the crowd at an event, hence with crowd control everyone in the event have the right to enjoy themselves. In crowds individuals act and behave in a manner that they will not when on their on own on the streets, which could lead to mayham. Poor crowd manageement can cause damages to properties and as far as loss of life. With crowd control there is better organisation. With a lot of people moving on pedestrians as well as in vehicles crowd control becomes mandatory.

Architecture has advanced towards building spaces that withstand pressure as well. Importantly in the design of large spaces tht can contain crowd in providing unique approaches in long-term and short-term solutions and actions for a better developed evnironment, as well as updated existing buildings. This kind of building design needs to be supported with other elements such as, well planned layout based on the function of the building sapce design, circulation, and behaviour of the users to be able to assist users in the situation where there are extreme events.

COVID-19 has during the course of a year killed over three thousand people in Nigeria alone (NCDC, 2022).it is difficult to conclude that the building industry is not affected by this development, in fact it plays a major role in the reduction and spread of this disease. This paper seeks to minimize the spread of COVID-19 virus using building itself. The goal of this paper hence, is to identify the processes in the use of a conference centre, areas where the spread is eminent and then provide the necessary building design strategies to minimise the spread of the disease.

EVOLUTION OF THE ECCLESIASTIC ARCHITECTURE

Just as every great organization or movement, the church started from somewhere. History shows that believers as popularly known create spaces of worship in a way that help propel the worship experience expressing their double characters, that is preaching the gospel as well as catering for the needs of the converts. Here is a brief background of the Christin church, a place where worship is endowed with symbolism. These needs have raised questions each worshipper should ask such as, how does a building affect the worship? How does the designer understand these processes? These questions have created a historical trial in ecclesiastical architecture.

THE HOUSE CHURCH

For every movement that starts there is always level resistance posed at it in order to see its end, for the case of Christianity it from the Roman empire. Christianity is seen as a fellowship of people to worship, pray, sing and share their need especially for the early church which started after Jesus had ascended to heaven (Fellowship, 2020)

BASILICA CHURCH

Originally the term referred to a style of building. Early Christians, when they could worship in the open, did not wish to have churches that resembled pagan temples. Instead they adapted the large Roman building which was a Hall of Justice. This building was called by the Greek word "basilica," which means "the house of a king." The ancient Roman floor plan of the basilica usually had three or five naves that were separated by columns. At the far end there was a raised platform for the judge's bench. Many columns and arches were standard features of the classical basilica.

The church is a historical center of the growth of the Catholic faith.

1. The church is outstanding for its architectural design and embellishments which render it a fine specimen of art.
2. The church is a center of pilgrimage of special ministry, as to a definite ethnic group.

THE MONASTERY CHURCH

In 313 CE, Constantine the Great (272 – 337 CE) ended the sporadic-yet-terrifying Christian persecutions under the Roman Empire with his "Edict of Milan," and brought the Christian church under imperial protection. Not surprisingly, public social activities and normative culture changed, quite dramatically and favorably, for the early Christians. Previously, early Christians faced dangers from outside of the faith and often had to "worship underground," in order to avoid both physical dangers and social oppression from various Pagan and Jewish factions in the first three centuries of the faith. However, after Constantine's imperial endorsement and favouritism for Christian leaders and the laity, a new cultural permissiveness and secularism arose within the faith; and pious believers began to worry more about inner church immorality, abuse, and vice.

GOTHIC AND ROMANESQUE CHURCH ARCHITECTURE

The name gives it away–Romanesque architecture is based on Roman architectural elements. It is the rounded Roman arch that is the literal basis for structures built in this style.

All through the regions that were part of the ancient Roman Empire are ruins of Roman aqueducts and buildings, most of them exhibiting arches as part of the architecture. (You may make the etymological leap that the two words are related, but the Oxford English Dictionary shows arch as coming from Latin arcus, which defines the shape, while arch-as in architect, archbishop and archenemy-comes from Greek arkhos, meaning chief. Tekton means builder.)

Gothic Architecture

Forget the association of the word "Gothic" to haunted houses, dark music, or ghostly pale people wearing black nail polish. The original Gothic style was actually developed to bring sunshine into people's lives and especially into their churches. To get past the accrued definitions of the centuries, it's best to go back to the very start of the word Gothic, and to the style that bears the name.

RENAISSANCE CHURCH

Renaissance architecture, style of architecture, reflecting the rebirth of Classical culture, that originated in Florence in the early 15th century and spread throughout Europe, replacing the medieval Gothic style. There was a revival of ancient Roman forms, including the column and round arch, the tunnel vault, and the dome. The basic design element was the order. Knowledge of Classical architecture came from the ruins of ancient buildings and the writings of Vitruvius.

MODERN OR CONTEMPORARY CHURCH ARCHITECTURE

The modern and contemporary church buildings are upshots of the modernist and postmodern architecture. The modern church style employs an architectural form hinged on a basic shape, with facades consisting of reinforced concrete material ornamented for aesthetic purpose. The entire outlook of the church carries the basic features of a quintessential church structure existing at that time. the post-modernist idea on the design of a church structure on the other hand employs the use of visually light materials such as the glass facades, contemporary façade finishes such as titanium etc.

CROWD CONTROL

HISTORICAL BACKGROUND AND HAPPENINGS ON CROED CONTROL

Crowd disasters have been quite a common occurrence in different parts of the world. below are a few accounts of crowd disasters that have occurred in a descending order of occurrence. In the year 2017, eight people were killed and 60 seriously injured in a stadium crush in DembaDiop stadium in Senegal. (Al Jazeera, 2017). In 2016, at least 52 people were killed during a thanksgiving festival in Ethiopia from human stampede (BBC news, 2016). In the year 2015, no fewer than 19 people died after a stampede that occurred in a football match in Cairo Egypt. (Maher H, 2015) In the year 2014, Tragedy occurred when about 16 to 24 recruits were killed and more than 119 were injured at several stadiums and other centres across the country of Nigeria.

CROWD CONTROL AND ITS CONCEPTS

The term “crowd control” literally means measures put in place to keep crowd orderly. This definition however does not specify the approach or method adopted in the quest to keep crowd orderly, whether actively or passively. Passive crowd control design is the integration of architectural elements features and principle to control crowd in both normal and extreme (emergency) conditions (Winter, 2012). This definition highlights two distinct situations that warrants passive crowd control design measures: normal and emergency conditions. Crowd control during normal conditions are meant to incorporate features required for crowd comfort, restriction of crowd from unwanted positions, ease in circulation, while emergency conditions focuses on features responsible for crowd evacuation within the shortest possible time. According to Maslow‟s hierarchy of needs, safety and security constitute the second

CROWD DYNAMICS

Crowd dynamics is the study of the movement of people: how, when and where crowds are formed and how they move. The behavior of people may be affected by the conditions of their immediate environment as a result of interactions with the space and the behavior of the other people. There may be spreading over the space in large environments and compression of groups of people in small spaces. The density of the surrounding crowd affects the speed of each person and individual behaviors due to personal characteristics and their response to environment can be included to modify the locomotion (Loet al., 2002). Moreover, the behavior of crowds show different characteristics compared to individual behaviors and the behavior of people during disasters differs from that of normal conditions. People do not like interruptions and interference with their activities and lives, so they would follow routines and see warning s as an “exercise” ignoring the signs in order to continue with their normal behavior when they face d with a disaster (Boer and Skjong, 2001)

CROWD DENSITY

Crowd density is the level of concentration of people in a given space it can be mathematically said to mean the number of people per unit area of a space. Crowd density is a vital factor in circulation crowd as well as emergency evacuation of crowd during extreme conditions. Standards have been put in place as to the maximum number of people required in a space. According to events management book, the standard crowd density for a seating crowd is 1person per square meter (1 per/sqm).

CROWD MANAGEMENT

Crowd management is the process of controlling the behaviors of large groups of people for their safety and security. It involves planning, organization, guidance and evaluation activities (Sagun et al.,2008). Crowd safety and security in public areas are primarily the organizer's or operator's responsibility. A health and safety management system is required to monitor and control potential crowding risks in public areas. The four interacting elements that need to be put into consideration to minimize injuries and death during crowd situations are defined as: time, space, information and energy by Fruin(1984).

BASIC CROWD CONTROL DESIGN MEASURES IN LARGE CAPACITY BUILDINGS

As afore said, safety of crowd in large capacity buildings is of high importance. The requirements for crowd safety in large capacity buildings conflict with those required for security, as the initial seeks to increase modalities for ease in movement while the latter seeks to restrain and monitor movement (Billingtonet al., 2002). Thus proper synergy between security and safety has to be achieved to ensure a logical balance. According to Daolianget al.,2006 and Helbing et al., 2002 the three most important factors that can cause reduction of evacuation time in large capacity buildings are the placement and width of exits and the placement of environmental objects.
Sagunet al. (2008) enumerated the design variables to consider when addressing the issue of passive crowd control.

1. Size and capacity of the building.
2. Characteristics of entrance to the building
3. Building layout.
4. Number of routes and doors.
5. Dimension of the routes and doors

RESEARCH METHODOLOGY

Descriptive survey method was used on the selected church buildings in Abuja. Owing to the fact that the variables for evaluating passive control design measures are physically measurable variables, observation schedule was used which also involved the physical measurement of linear variables (length, breadth, depth). A total of 10 samples were selected from a study population of 447 churches using stratified purposeful sampling method which according to Palinkas (2013) will provide variation in the sample selected bringing to bear some specific features the researcher wishes to observe in the selected population sample. In this vein the criterion for selection of samples is the seating capacity of the churches, choosing a minimum requirement of 1000 seating capacity for the selection of samples. This was to afford the researcher a wide range of passive crowd control design features required to be evaluated. It is also noteworthy that no 2 churches were selected from the same denomination as this stratified sampling technique afforded the researcher a variety of design typologies as are obtained from the different samples selected.

Name of churches
1 National Ecumenical Centre,Central Area, Abuja
2 Champion"s Royal Assembly, Chikakore, Abuja
3 Holy Trinity Catholic Church Maitama Abuja
4 Living faith church Dutse, Abuja 5 Redeemed Christian Church of God Kubwa, Abuja
6 ECWA Blantire, Wuse, Abuja
7 St Bartholomew Anglican cathederal, kubwa, Abuja
8 Common Wealth of Zion Assembly, Guzapei Hills Abuja
9 First Baptist Church Garki Abuja
10 Dunamis International Gospel Centre, Area 1, Abuja

RESULT AND DISCUSSION
Capacity of Church Building
Capacity of the space has a strong influence on the crowding (Fruin, 1984) and bottlenecks because as (Casburn,L *et al*, 2005) stated that people spread out when there is enough space to avoid collisions and they bunch up without intersecting at bottlenecks. The capacity of an enclosed space is the first factor to consider when designing for crowd control.

Table1. *Capacity of Church Building*

s/n	Name of church	1000-2500	2501-5000	5001-10000	10001-20000	Above 20,000
1	National Ecumenical Centre Abuja		•			

2	Champion's Royal Assembly, Chikakore, Abuja					•
3	Holy Trinity Catholic Church Maitama Abuja		•			
4	Living faith church dutse, abuja		•			
5	Redeemed Christian Church of God Kubwa Province	•				
6	ECWA Blantire, Wuse	•				
7	St Bartholomew Anglican cathederal, kubwa		•			
8	COZA Guzapei Hills Abuja		•			
9	First Baptist Church Garki Abuja	•				
10	Dunamis International Gospel Centre, Area 1, Abuja		•			
	Percentage (%)	30%	60%			10%

Number of Seats Per Seat Clusters

Large capacity auditoriums arrange their settings in smaller clusters with aisles between them for circulation. The smaller the capacity of such seating clusters, the more circulation spaces are created and the less congestion is likely to be experienced

Table2. *Number of Seats Per Seat Clusters*

s/n	Name of church	Below-25	25-50	51-75	76-100	Above 100
1	National Ecumenical Centre Abuja	•				
2	Champion's Royal Assembly, Chikakore, Abuja		•			
3	Holy Trinity Catholic Church Maitama Abuja			•		
4	Living faith church dutse, abuja			•		
5	Redeemed Christian Church of God Kubwa Province				•	
6	ECWA Blantire, Wuse			•		
7	St Bartholomew Anglican cathederal, kubwa		•			
8	COZA Guzapei Hills Abuja				•	

9	First Baptist Church Garki Abuja				•	
10	Dunamis International Gospel Centre, Area 1, Abuja					•
	Percentage (%)	10%	20%	30%	30%	10%

Average Crowd Density Per Seating Cluster

Crowd density shows the extent of concentration of a population per space. This is a derivative of dividing the number of seats in a cluster by the floor area of that cluster. According to Emergency Planning College Handbook, standard Crowd density for people seating is 1 person per square. meters. 47 people per 10 square meters for people standing and 10-15 persons per 10 square meters for easy circulation of people. This is also regarded as critical mass. A value which if exceeded, poses a potential threat to the safety of the occupants of that given space.

Table3. *Number of Seats Per Seat Clusters*

s/n	Name of church	1 head & below per m^2	3 heads per $2m^2$	2 heads per m^2	3 heads per m^2
1	National Ecumenical Centre Abuja			•	
2	Champion's Royal Assembly, Chikakore, Abuja			•	
3	Holy Trinity Catholic Church Maitama Abuja				•
4	Living faith church Dutse, Abuja			•	
5	Redeemed Christian Church of God Kubwa Province		•		
6	ECWA Blantire, Wuse			•	
7	St Bartholomew Anglican cathederal, Kubwa				•
8	COZA Guzapei Hills Abuja			•	
9	First Baptist Church Garki Abuja				•
10	Dunamis International Gospel Centre, Area 1, Abuja			•	
	Percentage (%)		10%	60%	30%

Emergency Evacuation Rate of Auditorium Per Time.

This analysis is an extrapolation of the obtained data (entrance/exit and capacity of the auditorium.) to derive the emergency evacuation rate of the building per unit time.

Table4. *Emergency Evacuation Rate of auditorium Per Time.*

s/n	Name of church	Capacity of church auditorium	Available exit width	Number of doors provided	Total entrance/ exit width(m)	Carrying capacity of entrance/exit (no of persons per unit time)	Ratio of capacity of church to capacity of entrance per unit time
1	National Ecumenical Centre Abuja	8000	1800(8),1500(12)	20	32.4	40, (16,24)	1:200
2	Champion's Royal Assembly, Chikakore, Abuja	80000	1500(12),1100(6)	18	24.6	30, (24,6)	1:2667
3	Holy Trinity Catholic Church Maitama Abuja	3000	1500	12	18.0	24	1:125
4	Living faith church Dutse, Abuja	2000	1800	6	10.8	12	1:167
5	Redeemed Christian Church of God Kubwa Province	1200	1800	4	7.2	8	1:150
6	ECWA Blantire, Wuse	2000	1800	6	10.8	12	1:167
7	St Bartholomew Anglican cathederal, Kubwa	1500	1800	5	9.0	10	1:150

8	COZA Guzapei Hills Abuja	2000	1500	4	6.0	6	1:333
9	First Baptist Church Garki Abuja	1500	1500	3	4.5	6	1:250
10	Dunamis International Gospel Centre, Area 1, Abuja	1800	1200(7), 900(2)	9	10.8	9	1:200

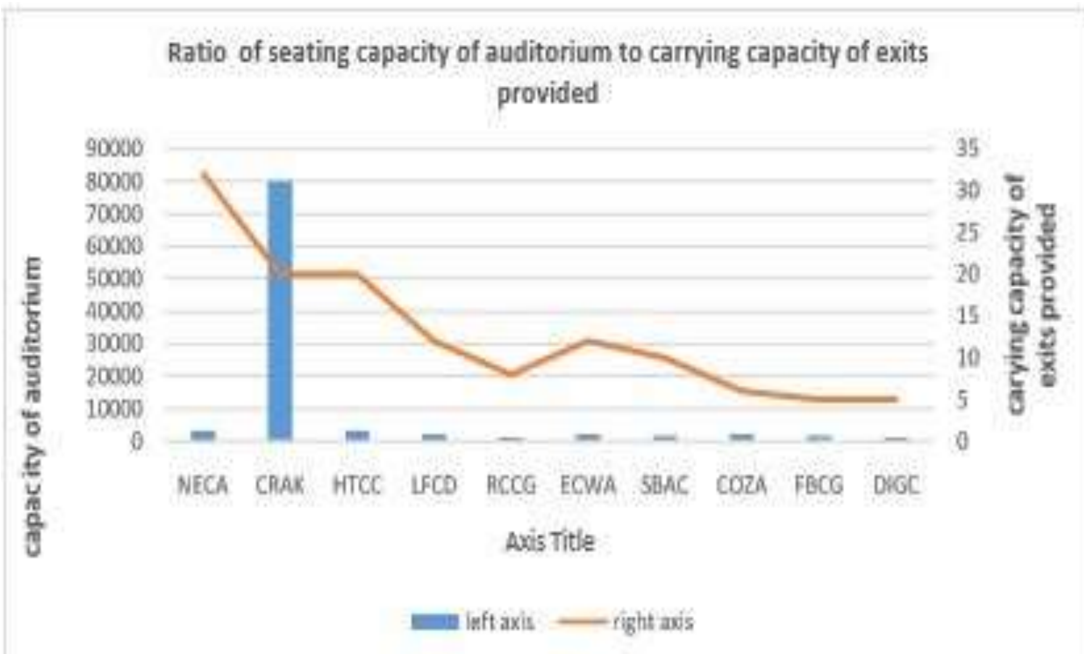

Figure1. Chart showing the ratio of seating capacity of church auditorium to the carrying capacity of exits provided

Results of this analysis shows the ratio of capacity of the church auditorium to the carrying capacity of the accesses (entrance and exit doors) provided.ie for the national Christian centre, for the first person exiting the building during emergency evacuation, there is a potential queue of 200 people waiting to use the same exit if assumptions for even distribution of persons per exits are made. This gives a projection of what is likely to occur during emergency evacuation the church auditoria evaluated in their full capacity.

Fig 1 comparatively illustrates the ratio of the church capacity to the total carrying capacity of the exits provided per time. Presence of Obstructions at movement path The presence of elements that constitute obstructions at movement path is an inhibitor to the optimum circulation and emergency evacuation of crowd. Winter (2012) opined that placing a column at the exit point of building is a counter intuitive measure that could increase the perceived danger of an individual, which could lead to more danger than if there was no column at all.

CONCLUSION AND RECOMMENDATION

In adequately solving the problem of crowd control in large capacity public buildings, integrated approach needs to adopted. The evaluation conducted in this research was mainly on the existing features and parameters used in the design of the church auditoriums so assessed. The variables appraised were such influencing passive crowd control design and design for emergency evacuation of crowd. Findings from the evaluation conducted in this research provides a rationale for the following recommendations:

There is need for the designers of large capacity spaces to do an adequate appraisal on the capacity of seating clusters the church auditorium as this is a key factor that influences the level of crowd congestion in the aisles as well as the success of emergency evacuation of crowd during extreme situations. Also, for effective crowd circulation and emergency evacuation, the required crowd density for a given space has to be calculated while determining the capacity of a church auditorium and known so as to avoid potential congestion. Priority should be given to crowd safety over space maximization when determining the type of seats to be specified for large capacity buildings. From the researcher's observation, the pew seating type are the ones likely to be overloaded because there is no demarcation on them. Thus, seating arrangement should be properly monitored to prevent overcrowding. Attention should be given to the positioning of permanent design elements that could constitute movement obstruction of people especially during emergency evacuation of crowd. Findings from this research revealed that the major source of movement obstruction is from the positioning of the structural columns supporting the suspended gallery floors with respect to the circulation aisles. Thus, there have to be a synergy between structural design and interior design/furniture specification and arrangement.

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MICROORGANISMS ASSOCIATED WITH CURRENCIE IN THE BANKING HALL

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Abstract;

Samples were collected from banking hall and processed for the presence of pathogenic microorganisms and identified by swabbing and streaking on appropriate media using standard techniques. The probable microorganisms isolated are Escherichia coli (10.81%), Streptococcus species (13.51%), Klebsiella species (8.10%) and Staphylococcus species (1.6%). Four probable grnera of Fungi isolates were: Aspergillus niger, Aspergillus flavus, Mucor species and Sacharomyces cerevisiae. Paper currency is commonly contaminated with bacteria and fungi and this may play a role in the transmission of potentially harmful disease producing organisms. The identified microorganisms have pathogenic potential and hence their presence on such surfaces could serve as a source of cross transmission of bacterial and fungal infections in the banks and the general community.

Keywords*; microorganisms, currencies, Associated, Banking, Hall.*

INTRODUCTION

Microorganism contamination of naira notes could be from several sources, it could be from the counting machine, atmosphere, during storage, handling or production. (Awodi *et al*., 2010). Daily transactions have made the naira to pass through many hands and pathogens become imposed on them before they are finally deposited in banks. Bacteria are particularly very ubiquitous and their ability to contaminate objects such as naira notes is very prevalent when compared to parasites (Prasa, *et al.,* 2018). Attitude such as wetting the hands or fingers with saliva or use of contaminated water to lubricate the hand in counting money could lead to possible transfer of bacteria from such medium to the notes (Awe, *et al.,* 2010). The environment plays a critical role in transmission to humans, with many environmental materials serving as vehicle. Microbial contaminants maybe transmitted directly, through hand-to-hand contact, or indirectly, via food or other inanimate objects. The routes of transmission are of great importance in the health of many populations in developing countries, where the frequency of infection is a general indication of local hygiene and environmental sanitation levels (2011). Paper currency is widely exchanged for goods and services in countries worldwide. It is used for every type of commerce, from buying milkata local stores to trafficking in sex and drugs. All these trade is hard on currency, with lower-denomination notes receiving the most handling because they are exchanged many times (Gadsby, 2018). Although paper currency is made to take abuse (up to 4,000 folds in each direction) in most parts of the world, including Nigeria where paper currency is mixed of 75% cotton and 25% linen, it lasts less than a few years in circulation (Gadsby, 2018). Paper currency also provides a large surface area as a breeding ground for pathogens (Micheals, 2012).

Objectives of the research

The objectives of this study were to:

- Culture microorganisms found in the internal environment in a selected commercial bank.
- To find out pathogenic organisms on naira notes (Currency)
- To enlighten the entire populace of the inherent risk that naira notes carry by being a universal medium for the transfer of harmful pathogenic organisms.

Study area and sample collection

The study area comprised the currency counting machines, door handles, air and the currency counting rooms of some selected commercial banks, in Kwara State metropolis, Nigeria. Samples was collected from counting machines, door handles and work bench using sterile swab sticks soaked in sterile peptone water. Plates containing nutrient agar was exposed in the banking hall each for 10 minutes. The swab sticks were removed aseptically, soaked in the sterile peptone water and the rollers and teeth of the currency counting machine, door handles and work bench was swabbed using the sterile swab sticks.

Inoculation of Samples

All samples collected from the bank were immediately taken to the laboratory under aseptic conditions. The swabs were soaked in test tubes containing sterile peptone water and was incubated for 24hrs at 37^{o}C. After 24hrs, all swab sticks were directly inoculated on EMB, nutrient agar and PDA using streak method in duplicates. The pair of inoculated plates were incubated at 35 to 37^{o}C for 24 hours (for bacteria) and for Fungi PDA plates were placed at room temperature for 24 to 72 hours. The plates were then examined for bacterial and fungal growth. The fungal growth on each plated were observed and recorded. The counts for each bacteria plate were expressed as colony forming unit of the suspension (cfu/g). Bacterial colonies obtained were subjected to gram staining. Purification was done by several sub-culturing on corresponding media. Pure colonies were used for biochemical test. The pure cultures were inoculated on EMB agar and then incubated at 37°C for 24-48 hrs, then stored at 4°C in refrigerator.

RESULTS AND DISCUSSION

Table 1; Frequency of occurrence of the Bacterial Isolates

S/N	BACTERIA ISOLATED	FREQUENCY OF OCCURRENCE
1	***Staphylococcus species***	**6**
2	***Streptococcus species***	**4**
3	***Escherichia coli***	**5**
4	***Bacillus species***	**4**
5	***Klebsiella species***	**4**

Source; lab work 2021

Table 2; colonial and morphological characteristics of Bacteria isolate in banking hall.

PARAMETERS	BI 1	BI 2	BI 3	BI 4	BI 5
Cellular shape	Cocci	Cocci	Rod	Rod	Rod
Colonial surface	smooth	smooth	smooth	Rough	Mucoid
Grams staining	+	+	-	+	-
Motility test	-	+	+	-	-
Catalase test	-	-	+	+	+
Oxidase test	+	+	-	+	+
Glucose	+	+	+	-	+
Fructose	-	+	+	+	-
Mannitol	+	-	-	-	+
Galactose	-	+	-	A	+
Maltose	A	A	-	-	A

Ogranisms isolated	*Staphylococcus species*	*Streptococcus species*	*Escherichia coli*	*Bacillus species*	*Klebsiella species*

Source; Lab work 2021

KEYS: BI= Bacteria Isolates, - = Negative, + = Positive

Table 3; Identification of Fungal Isolates in Banking Hall

Isolate code	Macroscopic characteristics	Microscopic characteristics	Probable organisms
P1	Yellowish green color with raised elevation and wooly face	Septate hyphae, conidiophore with conidia	*Aspergillus flavus*
P2	White color with raised elevation and wooly surface	Non-septate hyphae, sporangiophore with sporangium	*Mucor specie*
P3	Milk color with flat elevation and smooth surface	Oval shaped cells with budding cell structure	*Saccharomyces cerevisiae*
P4	White black color with raised elevation and wooly surface	Septate hyphae, sporangiophore with sporangium	*Aspergillus niger*

Source; Lab work 2021

KEY: P = Plate

The cultural, morphological and biochemical properties of the bacteria isolates showed that they belonged to the following bacteria genera: *E. Coli, Streptococcus, Staphylococcus, Klebsiella* and *Bacillus species*. These microorganisms could have come in contact with money through soil, clothing, food or hands of users before being taken to the banks. Some of these organisms are potentially disease causing agents. For example, Staphylococcus species have been known to be responsible for food poisoning. The probable Fungal isolates *Aspergillus niger, Mucor species, Saccharomyces cerevisiae* and *Aspergillus flavus*. The Fungal isolates could produce elaborate mycotoxins in foods which are dangerous to human health (Grundy, 2017).

The results obtained shows that currency counting machine, door handles, bench and banking hall are contaminated with different microorganisms. Most of the microorganisms isolated are from counting machines and door handles.

Conclusion and Recommendations

The occurrence of different species of microorganisms in the banking hall can constitute a potential health hazard to users and also the workers. It is therefore advised that money be handled in a manner that does not get contaminated with dirt, disease causing agents or become unduly mutilated. This study revealed that currency notes can be contaminated with pathogenic microorganisms that are capable of causing disease and infections. The significance and importance of the currency is well established because it is necessary in this modern age and time for easy transactions and exchange of goods and services. It is therefore necessary that we also make the following recommendations:

1. There should be a regular disinfection of currency deposited in the banks with ultraviolet light or formalin vapors.
2. Hands should be washed thoroughly before and after handling naira notes as a mark of personal hygiene.
3. Currencies should not be stored in wrong places like private parts, shoes or socks during usage to reduce level of contamination.
4. Electronic transaction should be adopted because it is more hygienic.
5. It is also recommended that similar studies on microbial contamination of currency be undertaken in other parts of the world to enrich global information for banks on this subject.

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TECHNIQUES OF REDUCING FLOOD IN THE SAVANNAH REGION OF JIGAWA STATE FOR ADEQUATE FOOD SECURITY

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Abstract

The Nigerian Savannah is sometimes affected by flooding that leads to the destruction of farmlands and houses leading to poverty within the region, many researchers had been providing so many solutions to such kinds of environmental disasters across the world, yet the problem persists, because the environment lacks a technology that will solve the problem in Architecture, Engineering and Construction industry. This study was conducted along the Hadejia river that crosses through some local Government of Jigawa state, the local Governments includes Ringim, Taura, Miga, Auyo Kafin Hausa and Hadejia, the research method used was mixed methods, these are; the qualitative and quantitative approach, the qualitative approach includes the reconnaissance survey, field data collection, existing data. while the quantitative method includes the Satellite Image Processing and Analysis, a familiarity visit to the area under investigation was carried out, after intensive fieldwork, in which the samples/data were collected across the study area, and a TCX converter software was used to determine the longitudes and latitudes of the study area, Quikgrid was used to convert the available data to contours of the study area. Their elevations were as follows: Highest from Ringim which is 392M to Lowest toward Hadejia which is 346M with intervals of 2M between contours height, the results show that the flooding will be higher in Hadejia because it has the lowest elevations, after intensive calculations, the solution provided for the disaster was a creation of dunes and Oasis using AutoCAD software and Realtime Landscape Architects to solve the problem in the perspective of Landscape Architecture, a *10,000 Meter cube area was used as a sample in the part of the study area and closed to the waterways, a design was produced and evaluated, the result shows that initially, the sampling area was accommodating only 30,000 Meter cubes at the maximum height of 3-meter flooding of the existing data, after the calculations and the design of Oasis creation and dunes along the higher contours, the result shows that each sampling area will accommodate more flooding under the ground, this result can be multiplied by millions of the same samples. And the second result was the dunes created will allow for farming, planting of medicinal trees, fruit trees, fishpond and wildlife survival. This will serve as a menace after the* *disaster, and also a preventive measure before or during the next flooding if available. The proposal will boost food security in the area and create more job opportunities for the people of Jigawa State and beyond.*

***Keywords**: Flooding, Landscape Architecture, Savannah, Technology*

Introduction

Speaking to Daily Nigerian on the sideline of the International Climate Change Conference organised by the African Climate Change Research Center in Dutse, on 27th March 2021 (para.4), Mr Jibo warned that:

> *Earth observation satellite data has already shown that disaster is looming. "Climate change is the major cause of the massive flooding we are witnessing today globally. If you just take a look at what happened in the year 2020 between 13 and 19 September, a heavy downpour that ravaged global communities, especially in Al Tayeb in Saudi Arabia, Valencia, Magarya, Auyo, Kafin Hausa, Ringim is quite alarming.*
>
> *All these places were ravaged by climate change. Human actions and inaction have also contributed to warming the atmosphere. The case of Hadejia is peculiar because Hadejia has fallen squarely under Hadejia Jama'are River Basin and Komadugu Wetland. Since it is directly on the water tributary that channels itself into Lake Chad, it has no choice whatsoever but to start thinking of a relocation plan. Why because if you see the volume of flood rains in Hadejia, it went to an extent that an oil tank that was buried underground had to be flushed out by underground water. That is to show you the level of the water table that has risen due to climate change. And there is already a sea-level rise of 0.05 per cent. So that is why you can't avoid this climatic disaster.*
>
> *Based on the research we have carried under and Group on Earth Observation (GEO) in Geneva and under United Nations Framework Convention on Climate Change, earth observation satellite data has already shown that in the next two years, there is a tendency of landslide in Hadejia, Auyo and Birniwa. This is current satellite data. But based on the in-situ data, out of 27 local governments in Jigawa State, 18 were submerged by floodwaters. What are we talking about? All the indicators are there. We have*

> *already passed a red alert. Also, we have already passed early warning signs. We are now under red alert. And there is a town in the Niger Republic that had fallen squarely in the same position as Hadejia. The water runoff started from there, traverses and channels itself into Hadejia. Even the Niger Republic waters came and channelled itself into Hadejia River Basin. That is the reason for massive flooding in 2020,*

Many researchers had been providing so many solutions to such kinds of environmental disasters across the world, yet the problem persists. Because the built environment lacks a technology that will solve the problem in Architecture, Engineering and Construction industry.

Technology is the application of scientific knowledge to the practical aims of human life or, as it is sometimes phrased, to the change and manipulation of the human environment (Huesemann, M.H. & Huesemann, J.A. 2011). The natural environment or natural world encompasses all living and non-living things occurring naturally.

Since Landscape Architecture profession is a profession that involves the systematic design and general construction of structures for the use of living things, investigation of existing social, ecological, and soil conditions and processes in the landscape, and the design of other interventions that will produce desired outcomes (Geoffrey & Susan 1987). The research, therefore, provides a design technology that will reduce flooding impact in some part of Jigawa state.

Methodology

In this chapter, the various processes used in generating, processing and presenting data for the research was discussed. The research method used was mixed methods (CR Kothari 1995). These are; the qualitative and quantitative approach, the qualitative approach includes the reconnaissance survey, field data collection, existing data. while the quantitative method includes the Satellite Image Processing, calculations and Analysis.

Reconnaissance survey

At this stage, a familiarity visit to the area under investigation was carried out. The purpose of the reconnaissance survey is to identify major land use classes in the study area. This information is very essential and pre-requisite to the study.

Field data collection

After a comprehensive reconnaissance survey, a field data collection was followed. The geographic coordinates (latitude and longitude) of some training sets were collected using a Global Positioning System (GPS). The coordinates helps in generating contours.

Satellite image processing

The Google image area of the study was downloaded using a Google earth pro image Landsat Copernicus 2022.

TCX converter

TCX converter is an affordable and easy-to-use GIS Data processing application that offers access to an unparalleled variety of spatial datasets and provides just the right level of GIS functionality to satisfy both experienced GIS professionals and mapping novices. Equally well suited as a spatial data management tool and as an integral component of an enterprise-wide GIS, TCX converter software was used in order to process the Longitude and Latitude of the area to determine the elevations of land area under study.

Quikgrid

Quikgrid is a program which will read in a set of scattered data points (x, y, z) which represents a surface. The program will generate a grid from this data and then display the surface as a contour map, or as a 3d representation.

AutoCAD Design

Computer-Aided Design(CAD) or

Computer-Aided Design and Drafting (CADD) was used in the creation, modification, analysis, or optimization of a design.

Realtime Landscape Architect

Realtime Landscaping Architect is also an ideal companion title for enabling you to create detailed three dimensional landscapes. With a comprehensive database of plants and objects as well as tools specifically designed to add pools, ponds, decks and patios. The software was used in order to create the sand dunes of the study area.

The study area

Figure I Google Mapshowing the study area

The study area include Ringim, Miga, Auyo, Hadejia and Kirikasamma, The Hadejia-Nguru floodplains are situated in the Komadugu-Yobe Basin in NE Nigeria, along the fringes of the Hadejia and Jama'are rivers. Figure 1 below shows the google map of Jigawa state, while figure 2 shows the River crossing through the study area, The Plate 1 shows the collapsed Farmlands and road along the Hadejia Road as a result of flooding in 2020, Plate II and III also shows some parts of the flooded town.

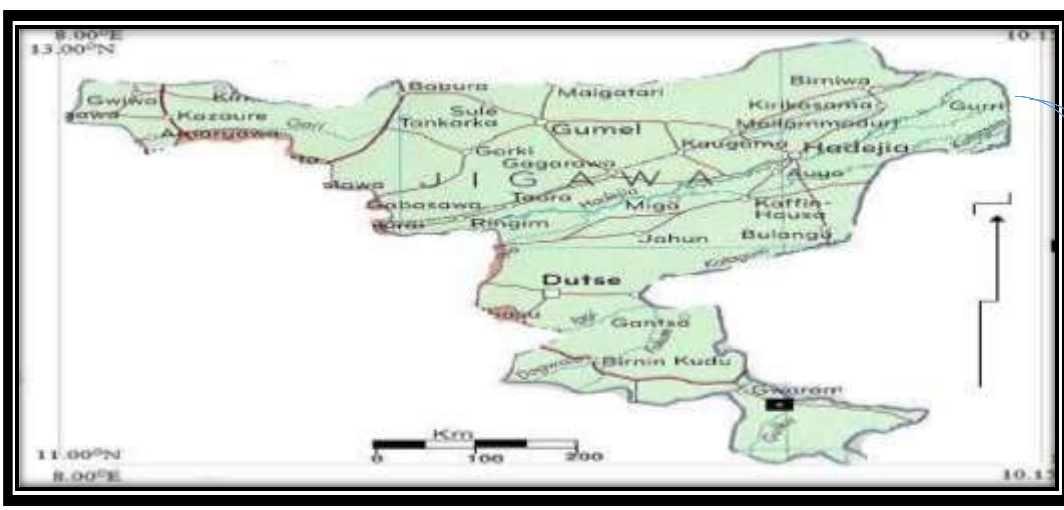

Figure:2Map of Nigeria showing the study area.
Source: Nigeria Map and World atlas 2020

Source: Google Earth Pro 2022.

Source: Author's Compilation 2020.

Plate I: Picture of the Collapsed Hadejia Gujungu Road

Plate II: Picture of the parts of the Hadejia Town.

Source: Author's Compilation 2020.

Plate II Picture of the A.P. Plc station were fuel underground tank boost out.
Source: Author's Compilation 2020.

Results

After intensive fieldwork, in which the samples/data were collected across the study area, a TCX converter software was used to determine the longitudes and latitudes of the study area, Quikgrid was used to convert the available data to contours of the study area . They elevations were as follows: Highest 392M to Lowest 346M with an intervals of 2M between contours as shown in figure 3 below, the colour contours were also generated using the quikgrid software as shown in figure 4 below, likewise the 3D coloured contours as shown in figure 5 below.

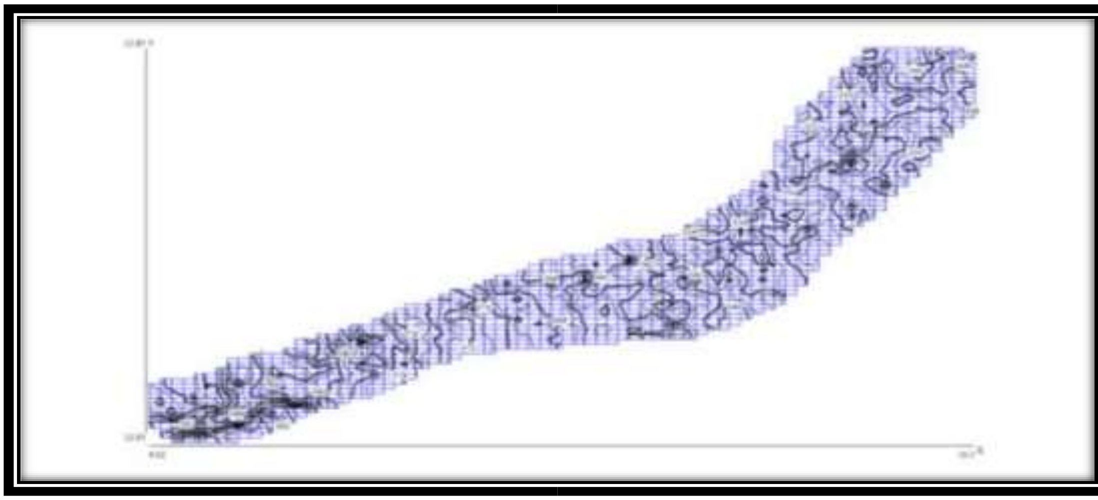

Figure 3 2D Contours of the study area.
Source: Source: Author's Compilation 2022.

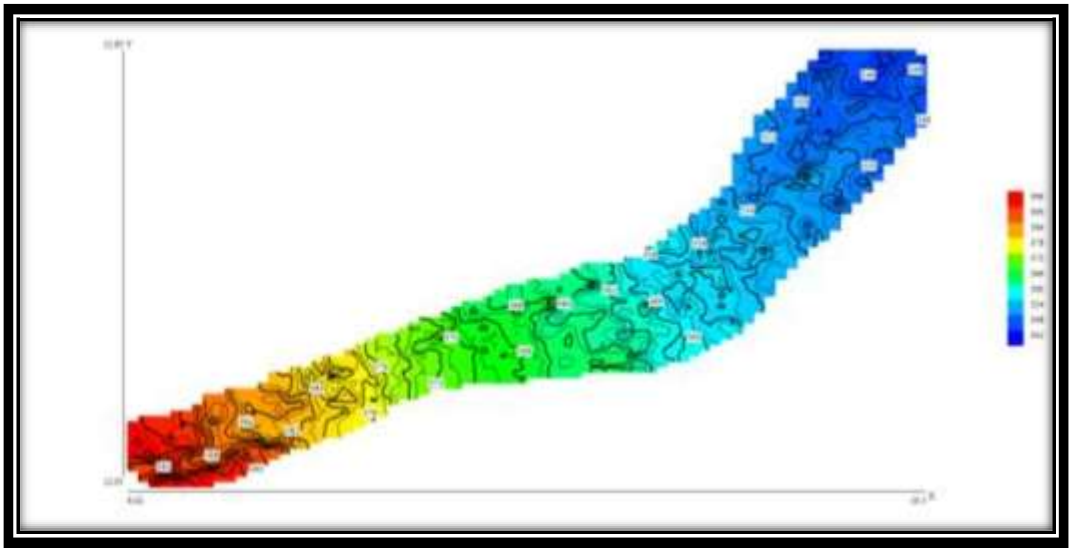

Figure 4: 2D Coloured Contours of the study area.
Source: Source: Author's Compilation 2022.

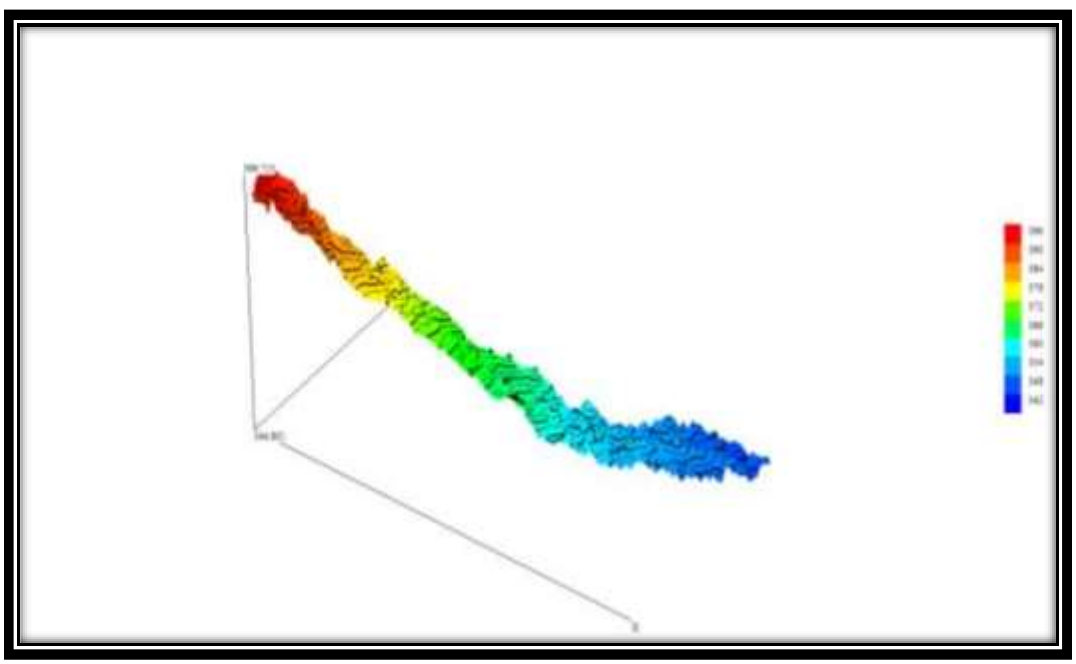

Figure 5: 3D Coloured Contours of the study area.
Source: Source: Author's Compilation 2022.

Discussion

Many professionals had been providing solutions to a flooding disaster, but yet good result was not abstained. The technology used in this study was contours generating and design analysis, previously when there was flooding in the area of the study, the flooding used to destroy farmlands in Jigawa state area of the study. In figure 6,7 and 8 below, a 10,000M^3 area was used as a sample in the part of the study area and closed to the waterways, a design was produced and evaluated, the result shows that initially, the sampling area was accommodating only 30,000M^3 at the maximum height of 3M flooding of the existing data, after the calculations and the design of Oasis creation and dunes along the higher contours, the result shows that each sampling area will accommodate more flooding under the ground, this result can be multiplied by millions of the same samples. And the second result was the dunes created will allow for farming, planting of medicinal trees, fruits trees, oasis, fishpond and wildlife survival. This will serve as a menace after the disaster, and also a preventive measure before or during the next flooding if available. The proposal will allow for farming, planting of medicinal trees, fruits trees, oasis, fishpond and wildlife survival. This will serve as a menace after the disaster, and also a preventive measure before or during the next flooding if available. The proposal will boost food security in the area and create more job opportunities for the people of Jigawa State and beyond.

AutoCAD Drawing

AutoCAD 2010 software was used to produce the sampling area of 100M by 100M as shown in figure 6 and the section in figure 7 below.

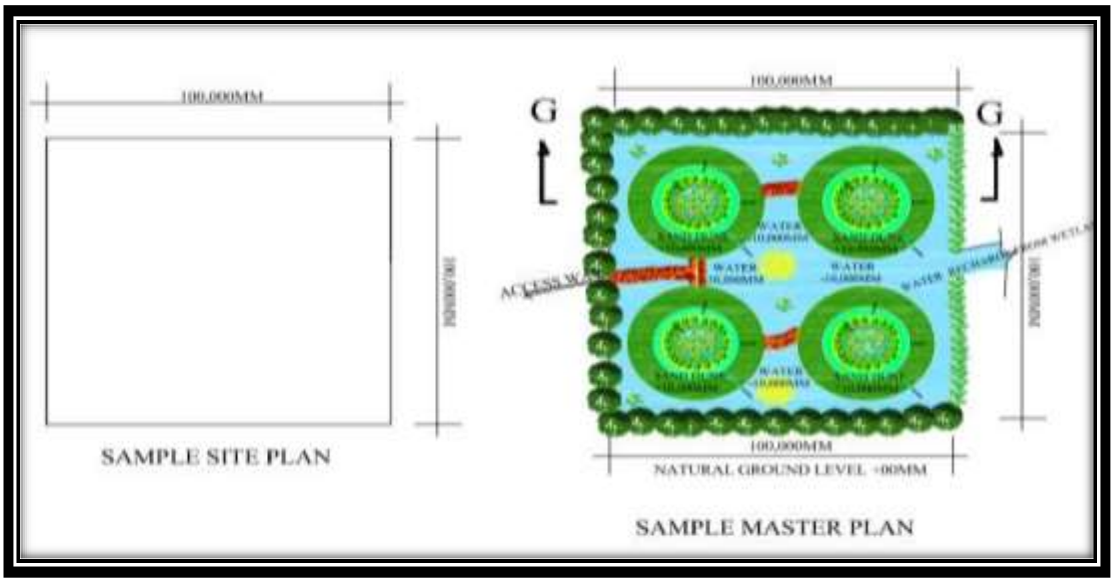

Figure 6: AutoCAD drawing showing the sample plan of the study.
Source: Author's Compilation 2022.

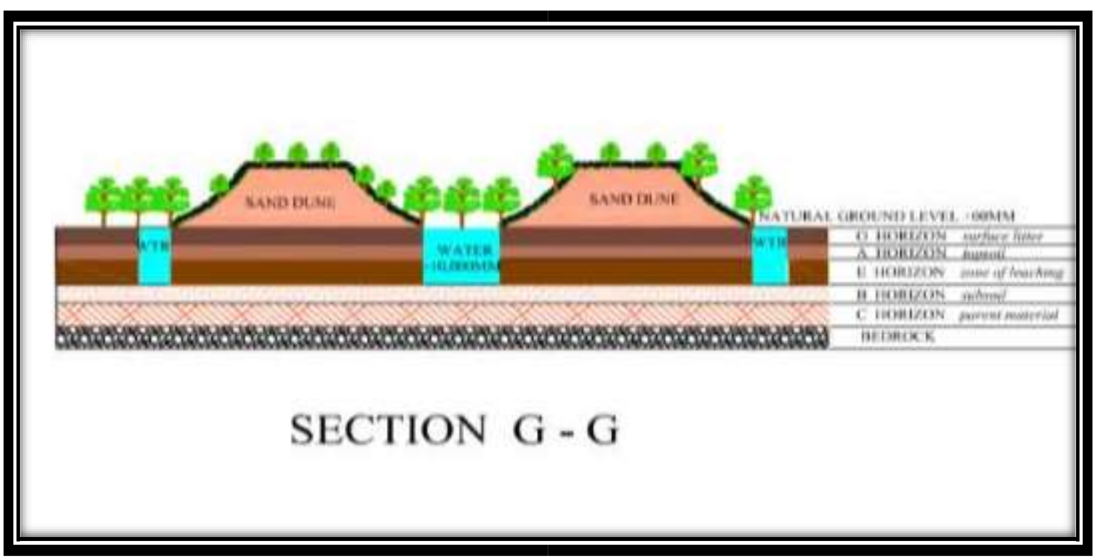

Figure 7: AutoCAD drawing showing the section of the sample area of the study.
Source: Author's Compilation 2022.

Realtime Landscape Architect

Realtime Landscape Architect was used to create the 3D (Three dimensional Drawing of the study area as shown in figure 8 below

Figure 8: Drawing using a Realtime Landscape Architect the 3D area of the study.

Source: Author's Compilation 2022.

Recommendation

Many professionals had been making so much research regarding flooding in Nigeria and beyond, yet the results of controlling the flooding were not very effective, the researcher in this study recommends the followings; Government should engage Landscape Architects in all aspects of the Built environment, Ecological Landscape and beyond, Government should add more schools of Landscape Architecture in the country, Government should license the existing Landscape Architects in the country. Non Governmental Organisations working on environmental aspects should also engage Landscape Architects to contribute in saving our natural environment.

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POVERTY AND VIOLENCE IN NIGERIA IMPLICATION ON DEMOCRACY

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Abstract
This paper discussed the relationship between poverty and violence in Nigeria and their implications on democratic consolidation. Poverty has many effects and one of its obvious manifestations is violence. This submission has been justified using social structure and anomie theory. While democracy seeks to provide equal socio-economic and political opportunities across populations and/or sub-populations of a nation, poverty is an albatross to the attainment of such egalitarian socio-economic and political arrangements. Looking at most developing countries and in Nigeria in particular, poverty is obviously an artificial social problem and it is created by corrupt politicians. These vested interests are recruiting unemployed and illiterate youths into political thuggery, such as Yankalare in Gombe State, ´Yan sara-suka' in Bauchi State, 'Yandaba' in Kano State and 'Bakassi' Boys in Abia State. The paper also found that, religious radicalism by 'Boko Haram' in the northern Nigeria and other violent activities by insurgents in the Niger Delta, such as Niger Delta Avengers are all reflections people's frustration on unemployment and poverty. The paper recommended that, to achieve democratic society, we shall overcome the scourge of violence in Nigeria through fighting poverty.

Keywords: *Democracy, Poverty, Unemployment, Violence.*

INTRODUCTION

Poverty is a social problem that leads to other social, economic and political disturbances. Poverty is a global phenomenon but it is more common among developing countries, Nigeria inclusive. Nigeria is the Africa's most populous country. As contended by Mukhtar, Mukhtar & Mukhtar (2015: 3), apart from being oil rich, "the country also has large landmark and a lot of mineral resources which if used wisely, the country will achieve rapid political and socio-economic development". But the reverse is the case in the country because large scale corruption, poor economic policies and bad governance have rendered majority of the country's population poor. Three months after assuming his office, the Nigerian Vice President, Osinbajo (in the

Vanguard, August 20th 2015), expressed concern that over 110 million Nigerians lived below poverty line.

The consequences of poverty are many and notable among the effects of poverty is violence. That is why Nigeria has been experiencing many security challenges in forms of criminal activities, violence and conflicts over the years (Omotor, 2009; Adenrele, 2012; Afegbua, 2010; Onuoha, 2014; Mukhtar, Isyaku, & Sani, 2016). The formation of youth violent groups like the Movement for the Emancipation of the Niger Delta (MEND) and the Niger Delta Avengers in the south-south, Bakassi Boys, in the south-east, Yandaba in the north-west, *Yan-kalare* and *Yan-sara-suka* in north-east, as well as the most notorious terrorist group, known as *Boko Haram*, also in the north-east (Mukhtar*, et al.* 2016) are all but manifestations of high rate of unemployment among teeming youths and poverty incidences in the country.

While the major cause for the formation of the above violent groups in various parts of Nigeria is either poverty or unemployment among the youth population, these violent groups have many serious implications on the fate of the democratic governance in the country. Violence has taken a severe toll on Nigerian economy, its peoples' political, social, and even spiritual lives. Crime and violence are so palpable, so pervasive and so devastating to many Nigerians (Nwosu, 2002). It is even more disturbing to find that, the country's political leaders are using joblessness and poor living conditions of the youths to employ them as political thugs. This manner in which members of our political class in Nigeria engage the services of jobless youths as thugs for the purpose of intimidating political opponents and their supporters during elections is growing. These youths, who are mainly uneducated or semi-literate, are often encouraged to unleash violence, cause electoral violence, break the law at will, in which virtually nothing can be done to stop them once they have made up their mind to unleash these havocs on their intended targets (Usman, 2010).

Violence has become so common in the Nigerian society; at domestic, community and national levels and it has the tendency for causing national instability. For example, when there is insecurity in a nation, such as those emanating from the *Boko Haram* and the Niger-Delta Avengers, the prospect of democratization is threatened, as the leaders will shift attention from welfare services and dispensation of democratic dividend to resolving the violence emanating from the activities of these groups, even if it will affect the wellbeing of the citizens. Hence, the ban of *okada* rides, curfews, and too much check points are authority's reaction to the. In addition, election processes have been suspended in places like Gombe State and political administrations in Yobe State, Borno State, and Adamawa State, have suffered setback in the towards the end of the year 2015.

From the foregoing, it is obvious that, poverty can lead to violence and violence can hamper democratic consolidation in any given country. That is why this paper will discuss the relationship between these two concepts: poverty and violence, and to analyse their implications on democratization process. The paper is structurally divided into six sections. Section one introduced the paper; section two deals with the conceptualization of key terms (poverty, violence and democracy); section three is about theoretical framework; section four discussed how poverty leads to violence and their implication on democracy in Nigeria; section five concluded the paper and section six suggested some recommendations.

Conceptualization: Poverty, Violence and Democracy

Poverty, according to Mukhtar *et al.* (2016), is a multidimensional state of deprivation involving lack of basic requirements, social and political exclusion and lack of education. Poverty is a condition of having insufficient resources or income. In its most extreme form, poverty is a lack of basic human needs, such as adequate and nutritious food, clothing, housing, clean water, and health services. Extreme poverty can cause terrible suffering and death, and even modest levels of poverty can prevent people from realizing many of their potentials. The frustration for attaining one's potential is often expressed in form of violence. Poverty has always leads to immense social, political and economic constrains.

Violence is the physical, psychological or emotional attack on a person or group of persons. Violence takes place at various levels; it can be interpersonal violence, such as that emanating from home (which is also called domestic violence), and inter-group violence, such as inter-ethnic violent conflict. Thus, Violence Prevention Alliance (2016) defined violence as the intentional use of force or power, threatened or actual, against oneself, another person, or against a group or community, which either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment, or development.

The negative consequence of violence is that, it usually ends in a quarrel, skirmishes, conflict or war. Just like war, violence can be fatal or, at least, result in the victimization of one person or group by the other. Racism, ethnicity, religious jingoism and bigotry, gender discrimination and prejudice are some of the root causes of violence. Violence can also lead to deprivation of some groups' right to live and conduct their daily routine activities freely alongside other members of a society or nation. As a result, violence negates ideal democracy.

Democracy is derived from the Greek word "demos," or "people". Democracy is a political system characterized by the consent of the majority. It is the system of government in which people get on to power by virtue of election, with the predetermined contract that the interest of the electorates will be represented at state or national government. No segment of the society is neglected on the basis of region, religion, tribe, ethnicity, gender and even political parties in this political system. Democracy, according to Kwasau (2013), is a subject of global concern as well as engine for socioeconomic and political developments of nations striving for international identity and developmental posture as well as liberality and good governance.

Thus, democracy can be exercised directly by the people; in large societies, through their elected agents (US Department of State, 2007). The main attribute of democracy is that, those holding political office do not have automatic security of tenure but can be challenged and even displaced in accordance with the will of the people through a wide range of institutional mechanism. Yet in Nigeria, the democratically elected leaders are abusing this principle as some unscrupulous politicians resort to dictatorship, corrupt practices and artificially create poverty and high rate of unemployment thereby inciting violence.

Theoretical Framework

The social and political problems caused by poverty and income inequality are within the concerns of sociologists. This is why Sociology is rich in theoretical explanations on the influence of social structural forces on crime and other violent behaviors (Merton, 1938, as cited in Mukhtar *et al.* 2016; Walklate, 2003; Tierney, 2010; Siegel, 2010; Siegel, 2011). This paper therefore adopted *Social Structure and Anomie* theory to analyze the causal link between poverty and violence in Nigeria. This is because violence is for the most part an outcome of poverty, unemployment, illiteracy and other social and structural forces that situate some members of the society at advantage and others at disadvantage or lower class category.

Social strata are created by the unequal distribution of wealth, power, and prestige and, according to Siegel (2010), it comes as no surprise that violent gangs develop in poor, deteriorated urban neighborhoods. Many kids in these areas grow up hopeless and alienated, believing that they have little chance of being part of the social structure. Youths growing up poor and living in households that lack economic resources are much more likely to get involved in serious crime and violence than their wealthier peers (Bjerk, 2007).

Lower-class areas are scenes of inadequate housing and health care, disrupted family lives, underemployment, and despair. Members of the lower class also suffer in other ways. They are more prone to depression, less likely to have achievement motivation,

and they tend to constitute a threat to safety and security of the entire society, cause violence, thus they threatened the existing core-values and the democratic ideal of right to life, freedom of movement and even cause political instability (Siegel, 2010).
Youth gangs have become an ever-present fixture, even in the developed countries. Gang members are heavily armed, dangerous, and more violent than nonmembers. They are about ten times more likely to carry handguns than nongang members, and gun-toting gang members commit about ten times more violent crimes than nonmembers; gang homicides seem to be on an upswing. Indeed, poverty is the major reason why youths in Nigeria involved in ethno-religious and political violence, such as formation of youth gangs, political thuggery, religious radicalism, and insurgent activities. In addition, these violent activities are threatening the consolidation of the nascent democracy in the country. For example, Boko Haram sect has caused serious human rights violations from 2009 to date. Also, coupled with the economic recession in the country, the Niger Delta Avengers are also causing serious economic lost to the federal government. This is not to mention the sporadic cases of electoral violence, kidnapping, assaults, and violent conducts of many youth gangs in different parts of the country.

Poverty and Violence- Implication on Democracy in Nigeria

There is strong relationship between poverty and violence. Poverty results in some individuals been engaged in immoral conducts, such as drug abuse and commercial sex (Ibrahim & Mukhtar, 2016) as well as violent activities like drug dealing political and ethnic unrest, bribery, armed robbery and cybercrimes and militancy among others (Mukhtar *et al.* 2015). Nigeria is presently battling with multiple violent confrontations in form of inter-communal or inter-ethnic conflicts, religious radicalism, insurgency and environmental struggles. The long existing conflicts between various religions in some parts of Kaduna, Taraba and Jos; the long-existing militant movements in the Niger Delta region and the Biafran secession movements which have also lasted for over five decades; as well as the current *Boko Haram* insurgency (which bases in the north-eastern Nigeria, but affected the whole of the north) are all instigated by conflicts over scarce resources, such as land, environment, power, economy, etc.
In fact, economic deprivation is a factor that has stimulated the drive towards violent extremism, recruitment and support for *Boko Haram*. Several scholars believed that poverty and longstanding economic disparities in the northeast part of the country made the youth join the sect. Similarly, Adesoji (2010, as cited in Shuaibu, Salleh, & Shehu, 2015) stressed that, in Nigeria the marginalization and imbalance

distribution or implementation of the resources made some radicalized scholars to preach against the government and democratic setting, which later gave birth to the present *Boko Haram* insurgency.

To understand how *Boko Haram* is at the center of this argument, poverty theory explains that domestically the politicization of religious traditions and the radicalization of religious communities are especially likely in times economic decay, social integration or state collapse. Hopeless people below the poverty line; people who are marginalized or physical threat turn to their religious in search for an alternative political order that satisfies their need for welfares, recognition, and security.

It is important to note that, these violent movements have serious implications on the democratic consolidation of any nation. Acts of violence between or within political parties in Nigeria are usually associated with general elections and their spectacular death toll. A large share of party violence is ignored, as it is mostly internal or with a low lethality rate. Arguably, violence is a means used by the political elite, rather than the people's choice to protest against fraud. Levels of violence vary between places and parties in Nigeria (Cohen, 2015), and some studies have found that, there is strong link between poverty and the political violence. Depending on the states where they operate, some party members seem to be more likely to commit violent crimes than others. Furthermore, they often seem to do so in order to trigger ethno-religious clashes which are more deadly (Cohen, 2015). To do this, the politicians recruit and mobilize poor angry youths. As studied by Saleh (2016), the violent activities of *Yankalare* in Gombe State and *Yansara suka* in Bauchi State, for instance, are a reflection of youth's unemployment among other socio-economic factors.

Conclusion

The paper discussed how poverty, violence, and democratic paralysis are related. Violence is inevitable in a society characterized by high rate of poverty, illiteracy, ineptitude, corruption, just as evident in Nigeria. This is why high rate poverty and unemployment among the youths population has attracted many violent activities through formations of youth gangs in various Nigerian cities. Issue of *Boko Haram* insurgency in the north-east has not been totally addressed and other insurgent group in the south-south, Niger Delta Avengers, is unleashing more havoc to the already collapsing economy of the nation. Any country that allows poverty to thrive it will become recruitment target of violent group, like insurgents and terrorists. Thus, it could be argued that, the root causes of the violent conflicts are often related to a long cloudy set of problems culminating into uncontrolled grievances and exploding violence.

The paper found that, culture of corruption among the political class is the main factor which creates artificial poverty in Nigeria and in many underdeveloped countries. Such problems are socio-economic and political, that is why insurgencies are more rampant in the underdeveloped countries or countries engulfed by corrupt regime, ethnicity, social prejudices and disparities in the distribution of resources or even lack of it.

Nigerian is an epitome of these gloomy pictures. Ultimately, the democratization process in the country has been stuttering. Thus, the paper concludes that, violence is common in Nigeria and it is negatively affecting the prospect of democratization in the country.

Recommendations

To address the evil of poverty and its tendency for instigating violence, as well as establishing an ideal democratic system, the paper made the following recommendations:

1) To fight poverty in Nigeria, the governments shall revive previous come up with poverty eradication schemes, such as Better Life Program for Rural Women (BLPRW), National Accelerated Food Production (NAFP) Operation Feed the Nation (OFN), Green Revolution, and Directorate of Food, Road and Rural Infrastructure (DFRRI).
2) There is also the need for introducing new poverty reduction programs in the country. There are many poverty reduction programmes that focused on empowering women. Others the entire families, such as that which has proven effective when introduced in Brazil. This type of poverty alleviation programme is very important because all problems emanate from home. In addition, family is the microcosm of the society, so by improving the living standard of families, the government is improving the entire society.
3) Also in the fight against poverty in Nigeria, revitalization of agriculture will certainly make a difference on the high rate of poverty and unemployment. Attaching importance to modern methods of farming and cultivation will provide employment opportunity on one hand and achieve food security on the other. The government and nongovernmental organizations shall give farm credit or loan to well-trained and prepared prospective farmers to promote their agribusiness.

4) The paper also acknowledged the present Government's fight against the evil of corruption, because its evil should be handled with iron hand. In addition, the Government shall also be severely penalizing the culprits. In other words, the corrupt practices perpetrated by the government's officials have caused severe malaise the country's; it has caused indirect losses of lives, led many youths to brigandage and mayhem. Thus, in order to serve as deterrence to future prospective embezzlers and fraudsters, severe sentences like life imprisonment should be meted out to them.

5) Role of the media in reporting violence is very crucial in curtailing the act of violence in Nigeria. The media shall transform crime and violence coverage to the plain of the authority. The media reporters shall engage in both mental and psychological re-conditioning. The reporter must critically re-examine the routine, conventional approach to coverage of crime and violence in favour of treating crime and violence stories as he will normally treat stories about an epidemic. In practical terms, demands that the reporter to include three classes of information in crime and violence stories (the perspectives or prevalence of the violence in Nigeria; the risk factors that expose people to victimization; and the cost of the violence in our midst). This is important since the media play roles in the structuring of perception of violence and conflict to community and authority by regular reflection on related incidences and suggesting way forward.

6) Nigerians at all levels and in all structures from family level to community settings, marketplace to workplace, in the places of worship, law enforce, judiciary officials are as a matter of national security participate in national security crusade by becoming productive and desist from laziness in order to live a sustainable life, fight violence of all kinds, become patriot citizens, avoid lawlessness and each citizen to become his/her brother's keeper. In order for Nigeria to develop and be salvaged from the shackle of poverty, violence and conflict, the principle of the rule of law must be obeyed by leaders and followers.

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مفارقة ازدواج الإشارات ومقارباتها التداولية في شعر إبراهيم أحمد مقري: مفارقة الرموز الصوفية الخمر أنموذجا

مصطفى إبراهيم شعيب

طالب الماجستير قسم اللغة العربية، جامعة أحمد بلُّو زاريا نيجيريا

المستخلص:

يسعى هذا البحث إلى بيان مفارقة ازدواج الإشارات ومقارباتها التداولية في شعر إبراهيم أحمد مقري؛ مفارقة الرموز الصوفية الخمر أنموذجا، استوظف الباحث المنهج التداولي في الحديث عن ظاهرة المفارقة والمقاربة التداولية، ومفارقة ازدواج الإشارات، ومفارقة الرموز الصوفية عند الشاعر، ويتحدث البحث عن الشاعر وشاعريته وخصائصه الشعرية ومكوناتها، كما يهدف إلى تقديم تصورات علمية مفارقية ومقارباتها التداولية، فيما تحمل من الإشارات والمعاني المزدوجة، عبر الرمز الصوفي المتمثل في الخمر، ومن أبرز ما توصلت الورقة ما يلي: أن الشاعر أخذ النظرة الميتافيزيقية إلى الواقع الفيزيائي، حيث صور السكر المادي الناتج عن الخمر إلى السكر المعنوي الناتج عن العرفان الرباني، فربط بين العوالم الروحية المتمثلة في الكشف والأحوال والترقي والعوالم المادية المتمثلة في العنب والخمر والسكران لتمثيل النشوة والطرب بالفناء الصوفي في الله ورسوله. أن الشاعر جسد السنفونية الدرامية المفارقية بالعقل اللاواعي في الرمز الخمري ليفجر للمتلقي بحرا تداوليا يحمل في بوتقته تشفيرا دلاليا. وأن الشاعر يرسم في شعره مفارقة مملوءة بالتناقض اللفظي والمعنوي، حيث انتشى الأحوال الباطنية الروحية بالأحوال الظاهرية المادية، التي غالبا ما يكون مرجعها إلى المعاصي والمحارم، إلا أنه ربطها بالقرائن السطحية والعميقة يعثر عليها المتلقي بعد التأويل والتفسير الدقيق.

الكلمات المفتاحية: الشاعر، المفارقة، المقاربة التداولية، مفارقة ازدواج الإشارات، مفارقة الرموز الصوفية ومقارباتها التداولية الخمر أنموذجا.

THE PARADOX OF DUAL SIGNS AND THEIR PRAGMATIC APPROACHES IN THE POETRY OF IBRAHIM AHMED MAKRI: SUFI SYMBOLS, WINE AS A MODEL

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Abstract:

This research seeks to clarify the paradox of dual signs and their pragmatic approaches in the poetry of Ibrahim Ahmed Makri; The paradox of the Sufi symbols, wine as a model, the researcher used the pragmatics methodology to talk about the phenomenon of paradox and the pragmatics approach, the paradox of dual signs, and the paradox of the Sufi symbols of the poet. The dual signs and meanings, through the mystical symbol represented by wine, and the most prominent findings of the paper are the following: that the poet took the metaphysical view to the physical reality, where *he portrayed the physical drunkenness resulting from wine into the moral drunkenness resulting from divine gratitude, so he linked the spiritual realms represented in revelation. And conditions, advancement, and material worlds represented by grapes, wine and drunkenness to represent ecstasy and rapture in the Sufi annihilation of God and His Messenger. The poet embodied the paradoxical dramatic symphony with the unconscious mind in the wine symbol to blow the recipient a deliberative sea carrying in his crucible a semantic cipher. And that the poet draws in his poetry a paradox full of verbal and moral contradiction, where the inner spiritual conditions are elevated with the apparent material ones, which often refer to sin and forbidden, but he linked them to superficial and deep clues that the recipient finds after interpretation and accurate interpretation.*

Keywords: *the poet, the paradox, the pragmatic approach, the paradox of dual signs, the paradox of the Sufi symbols and their pragmatics approaches, the wine as a model.*

المقدمة:

كان جل الدراسات اللسانية تتألف من المفردات والتراكيب والدلالة، فظهرت المفارقة وتنوعت أنماطها، عندما ازدهر الفكر العربي في الوسائل التعبيرية، فأخذت الدراسة اللسانية مسارا حديثا تواصليا، فالسياق من أولى نواتها لفك شفرات التعبير، كما أن التداولية عنيت بمأثرات الكلام ومنجزاتها التواصلية، خلال أقنعة تشفيرية، فتُعد المفارقة من الانحرافات اللغوية التي تخلق دلالات عديدة يتحرك من خلالها رسم إبداعي للكشف عن جماليات لغوية، وتكون العلاقات فيها متناقضة ومتداخلة.[1] فالدراسة التداولية تميل إلى اللسانية التواصلية لأنها تستخدم اللغة عن طريق مباشر أو غير مباشر، واللغة لا يتم تناولها إلا عن طريق التواصل عمليا أو رمزيا أو سيموطيقيا، حتى تصل الرسالة إلى المتلقي، كما أن التداولية هي العلم الذي يدرس المعنى، مع التركيز على العلاقة بين العلامات ومستعمليها والسياق، أكثر اهتمامها بالمرجع أو بالحقيقة، أو بالتركيب.2

تتميز اللغة الصوفية عما يعرفه علماء اللغة، بمميزات لغوية وبلاغية، حيث يعبر الصوفيون عن أغراضهم بلغتهم الخاصة للإشارة إلى مراميهم الذوقية وأحوالهم الروحية، ومواجيدهم النفسية، وتكتظ الرموز عند أهل الطريق، للتعبير عن الإشارات والتلويحات والتجربة القلبية والرقي الروحي، والإلهام الإلهي.[3] يصور الشاعر ما عايشه من عوالم روحية ووجدانية ومثالية في مفارقة ذات مقاربة تداولية، فخلق من هذا المسار رموزا وأضفى عليها أسلوبا مفارقيا موشحا بالإشارات، حيث

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[1] – شكوري سيد عدنان والآخرون، (2017)، **المفارقة التصويرية في الشعر السياسي عند نزار قباني**، مجلة الجمعية الإيرانية للغة العربية وآدابها، العدد 42، ص5.

2. – حمداوي، جميل (2015م)، التداوليات وتحليل الخطاب، الطبعة الأولى، الناظور، المغرب، ص8.

[3] – ينظر أحمد، حمادة (2014م)، **الرمز الصوفي بين الرؤية والإبداع الفني**، مجلة جامعة الوادي، كلية الإلهيات، الجزائر، دون العدد، ص276-280. نصر، عاطف جودة (1978م)، **الرمز الشعري عند الصوفية**، الطبعة الأولى، دار الأندلس، بروت لبنان، ص350-400.

فتح نوافذ الجدال بين عالم العلوم وعالم المعارف، إذ صرف المعاني الباطنية إلى الظواهر المرئية بدلائل خفية لا يظهر مغزاها إلا إذا استوظف العقل واستنبط من السياق معان غير مباشرة فعندها تظهر المفارقة في مقارباتها التداولية.

وقد استخدم الشاعر مفارقة رمز الخمر، في قصائد، التي دائما يعود مغزاها إلى الرمز الذهني والمجازي المفارقي، لأن غالبية الترميز تعود إلى الطبيعة فأحال الشاعر عن ذلك إلى ما هو أغرب وأجذب للعقل في معظم قصائده وهي الخمر تعبيرا عما يجيش في قلبه ليوظف عقل المتلقي ردحا من الزمن للعثور على المعاني المنشودة.

تتحدث هذه الورقة عن الشاعر وشعره، وخصائصها الفنية، كما أنها تعالج مفهوم المفارقة والمقاربة التداولية، ومفارقة ازدواج الإشارات، ومفارقة الرموز الصوفية ومقارباتها التداولية الخمر أنموذجا.

نبذة عن الشاعر ونشأته:-

هو إبراهيم أحمد مقري بن سعيد بن خالد بن أحمد بن حمزة من سلالة عربية مغربية،[4] من مواليد عام 1976م، في مدينة زاريا، إحدى محافظات ولاية كدونا، نيجيريا، وقد عبَّر الشاعر عن حبه الخالص لمدينه، حيث يقول:

سلامٌ	وأذْلى	بِالقَوافِي	سَلامِيا	إلى	جَانبِ	الوادي	إلى	أهلِ	زارِيَا
إلَهِي	لو	بَين	الجِنَانِ	بأسْرِها	تُخيِّرنِي	أختارُ	زارِيَا	رَاضِيا	
بِها	والدِي	أمُّي	وعمِّي	وخَالتِي	وإخْوةُ	قَلْبِي	قَاطِنُون	وخَالِيا[5].	

نشأ إبراهيم أحمد مقري في أسرة ذات ثقافة دينية اجتماعية أخلاقية منتسبة إلى النبي الأكرم صلى الله عليه وسلم**6** مما أهَّله إلى أن يكون عالما، وشاعرا، وكاتبا، وأديبا، ومثقفا.**7**

وتعلم على يد والده الشيخ الأستاذ أحمد مقري مبادئ الدين واللغة العربية وتعلم كذلك على يد عمه الأستاذ الدكتور آدم سعيد خالد، كما هي العادة في معظم الأسر المتعلمة بشمال نيجيريا.

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[4] - أبه، أبوبكر علي (2016م)، **الشعر العربي في إمارة زاريا _ نيجيريا _ دراسة بيانية لأسلوب التشبيه في بعض أشعار إبراهيم أحمد مقري زاريا**، المؤتمر الدولي الخامس للغة العربية، الإمارات العربية المتحدة دبي، ص106.

[5] - مقري، إبراهيم أحمد (2012م)، **خلاصة العشرينيات**، الطبعة الأولى، دار الاتحاد، القاهرة، ص221.

6 - سجاد أبوبكر ناصر، (2016م)، "البنية الإيقاعية وتشكيل الدلالة الشعرية في ديوان العشاريات للسيِّد إبراهيم مقري" رسالة الدكتوراه قسم اللغة العربية وآدابها جامعة بخت الرضا السودان، ص13.

7 - تجاني يوسف (2014م) "المطابقة النحوية ودلالتها دراسة تطبيقية على شعر إبراهيم أحمد مقري" رسالة الدكتوراه، معهد اللغة العربية جامعة الدول العربية، مصر، ص12.

بل كان له باع في التعليم الغربي؛ حيث سجَّله والده في المدرسة الابتدائية (مُودُوجِي) ومدرسة (زَافِنْ دَاطِ كَشِنَا) وذلك للتنقل التعليمي لوالده، واستمر الاعدادية بكلية (كُفَينَا)، وأعاد الاعدادية بكلية الدراسات العربية جماعة نصر الإسلام زاريا،1990م. وفي الوقت نفسه سجلَّه والده في مدرسة الفيضة الإسلامية حيث أكمل حفظ القرآن الكريم بها،8 ويقول حول مدرسة [9]الفيضة:

ألا ليت شعري من لصب وعودة لأيام كان الماء في النهر جاريا
لأيام أنحو في ذهوب وجيئة لحفظ كتاب الله (فيضة) زاريا
ويدلظني الإرهاق عنها مواليا فتزجوني الآمال نحو أماميا

أأحمد إبراهيم بالله بلغ الـ ـشعاب التي أهوى فصوص سلاميا
ويا زاجل الشملال مني إلى (جماعة النصر) واقرأها سلام فؤاديا
سلام..وهل غير السلام لمعهدي أجازيه من بعدٍ صدر ما فدى ليا
قضيت به شطر الشبابة أرتوي وأنهل من منهله العذب صافيا
فذاكم زفير القلب أني أراكم أفي حالة التّسهاد أم في مناميا.10

وتراه يقول في كلية الدراسات العربية جماعة:

واستمر بالثانوية في الأزهر الشريف عندما حصل على القبول التأهيلي واجتاز عليها عام 1993م – 1995م، وقد التحق بجامعة الأزهر الشريف، كلية اللغة العربية، قسم الصحافة والإعلام وحصل على اللسانيس 1995م - 1999م، ومن ذلك قوله:

فعبدك إبراهيم يا سيدي على جرف هار فمُدَّ له يدا
أتمنح برًّا هام فيك امتيازة بمدرسة التقوى وتعطيه مقعدا
أتمنحه في حب طه امتيازة فقد منحته أزهر العلم جيدا.11

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8. – أبه علي أبوبكر، (2016م)، مرجع سابق، نفس الصفحة.

10. – مقري، مرجع سابق، ص221.

11. – إبراهيم أحمد مقري، (2012م)، المرجع السابق، ص190.

ومن ثم رجع إلى نيجيريا لخدمة الوطن، في جامعة أحمد بلو زاريا، كما هو المعهود لخرّيجي الجامعة في نيجيريا، عام 2001م، ونال درجة الماجستير في اللغة العربية قسم اللغة العربية، كلية الآداب، جامعة أحمد بلُّو زاريا عام 2002م – 2005م، وألقى عصا تسياره بقسم اللغة العربية كلية الآداب والدراسات الإسلامية جامعة بايرو كَنُو حيث حصل على درجة الدكتوراه عام 2006م –2009م.[12]

شاعريته ومراحلها:-

تُعد الشاعرية من القدرة الصناعية التي أجريت على التجويد والكمال الشعري المنوطة بالهوة النفسية، وتم فيها الحذق الإبداعي خلال ألفاظ سهلة المخارج المندفعة في رونق الفصاحة المثيرة إيقاعها الخليلي أو الحديث المثير للعاطفة بعبارته الراقية وأساليب جيدة مملوءة بخيال مرهف [13].

وقد نال إبراهيم أحمد مقري مقدرة الشعر والشاعرية من وجهتين: الوراثة والبيئة، فأما الوراثة فقد كان جده سعيد خالد شاعرا وأبوه شاعرا وعمه شاعرا، وخاله شاعرا وشيخه الشريف الحسيني شاعرا، ومعظم إخوته وختنته شواعر.

أما البيئة ثبت أن معظم شيوخ وعلماء زاريا شعراء وأن معظم من تربى الشاعر على أيديهم وكتبهم شعراء كابن الفارض وأبوحيان التوحيد وابن الرشد والعقاد والشعراوي والبوصيري والفازازي والشيخ إبراهيم انياس.

وكانت مدارسة الشاعر لدواوين القدامى والمحدثين من الشعراء والشواعر، مما قوى شاعريته، فإن دلَّ فإنما يدل على أن الشاعر ورث الشعر من جانب الأبوة والأمومة والشيوخ والشعراء المتقنين[14]،

وقد مرت تجربة إبراهيم أحمد مقري بالشعر، في المراحل الآتية:

مرحلة النشأة:-

بديهي أن إبراهيم أحمد مقري عهده الأول بالشعر لا يكاد يخرج من تلك القصائد النبوية واللغوية والأدبية المتمثلة في كتب التي تُدرس في الدهاليز، المسمى بكتب اللغة، والدواوين الموجودة في مكتبة والده، والأشعار التي تعلمها في وحلة الدراسة في الكلية، والقصائد التي يقرضها والده، وكان مولعا بأبي العلاء المعري، كما أولع به والده.

فتأثر بهذا وذاك في قراءته تلك القصائد والدواوين، جريا على عادة الشعراء في العصور الأدبية الذهبية، كثيرا ما يجاور والده بنظرة تأملية عندما يكتب الشعر ليتعلم، فبدأ يحاكي والده في نظم الشعر، إلا أن هذه المحاكة ألعوبة لما فيها من ركاكة الأسلوب واعوجاج التراكيب وعدم تحديد الغرض، بعيدة عما يقرأه ويكتبه والد الشاعر الشيخ أحمد مقري.

مرحلة التطور:-

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[12] – متقى إبراهيم، (2017م) مرجع سابق ص28

[13] – أبي الفرج قدامة بن جعفر (1956م)، نقد الشعر، تحقيق: خفاجي محمد عبدالمنعم، الطبعة الأولى، دار الكتب العلمية، بيروت، ص64–77.

[14] – عمر محمد الأول، (2019م)، تجليات الإقتباس القرآني "في جمع الخردة في تخميس البردة " شعر إبراهيم أحمد مقري "دراسة بلاغية تطبيقية" مجلة الرائق، العدد الرابع، ص150.

بداهة أن إبراهيم مقري تطورت محاولاته الشعرية عندما حسُن شعره في سبكه وقويت أساليبه وظهرت عاطفته فيما يقرضه، وقد سانده على ذلك والده وعمه، وظهر ذلك في أشعاره التي قالها قبل رحيله إلى الأزهر الشريف في المناسبات والمدائح النبوية، وأوائل التي قالها في الأزهر الشريف، كديوان العشاريات، وديوان صدى الهيمان، وديوان أوتار الحياة، كل هذه الدواوين تنبئ عن تطوره الشعري.

مرحلة النضوج:-

ظهرت لدى إبراهيم أحمد مقري شعرية عارمة لما خاض الفضاء السمائي في منطلق الشعر الحقيقي، برزت عبقريته الفذة خلال مجاراته شعراء العرب في الأزهر الشريف، بصالون وادي عبقر، حتى دنت رتبته إلى البرج العالي في سماء الشعر العربي النيجيري[15]، وحضرة الشيخ الشريف إبراهيم صالح حينا آخر ممتصا فصوص الشعر في معجزة الشيخ إبراهيم انياس الخولكي، وذلك إزاء تجليات الشاعر في غزله النبوي.

مكونات شاعريته:

ومما لا غبار فيه وجود مؤثرات ذات علاقات وتيرة في تكوين شاعرية إبراهيم أحمد مقري منها تعود إلى مؤثرات بيولوجية وأخرى ديناميكية على سبيل البيئة والحياة الاجتماعية، التي عايشها الشاعر في أجواء مختلفة.

خصائص الديوان:-

لا بد لأي ديوان قبل أن يسمى ديوانا أن يشمل ذخائر الألفاظ الموحية لدقائق الأفكار والمعاني، وهذه الألفاظ بمثابة جسر يربط بين الأفكار والمعاني، ويتميز هذا الديوان بمميزات وخصائص أغلبها الاتسام بروح التجديد والتطور وصولا إلى الثورة اللجوج في الصياغة والمضومون على الشعر العربي النيجيري، ويمثل ديوانه ذوبانا عاطفيا تشعله الشبابية عبر ميكانيكية فنية[16]، وأهم هذه الخصائص:

- التكرار الأسلوبي
- الإيقاع والموسيقى الشعرية
- الصورة الفنية
- الغزل النبوي
- السرد الدرامي
- التناص الشعري
- الرمز الشعري.

مفهوم المفارقة: المفارقة في اللغة:

تتمثل التعريفات اللغوية لمادة المفارقة في المعاجم العربية، منها:

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15. – سفيان محمد الرابع، (2015م)، مرجع سابق، ص78.

16. – إبراهيم أحمد مقري، (2012م)، مرجع سابق، ص10.

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فرق: الفرق: موضع المفرق من الرأس في الشعر. والفرق: تفريق بين شيئين. الفِرق: طائفة من الناس ومن كل شيئ. والفرقان: كل كتاب أنزله الله وفرق بين الحق والباطل. والفريقة: تمر يُطبخ بأشياء يُتداوى بها. والفروقة لحم الكُلْية.[17] فرق: الفاء والقاف والراء أصل صحيح يدل على تمييز وتزييل بين شيئين. والفارق: الذي يفرق بين الأمور أي يفصلها.[18] فرق: بدأ المشيب في مفرقه. الفرق: سابقها أي فارقها. فعيل بمعنى مفاعل، ومن المجاز وقفته على مفارق الحديث أي على وجوهه الواضحة.[19] وبناء على التعاريفات السابقة يتبين من معنى المفارقة لُغويا بأنه هناك علاقة التفريق بين المعنى اللفظي والسياقي تحدث تداولا دلاليا كما في الفرق بين الحق والباطل، وأن جذورها تتوحد في معنى واحد وهو التمييز؛ أي التمييز بين المعاني المادية والميتافيزيقية.

مفهوم المفارقة في الاصطلاح:

لم ترد كلمة المفارقة في المعاجم اللغوية القديمة مصرحة بما تدل عليه في هذه الآونة، بل هي مرتبطة بمصطلحات جديدة في الاستعمال اللفظي، ومع ذلك فلا يُنكر وجود معانٍ لهذه الألفاظ أو التقنيات رجوعا إلى المصطلحات البلاغية أو الأدبية أو فقه اللغة العربية قديما، أمثال الكناية والتهكم والسخرية والرمز والمجاز والاستعارة والأضداد، فمعظم هذه المصطلحات تنبئ بمعان لسانية اجتماعية ونفسية في توطيد معان خفية في نفس الأديب أو الألسني.

فمن أجل ذلك تُعد المفارقة من الانحرافات اللغوية التي تخلق دلالات عديدة يتحرك من خلالها رسم إبداعي للكشف عن جماليات لغوية، وتكون العلاقات فيها متناقضة ومتداخلة.[20] ويكاد يكون مفهوم المفارقة مضطربا وغامضا الوجهة ومتعدد الأشكال، ويعبر عنها مويك بقوله: "إن المفهوم السائد في القرن العشرين يبدو مفهوم مفارقة نسبية بل غير ملتزمة، فنحن نقرأ المفارقة: نظرة في الحياة تجد الخبرة عرضة لتفسيرات متنوعة، ليس فيها صحيحة دون غيرها، وإن تجاور المتنافرات جزء من بنية الوجود، وأنها قول شيئ والإيحاء بقول نقيضه، قد تجاوزته مفهومات أخرى، أو قول شيئ بطريقة تستثير لا تفسيرا واحدا في سلسلة لا تنتهي من التفسيرات"[21]. وأنها "لعبة عقلية من أرقى أنواع النشاط العقلي وأكثر تعقيدا تستخدم لقتل العاطفة المفرطة والقضاء على المظهر الزائف ولفضح التضخيم الفكري، وتعيد التراث الفني الموروث بصياغته وتحويله وتشكيله وتفسيره من جديد"[22].

يتجلى في التعريفات السابقة أن المفارقة نوع من العدول الدلالي يتضمن معنين، أولاها سطحية ، وأخراها عميقة، لكن السياق هو الذي يفرق بين تنافرها فتعطيها أو تلبسها لباسا جديدا.

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[17] – الفراهيدي الخليل بن أحمد، (2003م)، **كتاب العين مرتبا على حروف المعجم**، تحقيق: هنداوي عبدالحميد، الطبعة الأولى، دار الكتب العلمية، الجزء الثالث، بيروت لبنان، ص217-218.

[18] – ابن فارس، مرجع سابق، ص494-495.

[19] – الزمخشري جار الله محمود، (1998م), **أساس البلاغة**، الطبعة الأولى، دار الكتب العلمية، الجزء الثاني، بيروت لبنان، ص20-21.

[20] – شكوري سيد عدنان والآخرون، (2017)، **المفارقة التصويرية في الشعر السياسي عند نزار قباني**، مجلة الجمعية الإيرانية للغة العربية وآدابها، العدد 42، ص5.

[21] – مويك: د.س، (1987م)، **المفارقة وصفاتها**، ترجمة عبدالواحد لؤلؤة، الطبعة الأولى، بغداد، دار المأمون، ص42-43.

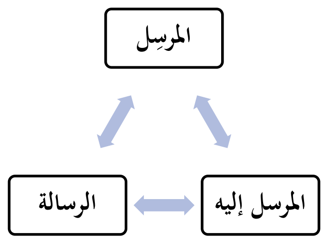
[22] – قاسم، سيزا (1982م)، **المفارقة في القص العربي المعاصر**، مجلة فصول، العدد الثاني، ص144.

أنواع المفارقة:

تتنوع المفارقة إلى نوعين أساسيين وهما: المفارقة اللفظية واللا لفظية، والمفارقة اللفظية في أبسط تعريف لها هي شكل من أشكال القول يُساق فيه معنى ما في حين يُقصد منه معنى آخر، غالبًا ما يكون مخالفًا للمعنى السطحي الظاهر[23]. والمفارقة اللا لفظية أو الملحوظة: هي شيء يمكن في الأقل تَصوّر حدوثه، أو شعور بعض الشّيء بقوة اللّاوعي المطمئن لدى الضحية[24].

عناصر المفارقة:

تتحقق للمفارقة أغراض تواصلية خلال عناصر مفارقية منها مخطط الآتي[25]:



مكونات المفارقة:

ومما تراه يسرى عبدالرحمن أن المفارقة تتكون من مكونات ترمي بالشاعر إلى أن يتوفر في نصه الشعري ما يشد القارئ، إذ يرفض المتلقي المعنى الظاهر المتناقض المتنافر وذلك بدفعه للبحث عن خفائه؛ لذا حدا بالمبدع أن يُضمّن نصوصه الشعرية عناصر متنوعة تتحقق فيها المفارقة، وتتمثل في الآتي: **المفتاح وسيميائيته، الألفاظ ودلالتها والتباين والتخالف**[26].

مفهوم المقاربة التداولية لغويا:

دَوَلَ: العقبة في المال والحرب سواء، وقيل: الدُّولة بالضم، في المال، والدَّولة بالفتح في الحرب، وفي حديث أشراط الساعة: إذا كان المغنم دُولاً، أي مايتداول من المال فيكون لقوم دون قوم، وقال الزجاج: الدُّولة اسم الشيئ الذي يُتداول والدولة الفعل والانتقال من حال إلى حال.[27]

[23] - قاسم سيزا، (1982م) ، المرجع السابق، 144.

[24] - مويك د. سي، (1993م)، مرجع سابق، ص223.

[25] - خليل يسرى عبدالرحمن وسلامة أبو سنينة، (2015م)، **المفارقة في شعر الصّنوبري**، رسالة ماجستير قسم اللغة العربية وآدابها، كلية اللغات والآداب، جامعة الخليل، ص16.

[26] - خليل يسرى عبدالرحمن وسلامة أبو سنينة، (2015م)، االمرجع السابق ص16.

[27] - ابن، منظور (1863م)، **لسان العرب**، الطبعة الأولى، الجزء الخامس، دار الكتب العلمية، بيروت لبنان، ص327.

دَوَلَ: دالت له الدولة، ودالت الأيام بكذا، وأدال الله بني فلان من عدوهم: جعل الكرّة لهم عليه، وعن الحجاج: إن الأرض ستدال منا كما أبانا منها، والدهر دولٌ وعقبٌ.[28]

يتجلى من معطيات السابقة أن التداولية لا تكاد تخرج من الانتقال المقامي والمقالي والحالي من مسار إلى مسار آخر؛ عن طريق التغير والتصرف، كما أن الحالة النفسية والاجتماعية مما يأثر على تغير الدلالي من وجه لوجهٍ للمداولة، ولا يُدرك هذا إلا بالسياق الذي يكون شعلة بين الدال والمدلول والترابط والاستبدال والوظائف الكلامية والثنائية المعنوية.

مفهوم المقاربة التداولية اصطلاحيا:

تُعد المقاربة التداولية بين تلك المناهج التي تدرس الجانب الوظيفي والتداولي والسياقي في النص أو الخطاب ،وتدرس مجمل العلاقات الموجودة بين المتكلم والمخاطب، مع التركيز على البعد الحجاجي والإقناعي وأفعال الكلام داخل النص. بمعنى أن التداوليات هي ذلك" العلم الذي يدرس المعنى، مع التركيز على العلاقة بين العلامات ومستعمليها والسياق، أكثر من اهتمامها بالمرجع أو بالحقيقة، أو بالتركيب".[29] وتهتم المقاربة التداولية أيضا بالمرجع والإحالة التي تم إقصاؤها من فرديناند دوسوسير الذي حصر العلامة في الدال والمدلول. ومن ثم، ترفض المقاربة التداولية في مجال الأدب والنقد التركيز البنيات الشكلية والجمالية، دون مساءلة أفعال الكلام والمقصدية الوظيفية. فضلا عن ذلك، تدرس المقاربة التداولية اللغة العادية واللغة اللاعادية (اللغة الشعرية، اللغة الروائية، واللغة الدرامية)..

وحضور الأنا والأنت، والسياق التواصلي، والوظيفة المقامية والمقالية، والانتقال من الحرفي إلى الإنجازي، ودراسة الحجاج في النصوص والخطابات التي يكون هدفها هو الإقناع الذهني والتأثير العاطفي الوجداني، وأيضا دراسة السرد الإقناعي كما عند غِرِيمَاسْ، وخاصة في خانة التطويع والتحفيز المبنية على فعل الاعتقاد، وفعل التأويل، وخانة الكفاءة المبنية على منطق الجهات (وجود الفعل، ومعرفة الفعل، وقدرة الفعل، وإرادة الفعل).[30]

فالمقاربة التداولية هي دراسة العلامات في علاقة مع مستعمليها. ومن ثم، ترتكز اللغة على ثلاثة مكونات ضرورية ومتكاملة حسب شَارِلْ مُورِيسْ، هي: التركيب، والدلالة، والوظيفة .أضف إلى ذلك ، للغة ثلاثة مظاهر: مظهر خطابي، ومظهر تواصلي، ومظهر اجتماعي. لذا، فالمقاربة التداولية هي التي تركز على الجانب التواصلي في اللغة الطبيعية، وتستند المقاربة التداولية كذلك إلى تخصصات عدة، فهناك– مثلا– تداولية تحليلية، وتداولية تلفظية، وتداولية نفسية– اجتماعية، وتداولية نصية، وتداولية سوسيولغوية.[31]

مفارقة ازدواج الإشارات:

تزدوج الإشارات السيموطيقة في اللغة والكلام، عندما ينحرف الشاعر من المألوف إلى اللامألوف، ليبسط تكنيكا مفارقيا، حيث يحصل ذلك بكثرة في الشعر الصوفي، كالعشق الإلهي والغزل النبوي، عندما يخلق الشاعر رموزا ذات دلالات متباينة المغزى ليتداول في جمالية لغوية مع متنافرات الألفاظ، تسلية للنفوس وترويحا للقوب، فتتساقط السيمائية المفارقية التداولية في نسق مفارقي جميل.

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[28] – الزمخشري، حجة الله (1998م)، **أساس البلاغة**، تحقيق: محمد باسل وآخرون، الطبعة الأولى، الجزء الأول، دار الكتب العلمية، بيروت لبنان، ص303.

[29] حمداوي، جميل (2015م)، **التداوليات وتحليل الخطاب**، الطبعة الأولى، الناظور، المغرب، ص8

[30] حمداوي، جميل (2015م)، المرجع السابق، الناظور، المغرب، ص8

[31] – حمداوي، جميل (2015م)، المرجع السابق، ص8.

مفارقة الرموز الصوفية ومقارباتها التداولية:

تتميز اللغة الصوفية عما يعرفه علماء اللغة، بمميزات لغوية وبلاغية، حيث يعبر الصوفيون عن أغراضهم بلغتهم الخاصة للإشارة إلى مراميهم الذوقية وأحوالهم الروحية، ومواجيدهم النفسية، وتكتظ الرموز عند أهل الطريق، للتعبير عن الإشارات والتلويحات والتجربة القلبية والرقي الروحي، والإلهام الإلهي.[32]

يصور الشاعر ما عايشه من عوالم روحية ووجدانية ومثالية في مفارقة ذات مقاربة تداولية، فخلق من هذا المسار رموزا وأضفى عليها أسلوبا موشحا بالإشارات، حيث فتح نوافذ الجدال، بين عالم العلوم وعالم المعارف، إذ صرف المعاني الباطنية إلى الظواهر المرئية بدلائل خفية لا يظهر مغزاها إلا عند المتفحص البصير، فأصبحت هذه الرموز مرايا مادية في تمثيل حقائق معنوية.

وقد استخدم الشاعر مفارقة رمز المرأة والخمر، والطبيعة والصورة، والعبادات والحروف في قصائد؛ أي رسائله، التي دائما يعود مغزاها إلى الرمز الذهني والمجازي المفارقي، لأن غالبية الترميز تعود إلى الطبيعة فأحال الشاعر عن ذلك إلى ما هو أغرب وأجذب للعقل في معظم قصائده إجابة لمستجدات الصوفية وإرباكا لغرائز المتلقي، حتى وإن كان ذلك لا يجدي كما يذهب إليه الشاعر.

من أجل ذلك اختار الباحث بعض الأبيات التي تتحدث عن هذا المسار، وأجابت عما جابهت القادة الصوفية في رموزها المفارقية، ومن ذلك ما يلي:

ساق قلبي الحبيب نحو الطَّلاء يستقي والأنا لدى هؤلاء
حلَّ بي حضرة يقال بأن الـ قدس اسمٌ لها من الأسماء
وسقتني سلافةً مذ سقاني ضلَّ عني الهدى وعزَّ شفائي
يا حبيب الفؤاد أذكِ لهيب الـ حُبِّ كي يبرحَ الأطبَّا حشائي.33

البنود التواصلية التداولية:

أ- ميدان التواصل: كيميائي، فيزيائي.

ب- شكل التواصل: إنشائي إخباري.

ت- نسبة التواصل: حديث عن الخمرة وسقيانها والنار ولهيبها.

ث- وظيفة التواصل: الرمز الصوفي (الخمر).

ج- القضايا التواصلية: ليعرف المتلقي ما ساق المرسل نحو الطلاء وما دار بينه وبين الخمرة ولهيب الفؤاد وحالة الأطباء.

ح- الشفرة: نسبة الخمر إلى التقديس، والقلب إلى الضلال، وعدم قدرة الأطباء وجود شفاء للمفؤد أي المرسل.

شرح الأبيات وإبراز ما فيها من المفارقة اللغوية:

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[32] - ينظر أحمد، حمادة (2014م)، **الرمز الصوفي بين الرؤية والإبداع الفني**، مجلة جامعة الوادي، كلية الإلهيات، الجزائر، دون العدد، ص276-280. نصر، عاطف جودة (1978م)، **الرمز الشعري عند الصوفية**، الطبعة الأولى، دار الأندلس، بروت لبنان، ص350-400.

33. **- مقري إبراهيم أحمد، (2012م)، المرجع السابق، ص23.**

ينشّط الشاعر سامعيه برسالة ذات رموز خمرية عن طريق المفارقة الرمزية في مقارباتها التداولية، وقد أخذ الشاعر النظرة الميتافيزيقية إلى الواقع الشعري الجيوفيزي، حيث صور السكر الناتج عن الخمر المادية إلى السكر الصوفي المعنوي الناتج عن العرفان الرباني، يصحبها انبلاج شعري.

حل الحبيب محل حضرة القدس؛ من حضرات الله سبحانه وتعالى، فناوله الحبيب الخمر التي حلت محل الحب والعشق الخالص، كيف لا وقد نهج الشاعر نهج شعراء الصوفية القدامى، حيث إن سكران الهوى وهيمان العاشق ووله الحبيب، يتماشى مع سكران مدمن الخمر وهيمان الصاحي، في قلب المجذوب الذي ترقى إلى الكشف الإلهي من المحسوس الجيوفيزي إلى الميتافيزيقي، فيجد نفسه إذا فني هيمانا سكرانا.

حيث حاول الشاعر الربط بين عالم الحق والروح المتمثل في الأحوال والكشف والترقي بعالم المثالي المتمثل في العنب والخمر والسكران عن طريق مفارقة الرموز الصوفية في مقاربة تداولية، لتمثيل النشوة والطرب واستخفاف الحبيب، بالفناء في الله ورسوله.

وقد صبَّ في كأس المتيَّم ماؤها فأشربَ لون الماء حين يُصبَّب
إذا قلت قولا كان قولي قولها ولم يك إلا قولتي إذ تعرب
وإذ نحن فيما نحن أفجر سرنا فقمت وقامت والدُّموع تُصبَّب
تقول اصطبر هجريك هجر مواصل فقلبك في ظعني إذ الرَّكب تضرب
وأقسم بالعهد الَّذي كان بيبننا يصان وعهد الحُبِّ أولى وأعجب.34

البنود التواصلية التداولية:

أ- ميدان التواصل: كيميائي، فيزيائي.

ب- شكل التواصل: إنشائي إخباري.

ت- نسبة التواصل: حديث عن صفات الخمر ومناجاة الحبيبة وعهد الحب.

ث- وظيفة التواصل: الرمز الصوفي (الخمر).

ج- القضايا التواصلية: ليعرف المتلقي صفة الخمر عندما تصب في الكوب، وحالة العشيقين عندما يحدث الهجران وقوة ميثاق الحب.

ح- الشفرة: نسبة لون الخمر إلى الكوب، نسبة تزراف الدموع إلى الانصباب، نسبة زيادة الوصل عند الهجران.

شرح الأبيات وإبراز ما فيها من المفارقة اللغوية:

يستمر الشاعر في إرفاق مفارقاته رموزا خمرية، حيث مثل الحبيب بتصبيب ماء الخمر في كؤس الشاعر حتى مازج لون الخمرة لون الكأس، وكأنه في تمثيلية تداولية مع الحبيب، حتى حل الحبيب محل الخمرة، إذ المخمور يتنشط عند شرب الخمرة، فيذهب العقل، فتراه يتحدث مع نفسه، في وسوسة مغرية.

جسد الشاعر السنفونية الدرامية المفارقية بالعقل اللاواعي، ليفجّر للمتلقي بحرا تداوليا على هيمنته الرمزية بشفرتها الصوفية، فكيف الخمرة تقوم وتتحدث وتدمع ويكون لها الصدر والوعد والميثاق، فهذا التجوال الرمزي لا يتجافى عن الغزل النبوي، الذي يجسد فيه الشاعر أحواله الباطنية الروحية بالأحوال الظاهرية المادية التي غالبا ما يكون مرجعها إلى المعاصي والمحارم، إلا أن الشاعر بادر بذكر القرائن اللفظية حينا والمعنوية حينا آخر حيث يتقارب إلى المفارقة بالتداولية ليجسد تنافرا وتضادا ليوحي إلي المتلقي ذوقه العرفاني ومدده الإلهي في هذا المنحى.

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34. **– مقري، إبراهيم أحمد (2012م)، المرجع السابق، ص115.**

كما أنه تتكشف المعاني العميقة لدى الشاعر عند سبر أغوار الرسالة، إلا أن المتلقي لا يعثر عليها مباشرة حتى يأخذ وقتا طويلا لفك شفراتها التداولية، وكذلك إن الرجوع إلى الله سبحانه وتعالى والسنة النبوية عليه الصلاة والسلام، هو المنبع الأوحد للسرور والابتهاج وإزالة الغموم.

إلا أن الشاعر انزاح عنه إلى الخمرة التي هي مرجع الغموم والهموم ليستنتج مقاربة تداولية ذات تضافر تنافري، بين الخمر المادية التي حرمها الله سبحانه وتعالى، والخمر المعنوية التي هي حب النبي الأكرم.

الخاتمة:

تناول البحث نبذة عن الشاعر ونشأته، وشاعريته ومراحلها ومكوناتها، وخصائص الديوان، وكذلك تطرق البحث إلى مفهوم المفارقة في اللغة والاصطلاح، وأنواع المفارقة، وعناصرها، ومكوناتها، كما أن البحث عالج مفهوم المقاربة التداولية في اللغة والاصطلاح، ثم تناول مفارقة ازدواج الإشارات ومقارباتها التداولية في شعر إبراهيم أحمد مقري، مفارقة الرموز الصوفية الخمر أنموذجا، ومن أبرز ما توصل البحث ما يأتي:

1- أن الشاعر أخذ النظرة الميتافيزيقية إلى الواقع الفيزيائي، حيث صور السكر المادي الناتج عن الخمر إلى السكر المعنوي الناتج عن العرفان الرباني، فربط بين العوالم الروحية المتمثلة في الكشف والأحوال والرقي والعوالم المادية المتمثلة في العنب والخمر والسكران لتمثيل النشوة والطرب بالفناء الصوفي في الله ورسوله.

2- أن الشاعر جسد السنفونية الدرامية المفارقية بالعقل اللاواعي في الرمز الخمري ليفجر للمتلقي بحرا تداوليا يحمل في بوتقته تشفيرا دلاليا.

3- وأن الشاعر يرسم في شعره مفارقة مملوءة بالتناقض اللفظي والمعنوي، حيث انتشى الأحوال الباطنية الروحية بالأحوال الظاهرية المادية، التي غالبا ما يكون مرجعها إلى المعاصي والمحارم، إلا أنه ربطها بالقرائن السطحية والعميقة يعثر عليها المتلقي بعد التأويل والتفسير الدقيق.

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EFFECT OF COST-RELATED RISKS IN BUILDING CONSTRUCTION PROJECTS

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Abstract

The construction industry is characterized by inherent risks and uncertainties as a result of its fragmented and competitive nature. This, therefore, makes it difficult to accurately estimate the cost of a construction project. Cost-based risks are the cost that directly affects the project cost during construction. Many projects have suffered abandonment because of cost overruns due to unnecessary occurrences of cost-related risk. For a project to be adequately completed especially within cost and quality, a manager should be able to ascertain cost-related risks to be able to prepare adequately for the risks. Therefore, this paper aims at evaluating cost-based project risks in building projects and also to determine the effect on building project costs. A quantitative approach was used in obtaining data through structured questionnaires administered to the construction professionals practising in the F.C.T. Abuja. 102 questionnaires were distributed and 75 were returned (73.5% response rate). Using a two-dimensional scaling, with a Likert scale of 0-4, the likelihood of the identified risk factors occurring and their perceived impacts in case of occurrence. The data were analysed using the Relative important index (RII) and multiple regression analysis. The study revealed that cost-based risks have a very positive significant effect on a project. The paper recommended that accuracy of data in the form of scope, specification and drawings be provided by the specialist in order to avoid change of scope, design and specification which would result to inflation of contract sum in order to avoid cost overrun and project abandonment.

Keywords: *Building, Construction, Cost-related, Projects, Risks.*

Introduction

Risks in construction projects are significant elements of the total project costs and thus their allocation has a major effect on the project budget (Zaghloul and Hartman 2003; Ayub *et al.,* 2019). The knowledge of significant risk factors requires greater attention and thus the incorporation of the whole process of risk management for projects to be completed as budgeted (Oluranti *et al.,* 2009). Bello and Odusami (2009) concluded that the effectiveness of contingency management can strongly influence project success. Furthermore, the importance of forecasting an accurate and effective construction contingency is essential to the client's satisfaction with the estimated final construction cost and hence, the construction contract delivery. In addition, the knowledge about risk reserve and cost estimation can provide an advantage in a rapidly changing business environment. The purpose of risk reserves estimation is to ensure that the budget set aside for project execution is realistic and sufficient to contain the risks of unforeseen cost increases (Karlsen and Lereim 2005; Koks *et al*., 2019). The accuracy of the contingency thus provides a realistic budget which could aid the completion of a project on time, in good quality and within budget. Therefore, there is a need to identify various forms of cost risks related risk and determine the effect on building project delivery this will enable the stakeholders to have a better knowledge of how to manage these risks. Because of the above, the paper tends to identify and rank the various sources of cost-related risks in building projects and to determine the effect of cost-related risks identified on project cost.

Literature review

Risk Management and Construction Projects

The effective management of risk is crucial to the success of any construction project. Since project risks are not inevitable, the management of risks must be optimized and not ignored (AACE, 2000; AACE, 2008; Jayalath and Gamage, 2022). According to Li *et al*. (2022), the risk management system presents a clear concise diagrammatic overview of the cost estimating process. Jagun (2020) and Odeyinka and Iyagba (2000) defined risk management as the act of planning, organizing, directing and controlling an organization's assets and activities to minimize the adverse operational and financial effects of accidental losses upon that organization and as a system that aim to identify and qualify all risks to which the business or project is exposed to. According to Wang (2004), risk management is a formal and orderly process of systematically identifying, analyzing, and responding to risks throughout the life – cycle of a project to obtain the optimum degree of risk elimination, mitigation and/or control. Risk management according to Abd El-Karim *et al.* (2017) is the identification, measurement and economic control of risks. Jahan *et al.* (2022) argued that the main benefit of risk management is to help project managers ensure that project objectives are not affected by adverse effects. Though risk management is not a means of removing all risks, but facilitates explicit decisions making which will mitigate the effects of certain risks. Other benefits include providing an improved understanding of the project, promoting feedback, information transfer and, heightening awareness of the range of possible outcomes (Maruping *et al*., 2019; Afzal *et al*., 2020; Deep *et al*., 2021). Managing project risks effectively required identification, analysis and mitigation (Berериche and Ait-Kadi, 2015). Carcillo *et al*. (2017) identified and categorized Risk mitigation strategies into four, namely; Risk reduction, Risk avoidance/ elimination, Risk transfer; and risk retention

Risk Reduction
Risk reduction deals with reducing the expected monetary value of risk events and this can be done by reducing the probability of occurrence, reducing the risk event value, or both (Deep *et al*., 2021). According to Bello and Odusami (2009) since risk cannot be eliminated, project reduction actioners make efforts to reduce either their likelihood of occurrence or eventual impact. Construction organizations would visit and conduct site investigations to ascertain any inherent problems with the land and decide on how to deal with them before signing a private Finance Initiative project (Bello and Odusami 2008; Bello and Odusami, 2009).

Risk Avoidance/ Elimination
Risk avoidance according to Shrestha and Shrestha (2016) involves taking preventative measures to avert jeopardizing project objectives to ensure that the risk cannot arise again. This does not result in a design team that is ignorant of the potential for risk-induced problems on-site rather a team who at the risk identification stages is made aware of the severity, source and impact of the potential risk.

Oyelami (2021) stated that eliminating a specific threat, usually by eliminating the cause is another way of avoiding risk. Vegas-Fernández (2022) further explained that a contractor not placing a bid or the owner not proceeding with project funding are two ways of eliminating risk. It was however argued that risk can never be eliminated but the possible adverse effect could be reduced (Oyelami, 2021; Vegas-Fernández, 2022).

Risk Transfer
Vegas-Fernández (2022) observed that the construction industry is not strong enough in coping with the issue of risks. Risk transfer was found to dominate the construction industry. Risk transfer according to Denga and Rakshit (2022) involves a shift in the burden of risk from one stakeholder to another. The essential characteristic of risk transfer is to share it with or to transfer the total risk to the other party. The transfer of allocation of risk to another party can be done either through the condition of the

contract to another party or through an insurance policy by payment of an agreed insurance premium for the risk (Carcillo *et al*., 2017)

Risk Retention

Risk-retention should only be advocated where reduction or transfer of risk is impossible. According to Smith *et al.* (2006) in some situations, the only option available is to retain a risk. The party that is holding a risk might be the only one that can manage the risk or accept the consequence should the risk be realized. Risk-retention in the words of Carcillo *et al*. (2017) involves the method of dealing with risk by a company that controls them. This has to do with devising a deliberate management strategy after a conscious evaluation of possible losses and making a contingency plan should the risk event occur.

Cost Related Risk In Building Projects

Cost-related risk is the risk that a project will spend more money than originally budgeted. It usually leads to overspending on the project and it causes project overrun if not well managed (Karlsen and Lereim 2005; Koks *et al*., 2019). Aarthipriya *et al*. (2020 Identifies Data inaccuracy, Inflation, Performance/ availability, Volume/demand, Currency fluctuation,Change in law, Solution/design risk, Delivery risk (Project delay), Scope change /specification, Supplier defaults, Termination, Subcontractor insolvency, Industrial action, and lastly unforeseen events (force majeure). These mentioned cost-related risks are the risks that were made use of in this paper.

Methodology

This paper aims to identify and rank the various sources of cost-related risks in building projects in some selected sites in the Federal Territory, Abuja Nigeria. In achieving the aim 102 questionnaires were distributed and 75 were returned (73.5% response rate) and found useful for further analysis. The sample size of the respondents was determined by the use of purposive sampling techniques. The questionnaire was identified from the literature and through discussion with the respondents who are professionals in the construction industry who have experience in project management and risk management. Using a two-dimensional scaling, respondents were requested to score on a Likert–type scale of 0-4, the likelihood of the identified risk factors occurring and their perceived impacts in case of occurrence. The measuring scale of 0 represents a situation where there was no likelihood of occurrence or impact, while 4 represents a very high likelihood of occurrence or impact. This then gives the measuring scale the property of an interval scale, which enables the collected data to be subjected to various statistical analyses. Their opinions were collected by the use of a Likert scale as earlier stated. The questionnaire analyzed using a relative importance index and regression analysis.

Data Analysis and Results

Data analysis was carried out by evaluating the relative importance of the identified risk factors at the project level. The numerical scores assigned by respondents were transformed into a relative importance index (RII) using the following formula:

$$\text{RII} = \sum_{k=0}^{1=4} \mathbf{E}^{i}\mathbf{P}^{i}$$

Where: Ei = the number of the likelihood of occurrence of risk factor or impact

Pi = the percentage of respondents to the number of the likelihood of occurrence or impact. Further analysis was carried out using multi-linear regression analysis to determine the impacts of the identified cost-related risk factors on total project cost and time.

Table 1: Classification of Organisation and the Distribution of the Questionnaire

Professionals	No distributed	Number retrieved	% of number retrieved	% of number distributed
Quantity surveyors	30	23	30.7	29.4
Builders	22	14	18.7	21.6
Civil engneers	20	15	20	19.6
Archtect	10	7	9.3	9.8
Others	20	16	21.3	19.6
Total	102	75	100.0	100

Source: Researcher Data Analysis 2022

Table 1 shows the the professionals that responded to the questionaires. 102 questionaires were distributed and 75 were retrieved indicating 73.5% level repondents which is adequate for the research. The result shows that quantity surveyors are the highest respondents for the study. This is inline with the findings of some previous studies that the quantity surveyers are the major proffessionals that are usually involve in risk management.

Table 2: years of experience of the respondents

S/N	Years	Frequency	Percentage

1	**Less than 5years**	**5**	**6.7**
2	**5 - 10**	**15**	**20**
3	**10 – 15**	**10**	**13.3**
4	**15 - 20**	**30**	**40**
5	**20 years and above**	**15**	**20**
	Total	**75**	**100**

Source: Researcher Data Analysis 2022

Table 2 shows the year experience of the respondents. The results indicated that the majority of the respondent are highly experience those with the 15 – 20 years and 20 years above are 40% and 20% respectively.

Table 3. Cost Related Factors and their Likelihood of Occurrences in Building Projects

Cost Related Risk	Likelihood of risk occurrence index(RII)	Rank
Scope change /specification.	**0.95**	**1**
Supplier defaults.	**0.94**	**2**
Data inaccuracy.	**0.93**	**3**
Subcontractor insolvency.	**0.90**	**4**
Inflation.	**0.89**	**5**
Industrial action.	**0.89**	**5**
Unforeseen events (force majeure)	**0.85**	**7**
Solution/design risk.	**0.83**	**8**
Performance/ availability.	**0.78**	**9**
Delivery risk (Project delay).	**0.76**	**10**
Change in law.	**0.75**	**11**
Termination.	**0.73**	**12**
Volume/demand	**0.70**	**13**
Currency	**0.69**	**14**

Source: Researcher's Analysis of Data (2022)

Table 3 shows the fourteen (14) cost-related factors gotten from literature, which was analysed using the relative importance index analysis. The result shows that the most important factor that occurs in a building project was changing of scope and specification of a project with an RII of 0.95 followed closely by suppliers defaults with an RII of 0.94, which indicated that since the contractor cannot control the activities of the suppliers there are likelihood of suppliers having default in their services, these findings are in line with Afzal *et al* (2020) and Aarthipriya, *et al*. (2020). Other factors also followed closely till the last factor was currency which was ranked last with an RII of 0.69, the level of importance of all the fourteen variables was significant they range between 0.69 – 0.95 Jahan *et al*. (2022).

Table 4: Assessment of the Effects of Cost-Related Risk on Building Project Cost and time

Model			Beta Coefficient	R Square	F	T Value	P-Value	Remark
$H1_1$	Data inaccuracy	CRR1 BPCT	−0.150	0.308	14.739	0.563	0.000	SSE
$H1_1$	Inflation	CRR2 BPCT	−0.045	0.260	13.287	0.184	0.000	SSE
$H1_1$	Performance/ availability	CRR3 BPCT	−0.510	0.370	15.288	2.206	0.000	SSE
$H1_1$	Volume/demand	CRR4 BPCT	−1.104	0.401	10.528	2.586	0.000	SSE
$H1_1$	Currency	CRR5 BPCT	−0.341	0.240	12.777	0.456	0.002	SSE
$H1_1$	Change in law	CRR6 BPCT	−0.341	0.362	18.643	0.456	0.002	SSE
$H1_1$	Solution/design risk	CRR7 BPCT	−0.134	0.402	74.344	3.014	0.000	SSE
$H1_1$	Delivery risk (Project delay)	CRR8 BPCT	−0.053	0.332	57.134	1.100	0.000	SSE
$H1_1$	Scope change / specification	CRR9 BPCT	−0.304	0.321	71.493	6.562	0.000	SSE
$H1_1$	Supplier defaults.	CRR10 BPCT	−0.283	0.391	71.905	6.281	0.000	SSE
$H1_1$	Termination.	CRR11– BPCT	0/383	0.310	68.615	8.864	0.000	SSE
$H1_1$	Subcontractor insolvency.	CRR12 BPCT	−0.013	0.290	4.600	0.192	0.003	SSE
$H1_1$	Industrial action.	CRR13 BPCT	−0.134	0.402	74.344	3.014	0.000	SSE

$H1_1$	Unforeseen events (force majeure)	CRR14 BPCT	–0.082	0.267	13.706	1.112	0.000	SSE

Source: Researcher's Analysis of Data (2022)

It was deduced from model 1 the degree to which the data accuracy affects building project cost and time is moderate, the model had a moderate predictive power of 31% (R^2 = 0.308; F change = 14. 739 with a P-value of 0.000). The same thing applies to all the variables the 14 variables have a significant effect on project cost and time and the R^2 ranges from 0.267 – 0.402 which indicated a percentage of effects between 26% to 40%. The detail of the result of the model is as shown in table 2.

Conclusion and Recommendations

From the literature reviewed and the analysis of the result, there is a precarious effect of cost-related risk on project cost, resulting to cost overrun and project abandonment. It was concluded that data inaccuracy and inflation are the major cause of risk in building projects in Nigeria, this is as a result of change of scope and specification. The study recommended that accuracy of data in the form of scope, specification and drawings should be made available by the specialist to the contractors in order to avoid the occurrence of change of scope, design and specification which would result to inflation of the contract sum in order to avoid cost overrun and building project abandonment. The study will guide construction professionals in identifying the cost related risks and help them make adequate provisions for them to avoid the occurrence, in order to curtail cost overrun and project abandonment. Further study should be carried out to identifying the time related risks as well as its impact on project cost.

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ADVANCE THE NECESSITY TO INTEGRATE INDIGENOUS AND MODERN SCIENTIFIC KNOWLEDGE IN PREDICTING AND PLANNING RAINFED FARMING

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Abstract

The research assessed the advance the necessity to integrate the indigenous knowledge and modern scientific used in predicting and planning rainfed farming. Focus group discussion (FGD) was conducted on rainfed farmers aged 40 years and above of both male and female in two communities in each of four agro-ecological zones. Also in-depth interviews were conducted with key informants in all selected communities on both genders aged 60 years and above and NiMet staffs were interviewed. The information sources were analysed using qualitative method and words map produced using Nvivo software. The ArcGIS was used to produce Agroecological map. Findings of the research revealed that there is no synergy between the two knowledge systems. The research proposed the integration of indigenous and modern scientific knowledge as a way of improving quality of rainfed prediction and planning.

Keywards: *Indigenous Knowledge(IK), Rainfed, Nvivo software.*

Introduction

Understanding indigenous knowledge is not only necessary to communicate the scientific forecast, since it is learnt and identified by farmers within a cultural context. By perceiving such a knowledge base, it may facilitates social interaction and promote acceptance of scientific forecast among the framers (Sanni *et al.*, 2012 and Chang'a, Yanda & Ngana, 2010). Integrating the scientific and indigenous climate forecasts information on rainfed farming decision is gaining momentum in the recent years. The IK research in conjunction with meteorological office forecasting information will improves the timing of agricultural operations and disaster risk management activities. Rainfed farmers in Africa were not familiar with the application of scientific weather forecasts and prediction. Hence integrating local knowledge in to modern scientific knowledge should be encourage in order to reduce the vulnerability of communities to disasters with through and effective evaluation protocols. Integrating IK and Scientific knowledge contributes to climate change adaptation among rainfed farmers.

Statement of Research Problem

According to Jimme, Kagu & Yahya (2016) religious and cultural perspectives in environmental resource management in Borno State, consequently, they encourage integrating both the local and western strategies to achieve sustainable agricultural management. Communities in Borno State largely engage in rainfed farming and trading of farm produce, they often grow rainfed crops which largely depend on rainfall, temperature and other physical factors, as well as farmers' indigenous knowledge which is used in predicting and better timing of their activities. However, these farming activities are sometimes affected by climate fluctuation as well as change and inadequate planning, hence the need for research in indigenous prediction and planning.

Aim and Objectives

The research aim is to advance the necessary to integrate indigenous knowledge and modern scientific knowledge used for predicting and planning rainfed farming.

The Study Area

Borno State lies in the extreme north-east corner of Nigeria; between latitudes 10^{o} 30' to 13^{o} 50' north and longitudes 11^{o} 00' to 13^{o} 45' east. It occupies an area of 69,435 sq. km sharing border with three States; Adamawa to the south, Gombe to the south west and Yobe to the west; as well as three countries, namely, republic of Niger, Chad and Cameroon to the north, north-east and east respectively (Figure 1).

Weather and Climate

The climate of Borno State is characterized by dry and wet seasons. The natives of the region traditionally identify four seasons, *Binem* (cool dry season) – harmattan season from December to February, *Bey* (hot dry season) – from March to late May; *Nengeli* (rainy season) from June to September and *Biila* (humid dry season transitional period) between September and November. The timing is however not rigid owing to vagaries in climate of recent times. The daily average temperatures are high throughout the year ranging between 25oC to 44oC, and lowest temperature usually recorded in January and the highest in April (Waziri, 2007).

There are clear differences between diurnal and night temperature especially in the northern fringes of the State. It is common knowledge that rainfall has been dwindling in the state both in quantity and number of rainy days since the 1970s. The mean annual rainfall ranges between a little over 800mm on the Biu plateau and less than 500mm in the extreme northern part of the State, while rainy days reduce from south to north between 80 to less than 40 days. For instance, in 2004, there were 60 rainy days in Biu and 20 days in Ngala with a total amount of 951 and 499 millimeters of rainfall respectively (Statistical Year Book, 2006); and this has created a lot of challenges on rainfed farming. Drought, famine and pest occur so often. Rivers are mostly dry, ground water is getting deep and desiccation is wide spread. The rainfall pattern of the state is the mono-modal, the peak rainfall experience in the month of August (Waziri, 2007).

Farming System and Livelihoods

Farming system in Borno state is mostly the combination of the crop production and livestock farming or both. Crops cultivated include sorghum, millet, beans, rice, groundnut, cotton, onion, garlic and vegetables. Livestock such as cow, sheep, goat and camel are found in the area. The livestock plays an important role in the crop production for example cow is use in ploughing the soil, its waste helps in improving soil fertility and proceeds from sale is used for financing the crop cultivation and crop residue on the other hand is used in feeding the livestock.

Most crops produced in the basin are rainfed, cultivated and harvested using simple tools and indigenous knowledge. Sometime crops were produced without chemical fertilizers and agrochemicals. Mixed cropping, crop rotation and intercropping were used to manage soil fertility. Other important rainfed farming is masakwa farming, where seedlings were produced at different phase in time of the rainy season and transplanted at the end of the rainy season; on a deep clay soil (vertisols); under this condition only dry season sorghum is produced. This type of farming is practiced in area around Mafa, Dikwa, Marte, Kala- Balge, Ngala, Monguno and Bama local government areas. Onion, rice, and wheat planted on the floodplain during rainy season receive supplementary irrigation at the later stage, due largely to the short rainy season. The most common crops produced in all agro-ecological zones are beans and groundnut. Cucumber and pepper are produced only in semi-arid zone of Geidam-Asaga-Monguno plain, basically along the floodplain of Kumadugu Yobe and Gana. Rainfed crops are for household consumption, financing of social activities (marriage, child circumcision, hospital bill and so on), cooking oil production, livestock procurement, feeding and barter trade. House wives do supplement what their husbands produce. Rainfed agriculture in Borno State as elsewhere will continue to play a dominant role in providing foods and livestock for the population.

Literature Review and Conceptual Framework

Integrating Indigenous Knowledge and Scientific Knowledge

The importance of integrating both the scientific and indigenous climate forecasts information for farm level decision is gaining momentum in Mahenge and Ismani wards, Tanzania (Kijazi et al, 2012). Orlove, Roncoli, Kabugo and Majugu (2009) analyzed a system of indigenous knowledge about climate, to document this system's complexity, large spatial, temporal and social scales and its dynamic nature and discussed how IK complements the modern science in Southern Uganda.
According Makwara (2013) the IK can provide significant values and boosts in the improvement of forecasting accuracy and reliability if it would be systematically researched, documented and subsequently integrated into conventional forecasting systems. The IK research in conjunction with meteorological office forecasting information will improves the timing of agricultural operations and disaster risk management activities. However, most farmers in southwestern Free State, South Africa were not familiar with the application of scientific weather forecast and predictions for their farming activities or with the other science based agro meteorological products (Zuma – Nethiukhwi, Stigter & Walker, 2013).
Although diverse practices were applied to predict and manage local disaster events, the skepticism prevails among locals towards these practices regarding their effectiveness in Northern Ghana. Due to the lack of Science Based tools and systems for disaster prediction and management, local communities continually depended on their knowledge systems and practices and integrating the local knowledges into modern scientific knowledge should be encouraged in order to reduce the vulnerability of the local communities to disasters with thorough and effective evaluation protocols (Ngwese, Saito, Sato, Boafo and Jasaw, 2018).
This study identifies and documents existing indigenous knowledge in weather forecasting in Lushoto District, Northern Tanzania which aims at promoting the integrating of indigenous knowledge and scientific weather forecasting for climate risk management. In order to improve it accuracy, systematic recommendation of indigenous knowledge and establishment of a framework for integrating indigenous knowledge and Tanzania Meteorological Agency (TMA) weather information was encouraged (Mahoo, Mbungu, Yonah, Recha Radeny, Kimeli & Kinyangi, 2015). Loita Maasai community of Kenya have good understanding of their IK which policy planners and climate specialist need to integrate two types of knowledge and in doing

so, will instigate development initiatives that are both environmentally and socially appropriate and hence, more sustainable (Saitabau, 2014).
A study in Zimbabwe shoed that farmers' willingness to use seasonal climate forecast to increased when the forecast were presented in conjunction with and compared with the local indigenous climate forecasts (Patt & Gwata, 2002). People are better able to adopt new ideas when it can be seen in the context of existing practices (Boko, Niang, Nyong, Vogel, Githeko, Medany, Osman – Elasha, Tabo and Yanda 2007). Indigenous knowledge has for generation's assisted rural subsistence farming communities adapt to climate change and make daily decision regarding agriculture (Basdew, Jiri & Mafongoya, 2017).
While there is a general recognition that integrating traditional ecological knowledge will contribute to climate change adaptation among the Mayan indigenous farmers in Mexico's Yucatan Peninsula, agricultural interventions have made little progress in achieving this due to the assumption of a clear divide between traditional ecological knowledge and scientific knowledge. This research considers that knowledge integration is already occurring, but in context of economic, socio – cultural and political inequalities (Camacho – Villa, Martinez – Cruz Ramirez – Lopez, Hoil – Tzuc & Teran – Contreras, 2021).

Methodology

This study adopted cross – sectional survey design in sourcing data. The data required basically concerned with getting people's perceptions and wisdom on indigenous knowledge on weather and climate change. Qualitative data on how farmers' response to the climate changes and variability of indigenous and scientific prediction systems. The data were obtained through FGD among rainfed farmers of 40 years and above of both gender and key informant interview for aged group of 60 years and above with specialized knowledge and skills. The study adopted multistage sampling methods. First is the stratification of the state into four agro-ecological zones namely; Semi - Arid, ecozone of Geidam-Asage-Monguno plain, Dry sub-humid ecozone of Gumen-Nguru-Maiduguri plain, Dry Sub-humid ecozone of Chibok-Biu-Mubi-Song high plain and Dry Sub-humid of Azare-Gombe-Yola plain. The variations in agro-ecologies may cause disparity in indigenous knowledge as regard to the perception of the causes and effects climate change and variability; thus two communities were sampled from east zone. The sampled communities were Abadam, Gudumbali, Bama, Magumeri, Damboa, Gwoza, Bayo and Shani (figure.1). At the second stage, one male group and one female group were selected from each community to make sixteen (16) groups. Each group composed of people from 40 years and above and numbered six to eight.

A total of 20 key informants were purposively sampled in all ecozones through snow balling. A knowledgeable person in each community was picked for the in-depth interview. In the communities of semi-arid ecozones of Geidam-Asaga-Monguno plain and dry of sub-humid ecozones of Gumen-Nguru-Maiduguri plain three key informants were interviewed. Two key informants were interviewed in communities in dry sub-humid ecozones of Chibok-Biu-Mubi-Song high plain and dry sub-humid ecozones of Azare-Gombe-Yola plain. The difference in sample was necessary because in the later zones, no new information was received after the interview of two (2) persons. All the key informants were aged. Furthermore, data for this study was obtained in Internally Displaced Persons' Camps (IDPs) namely; Bakassi, MOGCOLIS, Dalori, NYSC and Teachers Village in Maiduguri except those in the Dry of humid ecozones of Azare-Gombe-Yola plain (Bayo and Shani) which were taken in their localities. Those in the camps were interviewed after obtaining permissions letter from National Emergency Management Agency Borno State Office Maiduguri. Data derived from FGD and KIIs were analyzed using qualitative method. A software based analysis, Nvivo software was used to produce word clouds, which produced the patterns in the perceptions and thought of the rainfed farmers. Frequency tables were used to summarize and organized the data. All ethical issues bothering on informed consent, respect for anonymity, confidentiality and respect for privacy as they affect the research participant were taken into consideration in the process of data collections.

Case for Integration and Scientific Knowledge

Conventional weather parameters measuring instruments are used in measuring weather events, predictions and planning. Indigenous knowledge on the other hand, uses astrological features, local weather observations, phenological events and hydrological observations. Both NiMet scientific approach and indigenous knowledge predicts weather before commencement of the raining season to enable farmers to prepare against the season early. Failure sometimes happens both in scientific and indigenous knowledge predictions; however, it is generally accepted and considered good when prediction is 60% correct scientifically. Furthermore, NiMet will not accept unverifiable indigenous knowledge even if they are lacking information or knowledge on future weather trend. Rainfed fathers on the other hand will not easily accept NiMet report because its complex and more generalized. Thus, there is no synergy between two knowledge systems.

Nigerian Meteorological Agency (NiMet) 2021 Seasonal Climate Prediction

From NiMet report, it is expected that the onset of the planting season will be earlier in most places while the season may likewise be prolonged especially in few areas in the northeast where cessation might take place later than usual. Other variables like the length of the season and temperature throughout the season and unprecedented heavy downpours are expected. The onset (planting) dates of growing season of the study area was predicted likely to have it onset from 30th May to 14th June in southern region and from 14th June, to 29th June in northern region. The cessation dates of growing season are very essential for the end of season and post season activities such as harvesting, storage, preservation etc. These dates inform the end of the minimum moisture available to withstand farming activities. The cessation dates can be seen to progress from the Sahelian through Sudano of the study area. Raining season end in northern region from 9th October to 29th October while Central and Southern Regions from 19th October to 29th October and normal departure throughout the study area.

Furthermore, moderate dry spell is predicted in the study area for the months of June and August; however severe dry spell is predicted in the northern region Local Government Area of Abadam, Mobbar, Kukawa, Guzamala, Gubio, Nganzai and Monguno. During dry spell, cropping pattern adjustments can also help farmers adapt to changing weather patterns. Plants can be planted further apart so more moisture is available for each row, increasing the likelihood that they survive a period of dry spell.

The importance of integrating what both the scientific and indigenous climate forecasts information for farm level decision is gaining momentum (Kijazi et al, 2012). In line with this research, the wisdom of experience-indigenous farmers is increasingly subordinating the scientific – technical western knowledge (Forum of Cultures, 2004 and Sibisi, 2004). However, scientific validation remained a critical challenge for indigenous knowledge practitioners. Furthermore, much of indigenous knowledge is rooted in oral traditions and is not systematically documented in written form, with some notable exceptions of traditional medicine from India and China. With good understanding of IK, policy planners and climate specialist will be better able to integrate IK with scientific knowledge and in doing so, will instigate developments initiatives that are both environmentally and socially appropriate and hence more sustainable developments (Saitabau, 2014).

Summary, Conclusion and Recommendations

Summary

Case for integration of indigenous and scientific knowledge, conventional weather parameters measuring instruments were only used in measuring weather events, predictions and planning. IK on the other hand uses astrological features, local weather observations, phenological events and hydrological observations. However, NiMet will not accept unverifiable IK even if they are lacking information on future weather trend. Also rainfed farmers will not easily accept NiMet reports because it is generalized. Therefore there is no synergy between the two knowledge systems.

Conclusion

Rainfed farmer in the study area are conversant with the forms and management of IK, however, the knowledge relevance increases as you move from southern to northern regions, resulting from decreasing rainfall and increasing temperature condition which make predictions and planning necessary among rainfed farmers in the northern region. Young persons who have long contact with elders and their environments are mostly versed in the indigenous knowledge through their experience, experiment, proverbs, songs and stories. This knowledge is generally accurate and reliable although sometimes affected by climate change and variability.

Recommendations

First, there is need for the integration of IK and modern scientific knowledge system for accurate and reliable forecasting, predictions and planning of rainfed farming in order to achieve food security in the study area. This can be done when NiMet and other stakeholders recognized and used IK concurrently with the scientific predictive knowledge. One way to ensure its continued existence and used is to integrate indigenous knowledge into the education curriculum and to link it with formal climate change research through the participation of the local people. As indigenous knowledge played a valuable role in providing local scale expertise in formulating research questions and hypotheses, there is the need for further study on how to blend the two knowledge systems in order to improve their accuracy and reliability.

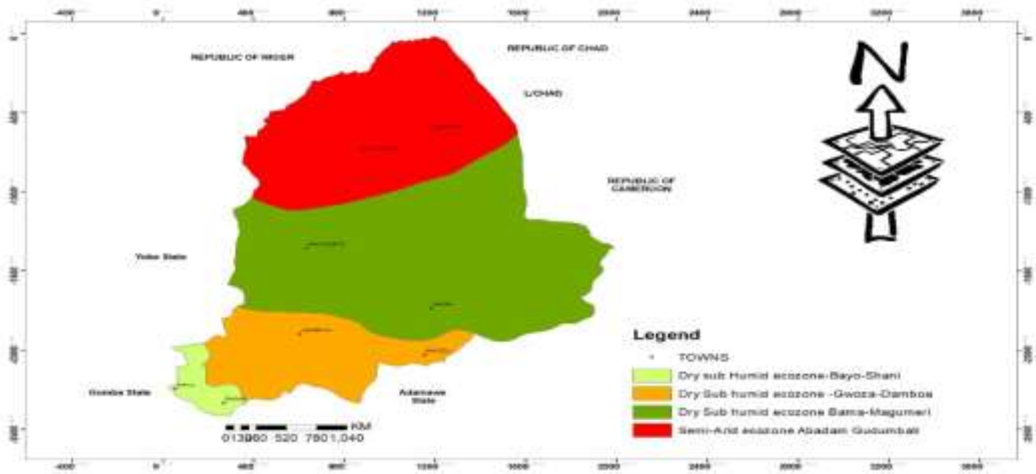

Figure 1: Borno State Sampled Location
Source: Adapted from FAO, National Special Programmed for Food Security (NSPFS) 2005

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CRISIS MANAGEMENT, A TOOL FOR SUSTAINABLE ORGANIATIONAL GROWTH A STUDY OF DELTA STATE POLYTECHNIC, OTEFE OGHARA

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Abstract

This paper is to study the crisis management as a tool for sustainable organiational growth a study of delta state polytechnic, otefe oghara. The aim of this paper is to assess whether the Crisis management has relationship with organizational sustainable growth. *Crisis management is the process by which an organization deals with a major event that threatens to harm the organization, its stakeholders, or the general public. Crisis management involves dealing with threats before, during, and after they have occurred. Social media has accelerated the speed that information about a crisis can spread. The viral effect of social networks such as Twitter means that stakeholders can break news faster than traditional media - making managing a crisis harder. This can be mitigated by having the right training and policy in place as well as the right social media monitoring tools to detect signs of a crisis breaking. Social media also gives crisis management teams' access to real-time information about how a crisis is impacting stakeholder sentiment and the issues that are of most concern to them.*

Introduction

Crisis management is the process by which an organization deals with a major event that threatens to harm the organization, its stakeholders, or the general public. Crisis management involves dealing with threats before, during, and after they have occurred.

Crisis Management is a discipline within the broader context of management consisting of skills and techniques required to identify, assess, understand, and cope with a serious situation, especially from the moment it first occurs to the point that recovery procedures start. The aim of crisis management is to be well prepared for crisis, ensure a rapid and adequate response to the crisis, maintaining clear lines of reporting and communication in the event of crisis and agreeing rules for crisis termination.

Crisis-management methods of a business or an organization are called a crisis-management plan. Crisis management is occasionally referred to as incident management, A **crisis management** requires the ability to think of the worst-case scenario while simultaneously suggesting numerous solutions. Trial and error is an accepted, as the first line of defense might not work. It is necessary to maintain a list of contingency plans and to be always on alert. The related terms emergency management and business continuity management focus respectively on the prompt but short lived "first aid" type of response

Statement of Problem

Crisis management is the application of strategies designed to help an organization deal with a sudden and significant negative event. It is designed to protect an organization and its stakeholders from threats and or reduce the impact of the threats. Despite the fact that some organizations put all these in place; they are still unable to deal with the possibility of the treat that determined potential hazards causing unsustainable growth in the organization. What could be the cause of organizations' not sustaining growth is the focus of this study.

Objectives

Crisis management has relationship with organizational sustainable growth

Questions

What is the extent of crisis management to sustaining organizations growth?
Hypothesis
Ho: There is a significant relationship between crisis management and organizational sustainable growth
Hi: There is a significant relationship between crisis management and organizational sustainable growth

Literature

According to Arherirm.co (2022) Crisis management is the application of strategies designed to help an organization deal with a sudden and significant negative event. A crisis can occur as a result of an unpredictable event or unforeseeable consequences of some event that had been considered as a potential risk. Effective crisis management occurs when an organization employs skillful planning and a proactive response to avert a crisis entirely, limit its severity and duration, or turn it into an opportunity. These examples feature organizations that responded with transparency and agility Andy (2020)

Types of crisis

It is important to identify types of crises in that different crises necessitate the use of different crisis management strategies.

Lerbinger in the work of Wikipedia (2022) categorized eight types of crises

1. Natural disaster
2. Technological crises
3. Confrontation
4. Malevolence
5. Organizational Misdeeds
6. Workplace Violence
7. Rumours
8. Terrorist attacks/man-made disasters

Natural crisis

Natural crises, typically natural disasters, are such environmental phenomena as earthquakes, volcanic eruptions, tornadoes and hurricanes, floods, landslides, tsunamis, storms, and droughts that threaten life, property, and the environment itself.

Technological crisis

Technological crises are caused by human application of science and technology. Technological accidents inevitably occur when technology becomes complex and coupled and something goes wrong in the system as a whole (Technological breakdowns). Some technological crises occur when human error causes disruptions (Human breakdown). People tend to assign blame for a technological disaster because technology is subject to human manipulation whereas they do not hold anyone responsible for natural disaster.

Confrontation crisis

Confrontation crisis occur when discontented individuals and/or groups fight businesses, government, and various interest groups to win acceptance of their demands and expectations. The common type of confrontation crisis is boycotts, and other types are picketing, sit-ins, ultimatums to those in authority, blockade or occupation of buildings, and resisting or disobeying police.

Crisis of malevolence

An organization faces a crisis of malevolence when opponents or miscreant individuals use criminal means or other extreme tactics for the purpose of expressing hostility or anger toward, or seeking gain from, a company, country, or economic system, perhaps with the aim of destabilizing or destroying it.

Crisis of organizational misdeeds

Crisis occur when management takes actions it knows will harm or place stakeholders at risk for harm without adequate precautions.

Workplace violence

Crises occur when an employee or former employee commits violence against other employees on organizational grounds.

Rumors

False information about an organization or its products creates crises hurting the organization's reputation. Example is linking the organization to radical groups or stories that their products are contaminated

Crisis leadership

James (2012) defines organizational crisis as "any emotionally charged situation that, once it becomes public, invites negative stakeholder reaction and thereby has the potential to threaten the financial well-being, reputation, or survival of the firm Sudden crisis

Sudden crisis

Sudden crises are circumstances that occur without warning and beyond an institution's control. Consequently, sudden crises are most often situations for which the institution and its leadership are not blamed.

Smoldering crisis

Smoldering crises differ from sudden crises in that they begin as minor internal issues that, due to manager's negligence, develop to crisis status. These are situations when

leaders are blamed for the crisis and its subsequent effect on the institution in question.
James (2012) demonstrates how leadership competencies of integrity, positive intent, capability, mutual respect, and transparency impact the trust-building process.

Models and theories associated with crisis management
Crisis Management Model
Successfully managing a crisis requires an understanding of how to handle a crisis – beginning with before they occur and its monitoring

Crisis Management Planning
No organization looks forward to facing a situation that causes a significant disruption to their business, especially one that stimulates extensive media coverage. Public scrutiny can result in a negative financial, political, legal and government impact. Crisis management planning deals with providing the best response to a crisis.

Contingency planning
Preparing contingency plans in advance, as part of a crisis-management plan, is the first step to ensuring an organization is appropriately prepared for a crisis.

Business continuity planning
When a crisis will undoubtedly cause a significant disruption to an organization, a business continuity plan can help minimize the disruption. First, one must identify the critical functions and processes that are necessary to keep the organization running. This part of the planning should be conducted in the earliest stages, and is part of a business impact analysis phase that will signpost "How much does the organization stand to lose?" (Osborne, 2007).
Each critical function and or/process must have its own contingency plan in the event that one of the functions/processes ceases or fails, then the business/organization is more resilient, which in itself provides a mechanism to lessen the possibility of having to invoke recovery plans (Osborne, 2007).

Structural-functional systems theory
Providing information to an organization in a time of crisis is critical to effective crisis management. Structural-functional systems theory addresses the intricacies of information networks and levels of command making up organizational communication. The structural-functional theory identifies information flow in organizations as "networks" made up of members ". Information in organizations flow in patterns called networks.

Diffusion of innovation theory

Another theory that can be applied to the sharing of information is Diffusion of Innovation Theory. Developed by Everett Rogers, the theory describes how innovation is disseminated and communicated through certain channels over a period of time.

Unequal human capital theory

James postulates that organizational crisis can result from discrimination lawsuits. James's theory of unequal human capital and social position derives from economic theories of human and social capital concluding that minority employees receive fewer organizational rewards than those with access to executive management.

Social media and crisis management

Social media has accelerated the speed that information about a crisis can spread. The viral effect of social networks such as Twitter means that stakeholders can break news faster than traditional media - making managing a crisis harder. This can be mitigated by having the right training and policy in place as well as the right social media monitoring tools to detect signs of a crisis breaking. Social media also gives crisis management teams' access to real-time information about how a crisis is impacting stakeholder sentiment and the issues that are of most concern to them.

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THE INTERNET OF THINGS (IOT): APPLICATIONS, INVESTMENTS, AND CHALLENGES FOR ENTERPRISES

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Abstract

The Internet of Things (IoT), often known as the Internet of Everything or the Industrial Internet, is a cutting-edge technological paradigm that envisions a global network of interconnected machine and devices. The Internet of Things (IoT) is gaining significant attention from a variety of businesses and is acknowledged as one of the most important areas of future technology. In addition to discussing three IoT categories for enterprise applications used to increase customer value, this paper covers five IoT technologies that are crucial for the implementation of successful IoT-based goods and services. It also looks at the real option technique, which is frequently used to justify technology initiatives, and the net present value method, and it shows how the real option approach can be used to justify IoT investment. Finally, five technical and managerial challenges are covered in this paper.

Keywords: *Internet of Things; Radio frequency identification; Real options; Cloud computing; Supply chain management*

Introduction

Internet of Things (IoT) is the networking of physical objects that contain electronics embedded within their architecture in order to communicate and sense interactions amongst each other or with respect to the external environment. In the upcoming years, IoT-based technology will offer advanced levels of services and practically change the way people lead their daily lives. Advancements in medicine, power, gene therapies, agriculture, smart cities, and smart homes are just a very few of the categorical examples where IoT is strongly established. The true value of the IoT for enterprises can be fully realized when connected devices are able to communicate with each other and integrate with vendor-managed inventory systems, customer support systems, business intelligence applications, and business analytics.

According to Gartner (2014), the IoT will increase to 26 billion devices by 2020 from 0.9 billion in 2009, which will have an impact on the information that supply chain partners have access to and how the supply chain functions. The IoT is revolutionising business processes by enabling more precise and real-time visibility into the movement of materials and goods. This includes production line and warehouses, as well as retail deliveries and store shelves. In order to revamp production workflows, enhance material tracking, and reduce distribution costs, businesses will invest in the IoT. For instance, to reduce costs and boost supply efficiency, John Deere and UPS are currently utilising IoT-enabled fleet tracking systems.

Essential IoT technologies

For the effective deployment of IoT-based products and services, five IoT technologies are frequently used:

- Radio frequency identification (RFID).
- Wireless sensor networks (WSN).
- Middleware.
- Cloud computing.
- IoT application software.

Radio frequency identification (RFID)

A tag, a reader, and radio waves are all used in radio frequency identification (RFID) to enable automatic identification and data collection. Compared to conventional barcodes, the tag has larger storage capacity. The tag includes information in the form of the Electronic Product Code (EPC), a world-wide RFID-based system for item identification created by the Auto-ID Center. Tags come in three varieties. No batteries are used to power passive RFID tags; instead, radio frequency energy is transmitted from the reader to the tag. Supply chains, passports, electronic tolls, and item-level tracking are a few areas where these are applied. Active RFID tags may initiate communication with a reader and have their own power source. External sensors for temperature, pressure, chemical sensitivity, and other variables can be included in active tags. Active RFID tags are used in manufacturing, hospital laboratories, and remote-sensing IT asset management. Semi-passive RFID tags use batteries to power the microchip while communicating by drawing power from the reader. Active and semi-passive RFID tags cost more than passive tags.

Wireless sensor networks (WSN)

Wireless sensor networks (WSN) consist of spatially distributed autonomous sensor-equipped devices to monitor physical or environmental conditions and can cooperate with RFID systems to better track the status of things such as their location, temperature, and movements (Atzori, Iera, & Morabito, 2010). WSN allow different network topologies and multihop communication. Recent technological advances in low-power integrated circuits and wireless communications have made available efficient, low-cost, low-power miniature devices for use in WSN applications (Gubbi, Buyya, Marusic, & Palaniswami, 2013).

WSN have primarily been used in cold chain logistics that employ thermal and refrigerated packaging methods to transport temperature-sensitive products (Hsueh & Chang, 2010; White & Cheong, 2012). WSN are also used for maintenance and tracking systems. For example, General Electric deploys sensors in its jet engines, turbines, and wind farms. By analyzing data in real time, GE saves time and money associated with preventive maintenance. Likewise, American Airlines uses sensors capable of capturing 30 terabytes of data per flight for services such as preventive maintenance.

Middleware

Middleware is a software layer interposed between software applications to make it easier for software developers to perform communication and input/output. Its feature of hiding the details of different technologies is fundamental to free IoT developers from software services that are not directly relevant to the specific IoT application. Middleware gained popularity in the 1980s due to its major role in simplifying the integration of legacy technologies into new ones. It also facilitated the development of new services in the distributed computing environment. A complex distributed infrastructure of the IoT with numerous heterogeneous devices requires simplifying the development of new applications and services, so the use of middleware is an ideal fit with IoT application development. For example, Global Sensor Networks (GSN) is an open source sensor middleware platform enabling the development and deployment of sensor services with almost zero programming effort. Most middleware architectures for the IoT follow a service-oriented approach in order to support an unknown and dynamic network topology.

Cloud computing

Cloud computing is a model for on-demand access to a shared pool of configurable resources (e.g., computers, networks, servers, storage, applications, services, software) that can be provisioned as Infrastructure as a Service (IaaS) or Software as a Service (SaaS). One of the most important outcomes of the IoT is an enormous amount of data generated from devices connected to the Internet (Gubbi et al., 2013). Many IoT applications require massive data storage, huge processing speed to enable real-time decision making, and high-speed broadband networks to stream data, audio, or video. Cloud computing provides an ideal back-end solution for handling huge data streams and processing them for the unprecedented number of IoT devices and humans in real time.

IoT applications

The IoT facilitates the development of myriad industry-oriented and user-specific IoT applications. Whereas devices and networks provide physical connectivity, IoT applications enable device-to-device and human-to-device interactions in a reliable and robust manner. IoT applications on devices need to ensure that data/messages have been received and acted upon properly in a timely manner. For example, transportation and logistics applications monitor the status of transported goods such as fruits, fresh-cut produce, meat, and dairy products. During transportation, the conservation status (e.g., temperature, humidity, shock) is monitored constantly and appropriate actions are taken automatically to avoid spoilage when the connection is out of range. For example, FedEx uses SenseAware to keep tabs on the temperature, location, and other vital signs of a package, including when it is opened and whether it was tampered with along the way.

While device-to-device applications do not necessarily require data visualization, more and more human-centered IoT applications provide visualization to present information to end users in an intuitive and easy-to-understand way and to allow interaction with the environment. It is important for IoT applications to be built with intelligence so devices can monitor the environment, identify problems, communicate with each other, and potentially resolve problems without the need for human intervention.

IoT applications to enhance customer value

Despite growing popularity of the IoT, few studies have focused on categorization of the IoT for enterprises (e.g., Chui, Lo¨ffler, & Roberts, 2010). Based on the technology trends and literature review, this paper identifies three IoT categories for enterprise applications:

- Monitoring and control.
- Big data and business analytics.
- Information sharing and collaboration.

Understanding how these three IoT categories can enhance the customer value of an organization is a prerequisite to successful IoT adoption.

Monitoring and control

Monitoring and control systems collect data on equipment performance, energy usage, and environmental conditions, and allow managers and automated controllers to constantly track performance in real time anywhere, anytime. Advanced monitoring and control technologies such as smart grid and smart metering reveal operational patterns, spot areas of potential improvement, or predict future outcomes and optimize operations, leading to lower costs and higher productivity.

The smart home is known to be at the forefront of innovation regarding IoT monitoring and control systems. The primary value propositions are family and property protection and energy savings. For example, the Verizon Home Monitoring and Control network uses a wireless communications technology designed specifically for remote control applications in home automation. IoT-enabled home appliances and devices can be monitored and controlled outside the user's home through a computer, tablet, or smartphone. The Verizon Home Monitoring and Control network allows users to adjust the lights, control the climate, manage the security system, receive automatic event notifications, and even lock and unlock doors.

The IoT is also used to monitor and control various components in cars. The primary customer value propositions are drivers' personalized experience and satisfaction. Ford and Intel teamed up in 2014 to explore new opportunities to personalize the user experience using facial recognition software and a mobile phone app. The joint research project, called Mobile Interior Imaging, incorporates perceptual computing technology to offer improved privacy controls and to identify different drivers and automatically adjust features based on an individual's preferences. The in-car experience is then personalized further by displaying information specific to the driver, such as his/her calendar, music, and contacts. The customer value propositions are appropriately integrated into the connected car environment to provide another revenue stream for Ford.

Big data and business analytics

IoT devices and machines with embedded sensors and actuators generate enormous amounts of data and transmit it to business intelligence and analytics tools for humans to make decisions. These data are used to discover and resolve business issues such as changes in customer behaviors and market conditions to increase customer satisfaction, and to provide value-added services to customers. Business analytics tools may be embedded into IoT devices, such as wearable health monitoring sensors, so that real-time decision making can take place at the source of data.

The IoT and advances in business analytics now make it possible to capture vast amounts of individual health data. The IoT enables healthcare service providers to personalize patient care. New IoT technologies provide data about a patient's everyday behaviors and health, creating opportunities for care providers to influence patients far more frequently and effectively. For example, Humana's Health sense eNeighbor1 remote monitoring system reports changes in the member's normal patterns of movement and activity to Humana care managers via in home sensors that measure routine daily activities with data analytics to help trigger interventions and help prevent adverse events from escalating to emergency room visits or hospital stays.

IoT-based big data are also transforming the healthcare product industry. For example, Proctor & Gamble developed the Oral-B Pro 5000 interactive electric toothbrush to provide users with a smarter, more personalized oral care routine. The interactive electric toothbrush records brushing habits with mobile technology while giving mouth-care tips alongside news headlines. This innovation provides users with unprecedented control over their oral care. Tests of the interactive electric toothbrush have shown that when connected, brushing time increases from less than 60 seconds with a manual toothbrush to 2 minutes and 16 seconds with an electric toothbrush, surpassing the 2-minute session recommended by dental professionals.

Information sharing and collaboration

Information sharing and collaboration in the IoT can occur between people, between people and things, and between things. Sensing a predefined event is usually the first step for information sharing and collaboration. In the supply chain area, information sharing and collaboration enhance situational awareness and avoid information delay and distortion. For example, if sensors are placed throughout a retail store where refrigeration is necessary, alerts can be sent to the store manager's mobile device whenever the refrigerators malfunction. The manager can then check the employee status report to see who is available and send task assignments to that employee via his or her IoT-enabled mobile device.

To enhance information sharing and collaboration with shoppers, Macy's is deploying shopkick's shopBeacon technology, an enhanced mobile location based technology that uses ultrasound Bluetooth Low Energy (BLE). ShopBeacon provides shopkick app users with personalized department-level deals, discounts, recommendations, and rewards. As shoppers enter Macy's, shopBeacon reminds those shopkick app users who have opted in. This enhancement in Macy's information sharing with shoppers allows for increased consumer engagement and promotional and marketing relevancy that lead to higher customer satisfaction and increase revenues. In September 2014, following a pilot test of the application, Macy's decided to roll out shopBeacon in all of its 4,000 U.S. locations. Other major retailers such as Target, American Eagle Outfitters, and JCPenney also partnered with shopkick and launched shopBeacon in 2014. Due to competitive pressure, there is expected to be a rapid adoption of shopBeacon at other national retailers, too.

Evolution of the foundational IoT technologies

Various types of IoT applications have emerged, and the willingness of enterprises to utilize them is growing rapidly. According to Bradley, Barbier, and Handler (2013), the IoT will generate $14.4 trillion in value; the combination of increased revenues and lower costs will migrate among companies and industries from 2013 to 2022. From an industry perspective, four industries make up more than half of the $14.4 trillion in value. These leading four industries in terms of value at stake include manufacturing at 27%; retail trade at 11%; information services at 9%; and finance and insurance, also at 9%. Other industries such as wholesale, healthcare, and education lag behind in terms of value generation, with a range between 1% and 7%. Much of the value for manufacturers comes from greater agility and flexibility in factories, and from the ability to make the most of workers' skills. Additionally, a large amount of the value for retailers comes from connected marketing and advertising. Geographic distributions of the value are heavily driven by each region's relative economic growth rate and by the relative size of industry sector in each region. In the United States, $4.6 trillion of value is most prevalent in the services area. However, in China, $1.8 trillion of value is derived from rapid economic growth, mainly in the manufacturing sector.

Table 1 shows projected evolution in the area of foundational IoT technologies: network, software and algorithms, hardware, and data processing. The network is the backbone of the IoT. It refers to uniquely identifiable objects (things) and their virtual representations in an Internet-like structure. Network technology is moving to unobtrusive wire-free communication technology that allows device-to-device applications to be deployed more flexibly. Network technology is evolving toward a context-aware autonomous network.

Objects rely on software to communicate effectively with each other and to deliver enhanced functionality and connectivity. Software should be developed with the IoT's interoperability, connectivity, privacy, and security requirements in mind. The focus of software development is shifting to user-oriented, distributed intelligence and machine-to-machine and machine-to-human collaboration.

The news that Google is paying $3.2 billion in cash to buy Nest, a smart thermostat business, demonstrates the value of hardware in the IoT. Hardware is innovatively designed and robustly produced, driven by the consumerized IoT devices which have myriad features, functionalities, and operating environments. While RFID tags and sensors have been the focus of hardware innovation, miniaturization of hardware and nanotechnology is leading the energy-efficient, low-power hardware evolution. IoT devices generate enormous quantities of data that need to be aggregated and analyzed in real time to provide information regarding status, location, functionality, and environment of the devices. The traditional data processing method does not work well in the real-time streaming data process of the IoT environment. Since processing large quantities of IoT data in real time will increase workloads of data centers at an exponential rate, data processing will become more context-aware, optimized, and cognitive.

In the IoT environment, a large number of devices are connected with each other, and it is not feasible to process all the streaming data available to those devices. Context-aware data processing enables sensors and devices to use context-specific information such as location, temperature, and the availability of a certain device to decide what data to collect and interpret to provide relevant information to other devices or users. For example, context-aware data processing can deliver relevant information to a user by knowing the user’s current location (e.g., within a department store, a park, or a museum). Cognitive data processing integrates the human cognition process into IoT applications. Rather than being programmed to deal with every possible data-processing need, a cognitive data-processing application is trained using artificial intelligence algorithms to sense, predict, infer, and learn tasks and environments. For example, cognitive data processing uses image recognition techniques to understand the surrounding environment, processes data for a user, and utilizes feedback from the user to learn further. The optimization of data processing is critical to timely processing of the continuous stream of massive amounts of data. Technological advances in optimized data processing help make timely decisions in time-critical big data applications such as smart grids, environmental monitoring, and smart manufacturing.

Table 1. Evolution of key IoT technologies

	Before 2010	**2010—2015**	**2015—2020**	**Beyond 2020**
Network	• Sensor networks	• Self-aware and self-	• Network context awareness	• Network cognition

		organizing networks • Sensor network location transparency • Delay-tolerant networks • Storage networks and power networks • Hybrid networking technologies		• Self-learning, self-repairing networks
Software and Algorithms	• Relational database integration • IoT-oriented RDBMS • Event-based platforms • Sensor middleware • Sensor networks middleware • Proximity/Localization algorithms123	• Large-scale, open semantic software modules • Composable algorithms • Next generation IoTbased social software • Next generation IoTbased enterprise applications	• Goal-oriented software • Distributed intelligence, problem solving • Things-to-Things collaboration environments	• User-oriented software • The invisible IoT Easy-to-deploy IoT software • Things-to-Humans collaboration • IoT 4 All

Hardware	• RFID tags and some sensors • Sensors built into mobile devices • NFC in mobile phones • Smaller and cheaper MEMs technology	• Multiprotocol, multi-standards readers • More sensors and actuators Secure, low-cost tags (e.g., Silent Tags)	• Smart sensors (biochemical) • More sensors and actuators (tiny sensors)	• Nanotechnology and new materials
Data Processing	• Serial data processing • Parallel data processing • Quality of services	• Energy, frequency spectrum-aware data processing • Data processing context adaptable	• Context-aware data processing and data responses	• Cognitive processing and optimization

Source: Adapted from Sundmaeker, Guillemin, Friess, and Woelffle´ (2010, p. 74)

IoT investment opportunities and evaluation (net present value vs. real option approach)

Our survey shows the IoT is penetrating a wide range of industries including retailing, manufacturing, healthcare, insurance, home appliances, heavy equipment, airlines, and logistics. The benefits of IoT technologies such as RFID-based merchandise tracking and home networking are concrete and immediately measurable. Other IoT technologies such as intelligent automobiles and intelligent hospital robot systems are in the experimental stage and their benefits may be realized in the long term. While the IoT is relatively new, investment opportunities abound, along with the development of various foundational technologies summarized in Table 1. Companies are expected to take advantage of the wave of IoT innovations in the coming years.

In general, companies are going to take an immediate investment or a wait-and-see approach to investment based on the maturity level of the specific IoT technologies.

Net present value and real option approach

With so much potential value in the investment of IoT technology, firms need an appropriate measure by which to properly assess its risks and rewards. The standard measure firms typically use to value projects, net present value (NPV), is inappropriate to use for several reasons. Chief among these in this circumstance is that it ignores flexibility in investment such as reversibility and scalability in the evaluation horizon. No other technology investment has the flexibility that information technology investments in general have (Fichman, Keil, & Tiwana, 2005). All of the aforementioned IoT technologies may have had value arising from flexibility in investment. Thus, NPV tends to undervalue a project's worth and is not suitable for high-risk projects. In order to value the IoT more appropriately, real option valuation may be an appropriate evaluation method.

Real options

As implied by their namesake, real options are the right, but not the obligation to take an action during a period of time. These include the options to expand, contract, and wait. Real options can prove particularly valuable in fields of high uncertainty and risk, such as information technology. As reviewed by Li and Johnson (2002), two main characteristics make real options an appropriate application for IT investments. First, IT projects typically require high initial investments and are often irreversible. Second, IT investments can have very high uncertainty and risk. IT projects such as IoT projects inherently contain technical uncertainty as well as market uncertainty (Fichman et al., 2005). Also, IT can advance at a rapid pace and change direction quickly. These characteristics make real option valuation ideal in valuing IoT investment projects, as it can capture value that otherwise would be overlooked.

Good managers intuitively understand real options. They understand that simple cash profits are not the only value a project can add; other opportunities may arise from engaging in projects. Real option valuation allows management to quantify these options to more accurately reflect the value of a project and to have a real strategic impact on the value of a project. Table 2 lists four general types of real options.

There are several examples of how real options are used in valuation today. Any firm that operates in a field of high uncertainty (e.g., pharmaceuticals) is likely to employ real options. Pharmaceutical companies face uncertainty not only in drug development (akin to IT technical uncertainty) but also in other external factors such as regulations and patents (akin to IT market uncertainty). Real option valuation is also used with movie deals. Movie studios often purchase rights that is, real options to produce films. Film rights give the purchasing studio the right but not the obligation to produce a movie. Note that this is not the cost of producing the movie, simply the value of the right to produce it.] After rights are purchased, studios can then employ surveys and analysis to determine whether or not a production will be profitable. If the timing is not right, these options allow the studio to wait and perhaps produce the film at a later time.

Table 2. Types of real option approaches

Type of Option	Description
Option to Abandon/Switch	This option gives management the option to abandon a project that is operating at a loss and sell or redeploy the assets.
Option to Contract	Similar to the option to abandon, this gives management the option to scale back a project that is operating at a loss.
Option to Defer/Postpone	This gives management the option to wait/learn more to see if a project will be profitable.
Option to Expand	This gives management the option to expand/scale up the project based on its success.

Valuation

Like financial options, real options can be calculated using the Black-Scholes model or decision trees. For real options, using decision trees may be more appropriate, as that will allow setting up possibilities of the project according to what management believes them to be. When valuing real options, it is especially important to stage the problem correctly and to understand how real options are analogous to financial options. Table 3 provides a guide on how they are related.

S represents the present value of cash flows from the project; X represents the cost to invest in the project; σ^2 represents the riskiness of the project; T represents the period of time in which management can take an action; and r represents the risk-free rate the investment capital would earn.

Using decision trees to calculate the real option value, one can stage the possible values a project can take, exercise the option at the optimal time/value of the project, and discount backward in order to find the value of the option. For example, with a one period decision tree, we begin with the starting value today, S_0, and move forward one period. The value can either increase to S_u or decrease to S_d. From here we can use the risk-free rate, r, and determine the probability of success (p) and failure (1-p), determine the expected payoffs using the project value less the investment amount, and essentially work backward to determine the value of the option.

Table 3. Real options variables

Real Options	**Variable**	**Financial Options**
Present Value of Project	S	Current Stock Price
Investment Cost of a Project	X	Option Exercise Price
Riskiness/Uncertainty of the Project	σ^2	Stock Price Uncertainty
Time Window of the Project	T	Time to Expiration
Time Value of Money	r	Risk-free Rate

Source: Adapted from Li & Johnson (2002)

Real options example

Here we offer an example. A company is looking to invest in new smart vending machines that will reduce costs and increase profits. Management believes there is a probability of 0.55 that there will be a high demand in this technology with a market value of $140m, and a probability of 0.45 that there will be a low demand in this technology with a market value of $40m. Figure 1 shows a decision tree without real options. If the cost of investing in this technology at time zero is $100m and the discount rate is 8%, then from a simple NPV calculation the value of the project is —$12.04m, which the standard NPV rejects.

Present Value of Cash In flow

$$= \frac{(140m)(0.55) + (40m)(0.45)}{(1.08)^1} = \$87.96m$$

$$NPV = \$87.96m - \$100m = -\$12.04m$$

However, management can use a real option approach to evaluate this investment as a phased financing and scaling option. The company could start with a pilot project and better learn the market over time. In the following year, management could avoid full investment of $100m into this smart vending machine technology if the market turns out to be $40m, and only invest in this technology if the market turns out to be $140m. Therefore, management can value the option using a decision tree that takes the higher value as the exercised option. The option value of this project from the real option perspective is ($140m — $100m)*0.55 + ($0m)*0.45 = $22m/(1.08)1 = $20.37m. As long as the pilot project costs less than $20.37m, this pilot project with a following investment in the smart vending machine technology is worth doing. Figure 2 shows the option value calculation, discounted back one period. While this example was simplified for readers from non-finance backgrounds, more complicated scenarios can be analyzed using the same principles. Many IoT projects have unclear project scopes and goals and are using breakthrough technologies; in such scenarios, there is a higher risk of project failure and greater irreversibility of investments than with traditional technology projects. Our example highlights the value of real option approaches to IoT projects.

Figure 1. A decision tree without real options

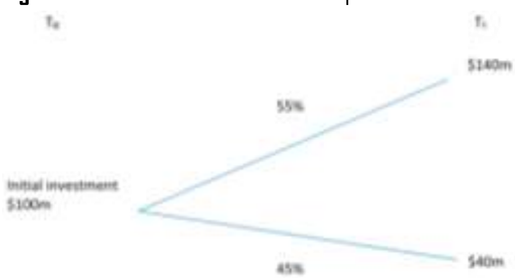
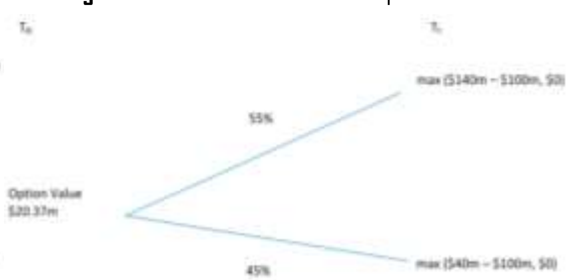


Figure 2. A decision tree with real options



Challenges in IoT development

Based on the survey of IoT practices, this section discusses challenges in IoT development by enterprises. As with any disruptive innovation, the IoT will present multiple challenges to adopting enterprises. For example, due to the explosion of data generated by IoT machines, Gartner (2014) suggested that data centers will face challenges in security, the enterprise, consumer privacy, data itself, storage management, server technologies, and data center networking. This section discusses five technical and managerial challenges: data management, data mining, privacy, security, and chaos.

Data management challenge

IoT sensors and devices are generating massive amounts of data that need to be processed and stored. The current architecture of the data center is not prepared to deal with the heterogeneous nature and sheer volume of personal and enterprise data (Gartner, 2014). Few enterprises would be able to invest in data storage sufficient to house all the IoT data collected from their networks. Consequently, they will prioritize data for operations or backup based on needs and value. Data centers will become more distributed to improve processing efficiency and response time as IoT devices become more widely used and consume more bandwidth.

Data mining challenge

As more data are available for processing and analysis, the use of data mining tools becomes a necessity. Data consist not only of traditional discrete data, but also of streaming data generated from digital sensors in industrial equipment, automobiles, electrical meters, and shipping crates. These streaming data are about location, movement, vibration, temperature, humidity, and even chemical changes in the air. Data mining tools can invoke corrective processes to address immediate operational issues or inform managers of discoveries regarding competitors' strategic moves and customers' preference changes that will impact their short-term and long-term business activities.

Data need to be tamed and understood using computer and mathematical models. Traditional data mining techniques are not directly applicable to unstructured images and video data. Coupled with the need for the advanced data mining tools to mine streaming data from sensor networks and image and video data, there is a shortage of competent data analysts. McKinsey Global Institute estimated that the United States needs 140,000 to 190,000 more workers with analytical skills and 1.5 million managers and analysts with analytical skills to make business decisions based on the analysis of big data (Manyika et al., 2011).

Privacy challenge

As is the case with smart health equipment and smart car emergency services, IoT devices can provide a vast amount of data on IoT users' location and movements, health conditions, and purchasing preferences all of which can spark significant privacy concerns. Protecting privacy is often counterproductive to service providers in this scenario, as data generated by the IoT is key to improving the quality of people's lives and decreasing service providers' costs by streamlining operations. The IoTis likely to improve the quality of people's lives. According to the 2014 TRUSTe Internet of Things Privacy Index, only 22% of Internet users agreed that the benefits ofsmart devices outweighed any privacy concerns (TRUSTe, 2014). While the IoT continues to gain momentum through smart home systems and wearable devices, confidence in and acceptance of the IoT will depend on the protection of users' privacy.

Security challenge

As a growing number and variety of connected devices are introduced into IoT networks, the potential security threat escalates. Although the IoT improves the productivity of companies and enhances the quality of people's lives, the IoT will also increase the potential attack surfaces for hackers and other cyber criminals. A recent study by Hewlett Packard (2014) revealed that 70% of the most commonly used IoT devices contain serious vulnerabilities. IoT devices have vulnerabilities due to lack of transport encryption, insecure Web interfaces, inadequate software protection, and insufficient authorization. On average, each device contained 25 holes, or risks of compromising the home network. Devices on the IoT typically do not use data encryption techniques.

Some IoT applications support sensitive infrastructures and strategic services such as the smart grid and facility protection. Other IoT applications will increasingly generate enormous amounts of personal data about household, health, and financial status that enterprises will be able to leverage for their businesses. Lack of security and privacy will create resistance to adoption of the IoT by firms and individuals. Security challenges may be resolved by training developers to incorporate security solutions (e.g., intrusion prevention systems, firewalls) into products and encouraging users to utilize IoT security features that are built into their devices.

Chaos challenge

The evolution of IoT technologies (e.g., chips, sensors, wireless technologies) is in a hyper accelerated innovation cycle that is much faster than the typical consumer product innovation cycle. There are still competing standards, insufficient security, privacy issues, complex communications, and proliferating numbers of poorly tested devices. If not designed carefully, multi-purpose devices and collaborative applications can turn our lives into chaos. In an unconnected world, a small error or mistake does not bring down a system; however, in a hyper-connected world, an error in one part of a system can cause disorder throughout. Smart home applications and medical monitoring and control systems consist of interconnected sensors and communication devices and controllers. If a sensor of a medical monitoring and control system malfunctions, the controller may receive an incorrect signal, which may prove fatal to the patient. It is not difficult to imagine smart home kits such as thermostats and residential power meters breaking down or being attacked by hackers, creating unexpected safety problems. The Internet bandwidth can get saturated with data traffic of proliferating devices, creating system-wide performance problems. A single device may have an insignificant problem, but for the system as a whole, the chain reactions of other connected devices can become disastrous. To prevent chaos in the hyper-connected IoT world, businesses need to make every effort to reduce the complexity of connected systems, enhance the security and standardization of applications, and guarantee the safety and privacy of users anytime, anywhere, on any device.

Conclusion

Because the IoT is such a recent development, there is still a paucity of studies on the social, behavioral, economic, and managerial aspects of the IoT. This makes it very challenging for companies to make informed decisions as regards IoT adoption/implementation. Our paper is one of the first studies on a conceptual model of IoT applications for enterprises. In this paper we identified three categories of IoT applications: monitoring and control, big data and business analytics, and information sharing and collaboration. We also presented investment opportunities and investment evaluation with NPV and real options. Finally, we discussed five challenges in implementing IoT applications for enterprises.

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TRADE SHOWS: EFFECTIVE INDUSTRIAL MARKETING STRATEGIC TOOL FOR EXPANDING A COMPANY'S MARKET SHARE.

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Abstract

The main objective of the paper is to examine the effect of trade show marketing as a strategic and effective tool for expanding a company's market Share. The supporting objectives are: To find out the trade show marketing strategies that are effective in expanding a company's market share, to ascertain trade show costs/expenses on the part of participating companies, to determine the risks associated with taking a stand at trade shows, to outline the trade show benefits to participating organization, and to create an understanding of the flow of revenue in exhibit/trade show marketing. With regards to the methodology, the paper is written from a descriptive perspective. Trade show marketing strategies were examined in order of what to do, before, during, and after the trade show. Trade show expenses (costs) on the part of participating companies were outlined, and they were found to be quite enormous, running to hundreds of thousands of Naira/Dollars. Risks associated with exhibiting at a trade shows were briefly examined and were found to cover unknown effectiveness- the marketing return per Naira spent, difficulty of measuring efficiency-the effectiveness of these events compared with other marketing communication tools such as advertising; high and rising cost of participation, heavy presence of competition- making it hard for smaller firms to get noticed, potential low turnouts that can affect the return on investment (ROI), not having the right stand personnel and the fact that leads might not always be qualified. Trade show benefits/ advantages (for participating organizations) were also outlined. Understanding the flow of revenue in exhibit Marketing was briefly treated which revealed that there is a lot of money circulating in the trade-show business, and most of it comes out of the pockets of exhibitors and attendees. The revenue flows in a way that benefits not just one or two entities, but a web of stakeholders who can all leverage its features for greater business and economic success. In conclusion, it is noted that despite the prevalent confusion about the value of trade shows, they are in fact proving to be an important part of marketing. It is recommended that proper planning, execution, and follow-up are the keys to trade show success. In view of the rising costs of trade shows (and promotion in general), participation is not something that can be taken lightly or approached in *a haphazard manner. Extensive evaluation of the shows themselves, detailed planning, establishment of realistic objectives and expectations, professional execution of the plan, and thorough and timely follow – up can provide relative assurance of successful trade show participation.*

Keywords: *Trade shows, Marketing, Exhibitors, Attendees, Social Media, Drayage, Revenue.*

Introduction

The primary objective of any company is to grow its business by reaching out to the maximum number of customers possible. While the process of expanding one's business may be tedious, it is important for its overall growth and expansion. One of the easiest ways in which both business-to-business (B2B) and business -to-consumers (B2C) companies can grow and promote their brand is by participating in trade shows, whether it be virtual or in person**.** According to a CEIR (2017) report, 99% of marketers said they found unique value from trade show exhibits that they did not get from other marketing mediums.

According to the Global Association of the Exhibition Industry (UFI, 2018) there are around 1,200 exhibition venues worldwide and 31,000 exhibitions a year. Around 4.4 million exhibitors and more than 260 million visitors gather at these more than 31,000 exhibitions every year. This is 2022, so obviously, the figures would have increased

Trade fairs are, in some ways, the ultimate example of marketing excellence, and are considered a traditional marketing strategy and tool. Trade shows are effective tools for generating new business, maintaining current relationships with customers and keeping a company's brand strong in the marketplace. It is used by companies to showcase their latest products and network on a B2B level. The objective is to increase brand awareness and drive sales and to do so by gathering with similar industries in a common area so gaining great synergy from the volume of traffic attracted. These congregations facilitate the promotion of customer involvement, on-hands training on products, the launch of new products and an opportunity to probe customer sentiments**.**

Trade shows have kept their appeal even as businesses move more of their marketing operations online. It is believed that physical conferences will also look to offer a virtual service for those unwilling or unable to travel. In addition, with the advent of innovative technologies around such things as virtual reality, and augmented reality, virtual viewing will become a more enhanced experience. But the greatest disadvantage of the virtual reality option might be a participant's inability to collect that obligatory bag of freebies/branded giveaways like tee-shirts, face caps, phone chargers, pens, key rings, and others. Trade shows exist in almost every industry, and attract a wide variety of audiences as a result.

The first reported business industry fair, as most people know it today, was held in Persia as early as the 15th century. Its function was to gather the manufacturers of products into one bazaar-like setting to allow them to promote and sell their products on a business-to-business (B2B) level. At the end of the 18th century, the idea of hosting B2B gatherings where products were displayed but not sold took hold across Europe. Businesses soon saw the advantages of inviting their customers and prospective customers to gather in a common area to view and discuss their business needs. As such, an industry was born and today the successors of those early efforts have become a massively profitable entity. So much so, in 2019, the global B2B trade show market was valued at US$34.4 billion, and by 2023, this figure is expected to surpass US$40 billion (Gutmann, 2020).

However, the industry was dealt a huge blow when in 2020 the Covid-19 pandemic swept across the globe forcing almost all exhibitions to close their doors and leave the huge exhibitions halls empty. A behemoth of international industry was brought to a shuddering halt, as the global exhibition industry contracted by 68% in 2020. The Covid-19 pandemic had serious consequences for the industry, with $330 billion in missed trade between exhibitors (UFI Covid Report, 2021). The effects of the crash spread everywhere, and beyond the exhibiting companies themselves. For every exhibition cancelled an army of supporters fell with it: hoteliers, taxi drivers, exhibition staff, catering staff, public transport, airlines, printing companies and so on. Cities across the world such as Dusseldorf, Barcelona, Lisbon, London, and many more felt the cost of an industry forced to become dormant.

Some exhibition organizers, such as the Websummit.com, overcame the obstacle by developing their own exhibition software. The Web Summit was able to cater for its 100,000 attendees online using this conference platform. In March 2021, Websummit.com made its conference software available for sale to other companies. Its first customer was the prestigious United Nations Development Program.

In 2019, the market for virtual tradeshow conference software was valued at US$77.98 billion, and this is expected to grow at a rate of 23.2% from 2020 to 2027. However, in-person trade shows have continued to be popular despite the growth of virtual events during Covid-19 period. This is because 95% of exhibitors prefer 'in-person' to 'virtual' events (Display Wizard Covid 19 Trade Show Report, 2022).

Objectives of the paper

The major objective of the paper is to examine the effect of trade show marketing as a strategic and effective tool for expanding a company's market Share. The supporting objectives are as follows:

1. 1. To find out the trade show marketing strategies that are effective in expanding a company's market share.
2. To ascertain trade show costs/expenses on the part of participating companies.
3. To determine the risks associated with taking a stand at trade shows.
4. To outline the trade show benefits to participating organizations
5. To create an understanding of the flow of revenue in exhibit marketing

Review of Related Literature

A trade fair, also known as trade show, trade exhibition, or trade exposition, is an exhibition organized so that companies in a specific industry can showcase and demonstrate their latest products and services, meet with industry partners and customers, study activities of rivals, and examine recent market trends and opportunities. Trade shows are an integral element of the industrial marketing process (Sridhar, Voorhees, & Gopalakrishna, 2015). According to Da Silva & Friberg (2017) the term "trade show" has been considered as a synonym for fairs, trade fairs and expositions (Kirchgeorg, 2005; Morrow, 2002). Trade shows have also been defined as frequently scheduled events at which companies display their products or services (Ponzurick, 1996).

An earlier definition by Banting & Blenkhorn (1974) sees trade shows as a facilitating marketing event in the form of an exposition, fair, exhibition or mart; which takes place at periodically recurring intervals, ranging from quarterly to triennially; having pre-established hours of operation during a period lasting between one day and several weeks; whose primary objective is to disseminate information about, and display the goods and services of competing and complementary sellers who have rented specifically allocated and demarcated areas or "booths", clustered within a particular building(s), or bounded grounds; and whose audience is a selected concentration of customers, potential buyers, decision influencers, and middlemen.

Black (1986) states that trade shows are "events that bring together, in a single location, a group of suppliers who set up physical exhibits of their products and services from a given industry or discipline". Trade shows are seen as a highly cost-effective method for meeting with a large number of prospect suppliers and customers in a short period of time and in a single location (Black, 1986; Gopalakrishna and Williams, 1992; Shoham, 1999).Trade shows are designed to promote sales, build relationships and facilitate knowledge exchange simultaneously (Blythe, 2002; Ling-yee, 2006)

Trade shows are an integral element of the industrial marketing process (Sridhar, Voorhees, & Gopalakrishna, 2015). In a US survey (Forrester, 2014) senior marketing executives indicated that they allocated 20 percent of their total marketing budget to trade shows, ahead of any other media in the marketing mix, including digital advertising (second at 13 percent) and content marketing (third at 12 percent). Trade fairs are one of the veritable tools of marketing communication (Aycı, 2011) and cover the process of exchanging information and news between parties which combine elements of advertising, personal selling (sales people staffing booth stands),sales promotion (giving out incentives like branded products),publicity, public relations, direct marketing, use of digital marketing and interactive communication (for example, product experience, entertainment). These help exhibitors pursue multiple marketing objectives simultaneously, such as creating product awareness, establishing customer relationships and influencing purchase decisions (Blythe, 2002; Tanner, 2002). By combining direct, personalized encounters with hands-on product experiences, trade shows create a lively environment for B2B-interactions (Kirchgeorge, Springer, & Kastner, 2010). Trade shows are also relatively cost-effective, as they create access to a high volume of interested prospects (Smith, Gopalakrishna, & Smith, 2004).

From the buyers' perspective, trade shows create a unique opportunity to find and connect with relevant suppliers (Weiss, 2018). Because trade shows bring together a large number of competing suppliers at a single venue, organizational buyers have the opportunity to contact and evaluate several alternative suppliers and engage in negotiating and orders taking/placement (Edwards, 2022). Research shows that organizational buyers tend to first search for technical information to better understand their buying needs and to formulate alternative product solutions. Once the buying needs are better defined, attention shifts to further considerations, such as price, delivery time, customer service and supplier reputation (Bello, 1992; Borghini et al., 2006). Trade shows offer an excellent platform to evaluate potential suppliers against the complex procurement criteria of organizational buyers (Jackson et al., 1987; Moriarty & Spekman, 1984). Trade shows are also ideal for reinforcing existing supplier contacts and developing new ones (Blythe, 2002). Trade shows are recognized as "a venue to discern a mutual interest between buyers and sellers and to start future cooperative action" (Godar & O'Connor, 2001). Trade shows bridge the physical, social and technological distance between organizational buyers and sellers and facilitate learning and inter-firm cooperation (Rinallo, Batheltde, & Golfetto, 2017)

Visitors at trade shows are often influential people within their companies making trade show an ideal shop window, as 81% of trade show attendees have buying authority (CEIR, 2016).These attendees of a trade show have a combination of buying and non-buying perspectives, and the buying dimension could include placements of orders and requests for product information from current or new suppliers. The non-buying dimension can include (professional) networking, searching to see what is new, and gathering competitive intelligence. This because 92% of trade show attendees say their main reason for attending trade shows is to see new products being featured and so exhibitors should try and launch a new product at their shows when possible.

There are more variables that are included in the different dimensions. How the attendees behave on the floor (and after the trade show) could be influenced by how the exhibitor has acted during the trade show. If an exhibitor has handled customer complaints and questions in an impressive way, this may influence both current and new customers to choose the exhibitor (Gopalakrishna, Roster, & Sridhar, 2010).This is because 64% of trade show attendees are not customers of the exhibitors' companies and so there are lots of opportunities for fresh prospects at trade shows(Exhibit Surveys, 2015).

Classification of Trade shows

Fairs could be classified into:

1). International, national and regional following the geographic origin of their participants, or more broadly, market coverage (Seringhaus & Rosson, 1994).

2).Consumer and industry following their visitor profile. Whereas industrial shows primarily target professionals and organizational buyers, consumer shows primarily target individual consumers and the public at large (Tafesse, 2014).

For industry classification, the following are very common:

- Technology Industry Trade Shows
- Manufacturing Industry Trade Shows
- Healthcare Industry Trade Shows
- Restaurant & Food Industry Trade Shows
- Arts & Crafts Industry Trade Shows

3). Vertical and horizontal, following their industry profile.

- Vertical Buyer-Seller type.
- Horizontal Buyer-Seller type
- Horizontal Buyer-Vertical Seller type
- Vertical Buyer-Horizontal Seller type

Trade Show Marketing Strategy: What to Do Before, During, and After

Marketing strategy is the marketing logic by which the business unit hopes to achieve its marketing objectives Kotler & Armstrong (2008).Although many companies understand the importance of participating in trade shows, not all deploy a trade show marketing strategy. Maintaining a plan for marketing one's business before, during, and after the trade show can help boost one's return on investment and lead to greater success in the chosen market. It can even help one's business access trade show grants! If participating in trade shows (whether international or local or regional), a company must consider how to address these promotional opportunities Jeff (2019) affirms that before travelling to the company's export market to participate in the trade show, the company should be committed to marketing itself at the trade event by making sure to boost its visibility by leveraging technology and its network of clients and strategic partners!

Before the Trade Show Marketing strategies

Some of the best pre-trade show marketing strategies that will help the organization to attract visitors and maximize sales at trade shows include the following:

i).Define the company's objectives: First, the organization must clearly state what its aims are as per its business goals. Target consumers, pricing, conditions, and distribution and the range of products are important decisions to make before it enters a trade show. The organization's objectives will serve as a guide for its business undertakings at a trade fair.

ii).Identify which trade show to attend: As an organization looks for the trade shows that are most relevant to its company's industry and market, variables such as location, costs to participate, and how each event fits into the company's marketing strategy and business plan should be considered. This is important because 64% of exhibitors surveyed said that the quality of attendees was the most important factor when choosing to exhibit at a trade show, followed by Cost (54%), trade show industry (40%) and geographical location (38%) (Display Wizard Exhibitor Survey).

The manager should make selections as far ahead as possible to give the organization time to apply for grants and other government funding. The search should commence with trade associations and publications relevant to the organization's sector, as well as chambers of commerce, visitors' bureaus and convention centres. The organization can also check for sector-specific trade events in Nigeria using the trade fair calender of The Nigerian Association of Chambers of Commerce, Industry, Mines and Agriculture (NACCIMA), and abroad, with each country's Trade Commissioner Service (TCS) and on websites dedicated to the trade show industry such as the country's chambers of commerce and other international ones such as "All Conferences", "10times", "EventsEye", "ExpoFairs", and others(edc.ca, 2019).

iii). Use of Social Media: As at July 2022, there is a total worldwide population of 8 billion people (Worldometer, 2022). Of that number, a total of 5 billion people around the world use the internet which is equivalent to 63 percent of the world's total population. Of that number again, 4.62 billion people around the world are active on social media and have social media accounts which they access multiple times a day (Kemp, 2022). This makes social media campaigns an effective way to promote an organization's business before, during, and after a trade show (ede corp.com, 2022). According to Redzia (2022) trade show social media can help:

- Increase brand awareness of a company and its involvement as an exhibitor.
- Reinforce brand messaging.
- Create shareable and quality content.
- Drive more traffic to the exhibitor’s booth.
- Generate and engage prospective customers.

These give exhibitors the opportunity to build excitement around their exhibit and create anticipation even before the trade show. Social media can be used before, during and after the trade show. Event organizers use social media to market their trade shows and conferences; so a company should use this momentum to showcase its business too! Using event-specific hashtags is the easiest way to achieve this. Since most social media sites use hashtags, a business should search these platforms for hashtags relevant to the event and post content using those hashtags to build awareness, and also create one or two relevant, memorable, easy-to-spell hashtags to spread the word faster. More and more exhibitors are choosing to create **video content** (Emma, 2021) at their shows which they can use in their marketing activities throughout the year. An organization's **blog** is excellent for informing its target audience about the upcoming trade show. The organization can create a dedicated landing page as well to highlight the event. **Email** is another superb option. A business can send a generic email blast or personalize each message to spark more interest. Again, it is important that the link to the organization's landing page is included. Social media promotions can help the business reach a broader audience. 76% of exhibitors say that their event is integrated with their other marketing campaigns (EventTrack, 2016).

iv). Advertise in Trade Publications: Advertising in trade publications is an effective way to attract a more general audience. By placing adverts, it lets attendees and prospective clients know in advance that the company is going to be at the exhibition. Those who are reading trade publications in the company's area of expertise are also more likely to take an interest in the company's products if they have seen the brand in an advertisement.

v). Direct Mail or Personal Invitations: With many marketing strategies going digital, there are potentially more opportunities to drive success with direct mail than ever before (O'Brienin, 2018). Using traditional marketing mediums like direct mail cuts through the clutter of online promotions and engages the company's target audience, especially those who are not connected with the company online. Developing a postcard-sized mailer and sending it out to a well-segmented list can deliver great results and ensure people know the company will be in their area and can be engaged with personally if they attend the trade show. Sending personal invitations also can let contacts and customers know they are valued by the business, and this is a good way to attract high-value visitors.

vi). Booth Design: The most typical consideration that companies must face is trade show booth design and display. An eye-catching stand is the most effective method for attracting attendees according to 48% of exhibitors surveyed. This was followed by giveaways (34%) and social media (31%) in terms of popularity ( )**.** Whether the company designs the booth in-house or hires an external consulting and design firm to take on this portion of the project, there are many considerations to make. First, the organization will want to start with its team's objective for the trade show. While service-oriented firms may opt for a smaller, more intimate experience through their booth design, product sellers may want a booth display that more closely resembles a retail store with shelves and other transaction-focused props. The best booth for the organization and its business depends on the type of trade show it is attending, but the most common trade show booth types according to Terceira (2020**)** include the following:

- Inline Booth
- Peninsula Booth
- Perimeter Booth
- Island Booth

vii). Road Show: Road shows have evolved into a popular, effective and flexible means of promotion and direct client approach. The value of doing both a road show and a trade show is an increase in brand or product exposure and the opportunity to build FOMO within the company's target audience. Prior to the trade show, the company can build up excitement for the event by promoting it in different locations along the way to lead up to the trade show (Anonson, 2020).

- ❖ A road show is a fast and cost effective marketing tool
- ❖ it can have a direct effect on the company's sales
- ❖ allows the business to meet the exact target group it needs
- ❖ Gives one's business the opportunity to develop direct marketing contacts .

During the Trade Show Marketing Strategy

Once at the trade show, there are some marketing strategies an organization can use to draw more visitors and convert them to customers. While a company's representatives/ambassadors will contribute towards marketing and sales efforts during the show, there should be elements of the organization's setup that should passively generate interest and draw visitors to the booth. Some of the best marketing strategies to deploy during trade shows include:

Set up a concert or some form engaging entertainment in front of the company's booth: Here visitors would enjoy live music from a few row of seats. This clever marketing tactic can create a fun environment and attract visitors to the booth. This will also attract attendees who want to take a break from the trade fair, and the large crowd can attract even more people to the booth. The live music also warms up most attendees to the exhibitor's sales representatives when they talk to them and may even prompt some visitors to approach the representatives themselves (Chi, 2016).

Product Information Handouts: One of the easiest ways to give leads to something tangible at a booth is to supply them with marketing and sales materials. Effective trade show handouts are often one or two pages long and focus on particular topics of interest to the visitors. The more personalized this information is, the more likely leads are to hang on to the information and recall it after the event. Trade show marketing materials that provide a high-level overview of the company can be made available options should be provided that let visitors choose the type of information that they take with them (Jeff, 2019).

Promotional Product Giveaways: Everybody loves swag! Free merchandise, often including a company logo or other brand identification, can help booth visitors remember the company and booth setup long after the trade show is finished. Making these freebies related to a company's brand or product/service offering can further solidify the visitor’s comprehension of what the company does and the value behind it – just watch out for trade show visitors that hop from booth to booth loading up on bags of giveaway items (Weiss, 2017).

Free merchandise is best used if integrated into a sales conversation where the lead is actively engaged with a company representative. There should be no free merchandise given away – you should structure your promotional items to be given away after there is information collected on a lead, or there are other signals that they have an interest in doing business with the company.

The company should feel free to get as creative as possible in its merchandise giveaways. Highly-visible and engaging activities, raffles, and contests will draw additional visitors to an organization's booth while helping them to remember the company once the trade show is done. Merchandise promotional activities that are big, bright, and loud can help lead to success. The company should make sure that it is attracting the right type of visitors who have a genuine interest in the company's products or services.

Merchandise and Point of Sale Interaction: With most trade shows and conferences supporting sales enablement while at the event, an organization should be prepared to generate real sales. The organization does not need to be a retailer with shelves full of merchandise to make sales at conferences, but it will need to be equipped to take payment and follow-up with customers afterwards. The company should make sure its credit card machine works, because 77% of consumers prefer using credit or debit cards (Chi, 2019). Mobile credit card readers are fairly inexpensive to purchase and generate a record of transactions, which makes it a go-to technology for any company participating in trade shows. Enabling transactions at the booth helps reduce barriers for interested parties and provides great data to analyze and determine how successful the event was.

Have High-Impact Exhibition Stands: An organization's stand is likely to be the first thing visitors will see. It needs to impress them. Modular exhibition stands are the most cost-effective option, as they can be re-used, while also allowing a good degree of customization. However, a full custom-built stand can really pack a punch through the use of unconventional shapes and designs. Picking the right stand for an organization's business is a key decision. It will greatly impact on the organization's success. So it is worth spending time on this one.

Digital photo booths: Digital photo booths allow customers to capture a memory or a moment in time. They provide entertainment through the inclusion of filters of special effects. Photo booths also allow companies to brand the photos that are created. Branded photos make it easy for visitors to share their photos and their experience on social media, enabling the brand to reach a wider audience too.

Relaxing Lounge Areas: The inclusion of a lounge area gives one's visitors a chance to step off of the main exhibition floor, sit down and talk to staff in a more relaxed environment. The provision of refreshments, Wi-Fi, and mobile phone chargers can also help to keep visitors at a stand for longer. A lounge area can facilitate more meaningful sales-based conversations.

Live Social Media Walls: Social media walls and other similar exhibition services work by encouraging visitors to get involved in the online discussion. They can help the organization's hashtags to grow in popularity on social media, therefore brand engagement too. Moreover, positive messages displayed on the wall can help to attract new visitors to the stand, increasing the chances of making sales. However, these need to be actively monitored to manage effectively to moderate any good, negative or even detrimental exposure.

Competitions or Contests: By running a competition, or hosting a quiz or physical contest, an organization can start to generate a buzz throughout the exhibition. The competition itself can also serve as a memorable moment. The activity allows brands to build a deeper relationship with customers. On top of that, the provision of a prize can help to create interest in the company's products or services.

Create interactive experiences: The most successful trade shows offer incentives to compel visitors to stick around longer. An organization can host a workshop, offer question and answer (Q&A) discussions, and prepare interactive media like VR games to create an unforgettable experience. Fun activities like these provide immersive experiences perfect for entertaining the visitors.

Virtual reality is still new enough and rare enough in home settings to have a novelty factor. More importantly, it allows marketers to change visitor’s perception of their surroundings. Virtual reality at events can provide attendees with a memorable experience. The virtual world created can also be cleverly branded, to increase awareness.

Have in-booth presentations and product demonstrations: The organization's in-booth presentations and product demonstrations can make or break the trade show for the organization. These should be kept short and sweet to drive engagement and sales. That means no unnecessary information and lengthy demonstrations. Highlight the most relevant features and benefits and make every demonstration exciting. Soft-selling techniques should be used and conversations should be made instead of pitches (Miller, 2020). That way, the organization can create a delightful experience and build meaningful relationships.

Speaking at the event: Gaining a speaking role at the event can help to establish an organization and its business as thought leaders. By poising the speaker as an expert, one can increase a standing at the event. It can also, on a more simple level, help to create greater awareness of the company's brand and what it has to offer customers. The organization can also add a speaker to its booth to create a buzz and more engagement (Weiss, 2019). Canon is a brand that does this very well. Every year at the major photography conference WPPI, they have a star-studded panel. The speakers often have live demonstrations, and lectures to inspire others to want to work with Canon.

Well Designed Uniform: A very simple technique to attract attention is to create a branded uniform. Create a uniform specifically for the show that your staff will wear when manning the stand. This is especially effective for business people would not expect a uniform to be worn.

Downloadable Content: It is important for organizations to understand that exhibitions can become crowded and people can be in a rush. Therefore, not everyone will have time to stop by an exhibitor's stand and read lots of material. A great solution to this, however, is to offer content that can be easily downloaded to a smartphone or a memory stick and read or viewed later.

Collaboration with Other Exhibitors: One method that can be extremely effective for attracting traffic is for an exhibitor to team up with other exhibitors at the trade show. They should come to an agreement where the exhibitors direct visitors to each other's stands if they seem like they will be interested in what the other is selling.

Eye-Catching Lighting: Lighting can sometimes be overlooked in the quest for a great exhibition stand. Effective, eye-catching lighting arrangements can draw plenty of interest. In fact, lighting can make or break a booth. It is important to make sure your lighting fits the overall mood of your exhibition. Lighting should be positioned to draw attention to things like products, logos, and displays. Speak to your audio visual (AV) team to ensure you are using lighting intentionally to create the results and emotions you desire your attendees to experience (Browne, 2017).

Gamification: Adding a game element to a stand design can be a clever way to attract visitors. Furthermore, gamification can also engagement visitors, enticing them to stay longer. The sky is the limit on gamification. From bespoke games specially designed to showcase your company's products or services, to more generic games such as stress tests or puzzles. Gamification has a proven track record to enhance exhibition visitors' experience as well as improve brand recall (Colebeck, 2019). So use it!

Provide light food and drinks: Few things draw people in more than giving them free food and drinks. There's bound to be people there who have not had anything to eat or drink in hours and will happily visit a booth for a quick snack. While they are there, the company will have a great audience that is already thankful for the exhibit, which is a great time to strike a conversation.

Hold an educational workshop: For many businesses, the goal of any trade show is to be able to teach visitors about what products and services they offer and how it could benefit them. During trade shows, many people are looking for the chance to learn more about the industry they are in and there are few better ways of doing this than by having a workshop. Visitors will leave knowing everything you want them to know about your business.

After the Trade Show Marketing Strategies

Once the show is over, it is vital for an organization to take stock of everything that happened and see if it was able to accomplish all the goals and targets that it set for itself (Anonson, 2021).

This is important because many of the organization's best contacts will not sign orders at the show and will need to review what they learned from the organization when they get home. The post-show follow-up can be critical to determining whether or not the trade show was a success for the company. The attendee list generated can be used to send thank-you letters, sales materials and a heads-up that the company will be calling to answer any questions the potential customer might still have. All of these names can in the organization's on newsletter list (Milano, 2021) .

If the company did a great job, all well and good! At the next event, the company can try to raise the bar and do something new. If the company did not accomplish all the goals and targets it should not worry. The company can look back on where they might have made a mistake and see if it can rectify it at the next trade show. The organizations are advised to always try and set themselves new goals for every event and use different strategies to achieve them. This will enable it to gain a deeper understanding of what works best for it and its brand at the trade show circuit.

Quantson (2020) argues that the trade show might be done, but there are still many great marketing opportunities to take advantage of keeping momentum with the leads and clients after the trade show is critical to long-term success. Fortunately, it is one of the areas where marketing strategies can be used most effectively. According to Jeff (2019) some of the best marketing strategies to deploy after a trade show include:

Analyze the benefits: After every trade show experience, the organization should gauge the benefits of participation or attendance. It should decipher in which aspects it has helped the organization and see which activities appealed to the company the most. Was it a stall, a speaker podium, a networking gathering or some other thing?

.The organization should then find out other trade events in which its selected programs are included. These will offer the organization apt business exposure and enrich its trade show experiences

Sales and Lead Evaluation: The marketing and sales teams should meet after a trade show to filter through leads and customers gained during the event. Build multiple lists that identify audience segments such as those who visited the booth and talked to a company representative, those that made purchases, or those who entered a contest/raffle with their business card. Specifying how leads were generated can help tailor conversations after the event and improve response rates.

Sales and Lead Follow-up: When it is time to use the trade show leads and customer lists, the company should make sure that it is continuing conversation(s) started while at the event. Making communications as personalized as possible, including recapping the product/service/topic discussed, and ensuring the E-mail sender is the same person who was at the event, as this helps overcome communication barriers. This is very important as 81% of exhibitors surveyed used **email** to follow up their trade show leads. Calling leads after the show is also important with 68% of respondents reporting that they use this method. A fast riser was social media with 27% of exhibitors using this means to follow up their leads (Display Wizard Exhibitor Survey). How an organization chooses to proceed is up to it, but the opportunity to continue momentum built during the trade event should not be missed.

Write a blog post: This can be done by tying together the pre-show, show floor, and post-show activities in a blog post. Blog posts are useful for continuing conversations with the company's audience and receiving feedback. This should be cross-promoted on all active channels in terms of platforms (ede corp.com)

Trade Show Expenses (Costs) on the part of Participating Companies.

It is obvious that trade shows are major investments with expected returns. The reason people exhibit at them is because they can bring even greater ROI! The following major costs must always be incurred with regards to trade fairs (Beers, 2017).

- ✓ Venue Cost/Booth Space Rental cost
- ✓ Booth Setup and Accessories/Design and Production of a professional display space cost Marketing/Marketing materials specific to the event
- ✓ Administration costs
- ✓ Insurance and Legal Fees.

They may include these kinds of situation:

- Non-employee, third party bodily injury
- Third-party property damage
- Liquor liability

Logistics Costs. . According to Rickets (2018) these come under the following:

- Inbound Shipping
- Materials Handling/Costs to unload booth and move onto show floor, called drayage
- Out bound shipping.
- Personnel Cost-Travel, Accommodation and Entertainment
- Trade Show Services costs

These can run into hundreds of thousands of Naira and Dollars.

Risks Associated with Exhibiting at a Trade Show

When a potentially attractive marketing tool offers face to face customer contact coupled with the allure of increased sales, marketers might be expected to embrace it eagerly. They have embraced trade shows, but often come away feeling as if they have been hustled. This is primarily due to four negative aspects of trade show programmes (Bonoma, 1983).

- Unknown effectiveness- the marketing return per Naira spent
- Difficulty of measuring efficiency-the effectiveness of these events compared with other marketing communication tools such as advertising
- High and rising costs of participation
- A growing feeling that shows are boondoggles-more a 'perk' for managers and current customers than a sound marketing communication tool.

Johnson (2016) and qld.gov.au(2020) reveal more of the downsides of taking a stand at an exhibition to include the following:

Cost/Expense: Exhibiting at trade shows is not cheap. In fact, trade shows are usually the largest budget expense for marketing. ROI may even take up to two years for larger trade shows (Johnson, 2016). In addition to exhibitor and sponsor fees, companies incur the associated cost of travel, lodging, shipping, exhibit construction, collateral, promotional items, lead collection mechanisms, staffing, cleaning, union labor, incidentals, and more. A simplified calculation to estimate the cost of exhibiting at a trade show is the cost of the exhibit space multiplied by two. Companies should carefully conduct a cost-benefit analysis of exhibiting at trade shows versus investing in inbound techniques like content marketing, blogging, thought leadership, SEO, social media, and personal branding.

Competition/Hard to get noticed: It is likely that a company's competitors will also be exhibiting at the event. Unless a company is in the top four or five competing companies within the industry, chances are you may have a smaller booth. If this is the case, it becomes increasingly harder to get people to notice your company. The company will need to stand out to get the attention of potential customers. To achieve this, it is important to identify your differentiating value and get creative with the distribution of your message in this ocean of over stimulation.

Potential low Turnouts: Without big name speakers or the right publicity, trade shows may not have enough delegates to make a company's presence worthwhile. The company should do its research before choosing to exhibit at a particular event, and discuss with a business adviser, if the company has any. Choosing the wrong trade show to exhibit your business's products or services can result in displaying to the wrong audience. Poor promotion can mean the costs of attending the trade show outweigh any revenue you gain.

Not having the right stand personnel: Another disadvantage of the trade show for some startups is that they just do not have the staff to cover the booth. The long hours are also hard for employees, and if the company does not have enough staff, burn-out is likely. The company may have enough team members, and the staff does not excel at marketing and communications. If the company has staff in the booth that is not skilled at marketing the product/service, the trade show is a waste of the company's time.

Leads are not always qualified: Many companies have scaled back on participating because the quality of leads are not happening. Companies do not always send key decision makers to regional trade shows. Smaller regional shows have more of a learning type of agenda, which makes qualified leads hard to obtain. It is important to understand the demographic of the attendees. With this, results are not guaranteed. So despite the investment of exhibiting, the organization is not guaranteed any sales leads.

Trade Show Benefits/ Advantages (for Participating Organizations)

Trade shows have traditionally been a very popular way to market a company's product, service and business. They are true multi-talents when it comes to corporate marketing goals and functions, and they are a veritable communication instrument. With advances in social media marketing and Internet technology, like webinars, Google hangouts and video conferencing, the value and benefits of marketing via trade shows cannot be overemphasized. The perception of a brand that is not represented at an event falls by 5%. This is true even for global brands (Facetime.org). So not attending the key events in a company's industry can be more damaging than one thinks. Though technology is changing marketing at a rapid pace, there are several benefits from having an exhibit presence at a trade show. Carter (2014) and Banting & Blenkhorn (1974) outline the various benefits of company's participation in trade fairs.

- Opportunity to introduce /launch a new product or service. Companies can usually generate more press by launching products during a trade show.
- Establish personal contact with new prospective buyers
- Maintain visibility of company's products and name
- Networking: Relationship building and meeting people in one's industry - establishing contacts with decision influencers and decision makers who cannot otherwise be reached.
- Opportunity to make direct sales
- Physical display of non-portable products
- Opportunity to build prospect list
- Recruit new distributors, dealers, and agents
- Determine potential customers' requirements
- Evaluate competitors' products
- Discover new applications for existing products
- Obtain new product ideas
- Discover new suppliers
- Evaluate competitors' marketing tactics
- Gaining market share.

Understanding the Flow of Revenue in Exhibit Marketing

There is a lot of money circulating in the trade-show business, and most of it comes out of the pockets of exhibitors and attendees. A large factor contributing to the flow of money is just how much the revenue flows back and forth, not just between organizers and attendees, but a wide range of related entities that benefit from the attendance and attention as well (Dehnam, 2022).

The organizer is typically an association or industry group looking to bring the entire industry forward. To do so, they book convention centres, sometimes up to and more than 1 million square feet in space. It does not end there. Hotels are paid, often in partnership with the event venue or industry group, to house the hundreds and thousands of businesses,exhibitors and attendees. The organizer charges an attendance fee to cover the cost of the venue and any catering or other accommodations that are part of the package. While in town, attendees spend significant revenue at local restaurants, attractions, and retail venues. Cities can spend millions to market themselves as potential hosts for some of the largest trade shows in the world.

Revenue, in other words, flows in a complex environment that touches on countless entities. And it does not end there. Given the direct connection between trade shows and sales mentioned above, the purchase orders an exhibitor can expect as a result of the trade show count as yet another stream of revenue that has to be considered within the big business of trade shows. Just who does that big business benefit? Clearly, the answer is multi-faceted. Exhibitors can grow awareness and sales, organizers can leverage attendance fees for profits, and host cities receive a boost to their local economy. Especially that last part can be significant, as a recent impact report found:

> *Adam Sacks, founder and president of Tourism Economics, an Oxford Economics company, said that trade shows have three levels of impact: direct, indirect, and induced spending. Indirect spending includes revenue streams such as the utility bills from a trade show, and the induced category relates to the trickle-down spending from employees who earn wages due to events-industry-related activities. "For every dollar spent on face-to-face meetings and business events in 2016, it generated an additional $1.60 in benefits to the U.S. economy," "It's a 160-percent return on investment."*

Nothing about this revenue flow is simple. But it means that in trade shows, the revenue flows in a way that benefits not just one or two entities, but a web of stakeholders who can all leverage its features for greater business and economic success.

Revenue Streams for the Organizers of the Trade Show

Greenwell, Danzey-Bussell & Shonk (2018) and Beers (2018) affirm that these are the most common revenue generating items one can find in a professional trade show.

- Attendance/Ticket Fees
- Exhibition/ Registration/Vendor Fees
- Sponsorships
- Food and Beverage
- Corporate Hospitality
- Media Rights

- Revenue Shares

This is quite enormous. I am sure most of the organizers of trade shows will be smiling to their banks with a 160% return on investment just as Adam Sacks said in 2016. How much more in 2022?

Conclusion and Recommendations

The paper set out to examine the effect of trade show marketing as a strategic and effective tool for expanding a company's market Share. Despite prevalent confusion about the value of trade shows, they are in fact proving to be an important part of marketing as can be seen on the section on 'Benefits of trade shows to participating organizations'.

However marketing managers must evaluate the benefits of the show participation not only on the basis of selling aspects of the show but non selling aspects as well. Although lack of a sure way to evaluate show results seems to be a point of contention within many companies, others indicate that this not a problem. Proper planning, execution, and follow-up appear to be the keys to trade show success. In view of the rising costs of trade shows (and promotion in general), participation is not something that can be taken lightly or approached in a haphazard manner. Extensive evaluation of the shows themselves, detailed planning, establishment of realistic objectives and expectations, professional execution of the plan, and thorough and timely follow – up can provide relative assurance of successful trade show participation.

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EFFECT OF LAND USE SUCCESSION AND REAL ESTATE TRANSACTIONS IN ILORIN METROPOLIS

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Abstract
The study evaluated the land use succession and real estate transactions in Ilorin Metropolis, Nigeria. It identifies and examined land use succession pattern in Ilorin Metropolis; identified and examined factors influencing land use change in the study area; and investigated the implications of land use succession on real estate transactions in the study area. Thus; with a view to providing information that will enhance real estate investment and transaction decisions. Both primary and secondary data were used for the study. Purposive sampling technique were utilized for the Kwara State town Planning and Development Authority, and the Kwara State Bureau of Lands while simple random sampling techniques were adopted for the landlords and tenants of all the identified 381 properties in the area of study and 19 Estate Surveying and Valuation firms. Data collected were analysed using frequency distribution, percentages, mean, standard deviation, trend analysis, factor analysis and relative importance index. The study revealed that residential – commercial land use succession is the most prevalent land use succession in the study area. The study also established that, the land ownership common in the study area was self – owned and that the nature of growth and development pattern of land use succession common in the study area was linear. The study concluded that major effect and implications of land use succession in the study area was traffic congestion, noise pollution, loss of business hours and particularly commercial property market product domineering respectively.

Introduction

Land use succession theorem has received a lot of excitement amongst policy makers, academia and real estate practitioners in developed countries; particularly, on how this trend affects the property market, including the values of real estate assets, as well as the market players and the local market economy (Zulkaidi, 1999). Virtually all human activities require land. From large scale industrial complex, the traditional market to the roadside cobbler's shop, all activities require land in varying dimensions (Agbola, 2004). On the surface of the land, beneath it and hanging above it are all traces of human activities which go a long way to say that land is perhaps the single most important element in development and mankind's most basic natural resource.

Development in many cities in Nigeria including Ilorin, Kwara State starts from the centre as the benefits of inner city locations attract several land uses towards the city centre. This has significantly influenced land use pattern in urban centres. There is a traumatic change in land use caused by several human activities competing for scarce land in urban cities. The person who is prepared to pay the highest sum for a site is likely to eventually occupy it. Such individual will be able to successfully edge out other potential users in the market (Aderamo, 2012). Since change in land use is a component of the real estate market, it is important to handle it carefully, because the effect of its failure could result into a macroeconomic catastrophe such as breakdown of the entire financial system of the nation, which could in turn lead to high levels of inflation and poverty. This is also supported by Clapp's economic theory when it suggests that as economic activities are expanding in the city, other areas close to the centre business districts (CBD) will be absorbed to accommodate the trend by broaden the property market , real estate transactions scope and opportunities (Clapp, 1993).

In Ilorin metropolis, a gradual change in urban land uses with its attendant influence on real estate investment decisions has been observed as the city continue to grow and expand. However, the pattern of the succession of land uses has not been properly documented. Furthermore, the magnitude of its impact on the values of real estate assets has not been investigated. This knowledge however becomes necessary arising from the changing status of the metropolis and the continuous influx of people. The concern of this thesis therefore is to investigate the dynamics of land use succession and their implications on the property markets and real estate transactions in Ilorin, Kwara State. Moreso, most of the factors influencing this land use succession (LUS) as revealed in the literature have not been domesticated here in Nigeria and particularly in the study area. Similarly, it was observed from literature that there exist some implications of the land uses succession (LUS) particularly on property market and real estate transactions but the question of whether these implications are applicable to developing economies like Nigeria, particularly Ilorin, Kwara State is of great importance. Hence, this study seeks to find answers to the following questions:

i. What are the land use pattern/trends in the study area?
ii. What are the factors influencing land use succession (LUS) in the study area?

iii. What are the implications of the succession (LUS) on the property market and real estate transactions in the study area?

Aim and Objectives of the Study

The aim of the study is to analyse land use succession (LUS) and real estate transactions in Ilorin metropolis with a view to providing information that will enhance real estate investment and transaction decisions.

The objectives of the study are to:

a. identify and examine the land uses succession pattern/trend in the study area;
b. examine the factors influencing land use change in the study area;
c. Investigate the implications of land use succession (LUS) on the property market and real estate transactions in study area.

literature Review

Land Use Succession, Urban Land Value and Real Estate Transactions

In the area of urban land values, the concept of accessibility has been adopted by various scholars to structure the value of urban lands. These efforts had their origins in the early works of von Thunen and Richardo (Herbert, 1982). The principle of Bid Rent functions was established by Hurd (1903), and this has been confirmed by later works (Ratciliffe, 1949; Alonso, 1964); among others. Land use succession apparently becomes visible; property market seems to be more vibrant and real estate transactions also became noticeable and profitable in the sphere of investment in the state. Residential properties located along major roads and businesses were the main target for commercial use. Urban economic theory postulates that commercial users would like to locate their business near good access roads. Commercial and residential land uses started competing for space. The reconnaissance survey and census of existing properties along Ibrahim Taiwo road reveals that exception of schools, churches and public land uses, there are 177 residential properties. Out of these figure, 167 have been converted to commercial uses such as banks office, fast food restaurants, supermarket; hair dressing salons, drug stores, offices, electronics stores, and business centres etc. Along Muritala Muhammed road there were 115 residential properties made up of tenement buildings, out of which 106 have been converted to commercial use. Similarly, In Wahab Folawiyo roads out of 78 building fronting the road 75 are currently being used for commercial activities like trading stores, offices and other commercial services.

The economic equilibrium theory has also been developed to provide explanations for the observed distribution of urban land uses (Alonso, 1964). This theory is an explanatory approach and makes use of equilibrium theory in economics. The organizing concept is the market mechanism and the sorting process it provides in the allocation of space to activities, both in quantity and locational aspects: to various users according to supply and demand relationship and at least-cost concept in an equilibrium system. The pattern of land use and real estate transactions are usually mutually determined. Value in the urban land is the resultant effect of economic or ground rent. In cities, economic rent is based on superiority of location only, the sole function of city land being to furnish an area on which to erect structures. Any utility could compete for any location within a city and all land goes to the highest bidder who, therefore, obtains maximum convenience or economy in time and effort by being accessible (Olatubara, 2004). The utilization of land is ultimately determined by the relative efficiencies of various uses in various locations. Efficiency in use is measured by rent-paying ability, the ability of a use to extract a utility from a site. The process of adjustment in city structure to a most efficient land use pattern and subsequent successions is through the competition of uses from various locations. The uses that can extract the greatest returns from a given location will be the successful bidder. On the aggregate, there emerges an orderly pattern of land use spatially organized to perform most efficiently the economic functions that characterize urban land use pattern and urban life.

Barlow (1972) identified a nexus between land use and land economic theory. This according to him is because land economics is pre-occupied with relationship of human economy with land. Since land economy deals on use of human economy with issues such as natural resources and physical factors, other issues like biology, economy and segments that have effect, formed, and impact on the use of this resource are also relevant. As such, land economics is closely related to land use form, which identifies the land into ten-land use classifications. Seldin (1988) expatiates that the real estate market is dynamic and there is a time factor on when a property type is expected to be absorbed into different use due to high demand for a particular purpose. This point to the fact that, there is a time when a particular type of property would cease to be available in the market as more demand for it increases. In this regard, Seldin, (1988) contends that when land uses changes occurs from residential to commercial at an increasing rate, then the overall number of housing stock in that particular locality become limited.

Similarly, William Alonso's "Location and Land Use Changes" presented a monocentric urban economic model based on basic economic principles of utility and profit maximization. The urban form he derived from this strict economic approach is the classical monocentric city, where the nature of a city only varies with regard to distance to CBD. The reason that spatial variation exists only along this dimension is that, in his basic model locations differ only in their commuting time to CBD, which is assumed to be a linear function of straight line distance. In addition, the most critical tradeoff taken into account in this model is between commuting cost and land cost. Therefore, land price and consequently land use, vary only along the radial axis. Methodologically, however, Alonso's work proposed the concept of "bid rent" which forms the crux of modern urban economic analysis and underlies most formal microeconomic models of urban spatial structure (Mathew, 2006). Bid rent is the concept that captures the essence of the bidding model of land and real estate market/transactions. It is a tool used to establish spatial equilibrium, in which firms and households are indifferent to locational difference, and therefore have no incentive to move. In terms of land use, bid rent enables the comparison between very different land use types in their relative preference for land and is therefore a forceful tool explain why land is used differently. Moreover, there are limits and difficulties with the bid rent approach as presented by Alonso. Strong assumptions are needed for the model to work. This includes the assumption of "a featureless plain, on which all land is of equal quality, ready for use without further improvements.

Research Methodology

Quantitative research methods were used in this study. The responders were given a questionnaire to fill out and return. the total enumeration survey were carried out on all the identified elements of the study. The primary data required include: the record and detail information of land use succession that has took place and the stakeholders involved (either landlord or tenants) in the study area as well as type of land use succession that took place on their lands. Secondary data on land use pattern and level of succession on master plan compliance / distortions were collected from both the Kwara State Town Planning and Development Authority and Kwara State Bureau of Lands. The total population of properties in the affected areas where land use succession is prevalent in Ilorin metropolis and within the scope of the study is 381 properties (including converted and unconverted properties) cut across the three (3) identified business districts in the metropolis and other stakeholders bringing the total study population to 403.

Result and Discussions

Table 1.0: Socio-Economic Characteristics of Estate Surveyors and Valuers

Socio-Economic Characteristics		
Position in the Firm	**Frequency**	**Percentage**

Principal Partner	8	42.1
Partner	3	15.8
Associate Partner	5	26.3
Head of Department	2	10.5
Senior Surveyor	1	5.3
Total	**19**	**100.0**
Sex		
Male	13	68.4
Female	6	31.6
Total	**19**	**100.0**
Professional Qualifications	**Frequency**	**Percentage**
ANIVS	12	63.2
FNIVS	3	15.8
Probationer	4	21.1
Total	**19**	**100.0**
Post qualification experience	**Frequency**	**Percentage**
1 – 5 years	2	10.5
6 – 10 years	9	47.4
11 – 15 years	3	15.8
16 – 20 years	3	15.8
Above 20 years	2	10.5
Total	**19**	**100.0**
Age of firms	**Percentage**	**Frequency**
1 – 5 years	1	5.3
6 – 10 years	1	5.3
11 – 15 years	4	21.1
16 – 20 years	9	47.4
Above 20 years	4	21.1
Total	**19**	**100.0**
Area of specialization	**Frequency**	**Percentage**
Valuation	6	31.6
Agency	5	26.3
Management	5	26.3
Property development	1	5.3
General practice	2	10.5

Total	**19**	**100.0**

Source: Author's field survey (2015)

Table 1.0 presents the position of Estate surveyor and Valuer of firms sampled for the study in the study area. The Estate surveying and Valuation firms examined for the study had 42.1% principal partner, 15.8% partner, 26.3% Associate partner, 10.5% Head of departments, and 5.3% Senior surveyor. The study further investigated the gender of the Estate surveyor and Valuers in the study area. Table 1.0 also shows that 68.4% of the respondents were male, while 31.6% of the respondents were female. To further reinforce the observation of the respondents, the study goes a step further to examined the age of respondents in the firms in the study area.

Further investigation revealed the professional status of the respondents in the selected Estate Surveying and Valuation Firms in the study area. The information presented in Table 1.0 below shows that 63.2% of Estate Surveying and Valuation Firms respondents had ANIVS, 15.8% had FNIVS and 21.1% of them had probationer professional qualification. These results suggest that the views of the respondents could be of high reliability and adequacy. A further quiz in this section investigated the post qualification experience of the respondents (Estate Surveyor in the firms) who are registered members of the Nigerian Institution of Estate Surveyors and Valuers in the study area. The result in Table 1.0 indicated that 10.5% of the Estate Surveying and Valuation firms respondents had 1 – 5 years of post-qualification experience in the field of Estate Surveying and Valuation, 47.4% had 6 – 10 years post qualification experience, 15.8% had 11 – 15 years of post-qualification experience, 15.8% and 10.5% had 16 – 20 years and above 20 years of post-qualification experience respectively. This attest to the fact that the Estate Surveying and Valuation Firms respondents have adequate professional experience to address the questions posed hence; this could guarantee high level of dependability on the result of the study.

The study further quizzed the age of the selected firms for the study in other strengthen the information relevant to the study. The result in Table 1.0 indicated that 5.3% of the Estate Surveying and Valuation Firms respondents age of firms were between 1 – 5 years, 5.3% were within 6 – 10 years, 21.1% were within 11 – 15 years, while the firms' age of 47.4% and 21.1% were within 16 – 20 years and above 20 years respectively. The information in the Table above revealed that firms whose age is between 16 – 20 years of age were more than those below or above this age. This gives an impression that they will be able to provide the needed information for this study. Further investigation into the study revealed that all the sampled Estate Surveying and Valuation firms i.e. 100.0% had between 1 – 5 Estate Surveyors and registered surveyor respectively in their respective firms. The sampled firms' area of specialization was also queried from the respondents. Table 1.0 evidently indicated that 31.6% of the Estate Surveying and Valuation firms area of specialization is valuation, 26.3% specialized in agency, 26.3% specialized in management, 5.3% specialized in property development and 10.5% specialized in general practice. The information presented in the Table below shows that those that specialized in Valuation were more than those that specialized in other areas Estate Surveying and Valuation practice in the study area.

Table 2.0: Land Use Succession Pattern in Ilorin Metropolis

Types of Land Use Succession	**Name of Authority**		**Total**
	Tplg. & Dev't Authority	Bureau of Lands	
Residential – Commercial	2(66.7%)	1(33.3%)	3(100.0%)
Total	**2(66.7%)**	**1(33.3%)**	**3(100.0%)**
Land Use Succession			
CBD (NE) (e.g. Ibrahim Taiwo Road by General Hospital Roundabout)	2(100.0%)	0(0.0%)	2(100.0%)
CBD (SW) (e.g. Murital Moh'd way by Wahab Folawiyo Road	0(0.0%)	1(100.0%)	1(100.0%)
Total	**2(66.7%)**	**1(33.3%)**	**3(100.0%)**
Nature of Conversion			
Additional Floors	1(100.0%)	0(0.0%)	1(100.0%)
Additional Structure on Plots	1(100.0%)	0(0.0%)	1(100.0%)
Internal Modification	0(0.0%)	1(100.0%)	1(100.0%)
Total	**2(66.7%)**	**1(33.3%)**	**3(100.0%)**

Source: Field Survey (2015)

Further analysis was conducted to know the type of development that is most prevalent in the city of the study area. The responses in this regard is presented in Table 2.0

Table 2.1: Type of Developments in the Study Area

Types of Development	**Name of Authority**		**Total**
	Tplg. & Dev't Authority	**Bureau of Lands**	
Shop	1(100.0%)	0(0.0%)	1(100.0%)

Commercial Complex	1(100.0%)	0(0.0%)	1(100.0%)
Office Space	0(0.0%)	1(100.0%)	1(100.0%)
Total	**2(66.7%)**	**1(33.3%)**	**3(100.0%)**

Source: Field Survey (2015)

The information presented in Table 5.3.1 revealed that 1(100.0%) of the respondents (Kwara State Town Planning and Development Authority) claimed that the development in the city of the study area was predominantly shops, 1(100.0%) claimed that the development in the study area was predominantly commercial complexes while 1(100.0%) of the respondents (Bureau of land) claimed that development in the study area were predominantly office spaces. The study further investigated the increased commercial activities (office complexes that had taken place since January 2004. Analysis of the data shown that 66.7% of the respondents (Town planning and Development Authority) agreed that commercial activities in Ilorin Metropolis had increased since January 2004 while 33.3% of the respondents (Kwara State Bureau of lands) also agreed that commercial activities had increased since 2004 in Ilorin metropolis. The study further investigated how increased economic activities and real estate transaction contributed to the frequent land use succession in the study area.

Table 2.2: Frequency of Land Use Succession in the Study Area

Frequency of Land Use Succession	**Name of Authority**		**Total**
	Tplg. & Dev't Authority	**Bureau of Lands**	
Yes	1(50.0%)	1(50.0%)	2(100.0%)
No	1(100.0%)	0(0.0%)	1(100.0%)
Total	**2(66.7%)**	**1(33.3%)**	**3(100.0%)**

Source: Field Survey (2015)

Presented in Table 2.2 above shows the frequency of land use change as a result of increased economic activities and real estate transaction in the study area. Information presented in the table above revealed that 50.0% of the respondents (Kwara State TPDA) claimed that increased economic activities and real estate transaction contributed to the frequent land use succession in the study area while 1(100.0%) of the respondents (Kwara State TPDA) claimed that increased economic activities and real estate transaction did not contribute to the frequent land use succession in the study area.

Factors that influenced land use succession in the study area

For this study, ten (10) variables that could influence land use change were identified. It is believed that the level of agreement of Estate Surveyor and Valuer would indicate the level of influence of these variables (factors). It also employed a five-point Likert Scale of *stronglyagree (SA), agree (A), undecided (UD), disagree (DA) and strongly disagree (SD).* The analysis of the responses evolved into an index called 'Estate Surveyor and Valuer' Agreement Index' (EAI). To obtain EAI, a weight value of 5, 4, 3, 2 and 1 were respectively attached to each rating above. The index for each aspect was arrived at by dividing the Summation of Weight Value (SWV) by the total number of responses. The SWV for each aspect is obtained through the addition of the product of the number of responses to each aspect and the respective weight value attached to each rating.This is expressed mathematically as:

$$\text{SWV} = \sum_{I=1}^{5} X_i Y_i \quad \text{...equ.(1)}$$

Where: SWV = summation of weight value,

X_i = number of ESV to rating i;

Y_i = the weight assigned a value (i = 1, 2, 3, 4, 5). The higher the ELAI, the higher the tenant/landlord' level of agreement index with the aspect under consideration.This is expressed mathematically as:

$$\text{TAI} = \frac{SWV}{\sum_{i=1}^{5} i = X_i} \quad \text{..equ.(2)}$$

The analysis established in Table 5.20 that 5 out of the 10 variables identified, had positive deviation around the $\overline{EAI}$ these include increase in demand for commercial properties (+1.46), increase in commercial activities (+0.94), government policy on IGR (+0.57), optimizing return (+0.25), and meeting up with common economic reality (+0.04) with ELAI of The most agreed factor influencing land use change was increase in demand for commercial properties with the highest positive deviation around the $\overline{EAI}$. The factors that had positive deviation about the mean were considered the ones influencing land use change the most.

On the other hand, factors with negative deviation about the $\overline{EAI}$ include need to upgrade property (-0.06), increase in population (-0.33), social benefit maximum comfort/prestige (-0.44), reduce operating cost due to aging (-0.69), and fashion and taste (-1.7). It revealed that amongst all the factors, fashion and taste had the least negative mean deviation with EAI of 1.68 that was far below the $\overline{EAI}$ of 3.38.

Table 3.0: Estate Surveyor and Valuer' level of agreement index of factors influencing land use change in the study area

Factors Influencing land use change	Rating and Weight Value							Mean Deviation
	SA (5)	A (4)	JA (3)	D (2)	SD (1)	SWV	PAI	PLAI – $\overline{PLAI}$
Increase in demand for commercial properties	80	12	-	-	-	92	4.84	+1.46
Increase in commercial activities	60	8	12	2	-	82	4.32	+0.94
Government policy on IGR	50	4	18	2	1	75	3.95	+0.57
Optimizing investment return	40	12	9	6	2	69	3.63	+0.25
Meeting up with current economic reality	35	12	9	6	3	65	3.42	+0.04
Need to upgrade property	30	12	9	10	2	63	3.32	-0.06
Increase in population	25	12	9	8	4	58	3.05	-0.33
Social benefit/maximum/comfort/ prestige	20	12	9	10	5	56	2.94	-0.44
Reduced operating cost due to aging	15	12	9	10	5	51	2.69	-0.69
Fashion and taste	-		12	16	4	32	1.68	-1.7
Total		∑PAI= 33.84						

Source: Author's Field Survey, 2014 $\overline{PAI}$ **=3.38**

Table 4.0: Effect of Land Use Conversion on Land Use or Master Plan of the City

	Name of Authority		Total
	Tpl. Authority	**Bureau of land**	
Really affect it	2(100.0%)	0(0.0%)	2(100.0%)
Effect not significantly felt	0(0.0%)	1(100.0%)	1(100.0%)

Total	**2(66.7%)**	**1(33.3%)**	**3(100.0%)**

Source: Field Survey, 2015

Table 4.0 above shows that 100.0% of the respondents (Kwara State Town Planning and Development Authority) claimed that landuse conversion really had effect on landuse/master plan of the study area, while 100.0% of the respondents (Kwara State Bureau of land) claimed that land use conversion did not significantly affected it. Further questions were asked about the effect of land use change on development in the study area.

Table 4.1: Effect of Land Use Conversion on Real Estate Transactions in the study area

	Name of Authority		**Total**
	Tpl. Authority	**Bureau of land**	
Loss of residential stock in the market	1(100.0%)	0(0.0%)	1(100.0%)
Increase in capital/rental value of certain product in the market	1(100.0%)	0(0.0%)	1(100.0%)
Traffic congestion and loss of business hour	0(0.0%)	1(100.0%)	1(100.0%)
Total	**2(66.7%)**	**1(33.3%)**	**1(100.0%)**

Source: Field Survey, 2015

From Table 4.1 above 100.0% of the respondents (Kwara State Town Planning and Development Authority) were of the opinion that loss of residential stock in the market affected development in the study area, 100.0% opined that it had effect on capital/rental value of certain product in the market, while 100.0% of the respondents (Kwara State Bureau of Land) opined that land use succession had effect on traffic congestion and loss of business hour in the Metropolis of Ilorin. The study further examined the challenges that the respondents (Kwara State Town Planning and Development Authority) experienced when controlling/monitoring/regulating developments in areas where land use changes were taking place at an increasing rate.

CONCLUSION

The study examined land use succession and real estate transaction in Ilorin Metropolis. The study reveals that residential property cannot compete with commercial property in terms of return that is why it gives way to commercial uses. The situation is prevailing because, the study reveals that there are no strong existing legal frameworks to control land use change or conversion in Ilorin and Kwara State generally. The study calls for an urgent need to formulate policy on succession of property to other uses. This legal framework would enhance planning activities and the yearning revenue generation for the government in terms of taxes.

RECOMMENDATION

The way forward require a collective efforts on the part of the government (Kwara State Town Planning and Development Authority, Kwara State Bureau of land) Estate Surveyors and Valuers in practice as well Landlords/Tenants. The following recommendations are made in respect of the researchers' perception of the necessary requirements for each. It is important to ensure that the law guiding land use is enforced on property/land owners in the Ilorin Metropolis, so as to avoid irregular and uncontrolled land use succession in the study area.

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POSSIBLE WAYS OF REDEEMING THE COLLAPSING NIGERIAN EDUCATIONAL SYSTEM: AN APPRAISAL

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Abstract

Education has been considered a key cum very important structure of the human society. By implication, education is derived from the noun educate which implies to impact knowledge. It is note worthy to establish that education is divided into two main forms of formal and informal education. Formal education can simply be taken for that form of education that uses a well- planned curriculum. It is usually carried out by personnel who are well and specially trained for that purpose otherwise considered as teachers. On the other side of the same coin, informal education is the one that takes place at home which usually is considered the child's first point of call upon birth. The two basic forms of education in truth complement each other. None can therefore claim to be more important than the other. In recent times in Nigeria, it has been observed that education has seemingly been relegated to the background and its importance so much compromised and undermined. Infact, the genuine purpose of education has been defeated and abused by almost all and sundry as none take its impact for a pint of salt. Both teachers, learners and various stake holders are caught in the web as its benefits has been marred by malpractices and corruption. This research is an effort at exposing the causes, dangers and possible ways out of this ugly doldrums in Nigeria. Data collection methods as the questionnaire, interview, textbooks, newspapers and internet were adopted. The functionalist theory was considered most appropriate as theoretical framework for analysis, thereafter, recommendations were made.

Keywords: *Possible, Redemption, Collapse, Nigeria, Educational System.*

INTRODUCTION

The imperativeness of the educational system in any nation developing nation like Nigeria has been seriously harped or overemphasized by scholars To some scholars it is considered the hub. That in essence shows its level of relevance. By the above statement, it means that all the things that has to be done to become to any individual to become relevant is basically learnt. This makes the teachers very important, the learners important and the learning environment necessary. It must be said that virtually everybody knows what ideal learning entails. But the ideal learning does not hold water in Nigeria. Both the learning process and examination stage has turned into a thing of very serious worry. This is because quacks have flooded the system with almost nothing to impact. This makes the learners to have learnt nothing even at the point they are adjudged to have completed various programmes, this infact is devastating and ridiculous. Another aspect of this problem which must be mentioned is that many people see teaching as the last resort. This in essence means that they take up teaching because, they have no other reasonable means of livelihood and survival and that alone shows that they are not motivated to impact knowledge. They are only after the meagre salary that are usually given which the use to keep body and soul together, so to speak. Still in another view, the stakeholders of are not living up to expectations this is demonstrated and orchestrated by little or lean resources they invest into education while expecting large profits or output.

Purpose of Study

The main purpose of this study is to determine possible ways for redeeming the collapsing Nigerian educational system.

Specifically, the study sought out to:

1) Identify the extent to which Nigerian educational system has rottened or decayed.
2) How the decay has affected the image of education in Nigeria.
3) Assess possible ways that be adopted to remedy or save the Nigerian educational system.

Significance of Study

This study focuses on the possible ways of redeeming the collapsing Nigerian educational system. The findings of this study will be of immense benefits to the governments at various level. This is because it will provide them answers to the decomposing Nigerian educational system. It has also been discovered that one of the problems making the educational system to fail in Nigeria ids poor policy formulation and implementation process. Another point remains that Nigeria's educational sector is poorly managed. The reason for this statement remains that people charged/saddled with the responsibility of managing the Nigerian educational

system are not technocrats in education as appointments have been seen to be practically and primarily based on settlement grounds rather than on merits.
Another set of people that will benefit from this study are atake holders in education. This study when completed will open the eyes of the stakeholders to understand how they are bein undone with the high level of decay being experienced in the system. This is because people will with time lose confidence with what we have here regarding education while seeking qualitative education elsewhere even across thae coast of the African region irrespective of the cost implication.
Parents too stand to benefit immensely from this study as they will be exposed to the level of decay associated with the Nigerian educational system at the moment while we seek for a way out. This is because before now, parents would always think that they are doing good for their children while exposing them to examination malpractices and foul means to pass examinations simply because they fear for their children failing examinations and not labouring so hard to pass examinations.
Students stand to benefit also from this study as they also will b e made to understand how lowly rated their certificated will be rated if they continue with the way they are going both in and outside the continent.

RESEARCH QUESTIONS

The following research questions guided this study.
1) To what extent has the Nigerian educational system rottened
2) To ascertain the extent to which the decay has affected the image of education in Nigeria.
3) Assess possible ways to remedy the decomposing educational system in Nigeria.

Scope and Delimitation of the Study

This study was carried out as a descriptive survey or study in Owerri, Imo State.
It was therefore delimited to the following variables:
1) Identifying the extent to which the Nigerian Educational system has decayed.
2) Assessing the factors responsible for the decay of the Nigerian educational system
3) Determining ways of improving the Nigerian educational system.

Conceptual Framework

This segment of the work is on the review of conceptual framework, theoretical framework, empirical review and summary of literature review.

The Concept of Possible

Capable of being realized, possible implies that a thing may certainly exist or occur given the proper conditions, a possible route up the west face of the mountain, practical implies that something may be affected by available means or under current conditions.

Redemption
According to dictionary. Come, the word redemption is considered an act of redeeming or atoning for a fault or mistake or the state of being redeemed. On the other hand, it means deliverance, rescue, purchase as of something sold.

Collapse
In accordance with Merriam dictionary 2022, the word collapse simply means to fall or shrink together abruptly and completely: fall into a jumbled or flattened mass through the force of external pressure, to disintegrate or better still to crave or fall in or give way.

Nigeria
Officially the Federal Republic of Nigeria is a country in West Africa. It is geographically situated between the Sahel to the North and the Gulf of Guinea to the south in the Atlantic Ocean.
It covers an area of 923.769 square kilometres (356,669 sq ml) and with a population of over 216 million. It is the most populous country in Africa and the world's seventh most populous country. Nigeria borders Niger in the North, chad in the north east, Cameroon in the east and Benin in the west.
Nigeria is a federal republic comprising 36 states and the federal capital territory where the capital is located in Abuja. The largest city in Nigeria is Lagos, one of the largest metropolitan areas in the world and the second largest in Africa.

Educational System
Simply put, educational system comprises of everything that goes into educating public school students at the federal , state or community levels, laws, policies and regulations. Public funding, resource allocations and procedures for determining funding levels.

Theoretical Framework
Functionalism

Functionalism is a theory about the nature of mental states. According to functionalism, mental states are identified by what they do rather than by what they are made of. This can be understood by thinking about artifacts like mousetraps and ways. In particular, the original motivation for functionalism comes from the helpful comparison of minds with computers. But that is only an analogy the main arguments for functionalism depends on showing that it is superior to its primary competitors: identity theory and behaviourism contrasted with behaviourism, functionalism retains the traditional idea that that mental states of thinking creatures contrasted with identity theory. Functionalism introduces the idea that mental states are multiply realized, Encyclopedia Britannica (2022).
In that regard, education is considered the heart of any nation that tends to develop, that points to the height of its importance. In the contemporary world, there is no society that will develop without quality education. Therefore, education is seen to play a key or pivotal role when it comes to the development of a nation. Therefore, it must be treated with utmost attention and seriousness.
Going by the above, functionalism is deemed suitable as theoretical framework for the study.

Empirical Review
Under this segment, we shall examine studies and factors that have militated the implementation of educational policies and programmes in recent time.
It must be stated here that efforts have been made to develop education in Nigeria since independence in 1960.Various policies in the interest of education have been formulated, some have been taken yielded the expected fruits while some others have not.
One thing that must be said is that it is quite unfortunate that these efforts have produced the desired effects.
The state of education in Nigeria is still very deplorable. It is so bad that some resourceful Nigerians prefer to send their children to Europe , America and even small African countries such as Ghana that has just few universities as against over sixty universities in Nigeria that lack adequate learning facilities.
Apart from the general problems of policy implementation common to most countries, especially those of the third world countries. Some factors have been identified as peculiar to Nigeria and seriously inhibiting her educational growth. It is no longer news that Nigeria is the giant of Africa in terms of resourcefulness as a major oil and gas producer.
Ironically, most Nigerians live below the poverty line of one dollar per day.

The following reasons among others account for the deplorable situation.

Instability of Government

So, as educational policies are formulated by various governments, political instability has stalled or discouraged the political will to implement such policies. As new governments come in quick succession and with relative uncertainty, continuity in policies could not be guaranteed. Every political player or politician has always been in a hurry to help him/ herself before being displaced by another group. This has affected educational poicy implementation and programmes in Nigeria.

Corruption

If anything has contributed greatly to the stagnation and collapse of corporate development of Nigeria, it is this virus corruption.

It is found in all aspects of human endeavour, education inclusion. Its prominence has earned our nation a place of negative prominence in the world. Adesina (2004:16) noted. The 2004 corruption perceptions index released by transparency International (TI) the watchdog on global corruption ranks Nigeria as the third most corrupt country in the world.

Still yet, in 2003, the organization ranked Nigeria second a one step improvement from the previous position as the most corrupt country in the world.

Although then President, Olusegun Obasanjo was uncomfortable and disputed the rating then, many Nigerians agreed that it was correct. This is because corruption pervades all segments of Nigeria's national life. Despite enormous oil and gas wealth at the disposal of the country, basic things or necessities of life such as food, shelter, portable water, electricity, good roads and education have become luxuries to the citizens.

In another development, in recent times, unfortunately, senators who are seen as senior citizens unexpectedly demanded an inducement before they would approvev that Nigerian children should go to school.

The Nigerian educational system has been on the ground for years now and it is neglected and abandoned with impunity (the emphasis is mine)

The current state of Education in Nigeria,

It has been harped by UNICEF over the years that all children no matter where they live or what their circumstances are, have the right to quality education. It has also been observed that even though primary education is officially free and compulsory about 10.5million of the country's children aged 5-14 years are not in school. Only 61 percent of 6 -11 year olds regularly attend primary school and only 35.6 percent of children aged 36-59 months receive early childhood education. In the North, of the country, the picture is even bleaker with a net attendance rate of 53 percent. Getting out of school children back into education poses a massive challenge.

Gender like geography and poverty is an important factor in the pattern of educational marginalization. States in the North- East and North-West have female primary net attendance rates of 47.7 percent and 47.3 percent respectively. Meaning that more than half of the girls are not in school.

Possible ways of redeeming the collapsing Nigerian Education

By and large, it must be established that the Nigerian education system is lying flat at the moment, but much need to be done in order to save the situation. In view of the above, here are the likely things that could be done.

1) Value re-orientation

It is necessary to establish that as things stand now, our people already have certain set beliefs which determine approaches to life. When it come to Nigerian education at the moment , the people already believe in the system being seen as corrupt. Efforts to change the perception and beliefs of our people should be on top gear in order to achieve the expected outcome. Virtually all the media channels need to get involved in this activity of re-orienting our people and needs to be followed up. It does not only end in getting people to believe that we can get back on track with a positive change in our education we need to follow it up with genuine action plan or efforts.

2) Increasing the Allocation of Education

In recent times, it has been discovered that the allocation being meted out for education is small compared to other sectors

There is need now to increase and improve the allocation usually given to education. This is because various things pertaining to education has sky rocked and immensely too in recent times. Such things as salaries of lecturers, teachers, infrastructure among other costs.

This paper is of the belief that if this is done, it will go a long way in re-activating the Nigerian educational system.

3) Professionalizing Teaching Profession

Another thing that must be established is the fact that teaching must be professionalized. This means the training of would-be teachers should be taken seriously. This really will be re-positioning teaching profession. It is necessary to establish that the salaries of teachers should be revisited and reviewed upwardly. This will encourage teachers to give their best.

4) Licensing of teachers

As it stands at the moment, quacks have messed up and flooded the field of the teaching profession in particular and education in general. It is on record that many practising teachers are have baked teachers so to speak. On the other hand, certain others are not licensed to teach. This situation must be addressed and brought under control.

Conclusion

The truth of the matter remains that the Nigerian educational system has collapsed. On the other hand, the government and other stake holders have all decided against speaking up over the issue for quite a long time now. This is because they take a deep thought over what they need to do to address the ugly situation. On the other hand, the solution the solution to this problem may not be far -fetched but it only depends on the approach and the masses bracing up for the change. The change must be welcomed though at the take-off stage it might seem difficult but it will truly surely re-shape and shake-up the educational system and make it even better.

Recommendations

Having concluded the work, we make these recommendations.

1) The government at various levels should take up the task of re-shaping Nigerian educational system.

2) The people should understand that the poor image of the Nigerian educational system truly paints an ugly picture and should make case for its repositioning.

3) Teaching already practising in the field should feel indebted to improve their training and credentials,

4) The allocation being given to the educational sector should be increased.

5) Educational policies should effectively and religiously be always implanted when made.

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MECHANOCHEMICAL SYNTHESIS AS A PANACEA FOR ENVIRONMENTAL CONTAMINATION

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Abstract

The researchers in this paper use mechanochemical synthesis as a panacea for the excess use of solution based syntheses that cause environmental contamination. The main aimed of the paper is the usage of mechanochemicaly synthesized complex of ciprofloxacin which was characterized by physical methods, spectral and biological studies. Spectral studies show that; in the complexe, the ciprofloxacin acted as bidentate ligand which coordinated to the metal ion through the ring carbonyl oxygen and one of the oxygen atoms of the carboxylate group. Results from microanalysis data shows 1:2 metal to ligand ratio. All the complexes show strong antibacterial activity at all concentrations compared with the free ligand (ciprofloxacin). Due to environmentally friendly, shortest reactions time, inexpensive, production of higher yields. Therefore, the authors recommend the use of mechanochemical methods over solution-based.

Keywords: *Mechanochemical, Synthesis, Ciprofloxacin, Panacea, Solution-based*

Introduction

According to Wilhelm Ostwald in (1835-1932) classified mechanochemistry as a branch of chemistry along with thermochemistry, electrochemistry, and photochemistry (James et al., 2012) in which mechanochemical actions normally induces chemical changes in different situations either intentionally or unintentionally (Takacs, 2007). Therefore, mechanochemical synthesis refers to the reactions in which solid reactants are induced by the input of mechanical energy by grinding using manual ball mills or manual methods (James et al., 2012). It is becoming more intensely studied partly because it can promote reactions between solids quickly and quantitatively, with either no added solvent or only nominal amounts. Historically it has been a sideline approach to chemical synthesis, and solution-based methods have been adopted by default. However, mechanochemistry could in future become a more mainstream technique for two reasons. Firstly, it is increasingly clear that is effective, and even advantageous, in ever-widening types of synthesis. Secondly, our current dependence on solvents appears increasingly unsustainable since it is wasteful of fossil-derived materials (e.g. 85% of chemicals used in the pharmaceutical industry are solvents and even if recycled typical recovery rates are only 50–80%), environmentally problematic, hazardous and energy-demanding with regard to solvent production, purification and recycling (Dubois et al., 2014).The needs for cleaner and hazardous free environment derived researchers into mechanochemical synthesis.

Statement of the Problem

As earlier stated, the research work looks at the alternative synthetic route to solution-based synthesis that cause environmental problematic. Therefore, the focus in this article is the use of mechanochemical transformation of metal (II) complex derived from ciprofloxacin by net grinding method and to compare the activity of the complex, ligand and standard against selected bacteria isolates. This means there is for the research.

Objective of the Study

The major objective of the study is to synthesized metal (II) complex of ciprofloxacin via mechanochemical means and their characterization in order to minimize the use of solvent that cause hazardous, environmental problematic and so forth.

Significance of the Study

The study designed to address the followings

i. The use of mechanochemical synthesis approach for the reliable synthesis of coordination metal (II) complexes of active pharmaceutical ingredient (API)
ii. To limit the use of solvent in chemical synthesis. Since it is wasteful of fossil-derived materials that cause hazardous and environmental problematic
iii. To give high product yield obtained mechanochemically, fast, low cost and eco-friendly.

Materials and Methods

Materials

All the reagents were of analytical grade and used without any further purification. The active pharmaceutical ingredient of Ciprofloxacin was obtained from Bristol Scientific-Sigma Aldrich. Metal salt used include $CoCl_2.6H_2O$. All the glass wares used in the work were washed thoroughly with detergent, rinsed with distilled water and dried in an oven at 110^oC. Weighing balance of model B154 Mettler Toledo was used throughout the experiment. The melting point of the complex was determined using Stuart melting point apparatus SMP0, molar conductance was obtained in Jenway conductivity meter model 4010 (10-3g in 10ml DMSO), while magnetic moment of the complex was obtained using Magnetic susceptibility balance of Sherwood scientific Cambridge UK. The elemental analysis was carried out using Flash 2000 Organic elemental analyzer and metal content of the complexes was determined in AA240FS, Fast Sequential Atomic Absorption Spectrometer. The FTIR spectra were recorded as KBr on FTIR-8400S in the range of 4000-400cm-1 while the electronic spectra of the complex was recorded using ultraviolet spectrometer lambda 35 with the range of 200-700nm. The antibacterial evaluation of the complex was determined using agar-well diffusion method.

Synthesis of the Complex

The described method by (Tella et al., 2011) was adopted and modified for the synthesis of the complex. 2 mmol (660mg) of Ciprofloxacin were mixed with 1 mmol (239mg) of $CoCl_2.6H_2O$ separately in mortar and pestle for about 10-15minutes in 2:1 ratio. The colour product obtained was dried in desiccator.

$$\mathrm{M + 2Cip} \xrightarrow{\text{Neat Grinding}} \mathrm{[M(Cip)_2Cl_2]}$$

Where M = $CoCl_2$

Antibacterial Screening

The described method by (Yusha'u, 2011) in which 0.02 g of ligand and metal (II) complex was dissolved in 1 ml of Dimethyl sulfoxide (DMSO) to gives a stock solution by half serial doubling dilution method of 20 µg/ml, 10 µg/ml and 5 µg/ml which were placed on the surface of the culture media and incubated at room temperature up to 2 days. Then in *vitro* antibacterial activity against *Escherichia coli, Salmonella Typhi* and *Staphylococcus aurous* were carried out by agar-well diffusion method. Standard was used to compare with the diameter of zone of inhibition produced by ligands and complex.

Results and Discussion

The reaction of the synthesized complex was completed within short period of time. The product yielded higher yield and gray colour complex of $[Co(Cip)_2Cl_2]$, similar to the results reported by (Mustapha et al., 2014) the complex is non-hygroscopic with melting point of 297 ^{0}C which is higher than the free ligand of 255 ^{0}C due to complexation (Mustapha et al., 2014). The physical properties of both the ligand and the complex are presented in Table 1. Co (II) complex is soluble in DMSO, soluble in non-polar and insoluble in polar solvents.

Table 1: ***The Physical Properties of Ciprofloxacin and its Metal (II) Complex***

Compounds	Colour	Melting point (°C)	D/ temperature (°C)	Molar Conductivity ($\Omega^{-1}cm^2mol^{-1}$)	Effective magnetic moment (BM)
Ciprofloxacin	White	255		-	-

$[Co(Cip)_2Cl_2]$	Gray	-	297	10.43	5.7

Molar conductance can be used to elucidate the structure of the complexes as reported by Ali et al. (2013), the molar conductivity value presented in Table 1 rendered the complex to be non-electrolyte in DMSO solvent (Ali et al.,2013). Also, magnetic moment frequently has been used to suggest the likely geometry of the complex. The μeff value of 5.7BM as presented in Table 1 is tentatively proposed high spin octahedral geometry due to the presence of unpaired electrons around the metal ion. These value lie within the expected range for high spin octahedral geometry as reported in the literature of (Al-Noor et al., 2013).

Table 2: ***The microanalysis data of the complexes***

Compounds	Molecular formula (Molar Mass)	Microanalysis: found (calculated) %			
		C	H	N	M
$[Co(Cip)_2Cl_2]$	$C_{17}H_{18}FN_3Cl_2Co$ (793)	25.92 (27.73)	2.56 (2.27)	5.10 (5.30)	7.27 (7.44)

Microanalysis

The microanalysis results obtained for the complex are presented in Table 2. Both the % of C, H, N and metal ion agreed with the proposed structure due to the evaluation of the microanalysis data and also showed the compound as $[CO(Cip)_2Cl_2]$ (Al-Noor et al., 2013).

Infrared Spectral Analysis

The IR spectra are presented in Table 3 by comparing of ligand spectra with metal complex as reported in the literature of (Waziri et al., 2017).

Table 3: ***The IR Spectra Data of Ciprofloxacin and its Metal (II) complexes***

Compound	υ(O-H) cm^{-1}	υ(COO) cm^{-1}	υ(C=O) cm^{-1}	υ(C-O) cm^{-1}	M-O	M-Cl
Ciprofloxacin	3403.99	1628.81	1724.95	1473.82	-	-
$[Co(Cip)_2Cl_2]$	3385.92	1580.29	1632.89	1521.09	509.89	707.38

Keys: υ=Wave number, M= Metal, O= Oxygen

Table 4: ***Electronic spectra in DMSO solvent for the ciprofloxacin and metal complexes with their suggested geometry***

Compounds	Electronic Spectra			Suggested Geometry
	Wavelength (nm)	Energy (cm^{-1})	Assignments	
Ciprofloxacin	205	48780	$n \rightarrow \pi^*$	
	210	47619	$\pi \rightarrow \pi^*$	
$[Co(Cip)_2Cl_2]$	215	46512	$^4T_{1g} \rightarrow ^4T_{1g}$	Octahedral

	245	40816	$^4T_{1g}\rightarrow^4T_{2g}$
	251	39840	$^4T_{1g}\rightarrow^4A_{2g}$

The IR spectral data of both the ciprofloxacin and its metal (II) complex suggested that; the band at 1724.95cm^{-1} in the free ligand (Ciprofloxacin) is assigned to υ(C=O) and shifted to 1632.80cm^{-1} for the complex. Band at 1628.81cm^{-1} in the spectrum of ligand has been attributed to υ(COO) vibrational frequency, this band also, appeared to shifted in the spectra of the complexes as presented in Table 3 which suggests the coordination through O atom of the carboxylate group. These results obtained agreed with the literature of (Kothari & Agrawal, 2015). The υ(O-H) band at 3403.99cm^{-1} in the ligand also shifted to 3385.92cm^{-1} in the complex shows a new compound is formed (Refat et al., 2014). The bands at 509.89cm^{-1} and 707.38 cm^{-1} in the complex which could not be traced in the spectrum of free ligand is assigned to M-O and M-Cl band. Similar observation was made by Mustapha et al., 2014).

Electronic Spectral Analysis

Table 4 present the electronic spectra of both the free ligand (ciprofloxacin) and its metal (II) complex. The ligand shows two bands at 205nm and 210nm which could be assigned to n $\rightarrow\pi^*$ and $\pi\rightarrow\pi^*$ (Waziri et al., 2017). These absorption bands appeared into three in Co(II) complex at 215nm, 245nm and 251nm which were assigned to 4T1g→4T1g, 4T1g→4T2g and 4T1g→4A2g within the octahedral geometry (Chudhary et al., 2017).

Antibacterial Activity

The antibacterial activity test results for both the ligand and metal complex are presented in Table 5.

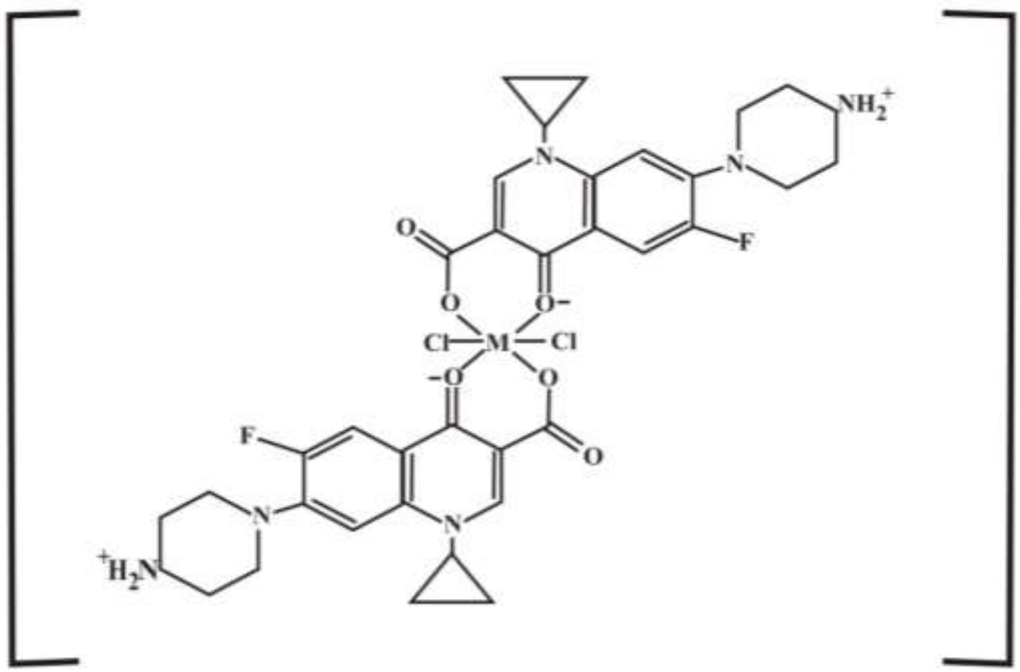
Table 5: ***Anti-bacterial Activity Test of Ciprofloxacin and its Metal (II) complexes***

Compounds	Concentration (µg/ agar-well)	Inhibition Zones S. aureus (mm)	E. coli (mm)	S. typhi (mm)
Ciprofloxacin	5	13	15	18
	10	17	20	19
	20	24	25	22
$[Co(Cip)_2Cl_2]$	5	27	10	23
	10	31	14	29
	20	37	20	38
Standard (Gentamycin)	20	27	37	44

S. aureus = Staphylococcus aureus, E. coli = Escherichia coli, S. typhi=Salmonella typhi

Ciprofloxacin complexes are all active against bacteria isolates. In general, these results revealed that the complex synthesized showed significant antibacterial strength even at low concentration as 5µ/agar-well in which the inhibitory action increases with increase concentration, these values are compared with the standard of Gentamycin which is similar with the result reported by (Mustapha et al., 2014).

From the spectral data obtained as well as the results from elemental analysis, molar conductivity and magnetic moment, the tentative proposed structure for the metal (II) complex of the ciprofloxacin as:



Proposed structure of Ciprofloxacin Complexes (M= Co^{2+})

Conclusion and Recommendations

Conclusion

Based on the above results obtained, the metal ion coordinated to the ligand through the ring carbonyl oxygen and one of the atoms of the carboxylate group given rise to octahedral geometry. The elemental analysis data also agreed with the proposed structure. Form the antibacterial activity of the complex, it shows the increase compare with the free ligand ciprofloxacin. Therefore, the result obtained for mechanochemical synthesis will help to minimize the use of more harmful solvents.

Recommendation

- This research work demonstrated the merit of mechanochemistry over solution-based synthesis as this call for scientist all over the world to exploit this wonderful synthetic method for the preparation of complexes and other compounds.
- The products obtained mechanically are comparable to those obtained via solution-based and have the advantage of producing fast, with higher yield, low cost and eco-friendly.
- The result obtained help to minimize the usage of harmful solvents.

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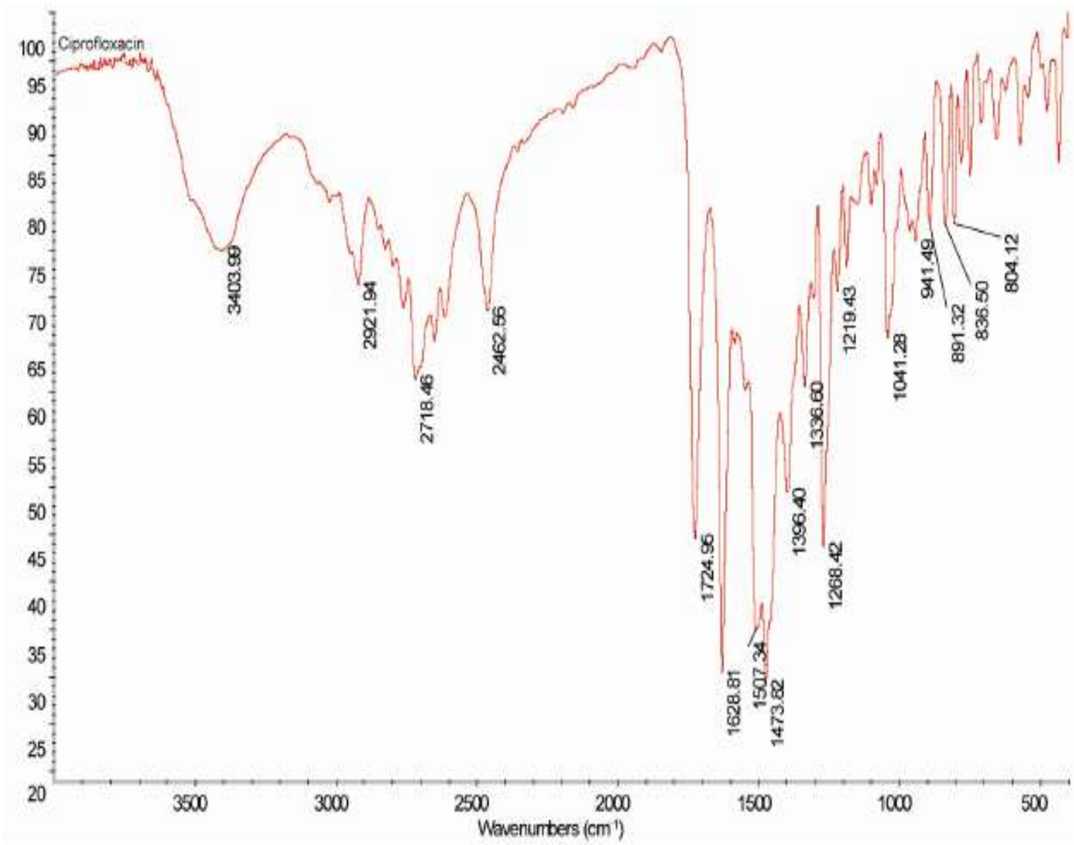
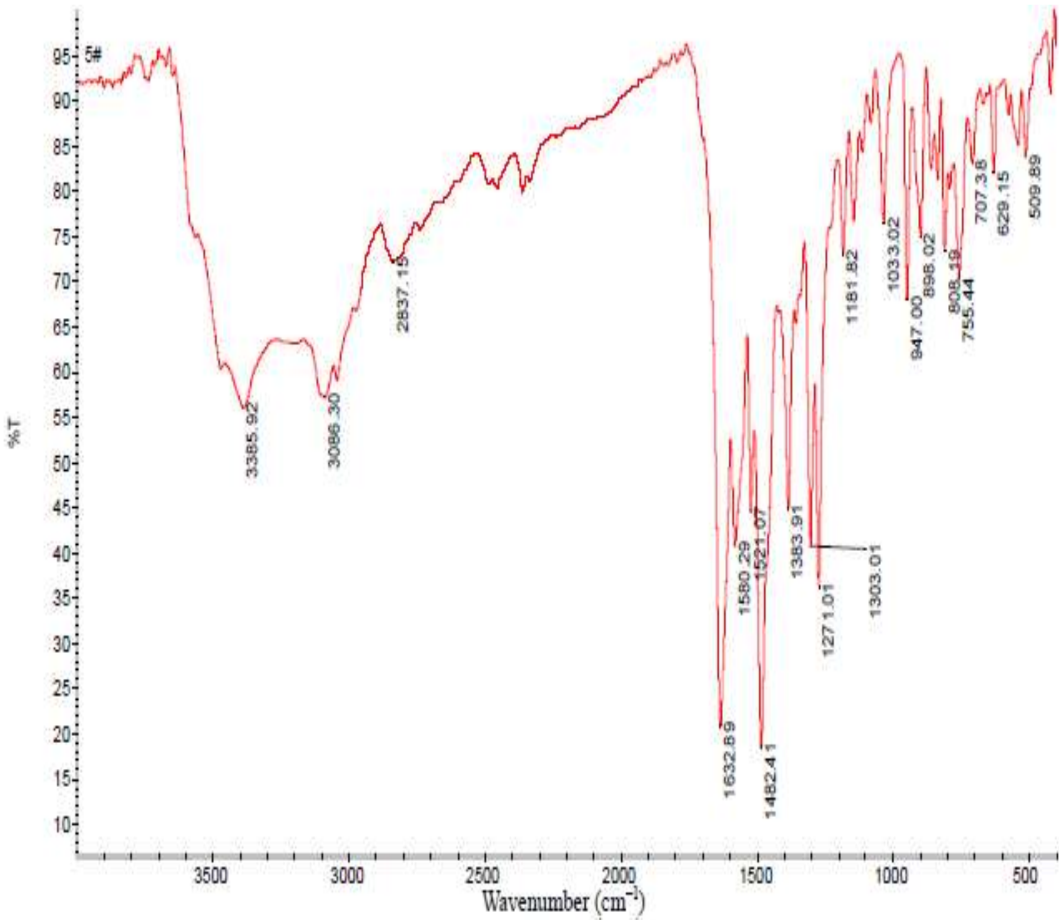
Appendix 1



IR Spectra of ciprofloxacin

Appendix 2



IR Spectra of Co (II) ciprofloxacin Complex

ASSESSEMENT OF THE CONTRIBUTIOS OF CO-OPERATIVE SOCIETIES IN THE DEVELOPMENT OF ENTREPRENEURSHIP AMONG YOUTH IN KADUNA STATE, NIGERIA

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Abstract

This research work was conducted to assess the contributions of co-operative societies in the development of entrepreneurship among youth in Kaduna State. The following research questions guided the study were; What are the activities of co-operative societies in developing entrepreneurship attitude among youth in the study area? What are the challenges of the co-operative societies in entrepreneurship development of youth in the study area? Multi-stage sampling techniques were employed in selection of 201 co-operative members in Kaduna metropolis. A questionnaire was developed based on 5-point Likert scale to gather the data. Frequencies and simple percentages were used to analyze the respondent bio data while mean score was used based on the research questions. Research results show that the activities of co-operative societies in developing entrepreneurship attitude among youth includes assisting members in developing business plant, encouraging savings habit among youth, creating cheap and easy avenue for loans, providing socio-economic security to youth and creating awareness on self reliance e.t.c result also show that challenges of the co-operative societies in entrepreneurship development of youth include weak financial strength, poor management, lack of managerial and technical know-how and fraud and financial malpractice. It was recommended among others that the youth should be encouraged to join co-operative society which will attract the attention of the government. Since most government policies revolves around the youth.

Keywords: *Assessment of contributions, Co-operative societies, Development, Entrepreneurship among youth.*

Introduction

Youth development has received the attention of many experts and researchers, organizations such as United Nation Organization (UNO) International Labour Organization (ILO), United Nations International Children's Emergency Fund

(UNICEF), World Health Organization (WHO), Non-Governmental Organization NGO, as well as the government. This is because as declared by the National Youth Policy (2010), they constitute an invaluable asset of the nation, because of courage, innovativeness, inquisitiveness and high level of self-confidence, which is also considered to be a main source of nation building they are not only a vital source of the state but also a change agent, the youths are pioneers of economic, social, political and cultural transformation and change driving force. Youth development as captured in National Youth Policy (2004-2014), is an intentional comprehensive approach that provides space opportunities and support for young people to maximize their individual and collective creative energies for personal development as well as development of the broader society of which are an integral part (NYP, 2014).

Helms (2005) on the other hand defined co-operative society as an association of persons who have voluntarily joined together to have a common end through the formation of a democratically controlled enterprise, making equitable contribution to the capital required and accepting a fair share of the risk and benefit of the undertaking in which the member activity participate. On the other hand it could be seen as a voluntarily association of persons having mutual ownership in providing themselves some needed service on non-profit basis usually organized as a legal entity to accomplish objectives through joint participation of its members.

As it is, the problems faced by youth in Nigeria today are complex. Co-operative environment provides working conditions more favorable to youth engagement than to other organizational forms because of it democratic governance structure and organizational aims which go beyond profit maximization.

Young people have the opportunity to develop social consciousness and attain a sense of self actualization through their democratic governance; co-operative societies also explore young members to democratic values and culture. The experience attained through engaging with an environment of accountability and solidarity gives young people the confidence to take on leadership roles in various contexts even beyond the cooperative movement.

Statement of the Problem

The major problem confronting the youth today is unemployment which leads to high rate of poverty. World Bank (2013) confirms 112million Nigerians living below poverty line. This followed another depressing disclosure by the World Bank, which said that the population of Nigerians in poverty has increased considerably and significantly. The figure represents about sixty seven percent (67%) of the entire population. In spite of all the orchestrated policies and programmes of successive

government in Nigeria as well as several works and researches conducted by various authors and organization, the Nigeria youth still leave a lot to be desired.
Such programs which range from in school education programme for physical and mental development of out of school programmes aimed at shaping the character and behavior of the youth, as well as promoting competitive spirit and national unity and integration. In the light of these problems, the researcher wants to probe into the role of co-operative societies in the development of entrepreneurship among youth in Kaduna State.

Objectives of the Study

The general objective of this study is to assess the contributions of co-operative societies in the development of entrepreneurship among youth in Kaduna State.
The specific objectives are as follows:

i. To find out the socio-economic characteristics of members
ii. To find out the activities of co-operative societies in developing entrepreneurship attitude among youth in the study area.
iii. To ascertain the challenges of the co-operative societies in entrepreneurship development of youth in the study area.

Research Question

The following research questions guided the study:

i. What are the socio-economic characteristics of members?
ii. What are the activities of co-operative societies in developing entrepreneurship attitude among youth in the study area?
iii. What are the challenges of the co-operative societies in entrepreneurship development of youth in the study area?

Literature Review

Conceptual Framework

The Concept of Cooperatives

The term co-operative is derived from the Latin word co operatic, where the word co-The term cooperative is derived from the Latin word co operatic, where the word co-means with" and opera means to work" thus co-operative means working together. So those who want to work together with some common economic objective can form a society, which is term as co-operative society" it is a voluntary association of persons who work together to promote their economic interest.

The International Co-operative Alliance (ICA) in its Statement on the Co-operative Identity, in 1995, defines a cooperative as "an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically controlled enterprise." It is a business voluntarily owned and controlled by its member patrons and operated for them and by them on a nonprofit or cost basis (UWCC, 2014). It is a business enterprise that aims at complete identity of the component factors of ownership, control and use of service, three distinct features that differentiate co-operatives from other businesses (Laidlaw, 2019).

The International Labour Organization (2018) Define co-operative societies as an association of persons usually of limited means who have joined together to achieve common economic goals through the formation of democratically controlled business organization, making equitable contribution to the capital required and accepting a fair share of risk and benefit of undertaken.

The Concept of Youth and Development

Youth is best understood as a period of transition from the dependence of childhood to adulthood independence as members of a community. Youth is more fluid category than a fixed age-group.

The United Nation Organization (UNO) defines as those persons between the ages of 15-24 years, without prejudice to other definition by member states. They went on to declare that young people between the ages of 15-24 represent approximately 18% of the global population nearly 1.2 billion people. 87% of youth live in developing countries, 62% of youth live in Asia, and 17% of youth live in Africa. As members of societies, youth deserve full access to education, adequate health care employment, financial service, participation in public lives.

The Activities of Cooperative

According to Usman (2010) said that the activities of any co-operative depend on the type of society. The socio-economic activities of cooperative societies include.

i. To assist members to plan wiser, richer and sooner.
ii. To encourage savings habit that is more convenient to the members.
iii. To provide socio-economic security for members, thus enhancing industrial harmony and productivity.
iv. To creates cheap and easy avenue for loans by members for productive and emergency purpose.

v. To gives members the opportunity to own property with jointly and individually

The Challenges of Cooperative Societies for Youth Development

According to Akinwunmi (2016) is leadership. If there is purposeful leadership, if leaders are transparent, dedicated and truly serving, the cooperative society will succeed. A true leader does not cut corners, does not inflate contracts so as to receive kickbacks, does not have favorites among members and does not mismanage the resources.

Asaolu (2014) as quoted by Mass Mobilization for Social and Economic Recovery (MAMSER) in its studies of 1998, while identifying the problems facing cooperative societies in Nigeria to be generally due to political and socio-economic factors.

The socioeconomic and political environment in Nigeria poses a great challenge to the youths. Economic and social statistics present a sober picture that leaves much to be desired. Almost haifa century after flag independence, the economy continues to be dominated by the primary sector agriculture, oil and minerals. This is partly because the country has not been able to create an environment for high value added economic activities (Andow, 2018).

Methodology

The Study Area

Kaduna State is located at the centre of Northern Guinea savannah. It lies between latitudes $9^{0.}10^{1}$-$11^{0}30^{1}$north and longitude 6^{0}-$9^{0.}10^{1}$ east. It has a total area of about 67,000 square kilometres (KADP, 2007) with a population of 6,066,562 people comprising of 3, 112, 028 males and 2, 954, 534 females, the estimated population of Kaduna State as at 2015 would be 8, 252, 366 people with annual population change 2006-2015(+1.4% per year) (NPC 2016). This study assesses the contributions of cooperative societies in the development of entrepreneurship among youth in Kaduna State. To this end, this chapter discusses and describes the design and procedure for the study, the population and the sample used. A description is also made of the instrument for data collection as well as its validity and reliability. Also discussed in this chapter is the procedure for the administration of the instrument, statistical analysis as well as the limitation of the study.

Research Design

A survey method was used for this study. This method involves gathering data about the target population from a selected sample and generalizing the findings obtained from the analysis of the sample to the entire population. This method was adopted because it enabled the researcher to discover relative incidences and distribution on the characteristics of the population. Besides, it facilitated the researcher to assess the role of cooperative societies in the development of entrepreneurship among youth in Kaduna State.

Population of the Study

The study was conducted using 10 registered cooperatives societies within Kaduna metropolis, the population consists of all the members of the cooperatives used for the study. The cooperatives used for the study include:

S/N/LOCATION	NAME OF SOCIETY	DATE OF REG	REG.NO.
1.KD NORTH L/G. AREA	GWARI/JAMA'A RD ASHEIYEWU AGRIC. COOP.	2/8/2010	KDS/DKA/CS/0516
2. "	KAD STATE BLIND WELFARE COOP SOCIETY	2/12/2010	KDS/DKA/CS/0737
3. "	ZANGO AYA RD KAWO FARMERS COOP SOCIETY	9/02/2006	KDS/DKA/CS/1276
4. "	MURTALA SQUARE FINANCE/INVESTMENT COOP SOCIETY LTD	14/4/2011	KDS/DKA/CS/1579
5. "	UNGWAR MAISAMARI BAPTIST INVESTMENT COOP SOCIETY LTD	11/4/2011	KDS/DKA/CS/1570
6 "	RAFIN GUZA MATA MAKIYAYA MPCS	11/3/2010	KDS/DKA/CS/1627
7. "	ABAKWA CENTRAL FARMERS COOP SOCIETY	17/6/1996	KDS/DKA/CS/1802
8. "	HIGHER HEIGHET MPCS LTD	13/92011	KDS/DKA/CS/2046

9.	**"**	**KATURU ROAD FARMERS COOP. SOCIETY LTD**	**3/5/2012**	**KDS/DKA/CS/3753**
10.	**"**	**KIFC MPCS LTD**	**23/3/2011**	**KDS/DKA/CS**

Source: Field Survey (2021)

Sample and Sampling Procedure

Multistage sampling procedure was adopted in selecting the respondents for the study. In the first stage a total of 10 registered cooperative societies were randomly selected within Kaduna metropolis, in the second stage the sample for the study was proportionately selected among the selected cooperative societies based on their population using simple random sampling. A total of 201 respondents were selected, this gives every member of the selected cooperative societies equal chance to be selected for the study. To determine the sample size for the study, Krejcie and Morgan (1970) sample size table cited in Ogbu (2012) was used.

Research Instruction

The instrument used for the study was the questionnaire. The questionnaire was developed by the researcher. Questionnaire is appropriate because the members of the cooperative society under study were literate. Besides the questionnaire method facilitated easy coverage and is more appropriate in survey studies of this nature (Nwana, 1982) cited in Ogbu (2012). The questionnaire was tagged Assessment of the Contributions of Cooperative Societies in the Development of Entrepreneurship among Youth in Kaduna State (ACCSDEY) Questionnaire.

The instrument was designed on 5-point Likert scale of strongly agree, agree, undecided, disagree, and strongly disagree. The items in the questionnaire were generated through a view of previous studies. In scoring the items related to the Likert type 5-point scale, respondents had a possible total score ranging from 5 to 1 which represented a respondent opinion. The higher the score, the more influenced the respondent was by the scale. The design of the questionnaire was clustered around five sections. Section A consist of items related to the personal date of the respondents such as sex, age while section B to D contained information dealing with the subject matter of the investigation.

Results

The data generated is presented using tables. The demographic variables of the respondents involved in the study are presented in table of frequencies and percentages. The responses to the individual items in the questionnaire were presented along the research questions in the study. In the course of scoring the items, the magnitude of the respondents' response to the option in the five point Likert scale was used to determine the direction of the respondents' opinion.

Socio-economic Characteristics of Respondents

Table 1: Sex Distribution of the Respondents.

Items	Frequency	Percentage (%)
Male	115	57.21
Female	86	42.79
Total	**201**	**100**

Source: Field work (2016)

Source: Field Survey (2021)

Table 4.1shows the socio-economic characteristics of the students based on sex status. In the table 115 respondent representing 57.21% are male while 86 respondent representing (42.79%) are female.

Table 2: Marital Distribution of the Respondents.

Items	Frequency	Percentage (%)
Single	15	7.46
Married	181	90.04
Divorcee	4	1.99
Widow	1	0.49
Total	**201**	**100**

Source: Field work (2016)

Source: Field Survey (2021)

Table: 4.2 show the socio-economic characteristics of the students of the based on marital status. In the table 15 respondents representing (7.46%) are single, 181 respondents representing (90.04%) are married, 4 respondents representing (1.04%) are divorcee and finally 1 respondent representing (0.49%) is a widow.

Table 3: Age Distribution of the Respondents.

Items	Frequency	Percentage (%)
15-20	5	2.49
21-25	16	7.96
26-30	35	17.41
36 and above	145	72.14
Total	**201**	**100**

Source: Field Survey (2021)

SourSource: Field Survey (2021)

Table 4.3 shows the socio-economic characteristics of the students of the based on age status. In the table 5 respondents representing (2.49%) are between the ages of 15-20, 16 respondents representing (7.96%) are between the ages of 21-25, 35 respondents representing (17.41%) are between the ages of 26-30 and finally 145 respondent representing (72.14%) are between the ages of 36 and above.

Table 4: Respondent Occupation

Occupation	Frequency	Percentage (%)
Civil servant	**98**	**48.75**
Business	**16**	**7.96**
Trader	**22**	**10.94**
Farmer	**19**	**9.45**
Tailor	**17**	**8.45**
Carpenter	**10**	**4.97**
Builder	**7**	**3.48**
Printer	**12**	**5.97**
Total	**201**	**100**

Source: Field work (2021)

Table 4.4 above shows the occupation of respondents used for the study. From the table, 98 respondents representing (48.75) are civil servant, 16 respondents representing (7.96%) are business man and women, 22 respondents representing (10.94%) are traders, 19 respondents representing (9.45%) are farmers. 17 respondents representing (8.45%) are tailor, 10 respondents representing (4.97%) are carpenter, 7 respondents representing (3.48%) are builders while 12 respondents representing (5.97%) are printer. This brings the total number of respondents to 201 (100%).

Research question 2:- What are the activities of cooperative societies in developing entrepreneurship attitude among youth in the study area?

Table 5: Distribution according to the activities of cooperative societies in developing entrepreneurship attitude among youth in the study area

S/N	Statement	SA	A	U	D	SD	X	Remarks
19	Establishing of vocational skill acquisition centre	111	71	-	5	14	4.00	Agree
20	Organizing training workshop for youth on	91	100	-	3	7	3.78	Agree

	development of entrepreneurial skill							
21	Assisting youth in developing To creates cheap and easy avenue for loans for members	130	74	-	-	2	4.20	Agree
22	To provide socio-economic security to members	95	81	-	1	24	3.18	Agree
23	Creating awareness on self reliance	95	96	-	2	8	3.78	Agree
24	Giving members the opportunity to own property jointly or individually	95	81	-	1	24	3.18	Agree
25	Assisting members in developing business plant							

Source: Field Survey (2021)

The data on the table 4.5 above shows the activities of cooperative societies in developing entrepreneurship attitude among youth in the study area. In item 19 result shows that a larger number of the respondents (N= 201; X = 4.00) agree that their cooperative assist members in developing business plant. In item 20 result shows that a larger number of the respondent (N = 201; X = 3.78) agrees that their cooperative society encourage savings habit among youth. In item 21, result shows that a larger number of the respondent (N=201, X = 4.20) agree that their cooperative society creates cheap and easy avenue for loans for members. In item 22 result shows that larger number of the respondents (N = 201; X = 3.18) agree that their cooperative society provide socio-economic security to youth. In item 23 result shows that a larger number of respondents (N= 201; X = 3.78) agree that their cooperative society create awareness on self reliance. Finally, in item 24 result shows that a larger number of respondents (N= 201; X = 3.18) agree that their cooperative society give members the opportunity to own property jointly or individually

Research Question 2: What are the challenges of the cooperative societies in entrepreneurship development of youth in the study area?

Table 6: Distribution according to the challenges of the cooperative societies in entrepreneurship development of youth in the study area

S/N	Statement	SA	A	U	D	SD	X	Remarks
26	Weak financial strength of the society	155	40	-	-	6	4.00	Agree
27	Poor management of the society	100	91	9	1	10	3.96	Agree
28	Lack of managerial and technical know-how	86	95	-	-	10	3.89	Agree
29	Fraud and financial malpractice	75	106	-	10	10	3.03	Agree
30	Lack of cooperative knowledge	101	83	-	7	10	3.55	Agree

Source: Field Survey (2021)

The data on the table 4.6 above shows the challenges of the cooperative societies in entrepreneurship development of youth in the study area. In Item 26, results indicate that a larger number of respondents (N= 201; X = 4.00) agree that their cooperative society financial strength is weak. In item 27, a larger number of the respondents (N = 201; X = 3.96) agree that their cooperative society poor management affect their cooperative society. In item 28, a larger number of respondents (N = 201, X =3.89) agree that lack of managerial and technical know-how affect their cooperative society. In item 29, a larger number of respondent (N = 201 X = 3.03) agree that fraud and financial malpractice affect their cooperative society. Item 30, show a larger number of respondents (N = 201 X = 3.55) agree that their cooperative society lack of cooperative knowledge.

Discussion

This study assesses the contributions of cooperative societies in the development of entrepreneurship among youth in Kaduna State. This result is based on the opinions of respondents understudy.

The result shows that activities of cooperative societies in developing entrepreneurship attitude among youth includes assisting members in developing business plant, encouraging savings habit among youth, creating cheap and easy avenue for loans, providing socio-economic security to youth and creating awareness on self reliance e.t.c. This result is in agreement with the views of Usman (2010) who said that the activities of any cooperative depend on the type of society. The socio-economic activities of cooperative societies include assisting members to plan wiser, richer and sooner, to encourage savings habit that is more convenient to the members, to provide socio-economic security for members, thus enhancing industrial harmony and productivity, to create cheap and easy avenue for loans by members for productive and emergency purpose and to gives members the opportunity to own property with jointly and individually.

Challenges of the cooperative societies in entrepreneurship development of youth include weak financial strength, Poor management, lack of managerial and technical know-how and fraud and financial malpractice. This findings is in agreement with the work of Atiomo, (2017) who mentioned that miss governance is marked by exclusion of the people from governance, non-accountability of public officials, lack of transparency in decision-making, electoral fraud and the colonialisation and personalization of the state and national resources by the political elite. This situation presents particular challenges for the Nigerian youths.

Conclusion

From the findings, it reveals that adequate savings are not been mobilized and loans provided by the society is limited and cooperative societies are finding it difficult in meeting and enhancing a very good percentage of their development activities. Education could be a significant indicator that can effectively mobilize cooperative group to attract government presence to assist the group. This has been the reason why cooperative society have existed in isolation to government assistance which is a hindrance to effective performance by cooperative society in discharging it development activities. Failure of members to participate actively will reduce the performance of the society in savings mobilization.

It is therefore believed that if the recommendations of this study will be implemented by both members, committee members of the society and the government, it will aid the cooperative society in effectively contributing to youth Entrepreneurship Development.

Recommendations

The following recommendations are made based on the major findings of this study. The recommendations are aimed at addressing challenges of the cooperative societies in entrepreneurship development among youth in the study area.

1. Adequate knowledge of cooperative education should be instilled in members and committee members by organizing seminars and workshop on regular basis.
2. The youth should be encouraged to join cooperative society which will attract the attention of the government to empower them. Since most government policies revolves around the youth.
3. Government should create an enabling environment for cooperative society by providing basic infrastructural facilities that will aid the activities of cooperative societies.

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EFFECT OF GUIDED-INQUIRY ON MECHANISTIC REASONING IN MECHANISMS OF ORGANIC CHEMISTRY REACTIONS AMONG COLLEGES OF EDUCATION CHEMISTRY STUDENTS, NORTH-WEST GEO-POLITICAL ZONE, NIGERIA.

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Abstract

The research was effect of Guided-Inquiry on Mechanistic Reasoning in Mechanisms of Organic Chemistry Reaction Mechanisms among State Colleges of Education Chemistry Students, North-west Geo-political Zone, Nigeria. A quasi-experimental design was employed to generate data. The population of the study comprised of 3615 NCE II Chemistry students of seven state colleges of education. The sample of the population consist of fifty (50) male and forty nine (49) female students which were selected through random sampling techniques. The study had two objectives and in line with them two research questions were raised and two null hypotheses were formulated and tested. The instruments used for data collections was Test of Mechanistic Reasoning Ability in Organic Reaction Mechanism (TMRAORM). Inferential statistics of t-Test analysis and mean were used to analyze the data collected. There was significant difference in the mean score in mechanistic reasoning between experimental and control groups with t-cal value and p-value of .6257 and .0391 respectively at .05 level of significance. There was also significant difference in the mean score in mechanistic reasoning of male and female students in organic chemistry reaction mechanisms with (t – cal = 1.452, P = 0.043).Therefore, it was recommended that the government of sub-saharan Africa should design programmes and policies that will incorporate the use of guided-inquiry instructional strategy in teaching and learning of chemistry in tertiary institutions.

Keywords: *Guided-Inquiry, Mechanistic Reasoning, Mechanism, Organic Reaction, SubSaharan Africa*

Introduction

Sub-Saharan Africa is a geographical area of the continent of Africa that lies south of the Sahara which is faced with an unprecedented challenge of educational development, the basic foundation of all sectors of human development verspoor

(2008). Human resource in sub-saharan Africa can be well explore when education becomes the front burner in this part of the continent because it has the potentiality of creating avenues for taping other physical resources. Science as it is well known is life and life is science, without which there will be no meaningful development. Karamustafaoglu (2010) pointed out that being educated in science and technology plays a key role for the future of societies and the effects of science and technology are seen overtly in every aspect of living. The growth of any nation, in this case, Sub-Saharan Africa is a measure of its level of science education. Babajide (2015) defined science education as a field of study that exposes learners to the content of science as well as the methodology (processes) of acquiring scientific knowledge for practical science applications. The British Science Council (2009) defined science as the pursuit and application of knowledge and understanding of the natural and social world following a systematic methodology based on evidence. While Olorukooba (2007) is of the view that science is a way of knowing, a systematic method of learning about nature based on observation and testing leading to the formulation of hypothesis, laws, facts and theories. From the above definitions one can assert that science is the study of nature through systematic processes leading to discoveries.

Chemistry as a branch of science has become one of the most important disciplines in the school curriculum. Ejidike and Oyelana (2013) found out that its importance in general education has gained world-wide recognition. This is why the National Science curriculum has three basic science subjects (Biology, Chemistry, Physics) of which a student is expected to choose chemistry at the Secondary School level in Nigerian (Ihuarulam, 2008). Among these basic science subjects, chemistry occupies a unique position because it is a pre–requisite for the study of many science courses, such as medicine, biochemistry, pharmacy, agricultural science, laboratory technology, geology (Ihuarulam, 2008). Nnoli (2011) defined chemistry as the science that systematically studies composition, properties of organic and inorganic substances and various elementary forms of matter. Therefore, chemistry is characterized by the study of science that deals with the composition, structure and properties of substances and the transformations that they undergo.Jegstad, Kirsti, Sinnes& Astrid (2015) opined that the branch of science education known as "chemistry" must be taught in a relevant context in order to promote full understanding of current sustainability issues. This could be archieved when sub-sahara African students are taught chemistry using guided-inquiry approach of teaching and learning.

Guided-Inquiry Approach has been described by Onwirhiren and LawaL (2016) as problem solving, critical thinking, reflective inquiry, deductive thinking and not mere personal assumptions. Kulthau, Moniotes and Caspari (2007) defined guided-inquiry as careful planning, close supervision, ongoing assessment and targeted intervention by teacher(s) through the inquiry process that gradually leads students towards independent learning. According to Bransford, Brown and Cocking (2000), inquiry-based teaching approach is supported on knowledge about the learning process that has emerged from research. In guided-inquiry, children become involved in many of the activities and thinking processes that scientists use to present new knowledge. Science educators inspire teachers to replace traditional teachercentered instructional practices, with inquiry-oriented methods that (a) engage student interest in science, (b) provide chances for students to use suitable laboratory skills to collect evidence, (c) require students to solve problems using reasoning and proofs, (d) encourage students to carry out further study to develop more rich explanations, and (e) stress the importance of writing scientific descriptions on the basis of evidence (secker, 2002). When guided inquiry is properly utilized, it facilitates mechanistic reasoning and invariably enhance the understanding of mechanisms of organic reactions by both male and female students in an academic environment, in particular, the Sub-Sahara African environment.

Bhattacharyya, (2013) stated that the skill of proposing mechanisms of reactions using the electron-pushing formalism (EPF) or merely, electron-pushing is not only of value to organic chemists but also is important for students enrolled in organic chemistry courses at all levels. This enhances their mechanistic reasoning as they become able to understand why and how reactions can occur. According to Russ, Scherr, Hammer, & Mikeska (2008), Educational research indicates that students have resources for productive mechanistic thinking but often struggle to explain phenomena using mechanistic accounts. Additionally, (Coffey 2011) discovered that teachers frequently fail to pay attention to the substance of students' thinking and to recognize both productive and constraining forms of reasoning, thereby missing valuable opportunities to support and guide the development of meaningful understandings. Mechanistic reasoning is one of those reasoning abilities that needs attention.

Mechanistic reasoning as a cognitive process, is used by scientists in all natural sciences and is an important component of organic chemistry. Researches of Goodwin (2003), Bhattacharyya (2013) and Caspari, Kranz and Graulich (2018) from chemical education literatures have shown that mechanistic reasoning could be define tentatively in different ways. Based on philosophy of organic chemistry, Goodwin (2003) sees mechanistic reasoning to include an approach to change, composing of both entities and activities. Caspari, Kranz and Graulich (2018) looked at mechanistic reasoning as comparative reasoning about cause–effect relations between explicit structural differences and energetic changes occurring in a mechanistic step. The contributions of

Machamer, Darden, and Craver, (2000) stemmed out from the word "mechanism", which defines "Entities and activities organized in such a way that they are products of regular changes from start or set-up to finish or termination conditions".

In mechanistic representations in organic chemistry, entities are usually presented by Lewis structures (Caspari, et al, 2018), while 'Activities' illustrate the dynamic part of a mechanism as can be seen in nucleophilic addition. They are transformations of entities and of their sets of properties (for example, change in bonding, change in potential energy). In mechanistic representations, activities are mostly presented by curved arrows. Organic chemists also occasionally include other representations of activities alongside electron pushing, for example a proton transfer, H^+. Caspari, et al, (2018) posited that the electron-pushing formalism is the most important tool that organic chemists use to represent activities in a reaction mechanism. Constructing mechanistic explanations is an essential feature of doing science, inquiry-based science instruction that gives students opportunities to develop mechanistic reasoning skills which of course inquiry in science may be describe as the pursuit of coherent mechanistic account of phenomena. For a coherent flow of this knowledge, students have to be taught, no matter the gender setting of a given learning environment.

The heterogenous gender settings of colleges of education is a factor to be reckon with in terms of performance in chemistry as they are not gender bias. Nwagbo & Chukelu, (2011) looked at gender as socially ascribed attribute, differentiating feminine from masculine. It has been reported as one of the factors that may interact with cognitive extent and sources of the recorded differences in the achievement of males and females in chemistry. Some researches carried out in the process of learning science-based subjects, show preference of males over females students while others females over males. Ifeako, (2005); Obeka (2007); Nwagbo and Okoro (2012); reported that males achieved significantly higher than females, Ekwueme and Umoinyang (2006), Longjohn (2009) reported in favour of females. No matter the differences, the aim of this research work is to see the effect of guided inquiry on mechanistic reasoning in mechanism of organic reaction among NCE students in state colleges of education, North-west Geo-political, Zone, Nigeria.

The theoretical frameworks that guides the study are based on Constructivist, and Mechanistic

System Approaches. One of the theories championing the course of this study is the work of John Dewey (1982), an educational theorist, who is one of the pioneers of constructivism. He rejected the idea that schools should focus on rote memorization and instead suggested that students should be engaged in real-world, practical tasks. Dewey's theory of "Reflex Arc" states that human experience is not a disjointed sequence of fits and starts, but a developing circuit of activities. Learning is framed as a cumulative, progressive process where inquirers move from dissatisfying phase of doubt toward a satisfying resolution of a problem. Dewey (1998) advocated for inquiry learning and called for education to be grounded in authentic experiences. He argues that in order for education to be most effective, content most be presented in a way that allows students to relate information to prior experiences, thus deepening the connection with new knowledge. It is in the light of this that students were guided on mechanistic step by step breaking and formation of bonds involved in organic reaction mechanisms.

In the same vent, Jean Piaget (1977), another pioneer of constructivism, developed the theory of cognitive development. The theory states that learning occur by an active construction of meaning by learners rather than learners being passive recipients of information. The theory of cognitive development suggested that children deepen their understanding of the world by acting on and reflecting on the effects of their prior knowledge. He stated that children are capable of organizing their knowledge in an increasingly complex networks. Piaget wrote, "To understand is to discover, or reconstruct by rediscovery, and such conditions must be compiled with if in future individuals are to be formed who are capable of production and creativity and not simply repetition". Piaget believes that learning is seriously influenced by learners' developmental stages, therefore the study used guided inquiry approach in which the teacher played a role in planning and facilitating learning processes, by providing diagrammatic representations of step by step organic reaction mechanisms, at their own pace, where breaking and formation of bonds were looked at in stages.

This study is also designed based on mechanistic theory by Rene Descartes and Galileo in 17th century. They developed a theory of the mind as an immaterial, non-extended substance that engages in various activities such as rational thought, imagining, feeling and willingness to carry out a task. The theory state that; human behaviours can be explained in the exact same way that mechanical and physiological processes are explained and understood, (Machamer et al., 2000). Based on the work of Hammer, Russ and Scherr, in Conlin, Gupta, Scherr, and Hammer (2008), constructing mechanistic explanations is an essential feature of doing science, in which inquirybased science instruction gives students opportunities to develop mechanistic reasoning skills.

Indeed, inquiry in science may be described as "the pursuit of coherent mechanistic accounts of phenomena". According to Bhattacharyya (2013), the following tasks can be performed using mechanistic reasoning: Explaining the products of a reaction, especially unexpected ones or sideproducts, Predicting the products of a reaction given the starting materials, Explaining stereo- and regiochemical outcomes of reactions, Choosing the appropriate experimental conditions including stoichiometry, solvent, and temperature for a reaction.

It has been observed that most students wrongly perceived organic chemistry as a difficult course to understand. From the research of Ngozi-Olehi, Duru, Uchegbu&Amanze (2018), the performance of chemistry students in AlvanIkoku College of Education in Organic chemistry III (CHEM 323 for degree programme) and Natural Products and Amines (CHE 323 for NCE programme) from 2010-2012 leaves a lot to be desired in the learning of this area of chemistry. Observations were made of a progressive increase in the percentage of students failing the courses by the years; 7 %, 55 % and 61 % for CHEM 323 for degree programme and 40 %, 47 % and 52 % for CHE 323 for NCE programme in 2010, 2011 and 2012 respectively. Mechanism of organic reactions happens to take the center stage in learning and understanding of CHEM 323 courses both at the NCE level and at the degree level. Before those years, (Njoku 2004) and (Lakpini, 2006) had observed that many factors such as poor teaching methods, mathematical nature of chemistry, and abstract nature of chemistry concepts account for such students' poor performance. This study therefore, sought to determine the effect of guided-inquiry on mechanistic reasoning in organic reaction mechanisms among NCE students in order to have an improved teaching methodology that will enable development of mechanistic reasoning among learners.

Objectives of the Study

The study seeks to investigate the Effect of Guided-Inquiry on Mechanistic Reasoning in Mechanism of Organic Chemistry reactions. The specific objectives of this study are to;

i. determine the effect of guided-inquiry on mechanistic reasoning of students in mechanism of organic chemistry reaction concepts.
ii. determine the effect of guided-inquiry on mechanistic reasoning in mechanism of organic chemistry reaction concepts among male and female chemistry students.

Research Questions

Mechanistically, the study sought to address the following questions:

1. What is the difference between mean scores in Mechanistic Reasoning of chemistry students taught Mechanism of Organic Chemistry Reactions using Guided-Inquiry and those taught using Lecture Method?
2. What is the difference between the Mechanistic Reasoning Ability scores of male and female Chemistry Students taught Mechanism of Organic Chemistry Reactions using Guided- Inquiry?

Null Hypotheses

To guide the study the following null hypotheses were tested at < 0.05 level of significance:

HO_1: There is no significant difference between the mean scores in Mechanistic Reasoning of students taught Mechanism of Organic Chemistry Reactions using Guided-Inquiry and those taught using Lecture Method.

HO_2: There is no significant difference between the mean of Mechanistic Reasoning Ability scores of male and female Chemistry Students taught Mechanism of Organic Chemistry Reactions using Guided-Inquiry?

Methodology

A quasi-experimental design by randomization was used to explore the effect of Guided-Inquiry on Mechanistic Reasoning in Mechanisms of Organic Chemistry Reactions among Colleges of Education Chemistry Students. Two groups were constituted, experimental and control groups of mixed gender. The students in the experimental group (EG) were taught organic chemistry reaction mechanisms using guided-inquiry while those of the control group (CG) were taught the same concept using lecture method. The population of the study comprised of 3615 NCE II Chemistry students of seven state colleges of education in the Northwest Zone, Nigeria. The number of male students were 2457 while the female students were1158; Statistics gotten from National Commission for Colleges of Education, Nigeria. The population is presented in Table1.

Table1: Population of the Study

S/N	SCHOOL	State	Location	M	F	Total
1.	Kaduna State College of Education	Kaduna	Gidan-Waya	562	460	1022
2.	Zamfara State College of Education	Zamfara	Maru	65	13	78

3.	Shehu Shagari College of Education	Sokoto	Sokoto	73	14	87
4.	Isah Kaita College of Education	Katsina	Dutse-Nma	129	14	143
5.	Kebbi State College of Education	Kebbi	Argungu	480	147	627
6.	Jigawa State College of Education	Jigawa	Gume	l161	85	246
7.	SaadatuRimi College of Education	Kano	Kumbotso	987	425	1412
	TOTAL			**2457**	**1158**	**3615**

Source: *NCCE Record of State Colleges of Education in Northwest Zone Nigeria.*

The choice of the colleges was paramount because of the homogeneity in the used of same minimum standard, Settings and facilities. The sample of the population consist of twenty-five (25) male and twenty-five (25) female students for the experimental group while the control group consist of twenty-five (25) male and twenty-four (24) female students. The sample size is in line with Sambo (2008a), that central limit theorem recommended sample size minimum of 30 subjects in a variable for a study of this kind. For purpose of this study, two research instruments were used to generate data. The instruments were: Test of Mechanistic Reasoning Ability in Organic Reaction Mechanism (TMRAORM) and Test of Performance in Organic Reaction Mechanism (TPORM). The reliability coefficients for the instruments were determined using test, retest method. The scores were subjected to Pearson Product Moment Correlation Coefficient (PPMC). The reliability coefficients of the instruments obtained were 0.82 and 0.70 respectively. According to Sambo (2008) and Pallant (2011) asserted that estimated reliability coefficient values above 0.70 are considered acceptable for an instrument to be used in this kind of study. Inferential statistics were used to test the null hypotheses at $P \leqq 0.05$ level of significance.

RESULTS AND DISCUSSION

This section deals with analysis of demographic data, testing of hypothesis and discussion of findings as follows:

Table: 1Demographic Characteristic of participants

Gender	N	Percentage
Male	**49**	**49.5%**
Female	**50**	**50.5%**
Total	**99**	**100%**

The table above reveals that 49 (49.5%) male students and 50 (50.5%) female students summing up to 99. This means there is no significant different between the number of participants on the basis of gender.

HO_1: There is no significant different between the mean score in mechanistic reasoning of students taught mechanism of organic chemistry reactions using guided-inquiry and those taught using lecture method.

Table: 2t-Test Result of Mechanistic Reasoning of Students taught Organic Reaction Mechanism using Guided-inquiry and Students taught using Lecture method

Variables	N	X	SD	Df	t-cal	p-val
Experimental	50	15.1	10.258	45	.6257	.0391
Control	47	11.94	7.452			

p-value< .05 at 45 df 2 tailed

The above tables reveals t-cal value and p-value of .6257 and .0391 respectively at .05 level of significance. The p-value is less than .05 level of significance to justify that there is significance difference in mean score of mechanistic reasoning of students taught mechanism of organic chemistry reactions using Guided-inquiry method as against those taught using Lecture method to the favour of guided-inquiry method. Thus, the null hypothesis is rejected.

HO_2: There is no significant different between the mean score of mechanistic reasoning ability of male and female chemistry students taught mechanism of organic chemistry reactions using guided-inquiry method.

Table:3 t-Test Different between Male and Female Students taught Organic Chemistry

Reaction Mechanisms using Guided-Inquiry Method

Gender	N	X	SD	df	t-cal	R-val
Male	25	17.16	10.42	48	1.452	0.043
Female	25	12.04	7.13			

P-value < .05 at 48 df 2-tailed

Table 1 above reveals t-value of 1.452 and p-value of .043 at .05 level of significance. This result shows a significant difference in the mean score of mechanic Reasoning ability between male and female students with the p-value less than .05 level of confidence. The difference however favour male students. Thus the null hypothesis is rejected.

SUMMARY OF FINDINGS

Based on the result of the data analysis, the findings of the study are summarized as follows:

(1) There is significant difference in the mean score in mechanistic reasoning between experimental and control groups with t-cal value and p-value of .6257 and .0391 respectively at .05 level of significance.

(2) There is significant difference in the mean score in mechanistic reasoning of male and female students in organic chemistry reaction mechanisms with (t – cal = 1.452, P = 0.043).

Discussion of Findings

The study shows significant influence of Guided-Inquiry on Mechanistic Reasoning in Organic Chemistry Reaction Mechanisms. This is in agreement with the study of Ugwuandu (2010) who found out that there was a significant difference between the achievements of students taught biology with guided-inquiry and those taught with lecture method in favour of guided-inquiry. This means that when guided inquiry is properly used, it has the capacity of boosting the mechanistic reasoning of students in organic chemistry reaction mechanisms. The present study also reveals that there is significant difference in the mean score of mechanistic reasoning ability between male and female students. This shows that the mechanistic reasoning abilities of female students were not up to the reasoning abilities of the male students in the sub-saharan Africa, considering the geographical area of the study.

Conclusion

In line with the findings of this study, the researchers concludes that there was significant influence in mechanistic reasoning of students taught mechanism of organic chemistry reactions using guided-inquiry and those taught using lecture method. This shows that teaching method is a factor if at all human resources is to be harness in sub-saharan Africa. It is also concluded that there is significant different between the mean score of mechanistic reasoning ability of male and female chemistry students taught mechanism of organic chemistry reactions using guided-inquiry method. Signifying an educational gab between male and female students in this part of the world.

Recommendations

In line with conclusions of this study, the following recommendations were made:

1. The use of guided-inquiry was found to enhance students' mechanistic reasoning and so teachers should be encourage to adopt the instructional strategy in order to improve the performance of students in the sub-saharan Africa.
2. Workshops should be organized to improve the skills of teachers in using the guidedinquiry method of teaching organic chemistry reaction mechanisms.
3. The government of sub-saharan Africa should design programmes and policies that will incorporate the use of guided-inquiry instructional strategy in teaching and learning of chemistry in tertiary institutions.
4. As guided-inquiry is gender friendly, chemistry teachers should use it to minimize gender disparity among chemistry students in the sub-saharan Africa in order to ensure sustainable development.

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EFFECT OF JOB STRESS ON ACADEMIC STAFF PERFORMANCE IN FEDERAL POLYTECHNIC, NASARAWA, NASARAWA STATE – NIGERIA.

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Abstract

Academic staff are expected to perform their duties diligently to enhance academic activities in the institution by coming up with something good and unique but this is often not achieved in practice because job stressors like workload, technological changes, time pressure, health condition and low salaries have seriously impacted on performance of academic staff with an alarming increase of economic consequences. The objective of the study is to investigate the impact of job stress on the performance of academic staff in Federal Polytechnic, Nasarawa (FPN). Survey method was used and data was collected using a well structure questionnaire which was analyzed using Descriptive Statistics and Regression Analysis to test the formulated hypotheses with the aid of statistical package for social sciences (SPSS) version 22 for analysis of data and a sample of 220 respondents using Taro Yamane's simplified formulae. The results showed that workload, technological changes, time pressure, health condition and low salaries are positively related to performance in FPN with statistical significance. The study concluded that job stressors affects academic performance in the institution. In light of these, it was recommended that management of the institution should ensure that job stress is reduce through training, delegation of authority, increase salary and timely payment of allowances and basic aids to curtail the stressor, employ qualify and professional academic staff to reduce the workload and academic staff should be made aware of any changes on the technology in use and give room for contributions to improve performance also, build recreational centre for relaxation to alleviate depression and anxiety.

Keywords: *Employee, job, performance, stress and stressor.*

Introduction

Stress refers to emotional problems such as anxiety, depression, low self-esteem, anger that interfere with employee performance in an organization. Job stress in an academic institution is one of the universal challenge influencing several academic work around the globe. It is an academic disease that creates emotional disruption either physically or psychologically that jeopardize academic activities of an institution. Indeed, stress is beneficial to the organization if it is not excessive but if it is excessively and employees are struggling to cope with the situation then emotional problems might occur. Employees in any organization are essential assets to their organizations but stress is a common challenge that affects employee performance. Academic activities are among the group of activities that face tremendous challenges due to antecedents of stress, academician perform different job in their institution depending on their department.

Job stress in an academic environment is increasingly becoming an essential issue due to the fact that employees have different opinion about it but academic staff are subjected to high level of stress which can influence their performance. It can be a positive or negative challenge which depends on the employee perception about it and employees see it as a positive challenge if it improves their performance and yield significant satisfaction while, if it cannot yield any significant satisfaction it becomes a negative challenge. Robbins (2001) cited in Ehsan & Ali (2019) asserted that stress is a dynamic condition in which an individual is confronted with an opportunity, constraint or demand related to what the individual desires and for which the outcome is perceived to be both uncertain and essential. Job stress is an outcome or response to certain stimuli in the environment and it has become more apparent and leads to low morale of employees (Vijayan, 2017).

The quality of services offered in tertiary institutions varies significantly and every institution has a unique role to play towards attainment of the institutional goals. However, academic activities need to be performed judiciously in every learning institution and stressful experiences that transpires in an academic staff life can easily affect the performance. Aguinis (2009) cited in Addai, Amoako & Adu-Gyamfi (2017) asserted that performance is about behaviour or what employees do and not what employees produce or the outcomes of their work. Meneze (2006) cited in Ehsan and Ali (2019) asserted that performance is the employee's ability to produce work or goods and services according to the expected standards set by the employers or beyond the expected standards. Performance in the academic institution has several variables that determine it and if the variables are critically solve it can improve the quality of services in the institution with minimal stress. Consider for example, good and hygiene working environment, working experience, educational qualification, training, recreational centres, recognition, etc. can significantly improve performance of academic activities in the institution.

Institutions of higher learning are expected to come up with something good and unique to attain their goals but job stressors like workload, technological changes, time pressure, health condition and low salaries have significant impact on the performance of academic staff. The Federal Polytechnic, Nasarawa (FPN) has employ several strategies for managing stress such as good working conditions, training, payment of salaries on time, delegation of authority, welfare package among others, despite all these efforts, job stress has seriously impacted on performance of academic staff with an alarming increase of economic consequences. A lot of studies have examined the relationship between job stress and performance of an employee in various organizations. The study by Laiba, Anum, Muhammad & Kashif (2011) and Ayodele (2014) found that stress affects employee productivity negatively in business sector of Pakistan, Vijayan (2017) found that the main cause of low productivity on employees of Aavin in Coimbatore appears to be stress at workplace while, Aasia, Hadia, & Sabita (2014) found that job stress does not impact employee job performance among taxi drivers in Gombak.

The objective of the study is to investigate the effect of job stress on the performance of academic staff in FPN. Besides, the study seeks to attain the following specific objective which includes:

(i). Assess the effect of workload on performance of academic staff in FPN.

(ii). Examine the technological changes on performance of academic staff in FPN.

(iii). Determine the effect of depression and anxiety on performance of academic staff in FPN.

(iv). Ascertain the effect of low self-esteem and anger on performance of academic staff in FPN.

(v). Determine the effect of low salaries on performance of academic staff in FPN.

The following hypotheses were developed and tested:

H_{01}: Workload has no significant effect on performance of academic staff in FPN.

H_{02}: Technological changes has no significant effect on performance of academic staff in FPN.

H_{03}: Depression and anxiety has no significant effect on performance of academic staff in FPN.

H_{04}: Low self-esteem and anger has no significant effect on performance of academic staff in FPN.

H_{05}: Low salaries has no significant effect on performance of academic staff in FPN.

Literature Review

According to Kihara and Mugambi (2018) stress was viewed as psychological and physical reaction to prolong internal environmental conditions in which individual's adaptive capabilities are over extended. Ehsan and Ali (2019) asserted that stress is a universal element and individual in every walk of life have to face it. Job stress can interfere with academic activities in an institution either negatively or positively due to either external or internal factors. It can affect performance negatively if the external factors such as competitive life style of an employee, changes in technology, government policy, etc. allow to dominate the entire job with a lot of pressure to work but does not come out with any significant outcome. However, performance can be productive if opportunities are created for employees to work and motivate them to come up with something good and unique through reduction of workload, recognizing the output of an employee and good conducive environment for work.

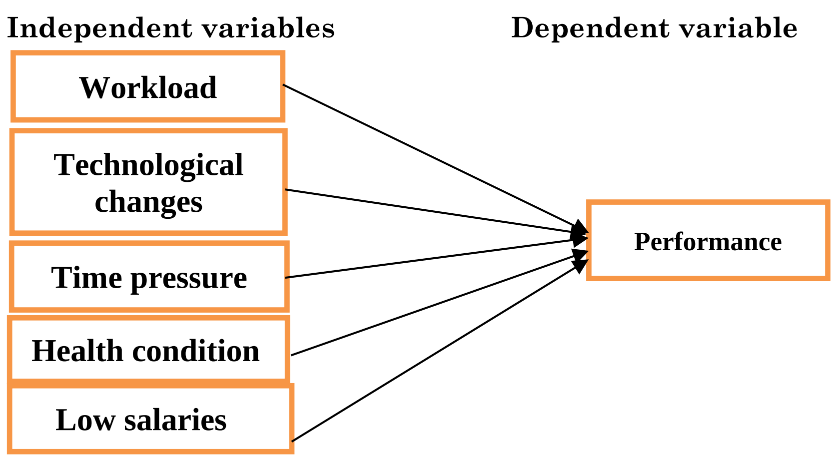

Figure 1: Conceptual framework

Different practices and experiences have resulted in the evolution of different theories and beliefs in order to mitigate job stress in an organization. Employees experience different stress in discharging their responsibilities such as acute stress, traumatic stress and chronic stress. A few related theories underpinnings from which the study is grounded is adopted as theoretical framework and these include Transactional Theory of Work-related Stress, Psychological Job Control Theory and Social-technical System Theory.

The transactional theory of work-related stress laid the foundation for managing stress between an individual and their environment. It asserted that stress is the direct product of a transaction that threaten the general wellbeing of the parties involves in the transaction. Also, it is associated with exposure to particular workplace scenarios. According to lazarus et al. (2001) cited in Pezaro (2017) it is the appraisal of transaction that offers a causal pathway that may better express the nature of the underlying psychological and physiological mechanisms which underpin the overall process and experience of stress.

The psychological job control theory entailed that job with a high demands and low control will lead to stress. Therefore, an understanding of how an employee carryout organizational tasks with high demand job that require high control and what the job require to enhance performance can reduce stress significantly. Kihara and Mugambi (2018) opined that the theory of job control has the perceptions of job control over work hours and perceived job autonomy. Besides, employees that their job is highly demanding usually experience significant level of stress.

The social-technical system theory described a holistic approach to workplace, it recognizes the interaction between employees and technology in workplace. Also, if number of employees is less than the require responsibilities in the organization then work overload may surface while, if the number of employees is more than the require responsibilities in the organization then high chance of resources to be scrambled may eventually emerge among the employees which can gradually create conflicts in the organization. According to Trist (1981) there are two compulsory and complementary subsystems that assist the organization to operate smoothly. The social and technical subsystems are complementing each other towards reduction of job stress however, the social subsystem involves the employees while technical subsystem involves the technical resources that assist employees to work.

Ehsan and Ali (2019), conducted a research on the impact of work stress on employee productivity with the objective to investigate the impact of work stress on employee productivity of banking staff in Faisalabad, Pakistan. Stratified random sampling technique was used to select fifty participants. Regression and correlation method was used to analyze the research hypotheses. The study revealed that there is significant relationship between work stress and employee's productivity in banking sector. It was recommended that the supervisors and managers need to explore the causes of the dissatisfaction of employees within the working environment. One major shortcoming with Ehsan and Ali (2019) as observed by this study was the used of stratified random sampling technique to select sample without justification, the policies to manage the stress in each organization cannot be generalized, this alone would not be sufficient and justifiable for a study of this magnitude. Consequently, it may be difficult to generalize these findings.

Kihara and Mugambi (2018), conducted a research on effect of stress management strategies on employees' performance in the public service with the objective to evaluate the influence of stress management strategies on employees' performance. Descriptive analysis and multiple linear regression model was used to study the relationship between stress management strategies and employees' performance with a population of seven hundred thousand respondents and a sample of four hundred. The study discovered that all variables studied indicated a significant effect on employees' performance of public service while, regression model indicated a positive relationship between employees' performance and the factor variables studies of relaxation techniques and counselling services. It was recommended that the management of the organization under study should create awareness to the employees to enable them be aware of utilization of stress management strategies available in the organization that can improve performance. One major shortcoming with Kihara and Mugambi (2018) as observed by this study was the methodology used to obtain the sample was not justified, the policies to manage the stress in each organization cannot be generalized, this alone would not be sufficient and justifiable for a study of this magnitude. Consequently, it may be difficult to generalize these findings.

Bala, Basit & Hassan (2017), conducted a research on impact of job stress on employee performance with the objective to analyze the impact of job stress on employee performance. The study used regression for the analysis of data with a population of 310 respondents. It was revealed that time pressure and role ambiguity have significant and negative influence on employee performance while workload and lack of motivation do not have any significant influence on employee performance. The study concluded that increasing time pressure and role ambiguity would reduce employee performance in all aspects. Managers and supervisors are strongly recommended to discuss the time allotment and task completion dates and duration of the task with their subordinates to avoid time pressure. One major shortcoming with Bala et al. (2017) as observed by this study was the methodology used to obtain the sample was not justified, the duration was not clearly specified and the policies to manage the stress in each sector cannot be generalized, this alone would not be sufficient and justifiable for a study of this magnitude. Consequently, it may be difficult to generalize these findings.

Addai, Amoako & Adu-Gyamfi (2017), conducted a research on the effect of work stress and its relationship with employee health with the objective to assess the effect of work stress and its relationship with employee health. A descriptive approach was employed with a population of forty employees and a sample of thirty-six using Krejcie

and Morgan formula. It was revealed that factors that bring about stress include lack of training to make work easier, work demands that outweigh abilities, working under poor working conditions, the risk factor associated with the work of employees, working under pressure from superior and dissatisfaction with job. The study concluded that can be managed ability to take mind off things, involvement in exercises, employee ability to understand their situation and talking over problems with colleagues at work. It was recommended that Sunyani West NHIS should invest in work stress which in return can pay huge dividends both in terms of reduced stress-related cost and increased job performance. One major shortcoming with Addai et al. (2017) as observed by this study was the methodology used to obtain the sample was not justified, the duration was not clearly specified and the policies of Sunyani West NHIS for managing stress cannot be generalized, this alone would not be sufficient and justifiable for a study of this magnitude. Consequently, it may be difficult to generalize these findings.
Vijayan (2017) conducted a research on impact of job stress on employees' performance in Aavin, Coimbatore with the objective to explore the major factors causing job stress and explains how it affects performance of the employees working using Aavin, Coimbatore. The study was based on quantitative approach with a descriptive research design and a sample of 100 respondents. The formulated hypotheses were tested using t-test, chi-square, correlation and regression analysis with the help of SPSS version 21. It was revealed that stress at workplace is the main cause of low productivity in an organization. In light of these, it was recommended that management should take necessary steps to control the job stress of employees to increase their performance. One major shortcoming with Vijayan (2017) as observed by this study was the methodology used to collect the data was not justified, the policy for managing job stress in Aavin, Coimbatore is not specified. Consequently, it may be difficult to generalize these findings.
Okeke, Echo & Oboreh (2016) conducted a research on effects of stress on employee productivity with the objective to examine the effect of stress on employee productivity in the Nigerian banking industry using five selected banks in Awka metropolis. The study adopted survey research method with a purposive sampling to select 250 employees. The data generated were analyzed using simple percentage and the formulated hypotheses were tested using chi-square statistical technique. It was revealed that workload pressure has significant effect on employee productivity and the study concluded that stress hinders effective performance of the employees. In light of these, it was recommended that remedial measures need to be taken by management to minimize the effect of job stress on permanent basis. One major

shortcoming with Okeke et al. (2016) as observed by this study was the methodology used to collect the data cannot be generalized, the duration (time) is not vividly justified while, the organizational policy for managing stress differ and only five banks to represent the entire county is grossly inadequate this alone would not be sufficient and justifiable for a study of this magnitude. Consequently, it may be difficult to generalize these findings.

Ahmed and Ramzan (2013) carried out a study on effects of job stress on employees job performance with the aim of examine the relationship between job stress and job performance on bank employees in Pakistan. The study used a sample of 144 participants and data were obtained through close ended questionnaire. The formulated hypotheses were tested using regression and correlation analysis. The results of the study showed that there is a significant with negative correlation between job stress and job performance and the study concluded that job stress significantly reduces the performance of an individual. This study by Ahmed and Ramzan (2013) did not discuss the proportion and distribution of questionnaires to the different categories of participants nor was the employed distribution justified. The study used 144 participants in the banking sector of Pakistan to represent the entire employees in Pakistan this is grossly inadequate for a study of this magnitude. Consequently, it may be difficult to generalize the findings.

Methodology

This study adopted a survey method. The survey population of this research consists of 487 academic staff of Federal Polytechnic, Nasarawa. The choice of this population was based on the tasks of academic staff in the institution where general activities in the institution require their services. The primary instrument used for the collection of data for this study is the questionnaire which was administered and retrieved the same manner from a sample of 220 respondents.

The study sample was determined by Taro Yamane's simplified formulae for proportion, which is widely accepted in management sciences. The Yamane (1967) formulae is $n = N/1 + Ne^2$. Where: **n** is the calculated sample size, **N** is the population size, and **e** is the acceptable sampling error and the choice of 0.05 level of significance is purely and exclusive decision of the researchers. Thus, $\boldsymbol{n} = \frac{\mathbf{487}}{\mathbf{1 + 487(0.05)^2}}$ $\boldsymbol{n} = \frac{\mathbf{487}}{\mathbf{1 + 487(0.0025)}}$ $\boldsymbol{n} = \frac{\mathbf{487}}{\mathbf{1 + 1.2175}}$ $\boldsymbol{n} = \frac{\mathbf{487}}{\mathbf{2.2175}}$ n = 219.6166 n = 220 respondents.

The regression model is:

$PER = \beta_0 + \beta_1 WL + \beta_2 TC + \beta_3 DA + \beta_4 LA + \beta_5 LS + \mu_i$

Whereas:
PER = Performance, WL = Work Load, TC = Technological Changes, DA = Depression and Anxiety, LA = Low self-esteem and Anger, LS = Low Salaries, b_0 = Intercept or Constant, β = Slope of the regression line with respect to the independent variables, μ = error term and i denotes cross-sectional dimension.

Results and Discussion

Table 1
Return Rate of Respondents

Responses	*Questionnaire Administered*	*Questionnaire Not Returned*	*Questionnaire Returned*	*Percentage of Total Questionnaire Returned*
SBS	36	8	28	15
SAS	35	5	30	16.1
SIT	30	4	26	14
SES	43	5	38	20.4
SET	31	4	27	14.5
STVE	45	8	37	20
Total	220	34	186	100

Source: Field Survey, 2022

Table 1 displays the response rate on the numbers of questionnaires administered to each section of academic activities in the school whom were the respondents for this study. It reveals that 36 questionnaires were administered to School of Business (SBS), 35 to School of Applied Science (SAS), 30 to School of Information Technology (SIT), 43 to School of Engineering Studies (SES), 31 to School of Environmental Technology (SET) and 45 to School of Technical and Vocational Education (STVE) respectively. Furthermore, 15% of the total questionnaires returned were from SBS, 16.1% were from SAS, 14% were from SIT, 20.4% were from SES while, 14.5% of the respondents were from SET and 20% of the respondents were from STVE. This table also shows that out of a total of 220 questionnaires administered, 186 representing 84.5% were retrieved or returned and that is sufficient enough for the continuation of analysis.

Table 2

Model Summary

Indicator	Coefficient
R	0.976
R^2	0.952
Adjusted R^2	0.950
Std. Error of the Estimate	0.341

The regression results in the above table shows the goodness of fit for the regression between performance and workload, technological changes, depression and anxiety, low self-esteem and anger and low salaries are adequate. The value of R= 0.976 represents simple correlation which shows the relationship between the variables also indicates a high degree of correlation while the value of $R^2 = 0.952$ represents the five variables studied and other factors not studied in this work contribute to 4.8%. It shows that holding other factors constant 95.2% of the variances in workload, technological changes, depression and anxiety, low self-esteem and anger and low salaries are explained by the variations in performance of academic staff in FPN. The value of adjusted $R^2 = 0.950$ represents the coefficient of determination that explains the variation in the dependent variable due to changes in the independent variables. The value of standard error of estimate which is 0.341 represents the effect of the factors outside this study.

Table 3
Analysis of ANOVA Variance

Indicator	*Sum of Squares*	*Df*	*Mean Square*	*F*	*Sig.*
Regression	414.416	5	82.883	711.039	0.000
Residual	20.982	180	0.117		
Total	435.398	185			

The ANOVA results in the above table reveals that the processed data had a significance level of 0.000 which shows that the data is optimal and the model is acceptable this was supported by F statistics of 711.039 and reported probability was less than the conventional probability of 0.05 significance level is a clear indication that workload, technological changes, depression and anxiety, low self-esteem and anger and low salaries influenced performance of academic staff in FPN.

Table 4

Regression Coefficient Results

Variable	*Beta*	*Std. Error*	*T*	*Sig.*
Constant	0.138	0.094	1.457	0.147
WL	0.145	0.045	3.200	0.002
TC	0.289	0.096	3.012	0.003
DA	-0.191	0.098	-1.953	0.052
LA	0.683	0.075	9.117	0.000
LS	-0.008	0.074	-0.113	0.910

The regression coefficient in the above table indicates that the relationship between performance of academic staff in FPN on workload, technological changes, depression and anxiety, low self-esteem and anger and low salaries as depicted in the regression equation: PER = 0.138 + 0.145WL + 0.289TC + -0.191DA + 0.683LA + -0.008LS. It provides the constant value and the beta values for each factor variable studied. Indeed, there was a strong positive relationship between the study variables as indicated by a positive constant value of 0.138. The regression equation indicated a negative relationship between depression and anxiety with a value of -0.191 and low salaries with a value of -0.008 and if one variable decreases the other variable increases and vice versa. Also, the regression equation indicated a positive relationship between workload with a value of 0.145, technological changes with a value of 0.289 and low self-esteem and anger with a value of 0.683 and if one variable increases the other variable increases.

Conclusion and Recommendations

The results and analyses above showed that, workload, technological changes, depression and anxiety, low self-esteem and anger and low salaries were positively related to performance of academic staff in FPN statistical significance. The findings showed that job stress has affected the academic performance in the institution and the general well-being of academic staff. The study concluded that job stressor affects academic performance in the institution.

Based on the findings and conclusion of the study, the following recommendations are made:

(i) Management of the institution should ensure that job stress is reduce through training, delegation of authority, increase salary and timely payment of allowances and basic aids to curtail the stressors.

(ii) Management of the institution should employ qualify and professional academic staff to reduce the workload.

(iii) Academic staff should be made aware of any changes on the technology in use and give room for contributions to improve performance.

(iv) Management of the institution should build recreational centre for relaxation and adequately equip it to alleviate the depression and anxiety and encourage academic staff to go for annual leave.

(v) Management of the institution should encourage creativity and innovation to reduce low self-esteem and anger through research witting.

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THE CHALLENGES OF MAMBE WARD WOMEN IN AGRICULTURAL DEVELOPMENT IN LAVUN LOCAL GOVERNMENT AREA OF NIGER STATE, NIGERIA

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Abstract

Agricultural production is a panacea to the development of any society, in terms of labour force participation, inputs/equipment and the resultant output. In Lavun Local Government of Niger State, Mambe ward women provide about 60 percent of agricultural labour force and about 70 percent of the food for family consumption. However, factors like patriarchy and lack of access to land among others have hindered women to achieve effective agricultural production. A survey method was used to effectively investigate the problems that affect Mambe ward women in Lavun Local Government area from effective participation in agricultural production. The source of information for this work was through primary instruments such as focus group discussions. The study revealed that Mambe ward women in the study area played a significant role in terms of food production, food processing and food preservation, which has helped in reduction of food shortage in the area. The study therefore recommended among others that there should be a redefinition of the Mambe ward cultural values in relations to males and female, where agricultural input should be as the disposal of both male and female folks.

Keywords: *Development, Land, Patriarchy, Agricultural production, Participation, Mambe Ward*

Introduction

The history of the development of the human race is closely related to that of agricultural and food production due to the fact that human society cannot survive without the availability of sufficient food to keep humans alive. It is therefore imperative for the members of the society to improve their agricultural productivity to keep life going. It is to this fact that women in Lavun Local Government area and indeed in Niger State and Nigeria at large have contributed and are still contributing immensely to the agricultural activities in their societies. In the publications of the International Assessment of Agricultural Science and Technology for Development

IAASTD in 2008, the involvement of women in agriculture is increasing in many developing nation's particularly with the development of export oriented irrigated farming which is associated with a growing demand for female labour. However, there are several militating factors such as poverty, illiteracy, patriarchy, indigenous land tenure system, and biological challenges of woman-hood and poor government policies that militate against their effort in contributing their quota to the development of agricultural activities (Alubo, 2012).

This paper is an outcome of a research conducted by the author with the aim to reveal how supportive and contributive Mambe ward women of Lavun Local Government area of Niger State have been and are still making to agricultural development of the area. The key objectives of this study were to find out the contributions of Mambe ward women towards agricultural production and to identify the factors standing against the efforts of women in agricultural production. The knowledge of these objectives will enable us suggest ways that can enhance the contributions of women towards agricultural development.

The research theoretical disposition of this work is that of modernization theory with emphasis on Smelser's model of modernization based on structural differential of institutions. It sees major changes in the awakening of women's consciousness with rapid economic development and the advent of women movement as an off shoot of modernization theory.

A survey method was adopted for the purpose of collecting data. Several variables such as age, status, occupation, income, accessibility to land etc. were examined using simple percentage for the analysis of the data collected. Findings and conclusions were made with suggestions on how to enhance women's contributions and participation in agricultural development in Lavun local government area of Niger State, Nigeria.

Literature Review

The development of any society depends heavily on agricultural product. For instance, countries like South Korea, Tanzania, China, Cuba, U.S.A., Russia etc. depend heavily on agricultural products such as cocoa, rubber, cotton, palm oil, groundnut etc. which serves as raw materials to their industries (Adelakun 2003).

Since colonial and post-colonial Nigeria, women have been performing crucial roles in their domestic and economic life of the society including agricultural activities. In recognition of the importance of women in nation building especially in agricultural sector, the Nigerian government more than ever before has focused its plan of desirable change which is however hinged largely on the active participation of women in agricultural production. Agriculture is generally regarded as field cultivation. However scholars see agriculture as all the processes involved in the control and the production of plants and animal materials that are used by man (Sam, 2001). Macionics (2002) also sees agriculture as the science or practice of farming, including cultivation of the soil for growing of crops and rearing of animals to provide food for man's consumption.

Agriculture is therefore important for the transformation of both the social and economic framework of an economy. In many parts of Nigeria, women (including Mambe ward women of Lavun Local Government Area) have played and continued to play crucial roles in agricultural production in addition to other responsibilities and obligations in vital labour related works. Given such multiple roles bordering on child bearing, child rearing, family and household maintenance, coupled with production and income earning struggles, the intensification of the pressure on women's time is of course enormous.

Women therefore are not only involved in the production of the means of livelihood; they are also in the production of life itself. Thus, women often contribute to the socio-economic and political lives of a nation, community and family, and their contribution to the formation of the future generation are undisputable indeed. The agricultural sector has the potentials to be the industrial and economic springboard from which a country's development can take off (Aina, 2011).

Methodology

The method used in this study was the "survey method". Survey is a sociological research method considered appropriate to effectively investigate problems in realistic settings, i.e. investigate behavior, opinion, culture etc. of a group of people with a view to determine its total characteristics and features. The population of study was the Mambe ward women in Lavun Local Government Area of Niger State, Nigeria and their role in agricultural production. Only those actively involved in agricultural production were our target. Since not the entire population of Mambe ward women in the local government can be studied, one hundred and twenty (120) women in four villages of Batagi Dewo, Batagi Dzuabu, Batagi Ndace and Mambe were considered as our target populations: Thirty women were picked randomly from the farming communities in each of the villages. It was a mixed population of single, married, divorced and widows. A large number of them participated in one form of agricultural activities or the other such as farming, processing and selling agricultural products. The population of study constituted both literate and non-literate women affiliated to different belief system.

Lavun Local Government area is predominantly rural and the main activities of the inhabitants are farming, which made it possible for the production of food crops, cash crops and fruit farming. As mentioned earlier, the sample size of the population of study is one hundred and twenty (120), the sampling technique was based on random sampling techniques where respondents were picked randomly among the farming communities in the four villages covered. In each district, we interviewed 30 women farmers.

Our source of information was through primary instruments, Focus group discussion was primarily used as questions were asked and discussions were made concerning the contributions of women to agricultural production in the area. Such questions as how do you acquire the land? Who is always in charge of land allocation? And what challenges do you have in securing land and relevant farm inputs? were often asked. In each of the four villages, we have three groups of women for focus group discussion. Each focus group has ten (10) women. Such questions like the occupations of women in the area, the extent of their involvement in agriculture, how do they acquire land, who inherits their parent/husband's land? The benefits enjoyed from their participation in agricultural activities and the problems they faced in participating in agriculture all formed part of our discussions. Suggestions were also made as to how women can be mobilized to contribute to the development of agriculture in the area of study. Questionnaires were also distributed to the study population to get their demographic profile and personal opinions concerning the contribution of Mambe ward women in the development of agriculture in their area. The questionnaires were collected and analyzed statistically by the use of simple percentage through frequency distribution table.

Results and Discussions

The study was mainly to reveal how Mambe ward women in Lavun local government area of Niger State involved themselves in agriculture, factors militating their participation and how to enhance their participation in agriculture aimed at improving their productive power. A typical Mambe ward women are culturally trained side by side the men with no regard for gender differences or the biological responsibilities in farming activities. As such, a Mambe ward woman in a typical agricultural setting does in terms of farming what any man can do.

Table 1: Income distribution of respondents per month

Income	Frequency	Percentage (%)
Below N5,000	78	65

N5,000 – N8,000	**33**	**27.5**
Above N8,000	**09**	**7.5**
Total	**120**	**100%**

Source: **Field survey 2021**

The table above shows that majority of the respondents (65%) earn below five thousand Naira per month while 27.5% of them earn between five thousand and eight thousand Naira per month. Only very few of them (7.5%) earn above eight thousand Naira per month.

The study revealed that most Mambe ward women in Lavun local government area live in poverty with less purchasing power for important farm inputs such as fertilizer, herbicides, pesticides etc. to prove their output. This is in agreement with the U.S. Department of State (2005) Declaration that Nigeria has an estimate of 60 million women and they constitute the army of rural dwellers in Nigeria with 70% of them living in poverty.

Table 2: Contribution of Mambe Ward Women to Agriculture

Contribution	**Frequency**	**Percentage (%)**
Farming	**91**	**75.83**
Processing/Selling	**11**	**9.17**
Others	**18**	**15.0**
Total	**120**	**100%**

Source: **Field survey 2021**

The above table indicates that 75.8% of the respondents engage actively in farming, 9.2% engage in processing and selling agricultural products while 15% of the respondents contribute to other aspects of agriculture such as rearing of animals or in multiple agricultural activities.

From the study, we found out that Mambe Ward women in Lavun local government area played a significant role in terms of food production, food processing and food preservation which has helped in reduction of food shortage in the area. Traditionally, the Member ward family is owned and headed by the man (husband) in total disregard and no consideration for the ideology and desire of his wife or wives in house-hold decision making. The husband here owns the women including important factors in agricultural production such as land. It is the man who appropriates the farmland to whoever he chooses. Because of the economic and cultural incapacitation of Mambe ward women in traditional societies, they were been marginalized in that they cannot withdraw their labour from cultivation for food production.

Table 3: Challenges Faced by Mambe Ward Women

Challenges	Frequency	Percentage (%)
Lack of access to land	50	41.7
Lack of inputs	51	42.5
Others	19	15.8
Total	120	100%

Source: **Field survey 2021**

To find out the challenges faced by Mambe ward women in agricultural production, 41.7% complain of lack of access to land due to patriarchy practice, 42.5% face the challenges of access to input such as loan facilities, fertilizers, tractors etc. that can promote agriculture in the area while, 15.8% of the respondents were not specific on particular challenges but believe that they don't have enough encouragement.

Although, the study revealed that many women do not have farm lands of their own, most of them borrowed land for agricultural production. Those that have access to land do not have security of tenure which makes them loose the land any time the man needs it back. The findings show that the difficulties of women in acquiring rural land is as a result of the indigenous land tenure system, promoted by patriarchy culture that places emphasis on male domination and custody of family properties in the study area. Some widows in our study groups lamented that they do not have access to their late husband's land. Other challenges faced by Mambe ward women, outside rural land, are pressure of over-cultivation or overgrazing of the land. Most of these lands are not fertile and require the use of fertilizers or animal manure.

Further, we observed that late release of farm inputs such as fertilizers and sometimes absence of it negatively affects the skills of Mambe ward women.

Table 4: Ways to Increase Productivity

Ways	Frequency	Percentage (%)
Access to land	18	15.0
Access to loan	19	15.8
Access to inputs	20	16.7
All of the above	61	50.8
Others	02	1.7
Total	120	100%

Source: **Field survey 2021**

To suggest ways in which participation can be enhanced, the above table reveals that 50.8% of the respondents would like to have access to land, loan and other inputs to enhance their productivity. Only 15% called for access to land while 15.8% called for access to loan facilities from the government. Only 16.7% would prefer the availability of farm inputs in subsidized rate, while 1.0% suggest the formation of cooperative societies to assist members instead of relying on government interventions which seems elusive.

Accessing relevant agricultural technology which has the potentials of increasing agricultural production is a shallow dream by the Mambe ward women as contact with extension workers, adopting the new technology, supply of improve seeds or machine does not usually happen with women. Thus, our respondents claimed that extension workers who are usually male tend to shun female farmers due to the perception of males as the sole farmers.

However, it is clear that Mambe ward women in the study areas have contributed immensely to agricultural development of Lavun local government area despite the challenges faced by them. Many of them have formed cooperative societies that engage both in production and processing e.g. garri processing or rice processing among others. Some of these cooperatives societies or thrifts allow women access to small scale loans payable weekly or monthly, depending on the borrower's convenience. For instance, an individual may be allowed to borrow a sum of N20,000 upon a deposit of N5,000 and pay back the money with a minimal interest of N2,000 per month. The said individual can withdraw her membership by collecting her N5,000 back but those who remain in the cooperatives often share the accruing interests at the end of the year. Such monies are usually borrowed for production of agricultural products or buying and selling of agricultural products. Many women groups acknowledge the relevance of these cooperatives in promoting their participation in agricultural activities.

In general, findings revealed that Mambe ward women in Lavun local government area of Niger State, Nigeria participate actively in the production and processing activities of agricultural products. But their efforts are not without challenges. Some of which were discussed above.

Conclusions and Recommendations

It is therefore pertinent to conclude this discussion by suggesting that for effective participation of Mambe ward women in agricultural production in Lavun local government area of Niger State, certain challenges have to be checked.

1) Government and commercial banks should encourage women to take loans and other farm inputs such as fertilizers and tractors at minimal costs and interest.
2) There should be redefinition of the Mambe ward cultural values in relation to both males and females, where agricultural inputs should be at the disposal of both male and female folks. Likewise, the inheriting beliefs that considered the male child as the one who controls the family properties e.g. land should be reviewed.
3) The extension workers should be made available and well-motivated to teach new techniques of farming to both male and female farmers to equip them with sufficient knowledge and skills of modern methods of farming.
4) Government should encourage formal adult education scheme to educate farmers especially female farmers, on agricultural strategies. Education is believed to be a weapon to liberation from ignorance, poverty and diseases. As such, proper education of female farmers in agricultural strategies will enable them increase their productive potentials and raise their social status from traditional level to commercial level.

Even though several factors such as poverty, low literacy level, patriarchy, inaccessibility to land ownership amongst others militate against women in their efforts to participate in agricultural activities, it was discovered that Mambe ward women in Lavun local government area of Niger State, Nigeria play a significant role in agricultural production in the area.

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MICROCONTROLLER BASED SMART IRRIGATION SYSTEM: DESIGN, SIMULATION AND REALIZATION

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ABSTRACT
Plants in specific regions of the world especially Africa are adversely affected by prevailing draught. Presently, the major concerns in agricultural sector are; water and labor managements. This work considers the design analysis of a low-cost microcontroller-based irrigation controller capable of managing irrigation for a small area of land based on real-time values of soil moisture. The method employed is to continuously monitor the soil moisture level to decide whether irrigation is required. In particular, the microcontroller based circuit device performs the action of irrigation management through continuous monitoring of moisture content of the soil, and comparing the values with two set reference values; the upper-limit, and lower-limit, then induces the corresponding action required. When the soil moisture content goes below the lower-limit value set by the user, the system observes this and begins irrigation action. Results obtained show that this design is cost-effective, and guarantees efficient water supply and effective labor management. Also, irrigation test results show that the duration of spray largely depends on the soil texture, grass identity and moisture content. In particular, sprinkler irrigation method in loamy soil took longer than in sandy soil, while clay soil irrigation took the longest time.

Keywords: *Draught, Microcontroller, Irrigation, Moisture*

Introduction
Irrigation is an artificial supplying of water to the root of plant. It has been used to assist in the growing of agricultural crops, maintenance of landscapes, and re-vegetation of disturbed soils in dry areas and during periods of inadequate rainfall. In crop production, irrigation helps in protecting plants against frost, suppressing weed growth and also used for dust suppression,

The old method used for irrigation was the use of watering cans, water channels that have to be opened and closed manually or backpack sprinklers. In this case, a lot of water is wasted in the process.

There is need for improvement on the existing or old forms of irrigation. An automated irrigation system needs to be developed to optimize water use for agricultural crops. An intelligent automatic irrigation system has to have all the components that autonomously monitor and control the level of water available to the plants without any failure or human intervention.

In this research, an automated irrigation system was designed to minimize water input and human intervention, while satisfying the plant's needs.

An automatic irrigation system does the operation of a system without requiring manual involvement of persons. Every irrigation system such as drip, sprinkler and surface gets automated with the help of electronic appliances and detectors such as computer, timers, sensors and other mechanical devices. The intelligent system should perform the following functions:

- **i.** Continuously monitor the amount of soil water available to plants using a sensing system.
- **ii.** Determine if watering is required for the plants based on the information obtained from the sensing
- **iii.** Supply an approximate amount of water required for the plants.
- **iv.** Discontinue the supply of water when the required amount has been delivered to the plants. This feature is important as the amount of water available for the irrigation system is not infinite, therefore water management is paramount.

Related work

Mahir Dursun et al, proposed an efficient water usage system by pump power reduction using solar-powered drip irrigation system in an orchard. Soil moisture content is analyzed by Artificial Neural Networks (ANN) to provide even distribution of water for the required location. This will prevent the unnecessary irrigation and reduce the water demand. This system reduces daily water usage and energy consumption by 38 percentages. (Dursun, 2011)

Farid et al, presented a practical solution based on intelligent and effective system for a field of hyper aridity. The system consists of a feedback FLC that logs key field parameters through specific sensors and a Zigbee-GPRS remote monitoring and database platform. The system is deployed in existing drip irrigation systems without any physical modification. FLC acquires data from these sensors and fuzzy rules are applied to produce appropriate time and duration for irrigation (Farid, 2010)

Singh et al, presents a solution for an irrigation controller for cultivation of vegetable plants based on the fuzzy logic methodology. In this system the amount of water given to the plants depends on its size, moisture control of soil, which is affected by

temperature of environment, evaporation due to wind velocity and water budget. The system feed water to plants in a controlled and optimal way. Solar energy conversion technology is used to feed power to the pump controller. (S. Singh, 2012.)
Xin et al, described an autonomous precision irrigation system through the integration of a center pivot irrigation system with wireless underground sensor networks. The wireless underground sensor aided center pivot system will provide autonomous irrigation management capabilities by monitoring the soil conditions in real time using wireless underground sensors. Experiments were conducted with a hydraulic drive and continuous-move center pivot irrigation system. (Xin, 2013)
Robertet al, promoted a commercial wireless sensing and control networks using valve control hardware and software. The valve actuation system included development of custom node firmware, actuator hardware and firmware, an internet gateway with control, and communication and web interface software. The system uses single hop radio range using a mesh network with 34 valve actuators for controlling the valves and water meters. (Robert,, 2013)
Awati et al design an Automatic Irrigation Control Using Wireless sensor Networks. The system was integrated with sensors into a wireless monitoring network to determine and evaluate calibration functions for the integrated sensors. The system compares the measuring range and the reaction time of both sensor types in a soil layer during drying. Data were transmitted over several kilometers and made available via Internet access. (J.S., 2012)
Nolz et al integrated the sensors into a wireless monitoring network to determine and evaluate calibration functions for the integrated sensors, and compare the measuring range and the reaction time of both sensor types in a soil layer during drying. The integration of the sensors into the telemetry network worked well. Data were transmitted over several kilometers and made available via Internet access. (Bhandari, 2013)
Christos et al described the design of an adaptable decision support system and its integration with a wireless sensor/actuator network to implement autonomous closed-loop zone-specific irrigation. Using ontology for defining the application logic emphasizes system flexibility and adaptability and supports the application of automatic inferential and validation mechanisms. A machine learning process is applied for inducing new rules by analyzing logged datasets for extracting new knowledge and extending the system ontology in order to cope (Christos, 2014)

Materials
Arduino

In this research, the Atmega328p microcontroller was used to control and coordinate all the units of the system. It operates between voltage ranges of 3–5.5 volts and has 32KB of flash memory, an 8-bit data bus, and consumes less power under certain circumstances (Rahman, 2017)

Figure 1: Atmega328p microcontroller **(Rahman, 2017)**

Moisture Sensor

FC-28 sensor moisture module was used to measures the volumetric water content indirectly by using some properties of soil, such as electrical resistance, dielectric constant, or interaction with neutron, as a proxy for the moisture content. The module has a potentiometer to adjust the level of sensitivity and requires an operating voltage between 3.3V and 5V. (Vani & Rao, 2016)

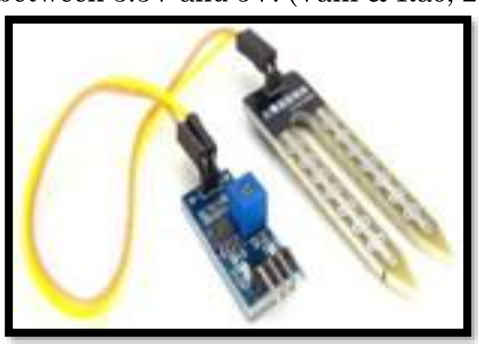


Figure 2: Structure of a FC-28Soil Moisture Sensor

Water Pump

In this research a DC pumps that operate on 12 volt was used to provide the means for moving water through the system at usable working pressures from a reservoir to the field. This type of DC pumps is the centrifugal type which uses an impeller to spray fluids.

Figure 3: Structure of a 6 Volt to 12 Volt dc Water Pump

Liquid Crystal Display (LCD)

A 16x2 Liquid Crystal Display (LCD) was used due to cost, simplicity during programming and can display a wide range of characters and animations. This LCD has Command and Data registers. The command register stores command instructions given to the LCD while the Data register stores the data to be displayed by the LCD

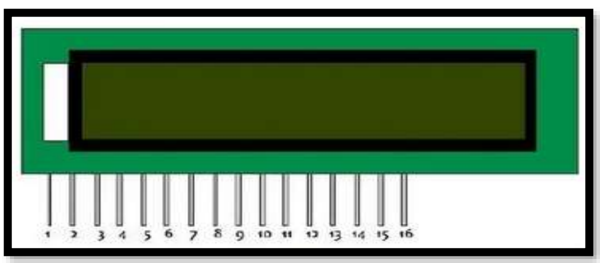


Figure 4: Structure of a liquid crystal display (LCD)

Methodology

The system has three major parts; the sensing unit, the control unit and the output unit which were achieved using sensors, controller, and actuator respectively as shown in Figure 5. The major components used to incorporate the control mechanism include; wireless sensor, controller, and actuator.

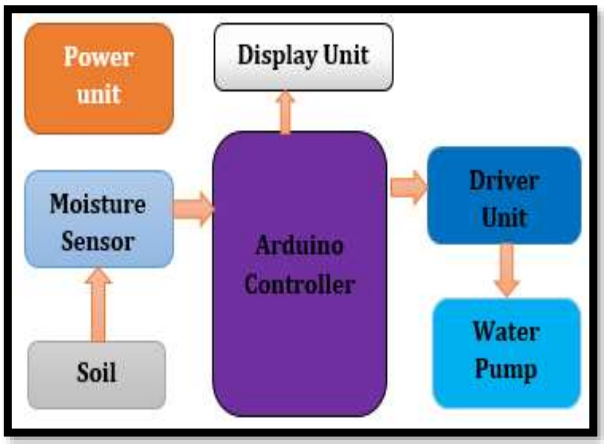


Figure 5: Block Diagram of an Irrigation System

System units
Power supply
A portable source of power was designed using a 12V/1.5A step down transformer, as shown in Figure 6. LM 7812 and LM 7805 regulators were used to produce a steady 12v and 5V respectively.

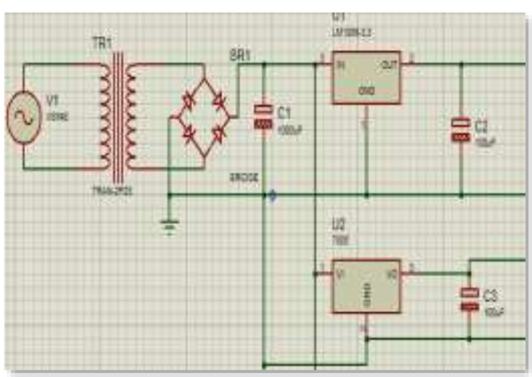
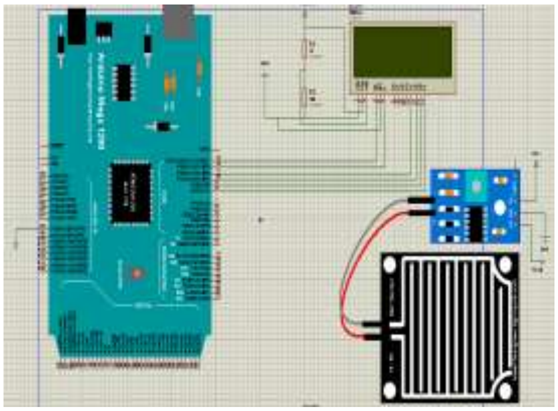


Figure 6: Circuit diagram of the systems the power unit

Sensing unit
An FC-28 moisture sensor was used to sense the level of moisture within the vicinity if the plant. It was powered by a 5v dc and its output pins was connected to pin 53 of the microcontroller as shown in Figure 7. The sensor sends voltage at a level which is proportional of the reading of moisture level to the microcontroller for processing and further action.



Control unit
Actuation unit
Figure 9 shows how the actuator was connected to the microcontroller. The primary responsibility of the actuator normalize the moisture content of the field. A 12V DC water pump to regulate the moisture level of the farm was designed and implemented for this unit and was connected to pins 14 of the microcontroller via a 10kW resistor and was powered by 12V relay switch.

Figure 9: Circuit Diagram of the actuation unit of the monitoring system.

Principle of operation
The principle of operation of the control device of the system is explained by the flowchart shown in Figure 10. Firstly, the moisture threshold values of the system was set and was uploaded into the sensing and response unit for comparison with acquired value.

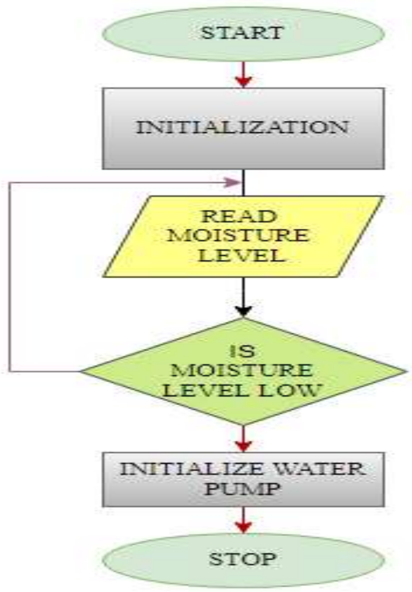


Figure 7: System Flow Chart

When powered ON, the system undergo initialization sequence, which were displayed on the LCD. The sensing device reads the moisture content of the field and the controller displays its level on the LCD, The system then compares the level of the current moisture with the threshold values uploaded. If the moisture is below the threshold value, the system energizes the actuator so as to have the required moisture level; otherwise, it will continue to read moisture level until it falls below the threshold value. The system will continuously monitor this parameters as long as it is connected to a power supply.

Result and discussion

Simulation results

This section presents simulation results that was achieved during the design of the control circuit of the monitoring device. After safe system booting, the system undergoes some series of initialization which will be displayed on the LCD as shown in Figure 8.

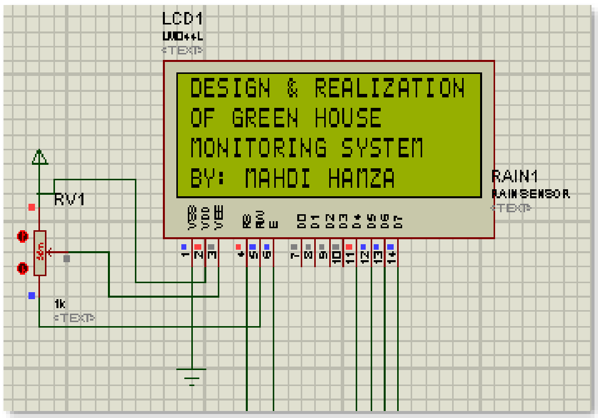


Figure 8: System welcoming note

It also display the current moisture level of the field and the status of the actuator (pump) as shown in figure 9 and 10

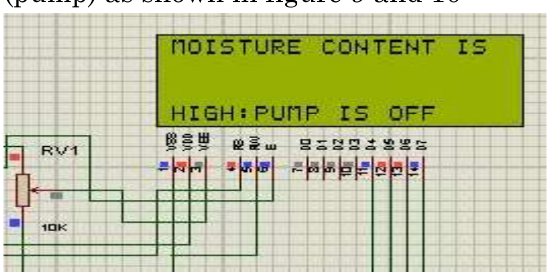
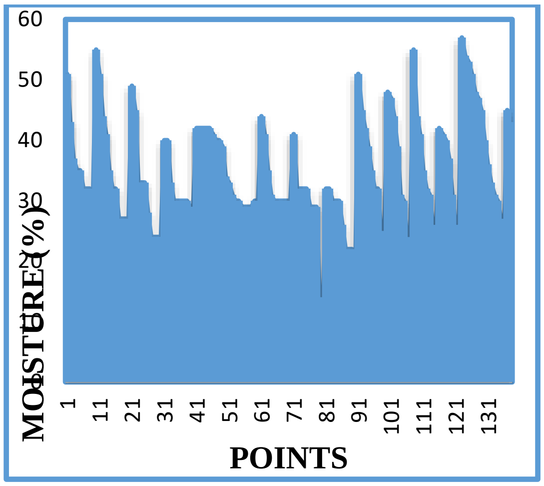


Figure 9: Farm status (favorable)

Figure 10: Farm status (Unfavorable)

Moisture variation

The instantaneous variations of moisture level of the field were displayed on the LCD. Figure 11 shows the variations of moisture level of the field that was recorded at three regular intervals per day; Mourning, Midday, and Early evening for four weeks.



The soil used in this research is a sandy-loam soil and by setting the threshold value for moisture as 15%, the result obtained showed that the maximum, minimum, and average moisture content was recorded was 55%, 18%, and 32.6% respectively. Based on the data collected, the level of moisture content of the field increases after 2-3 days.

Conclusion

This work presents the design and implementation of a low-cost microcontroller-based irrigation controller capable of managing irrigation for a small area of land based on real-time values of soil moisture. An Atmega328p microcontroller, Fc 28 moisture module and 12 dc pump were used to continuously monitor the soil moisture level of a field and then decide whether irrigation is required. When the soil moisture content goes below the lower-limit value set by the user, the system observes this and begins irrigation action. Results obtained show that by setting the threshold value for moisture as 15%, the result obtained showed that the maximum, minimum, and average moisture content was recorded was 55%, 18%, and 32.6% respectively. Based on the data collected, the level of moisture content of the field increases after 2-3 days. This design is cost-effective, and guarantees efficient water supply and effective labor management.

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