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PREAMBLE

The International Association of Technology and Art Teachers was created with the mind frame of developing effective personalities with innovative mind to change the narrative of global education system. The IATAT intend to harmonize the gap experienced in technology advancement between the advanced countries and the developing nations by sharing knowledge in various fields in art and technology through proffering solution to impending global challenges for the benefit of all.

The world today is experiencing huge setbacks in educational benchmark as many nations are faced with high level of illiteracy among its citizens. The IATAT through its support for global education intends to organize more teachers' education programs to improve the standard of teaching and learning globally.

Theme

The International Association of Technology and Art Teachers Conference

This year theme looks into Africa education between growth and reform. The African education system had faced a lot of setbacks in terms of global standard of education. Many countries within the country had very high illiteracy level mainly due to poor government support and interventions.

The theme is geared towards discussing possible ways in different fields where African education can spring up to aid development in the continent. The International Association of Technology and Art Teachers (IATAT) in conjunction with School of Education, Guru Nanak Development University, India to co-host the annual International Association Technology and Art Teachers Conference 2023 from the 16th to 19th of October, 2023, at the university of Cape Coast, Cape Coast, Ghana.

Ghana is located on the West African Region in Africa. The goal of the conference is to create a brainstorming arena where knowledge of African potentials can be discussed and possible bring out innovation methods to enhance reformation in the continent. The conference is geared towards developing teachers in various field and discipline with the mind of reforming the feature of Africa.

Sub-Theme

The sub-theme for the conference comprises of the following:

- Growth and reform in Art
- Growth and Reform in Economy
- Growth and Reform in Science
- Growth and Reform in Technology Education
- Growth and Reform in Social Sciences
- Growth and Reform in Business
- Growth and Reform in Politics
- Growth and Reform in Engineering
- Growth and Reform in Management
- Growth and Reform in Education

ABOUT US

The International Association of Technology and Art Teachers is an academic body designed to unite all professional fields in Art, Science, Management and Technology. The association is formed with the mind of developing brilliant minds that can participate actively in sharing of knowledge among lecturers in various fields in the tertiary institutions. The initiative is geared towards bridging gaps in learning and curriculum formation across various continents in the world.

The International Association of Technology and Art Teachers on various occasion organizes its academic workshops and conferences in various countries across the globe to units and foster knowledge sharing among scholars in various tertiary institutions.

The association in nearest feature intends to expand its purpose and mission in reaching out to institutions across Asia and Europe for more academic collaboration and cooperation. Also, the association organizes its conference in most prestigious institutions across the globe by giving participants the opportunity to make live presentations of articles using zoom, skyp and google classroom. Papers presented in the conference are reviewed by experts in various fields to educate participants.

Special Thanks

On behalf of the entire theme and organizers of IATAT 2023 conference held in University of Cape Coast Ghana, we want to express our profound gratitude to all those who participated physically and also presented via the use of media platforms. We thank you for your contribution and the knowledge you have shared with us in Cape Coast, Ghana.

We look forward to meet you in upcoming conference ahead in 2024.

Many Thanks.

Signed:

E. E. Bernnard (Ph. D)
International President

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THE IMPACT OF DIGITAL TECHNOLOGY ON THE ECONOMIC GROWTH AND REFORMS IN AFRICA

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ABSTRACT

Digital technology is a driving transformative change on digitalization which can be enabled through information and communication technology and has transformed several firms on the manner human and material resources are deployed and managed globally. Despite investment efforts, African countries are still weakened in reaping the expected economic prosperity associated with digitalization because of a persistent digital divide, including digital skills shortages and high cost of digital technological gadgets. However, Africa has experienced a significant increase in the number of mobile phone subscribers in recent times. The development and diffusion of digital technology and other technologies is expected to trigger a slight acceleration in productivity, while explosive growth in productivity, as predicted by some scholars, is not likely to happen. This study aims to unveil the impact of digital technology on the economic growth and social reforms in Africa. The uses a systematic literature review approach, where the researcher conducted a comprehensive review on the existing research on the research topic for the past five years and synthesize the findings into a cohesive argument. The findings of this study reveal that digital technology has a huge effect on the economic development and reforms, it further shows that reforms or regulations has a positive correlation between reforms and financial inclusion. It was therefore recommended that, government and lawmakers make improved policies to enhance a conducive environment to enable digital technologies to advance the economic growth.

Keywords: Digital Technology, Digitalization, Economic Growth, Reforms and Gadgets.

Introduction

Digital technology is now recognized as a key driver of global economic growth due to the rapid innovations in the Information and Communication Technology (ICT) sector. Countries with well-developed information and communication infrastructure are experiencing rapid economic growth while those with poor infrastructure do not enjoy the benefits it creates. Digital technologies can help emerging economies catch up with developed countries through the "leapfrogging effect" (Steinmueller, 2011). Studies have shown that digitization enhances economic growth through various channels such as improved access to information, increased productivity, reduced transaction costs, and increased economies of scale. Digitization affects economic growth through various channels. Many studies identify the growth-enhancing effects of digitization such as increased international trade (Meijers, 2014), active innovation, entrepreneurship, and increased market access, and reducing information asymmetry costs that facilitate access to finance, among other things. Digital technology has transformed nearly every aspect of modern life. Travel, work, shopping, entertainment, and communications are just some of the areas that have been revolutionized in recent decades. It's now rare to find an electronic device or piece of machinery that doesn't incorporate digital technology in some way.

Digital technology means that devices can be more compact, faster, lighter, and more versatile. Huge amounts of information can be stored locally or remotely and moved around virtually instantaneously. Even the term "information" has expanded to include media such as photos, audio, and video and no longer refers to just words and numbers.

Lack of capacity and relevant skills to exploit the potential of technological devices and web tools has been identified as one of the main barriers to Internet uptake in developing countries. The digital divide in access and skills particularly affects vulnerable users, including those from rural and low-income communities, disabled and marginalized people, as well as women. However, many other studies also suggest a positive relationship between digital technologies and economic growth (Gniniguè & van Klyton, 2020). In contrast, other findings show some potential drawbacks. Brynjolfsson & McAfee (2014) discusses the job displacement effects digitization may have on low and middle skilled workers, something the refer to “technological unemployment,” while Turkle (2016) highlighted its negative effect on social relationships, and Katz (2012) noted its impact on knowledge gathering activities like reading. Despite this, modern digital technologies are crucial for developing countries to achieve economic prosperity, integrate with the world market, and attract foreign direct investment (David, 2019). Although the sector is growing rapidly in the Sub-Saharan Africa region, it still lags in terms of utilizing and benefiting from digital technology products. This could be attributed to the lack of competitive environment and strict regulation (Samimi et al., 2015), the low levels of human capital and absorptive capacity (Keller, 2004), and so on.

Despite these challenges, the region has seen a remarkable trend in the penetration rate of digital product usage, such as mobile cellular telephone subscriptions increasing from 44.3% in 2010 to 82.7% in 2021 and active

mobile-broadband subscriptions increasing from 2.7% in 2011 to 40.7% in 2021. In spite of the growing adoption of digitization in Sub-Saharan Africa, its impact on the level of income and economic growth remains understudied. Some empirical studies have found a positive relationship between economic growth and digitization in Africa, but they have not fully accounted for factors such as the transmission mechanisms through which digitization affects economic growth and the endogeneity and reverse causality issues that are prevalent in empirical estimations (Adeleye & Klyton, 2020). Moreover, previous studies have not explored the impact of digitization on economic growth through channels such as improved human capital, higher firm-level productivity, increased provision of and access to finance, and stronger institutions.

Review of Related Literature

Numerous empirical studies have investigated the relationship between digital technology and economic growth, and the evidence overwhelmingly supports the notion that digitization rapidly grows economies. For instance, Gniniguè and Ali (2022) found that digitization stimulates economic growth by facilitating the transfer of remittances to ECOWAS member countries, while Yoo (2015) showed that investment in digital technology infrastructure boosts economic growth. Moreover, the development and implementation of information and communication technologies (ICT) in the public sector can enable effective provision of public services and governance, thus contributing to economic growth. For example, Solomon and Klyton (2020) found that ICT usage in the public sector and social media has driven economic growth in more than 58 African countries. Similarly, a study by Majeed (2020) demonstrated that digitization adopted by the public sector in developing countries has led to robust economic growth. Numerous studies conducted in developed countries have also highlighted the positive correlation between economic growth and digitization. There is also a strand of literature that explores other critical channels through which digitization affects economic growth. One such channel is through productivity. For example, Borowiecki et al. (2021) found that digital technologies have positive and significant impact on firm-level productivity. Similarly, Gal et al. (2019) found that digital adoption at the firm level leads to productivity gains, particularly in manufacturing and routine-intensive activities, in European countries. A study by Ferschli et al. (2021) in Germany also revealed that the adoption of digital technology improves sectoral productivity. Digitization also plays a critical role in promoting human capital, as it encourages growth by driving technical progress, inventions, and innovations. Several studies, including Ivanová et al. (2021) have demonstrated that digitization has significant and positive effect on human capital development.

Moreover, digitization has revolutionized financial service delivery. The impact of technology is particularly evident in how it has addresses market imperfections in the financial system. Through the proliferation of the internet, technology has lowered information asymmetry, making information more accessible and cost-effective. Digital systems can acquire vast amounts of data at a low cost, which reduces the information gap and increases the efficiency and contestability of financial markets.

A reform agenda from Government policies can support innovation by continually reforming and updating the regulatory and institutional framework within which innovative activity takes place. In this context, reforms are needed to make public policy and regulatory framework more conducive to innovation in a range of policy areas from the general business environment especially in the services, particularly in the network industries to international trade and international investment, financial markets, labour markets, and education. Governments can also play a more direct role in fostering innovation. Public investment in science and basic research can play an important role in developing ICT and other general-purpose technologies and, hence, in enabling further innovation. This highlights the importance of reforming the management and funding of public investment in science and research, as well as public support to innovative activity in the private sector. The latter calls for an appropriate mix of direct and indirect instruments such as tax credits, direct support and well-designed public private partnerships, support for innovative clusters and rigorous evaluation of such public support. In view of the changing environment for innovation, it is also important to consider whether the current system of IPR rules and practices continues to stimulate innovation while allowing access to knowledge. In certain cases the abuse of the control with which IPR owners are endowed could hamper competition, fair use and the diffusion of technology. However, regardless of issues related to the flexibility of the IPR system, stronger efforts are needed to combat counterfeiting and piracy, which are serious and growing problems. The need for political leadership and resolve Implementing reforms to foster innovation may prove difficult. Strong political leadership and efforts to develop a clear understanding by the various stakeholders of the problems and the solutions — including the costs they involve — can all help to communicate the need for reform and facilitate acceptance (Bai et al., 2016).

The Impact of Digital Technology on how we Work

Digital technology has allowed us to work from anywhere whether that be in a business office or at home as it has paved a way for people to use the internet and devices to allow work to be sent right to you without you having to be there. Working from home gives some people a better work ethic as they are comfortable and less stressed which boosts their productivity making them work better and more efficiently (Bai et al., 2016).

Digital Technology Impact on the African Child

Digital technology refers to digital devices, systems, and resources that help create, store, and manage data. An important aspect of digital technology is information technology (IT) which refers to the use of computers to process data and information. Most businesses use digital technology nowadays to manage operations and processes and to enhance the customer journey. Digital technology is introduced to make life easy by automating many processes, though it also has it's disadvantages but it is completely based upon individual uses (David, 2019).

Digital technologies have advanced more rapidly than any innovation in our history, reaching around 50% of the developing world's population in only two decades and transforming societies. By enhancing connectivity, financial inclusion, access to trade and public services, technology can be a great equaliser and shows how much of an impact it has on today's society. Technology has allowed the communication of people from all around the world from a single device and this as a result has made it easier for people to socialise and talk without having to go in-person (Eboagu, 2019).

Some positive impacts digital technology offers are;

i. It makes children learn independently.
ii. It makes them explore their own skill and interests.
iii. It helps them to build a social community.
iv. Those from the village or rural areas can get better education by the help of online school.
v. It makes them to explore the opportunity around them as it helps them to see things what they couldn't see everyday

Innovative performance is a crucial factor in determining competitiveness and national progress. Moreover, innovation is important to help address global challenges, such as climate change and sustainable development. But it is the application and advancing technology, in conjunction with entrepreneurship and innovative approaches to the creation and delivery of goods and services, which translates scientific and technological advances into more productive economic activity. This results in economic growth if market structures and the regulatory environment enable the more productive activities to expand (Eboagu, 2019).

Empirical Frame Work

The concept of the digital economy was first proposed by Majeed (2020) who indicated that the age of networked intelligence is not only about the networking of technology, but about the networking of humans through technology. The integration of digital and network technologies has made the digital economy prominent in economic and social activities; thus, its connotation has become richer. Yoo (2015), defined the digital economy in terms of three components: e-business infrastructure, e-business and e-commerce.

Other scholars considered the digital economy as a dynamic process instead of static efficiency. In recent years, the digital economy was defined as a wider than modest digitizing segment, and its general meanings integrate all the digitally-oriented economic activities. For instance, the Organization for Economic Co-operation and Development (OECD) described the concept of the digital economy as "the digital transformation of economic and social development" and considered all traditional industries in the process of digitization and networking as part of the digital economy. The G20 Digital Economy Development and Cooperation Initiative further defined the digital economy as "a broad range of economic activities that include using digitized information and knowledge as the key factor of production, modern information networks as an important activity space, and the effective use of ICT as an important driver of productivity growth and economic structural optimization.

Previous studies have shown that the digital economy is considered the main driver of economic growth in both developed and developing countries. The digital economy mainly based on ICT helps to increase capital and labour productivity and to obtain goods and services at lower prices. For example, Yoo (2015) developed a cumulative growth model to examine the positive relationship between ICT investment and economic growth in thirty nine (39) countries and found that countries with relatively low levels of productivity could take advantage of the knowledge spillover effects of ICT to close the gap with developed countries. Klyton (2020) also found that ICT can increase the output by facilitating technology innovation, improving the quality of decision-making, and reducing production costs. With the rapid development of digital technologies such as ICT, more and more scholars have focused on the role of the digital economy on consumer surplus e-commerce supply chain, and smart cities. Especially after the outbreak of COVID-19, the role of the digital economy on economic recovery has attracted the attention of scholars. Some scholars suggested that the digital economy played a hugely positive role in pandemic prevention and control, value-added distribution in global value chains, and economic development. During the COVID-19 pandemic, digital services received a large portion of the resources reallocated from traditional industries, which became a strong driver for accelerated growth. In addition, Klyton (2020) found that digital technologies not only empowered pandemic response strategies in the short term but also served as the technological foundation for Internet-based industry and consumption in the long term. However, other scholars have suggested that the digital economy may be detrimental to economic growth, especially in the absence of economic transition.

Revamping Policies for Economic Growth and Reforms

Shifting Paradigms addresses these questions by showing that policies matter. New thinking and adaptations are needed to realign policies and institutions with the digital economy. Areas for attention include competition policy and regulatory regimes, the innovation ecosystem, digital infrastructure, workforce development, social protection frameworks, and tax policies (Vlazneva, 2018). Competition policy should be revamped for the digital age. Antitrust laws and their enforcement must be strengthened.

The digital economy poses new regulatory challenges that must be addressed, including issues surrounding the regulation of data (the lifeblood of the digital economy), competition issues relating to digital platforms that have emerged as gatekeepers in the digital world, and market concentration resulting from tech giants that resemble natural or quasi-natural monopolies because of economies of scale and network effects associated with digital technologies. As in product markets, policymakers need to ensure that financial markets remain sufficiently competitive and address regulatory challenges relating to the new world of digital financial products, platforms, and algorithms. Also, new frameworks are needed for international collaboration in areas such as regulation of cross-border data flows and taxation of cross-border digital business.

The innovation ecosystem should be improved. Aging patent systems should be updated to the new innovation dynamics of the digital economy, better balancing incumbent interests and wider technology promotion and dissemination. Public research and development programs should be revitalized to foster technological progress that serves broader economic and social goals rather than the interests of narrow groups of investors. Policymakers must correct biases in tax systems favouring capital relative to labour that create incentives toward "excessive automation"—which destroys jobs without enhancing productivity (Klyton, 2020).

The foundation of digital infrastructure must be strengthened to broaden access to new opportunities. This calls for increased public investment and frameworks to encourage more private investment to improve digital access for underserved groups and areas. The digital divide remains particularly wide in developing economies. Stronger digital infrastructure and literacy will be crucial for these economies as technological change forces a shift away from growth models reliant on low-skill, low-wage manufacturing (Borowiecki et al., 2021).

Investment in education and training programs should be boosted and reoriented to emphasize skills that complement the new technologies. This will require innovation in the content, delivery, and financing of these programs, including new models of public-private partnerships. With the fast-changing demand for skills and the growing need for upskilling, reskilling, and lifelong learning, the availability and quality of continuing education should be greatly scaled up. The potential of technology-enabled solutions such as online learning tools must be harnessed. Persistent inequalities in access to education and (re)training must be addressed. While gaps in basic capabilities across income groups have narrowed, those in higher-level capabilities that will drive success in the digital economy are widening (Bai et al., 2016).

Labour market policies and social protection systems should be realigned with the changing economy and the nature of work. Policies need to shift to a more forward-looking focus on improving workers' ability to move to new and better jobs rather than seeking to protect existing jobs being rendered obsolete by technology. Unemployment insurance schemes should better support workers in adjusting to change, retraining, and transitioning to new jobs.

Worker benefits systems, covering benefits such as pensions and health care, which traditionally have been based on formal long-term employer-employee relationships, will need to adjust to a job market with more frequent job transitions and more diverse work arrangements (including an expanding gig economy). Institutions that give adequate voice to workers are important too as technology shifts the balance of market power (Pitaikina, 2018). Enabling broader participation of firms in the innovation economy, widening the diffusion of new technologies, and building complementary capabilities in the workforce can deliver both stronger and more inclusive economic growth. Reforms in these areas can reduce inequality and economic insecurity more effectively than fiscal redistribution alone.

Research Methodology

This paper focusses on unveiling the role digital technology plays on the economic growth and reforms in Africa. This paper is a theoretical study that uses a systematic literature review approach, where the researcher conducted a comprehensive review on the existing research on the research topic for the past five years and synthesizes the findings into a cohesive argument.

The research used was secondary sources and the research question includes “what are the various economic, social, cultural, and political effects of digital technology on economic growth and reforms in the African society?” A secondary research question is “how digital technology facilitates Globalization and reforms?”

Findings and Discussions

Businesses of all sizes will be forced to modify their mode of operations due to the rapid change and influence digital technology has on the society. Organizations that digitally transform, offer customers a flawless and frictionless experience, and as a result, claim a greater share of profit in their sectors. Examples include financial services industry like banking. Whereas most banking used to be done at a local branch, recent reports show that 40% of Americans have not stepped through the door of a bank or credit union within the last six months, largely due to the rise of online and mobile banking. This shows that as the years go by, even Africans will be less likely to go in person to use financial services as everything would be digital and done online.

Many roles traditionally performed by humans are prone to being taken over by computer-controlled machines in the near future. For example, self-driving vehicles are currently being developed, which will eventually take jobs from delivery drivers, taxi drivers, truck drivers, and others. Self-driving vehicles could potentially operate 24 hours/day, wouldn't need breaks except for refuelling, wouldn't get sick or go truant, would be less prone to driving accidents, and would not need to be paid a wage.

Conclusion

Digitization indeed plays a crucial role in driving global economic growth by enabling improved access to information, increased productivity, reduced transaction costs, and enhanced economies of scale. However, despite the growing adoption of digitization in Sub-Saharan Africa, the region still faces challenges in fully leveraging digital technology products. Encouragingly, there have been significant increases in the penetration rate of digital products, such as mobile-cellular telephone and mobile-broadband subscriptions. This study addressed the effects of digitization on income levels and economic growth, examining the diverse channels through which digitization can impact these factors. The findings of this study offer valuable insights for policymakers and stakeholders, highlighting the pivotal role of digital technology in driving economic growth in Africa and shedding light on the various transmission mechanisms through which digitization can positively influence income levels. By understanding these dynamics, policymakers can craft strategies to maximize the benefits of digitization and foster sustainable economic development in the region.

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Influence of Employability Skills Acquisition on Entrepreneurial Development of Mechanical Engineering Craft Practice Graduates

By

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Abstract

This study determined the employability skills acquisition on entrepreneurial development of mechanical engineering craft practice students in Rivers State. Specifically, the study determined the influence of mechanical engineering craft practice skills on entrepreneurial development of technical college students in Rivers State. Two research questions were posed while two hypotheses were formulated and tested at .05 level of significance. The study adopted a survey research design. The population was twenty-one (21) respondents (14 Teachers and 7 Instructors). The entire population was studied due to the manageable size; hence the sample was a census. A questionnaire titled: Influence of Turning and Milling Skills Acquisition on Entrepreneurial Development of MECP Students (TMSAEDMECPS) was used to elicit responses of the respondents. The instrument was designed on a 5-point Likert scale and assigned an ordinal value such as Strongly Agree (SA) = 5, Agree (A) =4, Undecided (U) =3, Disagree (D) =2 and Strongly Disagree (SD) =1 respectively. The instrument was face validated by three experts. Cronbach Alpha was used to determine the internal consistency and reliability of the instrument and a reliability coefficient of .78 was obtained. Data collected was analyzed using mean and standard deviation while t-test was used to test the null hypotheses. Any mean value less than 3.50 was regarded as "disagree" while mean value equal or greater than 3.50 was regarded as "agree". The study indicated that the mechanical engineering craft practice skills presented, influence entrepreneurial development of technical college students in Rivers State. The researcher recommended amongst others that there should be synergy between the industries and technical colleges in the area of skills development to enhance employability of MECP students.

Keywords: Technical College, Mechanical Engineering, Craft Practice (MECP), Employability Skill and Entrepreneurial Development

Introduction

Technical colleges are institutions where students are trained to acquire relevant knowledge and skills in different occupations for employment in the real world. According to the Federal Government of Nigeria (FGN, 2013), technical colleges form part of technical and vocational education designed to produce craftsmen at the secondary school level and master craftsmen at the advanced craft level. Technical colleges according to Okoro, (2006) as cited in Chukuigwe, (2021) asserted that technical college is a vocational training institution in Nigeria that admits junior secondary school leavers to senior secondary schools and provide them with a full vocational course of three years' duration. Technical colleges sometimes admit students who have the First School Leaving Certificate and give them a full six years vocational training (Uwaifo, 2010). He continued that this later case occurs in a situation where the technical college is experiencing difficulties in attracting enough junior secondary school leavers into its vocational programmes. Technical colleges are regarded as the principal vocational institutions in Nigeria. They give full vocational training intended to prepare students for entry into various occupations.

Technical colleges are post-primary schools saddled with the responsibility of producing craftsmen and master-craftsmen as low-level manpower. Atsumbe, *et al* (2012) are of the view that technical colleges are institutions where students are trained to acquire relevant knowledge and skills in different occupations for employment in the real world. That is why the Federal Government of Nigeria (FGN, 2013) stated that technical colleges form part of technical and vocational education designed to produce craftsmen at the secondary school level and master craftsmen at the advanced craft level. Technical college students are expected to put learning into practice using newer techniques of applying devices, materials, tools, equipment, machinery, and other resources to enable technicians to solve practical problems (Salihu, 2014). The goals of the functional technical colleges are to provide trained workers in the applied sciences, technology, and business, especially in the advanced craft and technician levels among which is mechanical engineering craft practice (MECP).

Mechanical engineering craft practice is one of the trades offered in technical colleges, aimed at training and imparting necessary skills leading to the production of craftsmen who will be self-reliant and enterprising on job areas, such as metal fitting, machining, welding and fabrication, Auto vehicle mechanics, air-conditioning and refrigeration amongst others (NBTE 2014).

Federal Republic of Nigeria (FRN, 2013) believed that the training will qualify them to secure employment (in both public and private sectors of the economy) at the end of the whole course, set up their own business or become self-employed and be able to employ others; pursue further education in advanced craft programme and in post-secondary (tertiary) technical and vocational institutions such as polytechnic, colleges of education (technical) and universities. Mechanical engineering craftsmen have often time claimed that they have to be exposed to basic practical foundations such as principles and operation of production machines like automatic lathe, magnetic chuck and centre-less grinding machines. According to Adamu(2015) mechanical engineering craft practice (MECP) provides technical and practical proficiency in machining such as grinding, boring, turning, drilling and milling among others to the level of good craftsman. This could lead MECP graduates to entrepreneurial development.

Turning is a machining process in which a cutting tool, typically a non-rotary tool bit, describes a helix tool path by moving more or less linearly while the work piece rotates. Turning is a machining process for all types of metallic and nonmetallic materials and is capable of producing circular parts with straight or various profiles. The cutting tools may be single-point or form tools. The most common machine tool used is a lathe.Modern lathes are computer-controlled and can achieve high production rates with little labor (Deore & Radha 2014). Turning centers combine head and tail stocks of traditional lathes with additional spindle axes to enable the efficient machining of parts that have rotational symmetry (pump impellers, for instance) combined with the turning cutter's ability to produce complex features. Complex curves can also be created by rotating the work piece through an arc as the turning cutter moves along a separate path.

Milling is the process of machining using rotary cutters to remove material by advancing a cutter into a work piece. This may be done by varying direction on one or several axes, cutter head speed, and pressure. Milling covers a wide variety of different operations and machines, ranging from small individual parts to large and heavy-duty gang milling operations. It is one of the most commonly used processes for machining custom parts to precise tolerances (Franco & Estrems, 2008). Milling can be done with a wide range of machine tools. The original class of machine tools for milling was the milling machine (often called a mill).

Entrepreneurship is the process of creating new enterprises to meet new challenges and opportunities in a community (Ubale, 2010). Entrepreneurship is a process of identifying and starting business venture and involves the acquisition of skills, ideas, managerial competences, sourcing and organizing the required resources and taking both the risks and rewards associated with the venture (Allawadi, 2007).

In its contribution to emerging definitions, the National Universities Commission, (NUC, in Oviawe, 2010) defined entrepreneurship as the art which involves recognizing a business opportunity, mobilizing resources and persisting to exploit that opportunity. Similarly, Enu and Esu (2011) considered entrepreneurship as the ability to seek investment opportunities and establish an enterprise based on identified opportunities. The term entrepreneurship is derived from the word "entrepreneur", the process of becoming an entrepreneur, is simply the act of being an entrepreneur.

Entrepreneurial competencies according to Aliyu, (2008) are the knowledge required for job occupation, skills in the application of the knowledge in one's sphere of work in order to accomplish occupational roles. Johnstone, (2004) cited in Ede and Aluwong, (2018) categorized the benefits that can be derived from entrepreneurship activities to include: enormous personal gain, self-employment, offering more job satisfaction and flexibility of the work force, employment for others, promotion of use of modern technology in small scale manufacturing to enhance higher productivity, income generation, and increase higher quality products (including welding and fabrication master craftsmen when they are competent.) Competency in the view of Olaitan, (2003) cited in Ede and Aluwong, (2018) is the knowledge, skills, attitudes, and judgments which are required in order to perform successfully at a special proficiency level in a program. International labor organization report (ILO, 2003) cited in Ede and Aluwong, (2018) stated that competency is the knowledge, capability, skills and behavior which are factors in achieving the result pertinent to teaching strategies. Entrepreneurial development of students involves essential knowledge and skills obtainable which students in the field must possess and be able to demonstrate at optimal level of acquisition and functioning in the industry.

Employability skill is a series of attributes, skills and knowledge to the workforce to make sure that they have the ability to be effective in the workplace that they have interest of their own, industry and economy to be wider. Employability skills denote essential competencies needed for worker success on the job (Carnevale, et al, 2000, cited in Vasanthakumari, 2019). Employability skills also guide to get a job that has the skills professionally qualified so that explicitly increase the attractiveness to be recruited (Cavanagh, et al 2009). It indicates that employability skills include all the possibilities for someone to be successful in a variety of jobs in the market situation and looking at a person's capability to develop. Onyije and Saue (2022) posited that employability skills are considered as fundamental because they are the mastery of necessary abilities that are essential for securing, maintaining, and performing efficiently in the world of work. The graduates of all levels of higher institutions are no exemption.

As a result, students who graduate from technical institutions acquire knowledge and practical skills that would enable them, on graduation to practice what was learnt in school, create jobs for themselves and participate in economic development (Okafor, 2011).

Employability skills are indicative of an ability to operate in ambiguous situations and also imply that capable person can work effectively on unfamiliar problems in unfamiliar contexts as well as on familiar problems in familiar contexts. More so, Knight and Yorke, (2014) noted that employability skill is a set of achievement, skills, understanding and personal attributes that make graduates more likely to gain employment and be successful in their chosen occupations, which benefit themselves, the workforce, the community and the economy". Employability skills can be categorized into skills that are needed to start a job and skills needed to perform well in a job, remain in employment and progress through the career. So, there are threshold employability skills and sustainable employability skills. Sustainable employability skills are needed to be acquired by individuals already in work for furthering their professional development.

Statement of the Problem

Mechanical engineering craft practice as an engineering trade is offered as an area of specialization in technical colleges. Students who offer this trade area are expected to graduate with skills that will enable them further their education, gain employment in the industry or be self- employed**.** However, outcome of researches conducted by Akplu and Amankrah (2010) and Ayonmike, (2016) revealed that most of these technical college graduates in those study areas do not have adequate practical skills for work. No wonder, Ezie (2012) posited that the rate of unemployment in Nigeria today is disturbing and even more disheartening that the country's economic condition cannot absorb an optimal proportion of its labour force which led to crime and other social vices experienced in our society. The acquisition of adequate skills by graduates of MECP of technical colleges will solve the problems of unemployment, under employment and retraining needed by employers. Hence, the study "employability skills acquisition on entrepreneurial development of mechanical engineering craft practice students of technical colleges in Rivers State".

Aim and Objectives of the Study

The aim of the study was to determine the influence of employability skills acquisition on entrepreneurial development of mechanical engineering craft practice (MECP) students in Rivers State**.** Specifically, the study sought to determine:

1. The influence of turning skills acquisition on entrepreneurial development of MECP students of Technical Colleges in Rivers State.
2. The influence of milling skills acquisition on entrepreneurial development of MECP students of Technical Colleges in Rivers State.

Research Questions

The following research questions guided the study

1. What is the influence of turning skills acquisition on entrepreneurial development of MECP students of Technical Colleges in Rivers State?
2. What is the influence of milling skills acquisition on entrepreneurial development of MECP students of Technical Colleges in Rivers State?

Hypotheses

The following two (2) hypotheses were formulated to guide the study at .05 level of significance.

Ho_1: There is no significant difference between the mean responses of teachers and instructors on the influence of turning skills acquisition on entrepreneurial development of MECP students of Technical Colleges in Rivers State

Ho_2: There is no significant difference between the mean responses of teachers and instructors on the influence of milling skills acquisition on entrepreneurial development of MECP students of Technical Colleges in Rivers State

Methodology

The study adopted a survey research design. The population was twenty-one (21) respondents (14 Teachers and 7 Instructors). The entire population was studied due to the manageable size; hence the sample was a census. A questionnaire titled: *Influence of Turning and Milling Skills Acquisition on Entrepreneurial Development of MECP Students (ITMSAEDMECPS)* was used to elicit responses of the respondents. The instrument was designed on a 5-point Likert scale and assigned an ordinal value such as Strongly Agree (SA) = 5, Agree (A) =4, Undecided (U) =3, Disagree (D) =2 and Strongly Disagree (SD) =1 respectively. The instrument was face validated by three experts. One from the department of Industrial Technical Education, Ignatius Ajuru University of Education Port Harcourt and two from Federal College of Education, Technical, Omoku. Cronbach Alpha was used to determine the internal consistency and reliability of the instrument and a reliability coefficient of .78 was obtained. The data collected were analyzed using mean and standard deviation to answer research questions and an inferential statistic of t-test was used to test the hypotheses at .05 level of significance. The criterion mean point was taken at 3.50. That is, any item(s) having mean equal or greater than 3.50 were regarded as agree, whereas item(s) having mean less than 3.50 was regarded as disagree.

Results

Research Question 1: What is the influence of turning skills acquisition on entrepreneurial development of MECP students of Technical Colleges in Rivers State?

Table 1: **Mean and standard deviation of teachers and instructors on influence of turning skill acquisition on entrepreneurial development of MECP students in Rivers State**

S/N	Items	Teachers N=14			Instructors N=7		
		$\bar{X}_1$	SD_1	Rmk.	$\bar{X}_1$	SD_1	Rmk.
1.	Calculate dimensions and tolerances using micrometers and vernier calipers.	3.64	1.19	Agree	4.03	.86	Agree
2.	Inspected all finished parts using fixed calipers	3.99	.86	Agree	3.65	1.17	Agree
3.	Measurements skill	3.92	.69	Agree	3.88	.76	Agree
4.	Inspect work using gauges, micrometers work	3.61	1.03	Agree	3.78	1.00	Agree
5.	Repair or replace machine parts	4.05	.60	Agree	4.18	.31	Agree
6.	Mount and position tools in machine chucks	3.66	.99	Agree	3.78	1.00	Agree
7.	Mount and position tools in machine spindle	3.68	1.65	Agree	3.67	.79	Agree
8.	Turning pieces with machines and hand tools	3.78	1.00	Agree	3.61	1.03	Agree
9.	Maintenance of tools and machines	3.88	1.53	Agree	3.54	.10	Agree
10	Adjust offsets on Fanuc controller	3.83	.84	Agree	3.66	.99	Agree
11	Operate 3-axis horizontal with a Fanuc control	3.96	.74	Agree	3.77	.58	Agree
12	Turning machined parts to specification (accuracy)	4.08	.87	Agree	3.78	1.00	Agree
13	Verify conformance with specifications	3.94	.71	Agree	4.13	.67	Agree
14	Ability to deburred parts	4.02	.81	Agree	4.10	.33	Agree
15	Machining on concentric and eccentric shape	3.95	.58	Agree	3.78	.63	Agree
	Grand Mean/SD	**3.86**	**.93**	**Agree**	**3.82**	**.74**	**Agree**

Source: *Author (2023)*

Table 1 above summarizes the mean responses of teachers and instructors on influence of turning skills acquisition on entrepreneurial development of MECP students of technical colleges in Rivers State with an average mean value ranging between 3.82 and 3.86 and a grand standard deviation value ranging between .77 and .93 respectively. The standard deviation value revealed the homogeneity of their various opinions. The respondents' responses on the items presented indicated that turning skill acquisition influence entrepreneurial development of MECP students of Technical Colleges in Rivers State.

Research Question 2: What is the influence of milling skills acquisition on entrepreneurial development of MECP students of Technical Colleges in Rivers State?

Table 2: Mean and standard deviation of teachers and instructors on influence of Milling skill acquisition on entrepreneurial development of MECP students in Rivers State

S/N	Items	Teachers N=14			Instructors N=7		
		$\bar{X}_1$	SD_1	Rmk.	$\bar{X}_1$	SD_1	Rmk.
1.	Read micrometers for sizing bars and worked metal down	3.82	1.10	Agree	3.56	1.09	Agree
2.	Check and mount cutting tools properly	3.91	.82	Agree	3.82	.94	Agree
3.	Measure thickness and diameter of parts	4.04	.89	Agree	3.91	.82	Agree
4.	Read work blue prints	3.63	1.08	Agree	3.62	1.03	Agree
5.	Calculate dimensions and tolerances using micrometers and vernier calipers	4.10	.65	Agree	4.13	.79	Agree
6.	Load materials into machinery and equipment using hand tools	3.99	.86	Agree	3.96	.88	Agree
7.	Perform quality checks to meet ISO	3.82	1.10	Agree	4.03	.75	Agree
8.	Mount milling wheel and regulating wheel on spindles with wrenches	3.71	1.05	Agree	3.57	1.33	Agree
9.	Machine gear case housings	3.72	1.12	Agree	3.67	1.03	Agree
10	Machining of crane wheels / gear blanks	4.12	.74	Agree	4.11	.77	Agree
	Grand Mean/SD	**3.88**	**.94**	**Agree**	**3.83**	**.94**	**Agree**

Source: *Author (2023)*

Table 2 above summarizes the mean responses of teachers and instructors on influence of milling skill acquisition on entrepreneurial development of MECP students of technical colleges in Rivers State with an average mean value ranging between 3.83 and 3.88 and a grand standard deviation value of .94 respectively. The standard deviation value revealed the homogeneity of their various opinions. The respondents' responses on the items presented indicated that milling skill acquisition influence entrepreneurial development of MECP students of technical colleges in Rivers State.

Test of Hypotheses

Hypothesis 1: There is no significant difference between the mean responses of teachers and instructors on the influence of turning skills acquisition on entrepreneurial development of MECP students of Technical Colleges in Rivers State.

Table 3: t-test analysis of respondents on influence of turning skill on entrepreneurial development of MECP students in Rivers State

Categories	N	X	SD	Df	P-value	t-cal	t-tab	Decision
Teachers	14	3.86	.93					
				19	.05	.210	2.00	**Accept**
Instructors	7	3.82	.74					

Source: *Author (2023)*

From Table 3 above, the calculated value of t = .210 is less than the table value = 2.00. Hence, the responses of teachers and instructors showed that turning skills acquisition influence entrepreneurial development of technical college students in Rivers State. Therefore, the null hypothesis which states thus "there is no significant difference between the mean responses of teachers and instructors on the influence of turning skills acquisition on entrepreneurial development of technical college students graduates in Rivers State" was accepted.

Hypothesis 2: There is no significant difference between the mean responses of teachers and instructors on the influence of milling skills acquisition on entrepreneurial development of MECP students of Technical Colleges in Rivers State.

Table 4: analysis of respondents on influence of milling skill on entrepreneurial development of MECP students in Rivers State

Categories	N	X	SD	Df	P-value	t-cal	t-tab	Decision
Teachers	14	3.88	.94					
				19	.05	.219	2.00	**Accept**
Instructors	7	3.83	.94					

Source: *Author (2023)*

From table 4 above, the calculated value of t = .219 is less than the table value = 2.00. Hence, the responses of teachers and instructors showed that milling skills acquisition influence entrepreneurial development of technical college students in Rivers State. Therefore, the null hypothesis which states thus "there is no significant difference between the mean responses of teachers and instructors on the influence of milling skills acquisition on entrepreneurial development of technical college students in Rivers State" was accepted.

Discussion of Findings

Table 1 above summarizes the mean responses of teachers and instructors on influence of turning skills acquisition on entrepreneurial development of MECP students of technical colleges in Rivers State with an average mean value ranging between 3.82 and 3.86 and a grand standard deviation value ranging between .77 and .93 respectively. The standard deviation value revealed the homogeneity of their various opinions. The respondents' responses on the items presented indicated that turning skill acquisition influence entrepreneurial development of MECP students of Technical Colleges in Rivers State. From Table 3 above, the calculated value of t = .210 is less than the table value = 2.00. Hence, the responses of teachers and instructors showed that turning skills acquisition influence entrepreneurial development of technical college students in Rivers State. Therefore, the null hypothesis which states thus "there is no significant difference between the mean responses of teachers and instructors on the influence of turning skills acquisition on entrepreneurial development of technical college students in Rivers State" was accepted. The finding above is in agreement with finding of Saue (2020) who noted the ability to identify and rectify various welding defects, ability to perform various gas welding operations, marking out and forming projects in sheet metal and ability to solder and braze various sheet metal project are needed for employability of graduates of welding and fabrication in technical colleges in Rivers State.

Table 2 above summarizes the mean responses of teachers and instructors on influence of milling skill acquisition on entrepreneurial development of MECP students of technical colleges in Rivers State with an average mean value ranging between 3.83 and 3.88 and a grand standard deviation value of .94 respectively. The standard deviation value revealed the homogeneity of their various opinions. The respondents' responses on the items presented indicated that milling skill acquisition influence entrepreneurial development of MECP students of technical colleges in Rivers State. From table 4 above, the calculated value of t = .219 is less than the table value = 2.00. Hence, the responses of teachers and instructors showed that milling skills acquisition influence entrepreneurial development of technical college students in Rivers State. Therefore, the null hypothesis which states thus "there is no significant difference between the mean responses of teachers and instructors on the influence of milling skills acquisition on entrepreneurial development of technical college students in Rivers State" was accepted.

Conclusion

Technical college students of mechanical engineering craft practice require the manipulation of tools and machines to acquire the necessary skills. The aim of MECP in technical colleges is to encourage the acquisition of practical skills by students so that they can use machines in production of items that are made of metal as an employee or self-employed. It is therefore necessary for MECP students to acquire employability skills for entrepreneurial development in other to perform well in a job and on a work piece, remain in employment, progress through the job career, perform well as an entrepreneur and meet up with new challenges and opportunities in a community. But it has been observed that some of the problems of unemployment in Nigeria could be attributed to lack of some machines and consumables in the workshops. Therefore, students cannot acquire necessary skills that could earn them employment or make them self-employed. The present study however, identified turning and milling skills as entrepreneurial skills needed for the development of mechanical engineering craft practice students of technical colleges in Rivers state.

Recommendations

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

1) Relevant agencies should provide adequate equipment, machines, tools and materials in mechanical engineering craft practice workshops of technical colleges to enhance practical work as identified in Table 1 and 2 above.
2) Regular training of instructors in mechanical engineering craft practice workshop, should be paramount.
3) There should be synergy between industries and technical colleges as this will help identify challenges and opportunities in communities and industries.

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Reforming education: Consequences of unqualified teachers on the teaching and learning of English in secondary schools in Idah Local Government Area of Kogi State, Nigeria

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ABSTARCT

This study explores the consequences of unqualified teachers on the teaching and learning of English in secondary schools in Idah Local Government Area of Kogi State, Nigeria, using a descriptive survey design. The population of the study consists of 42 secondary schools, a total population of 2803 comprising 2503 students and 300 teachers. It uses Random Sampling Technique in the selection of 35 teachers and 85 students from 6 secondary schools; using balloting without replacement, 18 students and 6 teachers from each school consist the sample for the study. Questionnaires, on the strength of 2 research questions guiding this study, were distributed to students and teachers in the selected schools. Using frequency and percentage, responses are analysed. The study discovers that the teaching and learning of English in secondary schools in Idah Local Government Area of Kogi State, Nigeria, is grossly affected by the use of unqualified teachers. However, some of those challenges can be overcome by implementing the recommendations that arise from the findings of this study.

Keywords: education, language, pedagogy, regulations, unqualified teachers

Introduction

Education is a critical component of human development, and the quality of education depends significantly on the competence and qualifications of teachers. In the context of Nigeria, particularly in Kogi State's Idah Local Government Area, concerns have been raised about the presence and influence of unqualified teachers in secondary schools, especially in the teaching and learning of English, a crucial subject.

Several studies emphasize the importance of qualified teachers in facilitating effective English language learning (Siti Hawa et al., 2017). Qualified teachers possess subject knowledge and pedagogical skills crucial for delivering high-quality education. Equally, research suggests that the presence of unqualified teachers can lead to inadequate instruction and poor academic performance among students (Kedir, 2018). This issue is aggravated in regions with a shortage of qualified educators, like Idah, Kogi State, Nigeria.

To this end, the Nigerian educational system has faced challenges related to teacher quality, teacher training and certification (Akpan & Udoudo, 2019). These challenges are particularly prominent in rural areas such as Idah Local Government Area.

Consequently, unqualified teachers may struggle to effectively teach English language skills, including grammar, reading, writing, and speaking, which are essential for students' academic and professional development (Ogunniyi, 2014). Similarly, Mkpa et al. (2018) indicate that students taught by unqualified teachers may underperform in examinations, limiting their future educational and career prospects.

To this end, Ogundele et al. (2017) discusses government initiatives and reform efforts aimed at improving teacher quality and addressing the issue of unqualified teachers in Nigerian education. Community and stakeholder involvement is crucial in addressing this issue. Engaging parents, local communities and educational institutions in reform efforts can lead to positive changes (Adeyemi, 2016).

In addition to being one of the main subjects in schools, English is utilised in Nigeria for several significant purposes apart from just being a second language. It is the medium of instruction in all Nigerian schools (Adedokun, 2011).

The most crucial of all of the English language's purposes is its contribution to educational growth. It is taught to students at practically all elementary school levels. Thus, students must pass the topic in order to continue their study in secondary level (Labo-Popoola, 2010).

Consequently, the calibre of classroom instruction has a direct impact on the quality of education. It is true that the teaching and learning process is impacted by the academic credentials, subject-matter expertise, teaching abilities and commitment of the teachers (Federal Republic of Nigeria, 2013).

However, the failure pattern has demonstrated that the incidence seems to occur more frequently in some schools than it does in other schools. Although many elements have been connected to the causes, the issue of teacher qualifications is particularly pertinent. This is particularly crucial because teachers only provide what they have to offer in the business of teaching and learning.

This study therefore examines the consequence teachers of English who lack certification have on the teaching and learning of English in secondary schools in Idah Local Government Area of Kogi State, Nigeria.

Objectives of the Study

This study's major goal is to determine how untrained instructors affect the teaching and learning of English in secondary schools in Idah L.G.A of Kogi State, Nigeria. It specifically aims to:

1. Examine the causes of unqualified teachers of English in the teaching and learning of English in secondary schools in Idah L.G.A.
2. Investigate the consequence of unqualified tutors of English in the teaching and learning of English in secondary schools in Idah L.G.A.

Research Questions

To direct the investigation, the following research questions were posed:

1. What are the causes of unqualified teachers in the teaching and learning of English in secondary schools?
2. Does the use of unqualified teachers of English in secondary schools have consequences on the teaching and learning of the subject?

Theoretical Framework

Macionis, (1998) defines a theory as the process of connecting diverse facts to provide explanations for specific phenomena or events. In this study, two fundamental theories form the framework:

1. Social Learning Theory: Social Learning Theory, as proposed by Bandura (1977), serves as a foundational element in this research's theoretical framework. Bandura's theory underscores the notion that much of our behaviour is acquired through observation and imitation of those around us. In essence, we learn by watching others' actions and internalizing the behaviors we perceive in our social environment. This theory also emphasizes the importance of role models and the social context in shaping our behaviour and cognitive development.

2. Social Constructivist Theory (Vygotsky Model): The theoretical framework also incorporates the Social Constructivist Theory, with a focus on Lev Vygotsky's model (1968). This theory is rooted in the constructivist educational philosophy, asserting that each individual's knowledge is unique and self-constructed. It places a strong emphasis on active participation, problem-solving and critical thinking in the learning process. Vygotsky's model introduces key concepts such as the role of social interactions in cognitive development, the More Knowledgeable Other (usually the teacher), and the Zone of Proximal Development (ZPD). The ZPD measures the gap between what a learner can do with assistance and what they can achieve independently. The theory highlights the importance of educators' professional attributes, such as subject knowledge, organizational skills and the ability to engage students in meaningful activities and assessments.

In summary, Social Learning Theory highlights the role of social interactions and observation in shaping behaviour, while Social Constructivist Theory emphasizes the active construction of knowledge and the evolving role of educators. Together, these theories provide a robust foundation for exploring the complex interplay between social interactions, cognitive development and effective teaching practices within the context of the research being conducted.

Methodology

The research uses a descriptive survey design. The major goal of descriptive survey design, according to Ali (1996), is to describe occurrences exactly as they occur without altering what is being seen.

From a population study consisting nine (9) secondary schools of a combined enrolment of two thousand, five hundred and three (2,503) students, and three hundred (300) instructors (according to the information supplied by the principal and teachers of the schools), a sample of one hundred and twenty (120) respondents, including thirty-five (35) instructors and eighty-five (85) pupils from Idah L.G.A. in Kogi State, Nigeria, were used for this study. Eighteen (18) students and six (6) instructors from each of six secondary schools, ranging from Junior Secondary School (JSS) One (1) to Senior Secondary School Three (3), were randomly chosen as respondents via balloting without replacements. Because of the homogeneity of respondents in this study, the random sample approach was used.

The "Consequences of Unqualified English Teachers in the Teaching and Learning of English in Secondary Schools Questionnaire (CUETTLESS)" was chosen as the structured instrument to gather data. It was separated into two sections: Section A (demographic information on the respondent) and Section B (two clusters according to the number of research questions). The instrument's answer format was structured on a 4-point Likert scale, with the following response options: Strongly Agree (SA=4), Agree (A=3), Disagree (D=2), and Strongly Disagree (SD=1). Teachers and students from the chosen schools made up the participants.

Three (3) experts from the Faculty of Education at Prince Abubakar Audu University in Anyigba, Kogi State, Nigeria, validated the instrument by putting it through face and content validity tests. As a result, their suggestions were implemented.
The instrument was trial-tested with 20 students and teachers from the Igalamela/Odolu Local Government Area in order to ensure internal consistency. This resulted from the same traits that Igalamela/Odolu and Idah L.G.As possess. Cronbash Alpha method yielded a reliability coefficient of 0.72.

A success rate of 100% was recorded because one hundred and twenty (120) copies of the questionnaires issued were recovered.

To address the two (2) research objectives, data gathered from the study was processed using frequency distribution tables and percentages. Items that ranged 40% and higher were allowed, while those that were lower than 40% were dismissed.

Data Presentation and Analysis

Research Question 1

Research Question 1: What are the causes of unqualified teachers in the teaching and learning of English in secondary schools?

The data that answer Research Question 1 are presented in *Table 1* below:

Table 1: Percentage Responses of participants on the causes of unqualified teachers in the teaching and learning of English in secondary schools

S/N	Items	Teachers				Students			
		N	F	%	DEC	N	F	%	DEC
1	Teachers are not well paid in schools.	**35**	**34**	**97.1**	**Agreed**	**85**	**70**	**82.4**	**Agreed**
2.	There are not enough qualified teachers of English in schools.	**35**	**30**	**85.7**	**Agreed**	**85**	**73**	**85.9**	**Agreed**
3.	Teachers' qualifications are not well tested before they are employed.	**35**	**26**	**74.3**	**Agreed**	**85**	**68**	**80**	**Agreed**
4.	There are no seminar or workshops organized for teachers in schools.	**35**	**31**	**88.6**	**Agreed**	**85**	**67**	**78.8**	**Agreed**
5.	Teachers are given more than their subject area to teach.	**35**	**31**	**88.6**	**Agreed**	**85**	**68**	**80**	**Agreed**
6.	Inadequate materials are given to teachers in schools.	**35**	**32**	**91.4**	**Agreed**	**85**	**80**	**94.1**	**Agreed**

Source: Research Survey, 2023

Table 1 shows teachers' responses with frequencies 34, 30, 26, 31, 31, 32 representing 97, 85, 74, 88, 91 percentages respectively. It shows students' responses with frequencies 70, 73, 68, 67, 68, 80 representing 82, 85, 80, 78, 80, 94 percentages respectively. This shows that both the teachers and the students agreed that those are the causes of unqualified teachers of English in the teaching as well as learning of English in secondary schools. This is due to the fact that the prevalence response for both teachers and students went beyond the benchmark of 40% for acceptance.

Research Question 2

Does the use of unqualified teachers of English in secondary schools have consequences on the teaching and learning of the subject?

The data that answer Research Question 2 are presented in *table 2* below:

Table 2: Percentage Responses of respondents on consequence of unqualified teachers of English in the teaching and learning of the subject in secondary schools

S/N	Items	Teachers				Students			
		N	F	%	DEC	N	F	%	DEC
7.	Students perform low in English.	**35**	**25**	**82.9**	**Agreed**	**85**	**70**	**82.4**	**Agreed**
8.	Vernacular is often used in schools compared to English.	**35**	**29**	**82.9**	**Agreed**	**85**	**66**	**77.6**	**Agreed**
9.	Students cannot speak English fluently in schools.	**35**	**26**	**74.3**	**Agreed**	**85**	**73**	**85.9**	**Agreed**
10.	Unqualified teachers hinder students' understanding of English.	**35**	**31**	**88.6**	**Agreed**	**85**	**77**	**90**	**Agreed**
11.	Mass failure of students in external examination in English is caused by unqualified teachers.	**35**	**31**	**88.6**	**Agreed**	**85**	**69**	**81.2**	**Agreed**
12.	Ineffective speaking of English is due to unqualified teachers teaching the subject.	**35**	**28**	**80**	**Agreed**	**85**	**78**	**91.8**	**Agreed**

Source: Research Survey, 2023

Table 2 shows teachers' responses with frequencies 29, 29, 26, 31, 31 representing 82, 82, 74, 88, 88, 80 percentages, and students' responses with frequencies 70, 66, 73, 77, 69, 78 representing 82, 77, 85, 90, 81, 94 percentages respectively. This shows that both teachers and students agreed that those are consequences of unqualified teachers of English on the teaching and learning of English in secondary schools. This is because the percentage responses for both teachers and students went beyond the benchmark of 40% for acceptance.

Findings

The analysis of the data revealed that irregular salary payments, a lack of teachers of English with the necessary qualifications, inadequate testing of those qualifications prior to hiring teachers, a lack of seminars and workshops following hiring, placement in non-specialty areas etc. are among the causes of unqualified teachers of English in secondary schools in idah LGA, Kogi State, Nigeria.

These factors are consistent with Omolewa, (1986) lamentation that the declining standard of education is a result of ineffective teaching and learning in schools, the high student-teacher ratio and overcrowded classrooms, as well as the aggravatingly low and tardy wage payments. The results further demonstrated that the impact of inexperienced English teachers has an impact on both student achievement and the use of English itself. According to Anderson (1991), if objectives are to be attained, teachers ought to have the information, competence, skills necessary to do so, as well as the ability to put that knowledge, competency, and abilities to use.

As a result, a teacher's credentials are a sign of quality and are crucial to the attainment of students' academic performance. This backs up Akinsolu, (2005) argument that skilled instructors should be kept in schools if increased productivity is to be attained since students learn more from such teachers.

The results of this study also revealed the necessity for trained teachers of English to be successful in the teaching and learning process since every student who completes the course of learning in the field of English is expected to become proficient in utilizing the language in a variety of contexts. Furthermore, there is no alternative option given that English is the official language of Nigeria. In Nigeria, English is the primary language of teaching in schools, and proficiency in it lays the groundwork for success in other courses.

Finally, the research found that there are a few potential solutions to the issues, including hiring enough skilled teachers of English, paying their salaries on time, and providing and making accessible the essential instructional resources. This is consistent with Raw (2003) assertion that well-qualified teachers produced students with superior academic achievement. This is because these teachers are able to balance their students' minds and emotions throughout class, which results in improved academic performance.

Conclusion and Recommendations

The idea of unqualified teachers of English in schools causes harms that are not only limited to the issue of teaching and learning of English in secondary schools but also cause limitations in producing competent undergraduates, leading to poor skills in speaking and writing of English in our society.

Consequently, the following issues, in addition to teachers' unfair treatment by the government, are to blame for non-qualification of teachers: the profession of teaching is not held in high regard; lack of teachers' motivation; insufficient teacher workshops, seminars or other professional development opportunities etc. Since English is relevant in both schools and society at large, it is crucial to hire qualified and competent teachers to teach it.

In this regard, the following recommendations are made towards reforming education and ameliorating consequences of unqualified teachers on teaching and learning of English in secondary schools in Idah Local Government Area of Kogi State, Nigeria:

1. Addressing the Causes of Unqualified Teachers in English:
    a. Improve Teacher Training: Invest in comprehensive teacher training programs that equip educators with the necessary skills and knowledge to teach English effectively. These programmes should include coursework on pedagogy, subject-specific training and continuous professional development.
    b. Competitive Salaries: Ensure that teachers are offered competitive salaries and benefits to attract and retain qualified professionals. Adequate compensation can help deter the hiring of unqualified teachers out of financial necessity.
    c. Streamlined Hiring Procedures: Implement transparent and rigorous hiring processes that prioritize qualifications and merit over personal connections or political affiliations. Ensure that schools have access to a qualified pool of teachers through centralized recruitment systems.
    d. Regular Audits and Evaluations: Conduct regular audits and evaluations of teacher qualifications within schools to identify and rectify misplacements or improper assignments. Implement mechanisms for ongoing monitoring and accountability.
    e. Community Engagement: Raise awareness among parents and communities about the importance of qualified teachers and encourage their involvement in advocating for better teacher quality.
2. Mitigating the Consequences of Unqualified Teachers of English:
    a. Professional Development: Provide ongoing professional development opportunities for unqualified teachers to upgrade their skills and qualifications. Encourage them to enroll in relevant teacher training programs to bridge their knowledge gaps.

b. Mentorship Programs: Establish mentorship programs where unqualified teachers can work closely with experienced, qualified educators. This can help improve their teaching abilities and subject knowledge.
c. Supervision and Support: Implement a system of regular classroom observations and constructive feedback for unqualified teachers. Provide them with access to instructional resources and support from qualified mentors.
d. Alternative Instructional Aids: Utilise technology and educational resources to supplement the teaching of unqualified educators. Online courses, educational software and multimedia resources can enhance students' learning experiences.
e. Long-term Solutions: While these short-term measures can mitigate the immediate consequences, the ultimate goal should be to replace unqualified teachers with qualified ones through systematic teacher recruitment, training and retention strategies.

By implementing these recommendations, educational authorities and institutions can work towards ensuring that students receive quality English language education and minimize the negative impacts of unqualified teachers in secondary schools in Idah LGA, Kogi State, Nigeria.

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CASH MANAGEMENT AND PROFITABILITY IN (SMEs) IN WEST AFRICA USING NIGERIA AS A CASE STUDY

BY

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Abstract

The study sought to examine the relationship between Cash Management and Profitability in Small and Medium Enterprises (SMEs) in West Africa using Nigeria as a case study. A descriptive research design and purposive sampling techniques was used, 200 questionnaires were distributed and 30 respondents were interviewed in order to gather information from primary sources. The results revealed that there is a positive and perfect relationship between cash management and profitability in (SMEs) in West Africa, and the relationship is statistically significant. Findings obtained shows that (SMEs) plan for their cash as a measure against improper use, embezzlement, and fraudulent, an effective cash management plans allowed the SMEs to come up with a rational decision, cash planning, cash inflows, and cash withdrawals were all shown to have an impact on (SMEs) earnings, this means that profit making is directly connected to cash management. Finally, it was recommended that the SMEs should establish a guide designed to guarantee that cash is secure, there should be immediate deposit of cash collections as this reduces the opportunity and temptations to misappropriation, embezzlement and fraudulent, SMEs should adopt accrual system of financial transactions rather the cash-based system if it wants to attain most effective business financial stability, there should be system monitoring to ensure that it continuing to provide the desired results and as a means of handling the SMEs funds, surpluses and deficits funds should be committed in ventures that are beneficial to the business as a whole.

Keywords: Cash Management, Profitability and SMEs

Introduction

The goal of cash management is to improve the organization's financial situation, which is necessary to keep the business operating continuously. Pandey (2009) notes that it is a set of guidelines established by management to ensure that the organization has an optimal cash balance at any time to meet the firm objectives. Recovered cash should be equivalent to cash spent on services, such that there are no unused cash balances. In addition, Van Horne (2014) noted that cash management involves managing the monies of the firm to maximize cash availability and interest income on any idle funds. Cash management indicators include cash planning, which is a strategy used to plan and regulate the use of cash, cash control, cash allocation, and cash budgeting. (Van Horne 2014). According to Weston and Brigham (2013) profitability is the ability of a firm to earn returns on investment. According to Van Horne (2014) the higher the cash balances are in a business, the higher the returns or profitability, the lower the risk. Profitability metrics include return on capital, return on assets employed, and enough cash flows. Organizations use cash management approaches to ensure effective cash investment and to achieve profitability in both the short and long run. (Puxty and Dodds 2008; Pandey 2013; Akinsulire, 2012). Despite the implementation of these cash management strategies, 60% of SMEs in Africa go bankrupt, and 40% are forced to close due to inadequate cash management.

Objectives of the Study

1. To review SMEs' profitability in West Africa.
2. To examine the correlation between cash management and profitability of SMEs in West Africa.

Methodology

The population under investigation was comprised of certain categories of people chosen from the population. those people entrusted in handling the SMEs financial matters, administration, and accountability. A descriptive study design and purposive sampling was used, information was gathered from primary sources using questionnaires and interviews. 200 questionnaires were distributed, and 30 respondents including business owners, managers, and employees of SMEs were interviewed. Respondents were prompted for the response they personally felt was the most appropriate on a Likert scale of five. In an effort to explain and analyse the findings and draw conclusions from the research, tables and figures were used in the presentation of findings to determine frequencies and percentages.

Cash Management

Cash management entails managing the company's funds in order to maximise cash availability. (Pandey, 2009). It consists of measures taken by a company's management to help it carry out its management policies, adhere to financial rules and regulations, avoid and identify fraud and mistake, and encourage orderly, effective operations. (Van Horme 2014). According to Pandey (2007) cash is the money that a firm can disburse without any restriction. The term cash includes coins, currency and cheques held by the firm and balances on its bank accounts. Sometimes, near cash items such as marketable securities or bank deposits are also included in the cash (Pandy 2009). Pandey (2007) noted that cash management is concerned with management of cash flows in and out of the firm, cash flow within the firm and cash balances lent by the firm at a time of financial deficit surplus cash.

Motives for Holding Cash

According to Van Horne (2014) the need to hold cash may be linked to the following motives, transactionary, precautionary and speculative motive. The transactionary motive acknowledged that the organisation must do everyday transactions in order to maintain its profitability position. To ensure that business operations run smoothly, cash is necessary to pay for labour, supplies, and utilities. (Akinsulire 2012). As a precaution, cash is required to cushion the organisation against any unanticipated issues, which might have a detrimental impact on the organization's revenue. However, their impacts are lessened by the availability of monetary resources, which stabilises the organization's profitability. (Akinsulire 2012). The company holds cash on hand for speculation so that it may capitalise from any profitable opportunities that may arise unexpectedly. When the organization's cash is no longer obtainable for speculating, it won't be able to take advantage of these benefits, and any further earnings and savings from such events would be lost. (Puxty and Dodds, 1999)

Strategies for Managing Cash

Cash Planning

According to Pandey (2007) Cash planning is a means for organising and managing cash flow, in order to determine future cash requirements, it also requires making forecasting of cash revenues and payments. As a result, the management of the SMEs must decide on a schedule for regular payments and creditor repayment. With efficient cash planning system, the financial needs of the business will be met, with reduced possibility of the cash balance and cash deficits, which can lead to business failure. He further notes that a cash budget is the most significant device used to plan for and control cash receipts and payments. A cash budget is a summary statement of the firm projected time period. This information helps the financial manager to determine the future cash needs of the firm, plan for the financing of these needs and exercise control over cash and liquidity of the organization (Akinsulire, 2012).

Cash Collection

If an organisation may improve cash collections, it can save money as well as lower its need for cash reserves. A number of methods are designed to speed up the collection process such as Reducing the period it takes for payment from customers to reach the account of the business. According to Akinsulire, (2012), the business could use a system of pre-authorized debts where an arrangement is made in advance that customers could automatically transfer funds from their account to the business account at a specified future date. Reducing the collection float; according to Pandey (2007), the collection float is the total time it takes a cheque to reach the business, from the time it is put in the mail by the ccustomer to when cash is actually available for use in the business. Usually this is affected by the time the cheque spends in transit (mailing float), the time it takes the business to process the cheques internally (processing float) and the time it takes the clearing process of the banking system. This can be managed efficiently by two ways, i.e. using a lock box system and billing up multiple collection centers.

Control of Surplus and Deficit Cash Balance

According to Van Horme (1995), The aim of managing cash balance is to avoid having unused funds or deficits that can't be invested, especially in short-term investments like treasury bills and other sorts of commercial paper. Since investments are near cash, the liquidity of the organization is not comprised by the investment plan while profitability is also enhanced. The investment selected for this purpose should meet the following criteria. They should be safe in that search for profitability does not increase the risks of liquidity. The instruments should have a low default risk so that interest and principal repayment will be realized (Akinsulire 2012). In case of deficits, arrangements for financing should be in advance to avoid hurried solutions which rob the business of the opportunity to strike a fair deal and hence acquiring the resources that costs higher than those of the decisions that were taken in a relaxed atmosphere (Pandey 2007).

Cash Flow Management

Generally, many people consider that cash transactions are supposed to be deferred as long as feasible without compromising the organization's financial standing or prompting it to default on its obligations to its customers. The idea is that payment should only be paid when deferral is no longer necessary, feasible or valuable. (Akinsulire 2012, Van Horme 1995, Pandey 2007). The way of delaying, disbursements that were generally agreed upon by above scholars include; Predicting banking habits of the work force and paying out the wage bill accordingly. Wages should not be paid in advance when workers are willing to accept delayed payments. During this period, the business will be able to make profits out of that money. Payments should be made via cheque as bank clearing requires a considerable amount of time.

Cash Management Indicator

Cash Control

This outlines the management's broad view and plan course of action with regarding the organization's cash management system. A strong control is a system with efficient supervision on cash balances, cash brought down, and effective budgetary management of cash received, cash banked, cash, and bills. According to Hamilton (2008) an obvious aim of a business is to control and manage its cash affairs in such a way as to keep a cash balance at a minimum level and invest surplus cash in investment opportunities.

Cash Allocation

Cash sources need to be accurately identified, and cash must be allocated effectively; for example, cash received for purposes related to the supply of essential business requirements should be put to use to obtain such requirements or supplies. Puxty and Dodds (1999), it is essential to keep some of the organization's resources in cash due to generally recognized motives for holding cash by business unit. The need to hold cash may be attributed to motives like transaction motive in order to protect profitability positions of business, for precautionary motive that is cash is needed to cushion the business against any unforeseen problems which have a profitable and a speculative motive is where the business maintains cash balances in order to take advantage of any profitable venture that may unexpectedly crop up.

Profitability

Profitability was defined by Mugerwa (1997) as an income earned on the excess of the input cost after a sale of service or product. Balunywa (2008) observed that present traditional economists take profit maximization as the objective of a firm. He further said that some scholars have a different view as they think profit making as not as inclusive as that of maximizing shareholder wealth. However, Balunywa in his view noted that any good performed organization should be able to realize profits. Griffith (2008) in agreement with Baluywa (2008) noted that business profitability is the justification of its good performance. Indeed, profits of a business are the end result of the operation and indication of its good performance. Kimbowa (2009) noted that organizational profitability is affected by factors such as cost of input, management of cash flows, government policy and borrowing culture. If the business relies more on loans, costs such as interest rates will not be avoided and this has a negative impact on profitability. Kakuru (2013) provided that organizational profitability is affected by the cost of capital. In this case, the cost of capital is usually increased by related dividends and interest rates from providers. The greater the default risks the higher the interest rates, lenders charge on loans and the lesser the profitability. Contrary the chances of default, the lesser the interest rate charged, the cheaper the cost of capital, the higher the profitability that will be earned on capital.

According to Limpsey (2006) organization's profitability is affected by many factors and these include changes in demand, change in prices of both input and output such as capital and labor, then level of staff productivity.

Small and Medium Enterprises (SMEs)

Small and Medium Enterprises (SMEs) have been long recognized as an instrument of economic growth and development (Akande and Yinus 2013). This growing recognition has led to the commitment of the World Bank group to the SMEs sector as a core element in its strategy to foster economic growth, employment and poverty alleviation (Akande and Yinus 2013). The importance of small and medium enterprises has not been in doubt; unfortunately classifying businesses into large and medium scale is subjective and premised on different value judgment. Such classification has followed different criteria such as employment, sales or investment for defining small and medium scale enterprises (Gadi 2013). According to extant literature, the definition varies in different economics, but the underlying concept is the same (Akande 2013). Ojo, (2004) contends that the "definition of small and medium enterprises varies according to context, author and countries". Small and medium enterprises are certainly not transnational company, multinational cooperation, publicly owned enterprises or large facility of any kind. However, they can depend on business and ownership structure to become a large business unit. (Akande, 2005; Kozak, 2007). However, where it is effectively operated, it has the capacity to sprout the economic growth and national development (Akande, 2013). In every economics small and medium scale enterprises has been seen as a pivotal instrument of economic growth and development either in development for developing economies. Several studies have confirmed this (Ovia, 2008; Ojo, 2004, Asaolu 2004; Akande, 2013; Kozak, 2007; Oladejo, 2008).

Relationship Between Cash Management and Profitability

Cash inflows and outflows are constantly fluctuating all over time, Due to numerous expenses, such as paying taxes, dividends, and seasonal inventory accumulation, cash outflows will exceed cash inflows. There is a risk of insolvency when cash outflows exceed revenues. Profitability will be at risk if the firm has near-cash assets to convert and make such payments. In an earlier period, cash inflows may exceed withdrawals of cash, resulting in high liquidity and dormant investments in cash that would cost the organisation revenue. Consequently, cash management minimises the adverse effects of inconsistent cash inflows and outflows and maximises profitability. (Shiff, 2010). Lynch (2008) noted that one of the major aims of cash management is to accelerate cash inflows and delay cash outflows. However, Lynch warned that both positions have associated dangers. Once cash inflows are accelerated, the costs of management and cash collection will most likely minimize while profitability will be miximize, however the reduction of the credit period might negatively affect sales, which most likely minimise a profit.

Lynch (2008) further noted that delaying cash outflows might result in an ethical issues and costs. Over delaying to pay staff salaries and wages may result into resentment of work, low morale, low productivity, high labor turnover, strikes, frauds and theft, which increase operating costs that minimize profitability. According to Akinsulire (2012) if cash management concentrates on boosting the liquidity, high balances of cash will be maintained. However, the higher these balances are, the most profitability will be foregone. This is risky, especially to people who expect profitable ventures. On the other hand, if cash management seeks to boost profitability, investments are highly risky but profitable and the business is threatened, as there will be no cost to meet the operating obligations as they fall due. If care is not taken, profitability will be short lived, as the business will be forced to close due to illiquidity. To Mantile Et al (1995), Hamilton (2001) and van Horme (1995) one of the primary objectives of a cashier is to maintain a sound liquid position of the business in order to meet motives of holding cash. In this case, the amount of cash balance will depend on the risk return trade off. The business maintains optimum neither just enough, nor too much, nor too little cash balance. The purpose of managing cash balance is to avoid having idle cash reserves or having deficit that cannot be covered easily (Kakuru 2008). If surplus cash balances are invested near cash forms, the illiquidity of the business will not be compromised by the investment and profitability will be maximize.

Result and Findings

Results on the 2nd Objective, Correlation Between Cash Management and Profitability in SMEs in West Africa.

Correlations

			Cash Management	Profitability
Spearman's rho	Cash Management	Correlation Coefficient	1.000	.932*
		Sig. (2-tailed)	.	.000
		N	200	200
	Profitability	Correlation Coefficient	.932*	1.000
		Sig. (2-tailed)	.000	.
		N	200	200

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

The table above shows a positive and perfect relationship between cash management and profitability in SMEs in West Africa, and this relationship is statistically significant and can also account for 95% of the variance (rho) as shown by Spearman's correlation coefficient as 0.932 and correlation is significant at 0.05 (2-tailed). This means that with a successful cash management system in position, profitability will continue to grow.

This is because cash management has a significant effect on profitability, for instance, as long as cash planning, cash collection, cash allocation, and cash budgeting are prioritised in SMEs when dealing with cash, profitability will continue to be favourable.

Findings

According to the findings obtained, SMEs in West Africa plan for their cash as a measure against improper use, embezzlement, and fraudulent. It was also discovered that an effective financial plan allowed the SMEs to come up with rational decision. Cash inflows, cash withdrawals, and cash planning have been among the proved to have an effect on the level of SMEs earnings in West Africa. It was also discovered that every single one of the three variables above move in exactly the same path, meaning that only a small variation in any one of the variables can changes the other variables. This means that profit making is directly connected with SMEs cash planning.

Conclusions

The key areas of emphasis were cash management and profitability, with the general results indicating that cash management is one of the most important instruments in any SMEs. Given the size of the SMEs and difficulty, running a business without cash management would ultimately have been an unattainable goal. Considering natural failures and system impediments, a great deal of quality work can be accomplished, and employee commitment is necessary. But since learning is a process, there is always an opportunity for advancement, which is why the following recommendations were made.

Recommendations

For successful cash management and profitability in SMEs in West Africa the followings are made;

1. SMEs should establish a guide, designed to guarantee that cash is secure.
2. There should be immediate deposit of cash collections, as this reduces the opportunity and temptations to misappropriation, embezzlement and fraudulent.
3. SMEs should adopt accrual system of financial transactions rather the cash-based system if it wants to attain most effective business financial stability.
4. There should be system monitoring to ensure that it continuing to provide the desired results.
5. As a means of handling the SMEs funds, surpluses and deficits funds should be committed in ventures that are beneficial to the business as a whole.

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ASSESSMENT OF EXPERTS OPINION ON THE APPLICATION OF ARTIFICIAL INTELLIGENCE ON ACADEMIC PROJECT DEVELOPMENT IN TERTIARY INSTITUTIONS IN BAYESLA STATE

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Abstract
The study deals with the assessment of experts' opinion on the application of artificial intelligence on academic project development in tertiary institutions in Bayelsa State. Two research questions and one hypothesis were used in the study. The study employed the descriptive survey research design. The population comprises of 120 lecturers in the department of Computer Engineering and Computer Science in various tertiary institutions in Bayelsa State. The entire population was adopted and used as sample for the study. The study developed an instrument titled "Experts Opinion on the Application of Artificial Intelligence on Academic Project Development" (EOAAIAPD). The instrument was subjected to face and content validation by two experts in the department of computer science in Bayelsa State Polytechnic, Aleibiri. The experts checked the appropriateness of the language content used on the instruments and research questions. The data obtained from the study was analyzed using simple mean, standard deviation, Pearson Product moment Correlation Coefficient and charts. Findings obtained from the study showed that students incorporate AI assisted program in the development of academic project, students analyze their projects using AI assisted programs and students use AI application for data analysis in academic projects. Also, findings show that students apply AI programs in developing term papers, students utilize AI technology in solving complex management and engineering problems and Students use AI software in composing classroom notes. Further findings shows that there is no significant correlation between the application of Artificial Intelligent Software in the development of students' project and the extent to which students interact with artificial intelligent software in their daily academic activities. Finally, it was recommended that seminars should be organized to train teachers and students on the application of Artificial intelligence on project development.

Keywords: Experts, Application, Artificial, Intelligence, Academic, Project & Development

Introduction

As artificial intelligence (AI) becomes more effective and machine learning becomes increasingly capable of internalizing complex concerns, we approach an age where faculty and staff can be relieved of many labor-intensive, but ultimately rote, tasks. Innovators in the marketplace are already beginning to tackle that challenge, and while we are a long way off from a higher education world out of science fiction, AI solutions exist in the market that free up brainpower and time, allowing us to pursue a rigorous, adaptive and personalized experience for students. There is a rush across a variety of markets to implement AI solutions within organizations, the key goal and focus being scale. Tasks that no longer require human labor become cheaper, more efficient, and generate a better value to the consumer through lower costs or more output for existing costs. Before discussing how AI is affecting higher education and its future role on campuses, in the job market and beyond, we should operate with a working definition of what it is and what features it may entail.

We believe that AI will have a positive influence on higher education, improving outcomes and helping institutions scale quality education for their students. This will hopefully lead to a cheaper, more responsive approach to our industry. For higher education to take full advantage of AI, there are a variety of regulatory, societal and organizational concerns that must first be addressed. Not only will the institution as a concept need to change, but so will how we as society view its contribution to the workforce. While there remain practical and ethical challenges to be resolved in this space, the potential of AI warrants the requisite effort to address them.

Imagine a world where grading a full course's papers takes 15 minutes, and teaching assistants, student advisors and enrollment counselors are available 24 hours a day, seven days a week. This is a world where a student's degree plan can shift instantly based on his or her needs, updated with a clear breakdown of how those shifts will affect costs, and quickly relayed to his or her advisor. Imagine a world where faculty can create immersive, real-world experiences for students without leaving the classroom, map out a class's misconceptions about material down to discrete learning outcomes and select a series of intervention strategies targeted to each student's unique learning needs.

The concept of Artificial Intelligence is not as modern as we think it is. This traces back to as early as 1950 when Alan Turing invented the Turing test. Then the first chatbot computer program, ELIZA, was created in the 1960s. IBM deep blue was a chess computer made in 1977 beat a world chess champion in two out of six games, one won by the champion and the other three games were draw.

Artificial Intelligence (AI) has been increasing in its use in our everyday lives spanning a broad swath of uses ranging from personal assistants, purchase reference and prediction, smart homes and cars, fraud detection, online customer support, and even assisting personal relationships. This increasing use is fueled by the use of machine learning, computer modelling, and algorithmic creation enabled by ever bigger data sets combined with ever more capable technological capabilities driven by Moore's Law (Schaller, 1995) and Metcalfe's Law (Hendler & Golbeck, 2008). The upward and accelerating trajectory of AI, encapsulated in the concept of the singularity, has drawn both excitement and concern from scientists, economists, and political and business leaders. The largest fear is that AI will outsmart its creators allowing the machines to turn the tables and become the masters, using our psychology to program our behavior. Further disquiet exists with respect to ethical considerations (Moore, 2006), governance of appropriate usage (Khatri & Brown, 2010) and to instances where programming bias have been shown to exist in early deployments of the technology (Devlin, 2017).

These concerns are valid and remain to be addressed, however it is not our intention to pursue these here. We are viewing real applications of AI to education that are practical and achievable in the near term. More broad-based sociopolitical and economic issues are not discussed in this paper. Nor are implications for the curriculum and the almost certain requirement for the incorporation of AI literacy and information accuracy into all disciplines, lest intellectual laziness yield an unverified trust to systems that were based on their creators' assumptions. The student higher education experience can be considered as a series of interdependent, overlapping, but not necessarily sequential, phases. This life-cycle approach is often used by administrators to manage student life as it distinguishes the critical elements of experience allowing the design and delivery of focused administrative services. The student lifecycle in higher education is defined as the journey of the student from first contact with an institution through to becoming an alumnus. The ultimate goal of a student is academic achievement accompanied by self-development through the academic experience. The academic success of students, however, relies on a composite of all aspects of the student's life. These other aspects include mental welfare and support, social interactions, sports and physical health, effective life balance, all of which contribute to the experience the student has in their higher education career (Morgan, 2013). Applying a technology into a complex environment, particularly one as traditional as higher education, is a very challenging endeavor. As with many technologies, the key question is where to start, what use case would provide a fair test of the technologies capabilities? The purpose of this paper is to address this by providing an approach for the coherent adoption of AI into higher education institutions to lessen both the cost and time for its benefits to be available. The use of the student lifecycle and the grouping of activity sets creates target groups for experimentation and piloting within definable and accepted domains, allowing for effective hypothesis testing, collaboration and comparison with other institutions. While not wishing to underestimate the degree of difficulty such a shift may incur, it is reasonable to suggest that such an approach will improve the rates of early adoption and the speed to production. One model developed to use this framework to understand the student journey, outlining the different stages that a student transitions through during their academic career, is the Student Experience Practitioner Transitions (SEPT). The model was developed to educate and guide practitioners about the various kinds of supports students need at each stage (Morgan, 2013).

Purpose of the Study

The study examined experts' opinion on the application of artificial intelligence on academic project development in tertiary institutions in Bayelsa State. Specifically, the study sought to:

3. Find out the extent of application of Artificial Intelligent Software in the development of students' project.
4. Find out the extent to which students interact with artificial intelligent software in their daily academic activities.

Research Questions

The following research questions were developed and used for the study:

1. What is the extent of application of Artificial Intelligent Software in the development of students' project?
2. What is the extent to which students interact with artificial intelligent software in their daily academic activities?

Hypothesis

The null hypothesis was adopted and tested at 0.05 level of significance.

There is no significant correlation between the application of Artificial Intelligent Software in the development of students' project and the extent to which students interact with artificial intelligent software in their daily academic activities.

Scope of the Study

The study is limited to experts' opinion on the application of artificial intelligence on academic project development in tertiary institutions in Bayelsa State.

Literature Review

The Artificial Intelligence Process AI is a broad field that is comprised of many disciplines including computer engineering, computer science, statistics, linguistics, psychology, and decision science. It is essentially concerned with getting a computer to replace human intelligence in assigned tasks. Given the breadth of the field it is not surprising that there are quite a few definitions of AI. In addition, these are non-constant as the capabilities develop. What was once considered AI begins to be seen as algorithmic development or big data analytics. A commonly accepted breakdown is to view AI as the overarching rubric which encompasses Machine Learning, which further encompasses Deep Learning. Rich and Knight (1991) state that "Artificial Intelligence (AI) is the study of how to make computers do things which, at the moment, people do better".

The definition of Artificial Intelligence, as stated in the first Volume of the Handbook of Artificial Intelligence is that "Artificial Intelligence (AI) is the part of computer science concerned with designing intelligent computer systems, that is, systems that exhibit the characteristics we associate with intelligence in human behavior - understanding language, learning, reasoning, solving problems, and so on" (Barr & Feigenbaum, 1981). This definition is appealing, as in this paper we are imagining a system that can correlate data from different sources and present options and pathways to students based on their interests and eligibility, similar to a human counsellor. For the propose of this paper we take AI's meaning in the broadest sense, any use of a computer to replicate or substitute human intelligence to provide insights through the application of various machine enabled analytical processes to large data sets. Insights from Artificial Intelligence are only possible when data is available related to the sought for insight. This data may be collected by surveying people, gathered from people completing tasks, automatically generated and stored by a system in log files, entered in by an analyst, etc. Data may be structured, always in a particular format e.g. form entered data; semi structured, complying to a structure e.g. emails; or unstructured, where it does not comply to a given structure e.g. photographs.

Incorporation of Artificial Intelligence at the Classroom Level

The mechanics have to be explained here and then the experience. The student would first interact with the system and input their interests, performance in studies to date, work experience, amongst other information. The intelligent system would then be able to provide a listing of the programs that the student is eligible for at the institute. If this system is utilized by more than one institution, programs across institutions might be suggested to the student as well. Possible pieces of information that could be utilized to train such a system could be the information from current students who are pursuing a program at the institution, their interests, the programs that they might have considered before pursuing the one they are in as well as career prospects. Similar data may be collected from alumni, noting the career that they are pursuing. Once the student decides on a program of study and is accepted, the system would be able to show the student possible scholarships, volunteer opportunities, as well as present program specific information about preparing for the first day, book a tour of the campus, residence services, library services, potential student clubs (based on the interests that the system is already aware of), time scheduling, and so on. This would potentially cover the second and third stages of SEPT. After classes have been selected and a term has been successfully completed, the system would be able to offer more refined job and volunteer opportunities based on the skills that the student has learned as a result of this education. Sweeney, Lester and Rangwala (2015) and Sweeney, Rangwala, Lester and Johri (2016) cited in Khare, Lam and Khare (2018) "predict whether the combination of courses that a student is taking in the current term would overwhelm the student. Thus, their research gives insight to students about courses they are taking, to counselors who advise the students about the course load and to instructors on considering differing course combinations. This would be an intelligent system that knows what the student is studying in all courses, the deadlines coming up as well the next set of courses that would become open to the student if s/he does well in his/her current set.

This would integrate data from the various courses and the database of course dependencies to show the student possible what-if schedules for next term and year, one that can be changed according to interests and constraints facing the student. The system would also be able to analyze integrated data from the numerous sources to present the student his/her best options (Woolf, Lane, Chaudhri, & Kolodner, 2013). This also relates to the field of learning analytics and student competences and skills. Zhang and King (2016) analyze the order in which questions should be presented based on the knowledge level of the students. This can be further applied to the skills that courses teach and other courses require.

Methods

The study employed the descriptive survey research design. The population comprises of 120 lecturers in the department of Computer Engineering and Computer science in various tertiary institutions in Bayelsa State. The entire population was adopted and used as sample for the study. The study developed an instrument titled "Experts Opinion on the Application of Artificial Intelligence on Academic Project Development" (EOAAIAPD). The instrument is a four-point rating scale consisting of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). The response options were weighed as 4, 3, 2 and 1 respectively. The instrument consists of a total of six (6) items. The instrument was subjected to face and content validation by two experts in the department of computer science in Bayelsa State Polytechnic, Aleibiri. The experts checked the appropriateness of the language content used on the instruments and research questions. The data obtained from the study was analyzed using simple mean, standard deviation, Pearson Product moment Correlation Coefficient and charts.

Data Analysis

Research Question 1

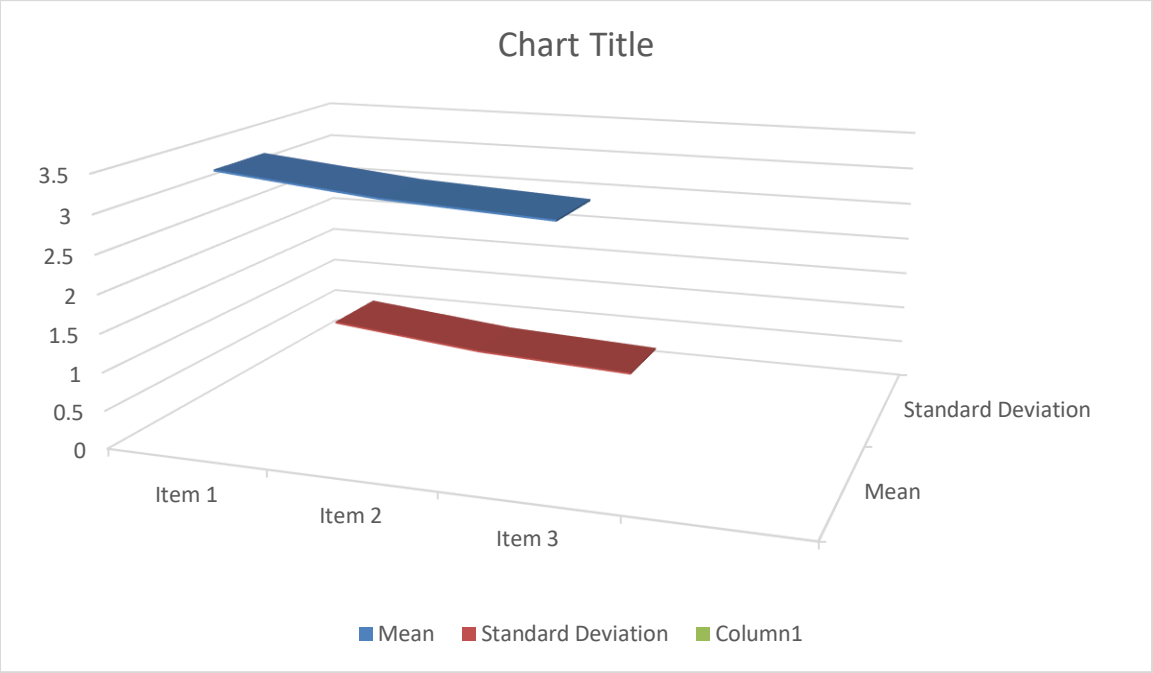
What is the extent of application of Artificial Intelligent Software in the development of students' project?

Table 1: Application of Artificial Intelligent Software in the development of students' project

S/N	ITEM	MEAN	STANDARD DEVIATION	DECISION
1	Students incorporate AI assisted program in the development of academic project.	3.44	0.65	Agree
2	Students analyze their projects using AI assisted programs.	3.23	0.43	Agree
3	Students use AI application for data analysis in academic projects	3.12	0.33	Agree
	Grand Mean	**3.26**	**0.47**	

Findings obtained from table 1 showed that items 1, 2 and 3 all agreed to the fact that students incorporate AI assisted program in the development of academic project, students analyze their projects using AI assisted programs and students use AI application for data analysis in academic projects.

Figure 1: Application of Artificial Intelligent Software in the development of students' project



Findings obtained from figure 1, showed that item 1, 2 and 3 had a mean and standard deviation value of 3.44;0.65, 3.23; 0.43 and 3.12;0.33. This implies that students apply artificial intelligence in project development.

Research question 2

What is the extent to which students interact with artificial intelligent software in their daily academic activities?

Table 2: Students interact with artificial intelligent software in their daily academic activities

S/N	ITEM	MEAN	STANDARD DEVIATION	DECISION
4	Students apply AI programs in developing term papers.	3.01	0.23	Agree
5	Students utilize AI technology in solving complex management and engineering problems.	3.11	0.33	Agree
6	Students use AI software in composing classroom notes.	3.41	0.64	Agree
	Grand Mean	**3.18**	**0.40**	

Findings obtained from table 2 showed that items 4, 5 and 6 all agreed to the fact that students apply AI programs in developing term papers, students utilize AI technology in solving complex management and engineering problems and Students use AI software in composing classroom notes.

Hypothesis

There is no significant correlation between the application of Artificial Intelligent Software in the development of students' project and the extent to which students interact with artificial intelligent software in their daily academic activities.

Table 3: Correlation between the application of Artificial Intelligent Software in the development of students' project and the extent to which students interact with artificial intelligent software in their daily academic activities

S/N	Application of Artificial Intelligent Software in the development of students' project (X)	Students interact with artificial intelligent software in their daily academic activities (Y)	X^2	Y^2	XY
1	3.44	3.01	11.83	9.06	10.35
2	3.23	3.11	10.43	108.79	10.05
3	3.12	3.41	9.73	94.67	10.64
	$\sum$= 9.79	$\sum$= 9.53	$\sum$=31.99	$\sum$=212.52	$\sum$=31.04

Findings obtained from table 3 showed that r-calculated value of -0.023 is less than r-critical value of 0.999 at 0.05 level of significance.

The null hypothesis was therefore accepted. This implies that there is no significant correlation between the application of Artificial Intelligent Software in the development of students' project and the extent to which students interact with artificial intelligent software in their daily academic activities.

Discussion of Findings

Findings obtained from the study showed that students incorporate AI assisted program in the development of academic project, students analyze their projects using AI assisted programs and students use AI application for data analysis in academic projects. This is in line with the opinion of Sweeney, Lester, & Rangwala, (2015) that states that AI has given students the room to improve on project development and other academic activities.

Also, findings show that students apply AI programs in developing term papers, students utilize AI technology in solving complex management and engineering problems and Students use AI software in composing classroom notes.

Further findings show that there is no significant correlation between the application of Artificial Intelligent Software in the development of students' project and the extent to which students interact with artificial intelligent software in their daily academic activities.

Conclusion

The study showed that students apply artificial intelligence in project development. Also, findings show that students apply AI programs in developing term papers, students utilize AI technology in solving complex management and engineering problems and Students use AI software in composing classroom notes.

Recommendation

Finally, it was recommended that seminars should be organized to train teachers and students on the application of Artificial intelligence on project development.

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ARTIFICIAL INTELLIGENCE KNOWLEDGE APPLICATION AND STUDENT COGNITIVE DEVELOPMENT IN TERTIARY INSTITUTIONS IN BAYELSA STATE

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Abstract

The study deals with artificial intelligence knowledge application and student cognitive development in tertiary institutions in Bayelsa State. Two research question and one hypothesis were used in the study. The study employed the descriptive survey research design. The population comprises of 120 lecturers in the departments of computer engineering and computer science in various tertiary institutions in Bayelsa State. The entire population was adopted and used as sample for the study. The study developed an instrument titled "Artificial Intelligence Knowledge Application and Student Cognitive Development" (AIKASCD). The instrument was subjected to face and content validation by one expert in the department of computer science in Bayelsa State Polytechnic, Aleibiri. The data obtained from the study was analyzed using simple mean, standard deviation, Z-test and charts. Findings obtained from table 1, showed that students have random knowledge on artificial intelligence application, students have seen artificial intelligence software and students can detect AI application when in contact with any. Findings obtained from table 2, showed that students use artificial Intelligence program for academic activities, students carry out academic task using artificial Intelligent programs and students apply artificial intelligence programs in conducting academic projects. Further findings showed that there is no significant difference between the level of awareness and utilization of Artificial Intelligence by students for cognitive development in tertiary institutions in Bayelsa State. Based on the findings of the study, it was recommended that Artificial Intelligence programs and courses should be incorporated in the education curriculum to enhance students' knowledge in the field of study.

Keywords: Artificial, Intelligence, Knowledge, Application, Cognitive & Development

Introduction

The introduction of computer and robotic technology had influenced the world in different dimensions. The advancement of artificial intelligence in industry, education and different aspect of life had created a new system for human development and comprehension. The marvel of AI and the technical assistance it had provided for different work functions had increased man dependence on its programs. Historically, artificial Intelligence term was created by John McCarthy in 1956 who defined it as "the science and engineering of making intelligent machines." AI is the unit of computer science which is connected with the study and design of intelligent agents that perceives its environment and takes actions which maximize its chances of success. AI can also be referred to as the ability to hold two different ideas in mind at the same time and still remain the ability to function. But AI must include the learning from past experience, reasoning for the decision making, inference power and quick response. Also, it must be able to take decisions on the basis of priorities and tackle complexity and ambiguity. Machines programmed to carry out tasks, when carried out by humans would require intelligence, are said to possess artificial intelligence. AI's scientific goal is to understand intelligence by building computer programs that exhibit intelligent behavior by using symbolic inference, or reasoning inside the machine. AI definition is not time-independent. It gives the judgment of any system by keeping time in mind.

The development of AI by learning and adopting to new knowledge programed by machines had enhanced perfection and productivities. The AI program comes with a lot of features that is dependent on client needs. According to Brook ordinary programming languages do not have the abilities to deal with qualitative information. Therefore, the AI machines, are programmed to work with their own developed programming language to manipulate knowledge more effectively. AI programs are unique from ordinary programming languages. They are developed to manipulate consistently qualitative rather than numeric details. They use declarative knowledge, i.e. assertions whose truth-value do not rely on the algorithmic context. They can induce, deduct and sometimes guess data. The system is designed to reappraise decisions by employing back tracking to prefer solution.

An expert system is a machine system in which significant human knowledge is imbedded in machine memory in order to provide smart council and offer explanations and justifications of its decisions or demand. Expert systems is dependent on a large database of well-defined specialized knowledge about a particular area. The development of such programs is referred to as Knowledge Engineering. All such AI programs that achieve expert-level competence in solving problems in task areas by using knowledge about specific tasks are called knowledge-based Systems or expert systems. These programs contain the knowledge used by 1 human experts, in contrast to knowledge gathered from textbooks. Because of these expert systems are like human experts e.g. doctors, engineers, analysts, teachers, geologists etc which encapsulate the skills of an expert and to dispense advice to less knowledgeable users.

This transfer of knowledge depends upon the task and will take place gradually through many interactions between expert and the system. It is easier to build expert system than ones with common sense. They represent task domain. Task means some goal-oriented, problem-solving activity and domain refers to the area within which the task is being performed. One of the earliest expert systems MACSYMA which performed a variety of symbolic mathematical tasks, was composed of a set of fairly unstructured LISP functions. There are many expert systems exists which have been designed for giving expertise training, designing and trouble-shooting etc. like MYCIN, TURNX, PROSPECTOR.
Intelligence has been considered as one of the most important qualities of human beings because every human behavior has actually been ascribed to intelligence. According to Kumar (2018), over history has been known to have intelligent of all the created animals in the world. This is revealed in the level of dominance in all it activities and manipulation of the world today. Human intelligence is expressed when human behavior interacts with nature and human environment, such that random mutations for greater intelligence get selected naturally.

This study of intelligence in machines is referred to as Artificial Intelligence (AI), which is commonly implemented in computer systems using programs through appropriate electronic circuits (Smith, 2006). Artificial Intelligence (AI) was founded on the claim that human intelligence can be so precisely described that a machine can be made to simulate it. This raises philosophical arguments about the nature of the mind and the ethics of creating artificial beings endowed with human-like intelligence which are issues that have been explored by myth, fiction and philosophy since antiquity (McCorduck, 2004). Some people also consider Artificial Intelligence (AI) to be a danger to humanity if it progresses unabated. Others believe that Artificial Intelligence (AI) unlike previous technological revolutions will create a risk of mass unemployment. This implies that artificial intelligence is involved in the project of developing machines endowed with the intellectual processes and characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from past experiences. Research in Artificial Intelligence (AI) focuses chiefly on the following components of intelligence: learning, reasoning, problem solving, perception, planning and using language.

In today's educational system artificial intelligence developed educational programs and software to enhance students research ability and to improve students' cognitive ability. The programs has created a new level of awareness that given students the opportunity to carry out research works easily.

Purpose of the Study

The study looked at artificial intelligence knowledge application and student cognitive development in tertiary institutions in Bayelsa State. Specifically, the study sought to train and develop competent students with the knowledge of artificial intelligence with the mind of observing their reaction in terms of knowledge, usage and application to problem solving's in the society.

Research Questions

The following research questions were developed and used for the study:

1. What is the level of awareness of students on Artificial Intelligence application on academic activities?
2. What is the extent of utilization of Artificial Intelligence by students for cognitive development?

Hypothesis

The null hypothesis was adopted and tested at 0.05 level of significance.

There is no significant difference between the level of awareness and utilization of Artificial Intelligence by students for cognitive development in tertiary institutions in Bayelsa State.

Scope of the Study

The study is limited to artificial intelligence knowledge application and student cognitive development in tertiary institutions in Bayelsa State.

Literature Review

Concept of Artificial Intelligence

Artificial intelligence (AI), sometimes called machine intelligence, is intelligence demonstrated by machines in contrast to natural intelligence displayed by humans and other animals (McCorduck, 2004). This implies that machines can be made to perform tasks commonly associated with intelligent beings like humans and animals. It is an area of computer science with the help of digital electronics that emphasizes the creation of intelligent machines that work and react like humans. The term is frequently applied to the project of developing systems endowed with the intellectual processes and characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from past experiences. Since the development of the digital computer in the 1940s, it has been demonstrated that computers can be programmed to carry out very complex tasks like discovering proofs for mathematical theorems and playing chess with great proficiency. Artificial Intelligence (AI) has been studied for decades and is still one of the most challenging subjects in digital computer. However, it is taking the world by storm, considering the application of its innovative uses across all industry segments. Indeed, the world is decades away from replacing every human intelligence with AI robots. AI technology ranges from machines truly capable of thinking to search algorithms used to solve societal problems. In fact, intelligent robots are slowly and gradually in demand and can be considered as an emerging technology in the field of surgery. Most AI examples that is heard about today from chess-playing computers to self-driving cars rely heavily on deep learning and natural language processing (McGuire, 2006). Using these technologies, computers can be trained to accomplish specific tasks by processing large amounts of data and recognizing patterns in the data. The overall research goal of artificial intelligence is to create technology that allows computers and machines to function in an intelligent manner. The general problem of simulating (or creating) intelligence has been broken down into sub-problems. These consist of particular traits or capabilities that researchers expect an intelligent system to display.

The traits are learning, reasoning, problem solving, perception, planning and speech recognition. These traits have been described to have received the most attention in AI technology.

Artificial Intelligence (AI) creates an encouraging environment, especially, can provide a favorable context for students learning characteristics and process. Artificial intelligence consists of all forms of electronically reinforced learning, processing and teaching. The easy and flexible structure of these AI influenced environments empowers learners to accommodate their personal needs in their own time learning. Thus, we can say that AI is a well-designed tool that offers a flexible arrangement, collaboration opportunities, and options and control over learning process that can provide learners and teachers with the opportunity to pursue learning process effectively. Also, in AI in higher education institutes is the responsibility of tutors. Using AI teachers can create a learning environment that permits the students to develop a better understanding of content and build associations with instructors and students. Entire globe has completely digitalized. Education has definitely been influenced by the digital world. The fast-paced technology provides individuals in the area to training and learning with unlimited possibilities. With the global interest in computers, artificial intelligence has been focused in learning environment. This AI presents different functions for academic surroundings. Computers have potential advantages to both the instructors and the students. With the arrival of the computer, AI is playing an important role in the higher education institutes. Plenty of programs have been created for various fields or professional classes. The conventional teaching and learning methods usually lack efficient methods of explaining an intuitional and clear material, while AI can make up through the use of new software and hardware methods. From the viewpoint of AI program, there is more scope in teaching in the classroom compared to other mere learning methods. Thus, the emphasis is given on adopting AI in the classroom as well as outside classroom.

Artificial Intelligence and Nigeria Educational Systems

The introduction of Artificial Intelligent robot is gradually taking the place of humans in the labor industry. AI are gradually occupying the spaces and jobs meant for humans in most industries. In Nigeria, almost all the works are done manually by humans, hence causing several economic dangers due to poor production and poor technology inclination. However, AI technology is efficient enough to reduce human efforts in various areas hence improving production and technology. In developed nations, in order to improve production in various activities in the economy, many of them are using artificial intelligence to create machine slaves that perform various activities on a regular basis. The use of artificial intelligence will assist humans to get the work done faster and with accurate results.

Error free and efficient worlds are the main motives behind artificial intelligence. In the recent years, many nations have started using AI technology to reduce human efforts, and also to get efficient and faster results, but Nigeria is yet to give the required attention in AI.

With the job substitutions and relocations created by AI, future job market and required ranges of skills would be fundamentally unique in relation to now (Siau, 2017, 2018; Rainie and Anderson, 2017). This job skills cut across different spheres of life. In the educational industry, the ability to carry out analytical thinking can be achieved with the application of artificial intelligence. Students can create wonderful notes and materials with the assistance of AI. The AI programs create a sense of direction and purpose in terms of cognitive thinking. It chooses and selects ideas randomly to suit the need of the clients. AI has been proven to handle complex learning problems and projects in higher institutions. In some cases, complex formulas can be programed and analyzed by AI in the educational field.

Major obstacles for artificial intelligence in Education as proposed by Woolf, et al., (2013)" incorporates virtual coaches for each student in which inescapable help that coordinates user displaying, social reenactment and information portrayal, helps students with self-heading, self-evaluation, collaboration and then some, unite the tremendous measures of information about individual learning, social settings, learning settings and individual interests, increment the inter connectedness and openness of classrooms worldwide and taking learning outside of the study hall and into the student life outside of school.

Following the trend of AI dominance in the world of technology, there is the likelihood of having machine instructors that will teach in institutions of higher learning in time to come. This may make many tutors to lose their jobs in time to come. With the job substitutions and relocations created by AI, future job market and required ranges of skills would be fundamentally unique in relation to now (Siau, 2017, 2018; Rainie and Anderson, 2017). Various examinations revealed that jobs that include routine tasks and organized are simpler to computerize and will be supplanted by AI soon. Despite what might be expected, work assignments that are progressively unstructured and included overseeing individuals are harder to be supplanted by AI. Advanced education should be versatile and develop ceaselessly in the global arena.

Methods

The study employed the descriptive survey research design. The population comprises of 120 lecturers in the departments of computer engineering and computer science in various tertiary institutions in Bayelsa State. The entire population was adopted and used as sample for the study. The study developed an instrument titled "Artificial Intelligence Knowledge Application and Student Cognitive Development" (AIKASCD). The instrument is a four-point rating scale consisting of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). The response options were weighed as 4, 3, 2 and 1 respectively. The instrument consists of a total of six (6) items. The instrument was subjected to face and content validation by one expert in the department of computer science in Bayelsa State Polytechnic, Aleibiri. The data obtained from the study was analyzed using simple mean, standard deviation, Z-test and charts.

Data Analysis
Research Question 1

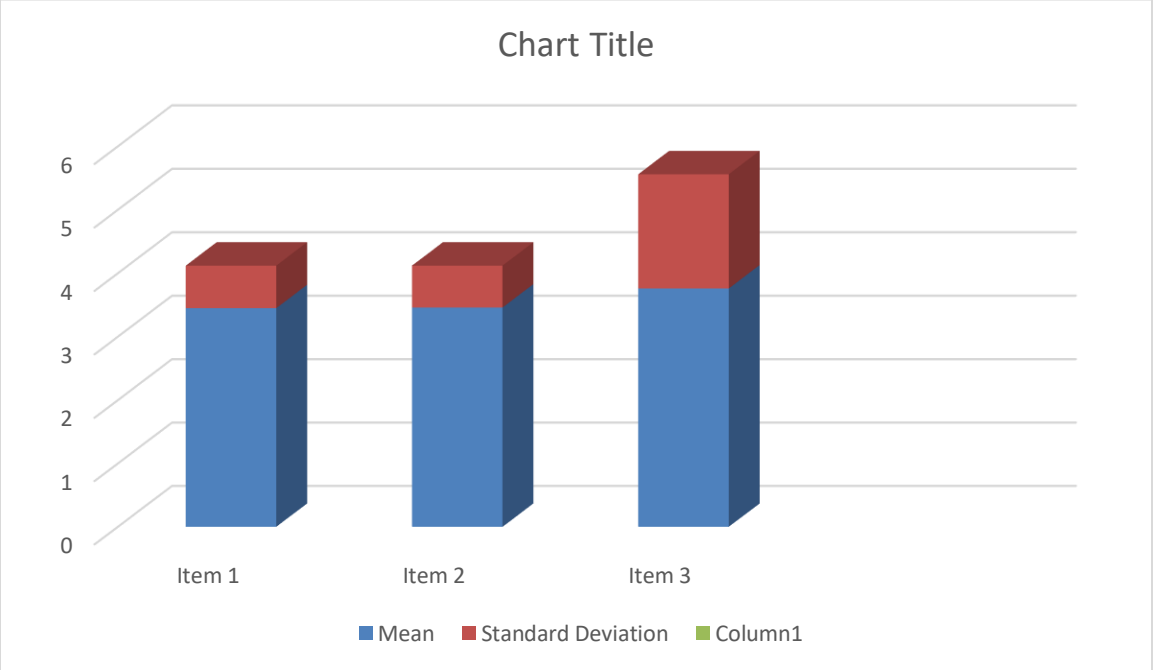
What is the level of awareness of students on Artificial Intelligence application on academic activities?

Table 1: Level of awareness of students on Artificial Intelligence application on academic activities

S/N	ITEM	MEAN	STANDARD DEVIATION	DECISION
1	Students have random knowledge on artificial intelligence application	3.45	0.67	Agree
2	Students have seen artificial intelligence software	3.46	0.66	Agree
3	Students can detect AI application when in contact with any.	3.76	0.71	Agree
	Grand Mean	**3.56**	**0.68**	

Findings obtained from table 1 showed that items 1, 2 and 3 all agreed to the fact that students have random knowledge on artificial intelligence application, students have seen artificial intelligence software and students can detect AI application when in contact with any.

Figure 1: Level of awareness of students on Artificial Intelligence application on academic activities



Findings obtained from figure 1, showed that item 1, 2 and 3 had a mean and standard deviation value of 3.45;0.67, 3.46; 0.66 and 3.76;0.71. This implies that there is a certain level of awareness of students on the use of artificial intelligence in the academic environment.

Research Question 2

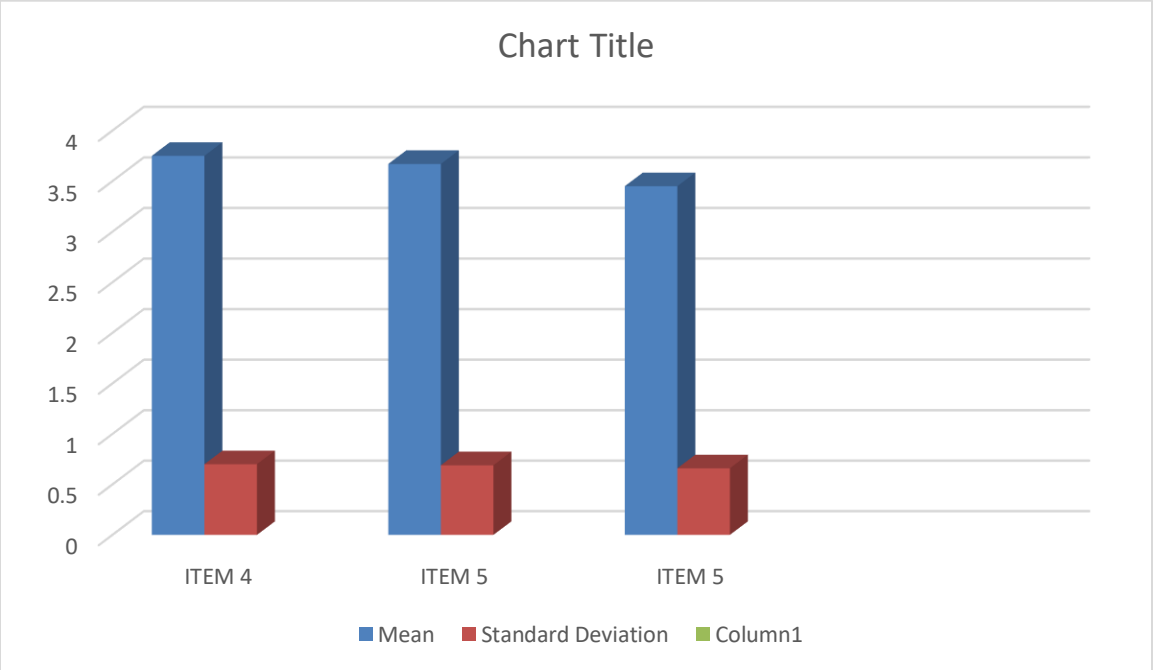
What is the extent of utilization of Artificial Intelligence by students for cognitive development?

Table 2: Extent of utilization of Artificial Intelligence by students for cognitive development

S/N	ITEM	MEAN	STANDARD DEVIATION	DECISION
4	Students uses artificial Intelligence program for academic activities.	3.75	0.70	Agree
5	Students carry out academic task using artificial Intelligent programs.	3.67	0.69	Agree
6	Students apply artificial intelligence programs in conducting academic projects.	3.45	0.66	Agree
	Grand Mean	**3.62**	**0.68**	

Findings obtained from 4, 5 and 6 all agreed that students use artificial Intelligence program for academic activities, students carry out academic task using artificial Intelligent programs and students apply artificial intelligence programs in conducting academic projects.

Figure 2: Extent of utilization of Artificial Intelligence by students for Cognitive Development



Findings obtained from figure 1, showed that item 4, 5 and 6 had a mean and standard deviation value of 3.75;0.70, 3.67; 0.69 and 3.45;0.66. This implies that there is a level of utilization of artificial intelligence by students for cognitive development.

Hypothesis

There is no significant difference between the level of awareness and utilization of Artificial Intelligence by students for cognitive development in tertiary institutions in Bayelsa State.

Table 3: Z-test analysis between the level of awareness and utilization of Artificial Intelligence by students for cognitive development in tertiary institutions in Bayelsa State

S/N	ITEM	N	MEAN	SD	DF	Z-cal	Z-tab	DECISION
1	utilization of Artificial Intelligence by students	120	3.62	0.68	238	0.67	1.653	Not Significant
2	level of awareness of Artificial Intelligence by students	120	3.56	0.68				

Findings from table 3, revealed that z-calculated value of 0.67 is less than z-tabulated value of 1.653 at 0.05 level of significance. This implies that the null hypothesis was accepted. This implies that there is no significant difference between the level of awareness and utilization of Artificial Intelligence by students for cognitive development in tertiary institutions in Bayelsa State.

Discussion of Findings

Findings obtained from table 1, showed that students have random knowledge on artificial intelligence application, students have seen artificial intelligence software and students can detect AI application when in contact with any. This is in line with the opinion of Kumar, (2018) that viewed that AI is now becoming part daily humane experience in education.

Findings obtained from table 2, showed that students use artificial Intelligence program for academic activities, students carry out academic task using artificial Intelligent programs and students apply artificial intelligence programs in conducting academic projects. This goes with the view of Siau, (2017) that informed that AI are used the learners to carry out different academic tasks.

Further findings showed that there is no significant difference between the level of awareness and utilization of Artificial Intelligence by students for cognitive development in tertiary institutions in Bayelsa State. This is in conjunction with the opinion of Kumar, (2018) that stated that students are not just only informed about the use of AI but are constantly using it for their daily academic activities.

Conclusion

In all the study showed that there is a certain level of awareness of students on the use of artificial intelligence in the academic environment. Also, there is a level of utilization of artificial intelligence by students for cognitive development.

Recommendation

Based on the findings of the study, it was recommended that Artificial Intelligence programs and courses should be incorporated in the education curriculum to enhance students' knowledge in the field of study.

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ASSESSMENT OF TEMPERATURE AND PARTICLE SIZE INFLUENCE ON THE YIELD OF BIO-OIL PRODUCTION

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Abstract

The study looked at assessment of temperature and particle size influence on the yield of bio-oil production. The study applied the experimental research design. EPFB biomass samples was used for this study Biochemical properties used include moisture content, density, viscosity, acidity, heating value stability, percentage ash, volatile matter, fixed carbon, -+heating values, compositional analysis, and elemental composition. These characteristics are critical for their products' effective handling, use, and storage. The biomass and other products were characterized using physical and mechanical criteria such as biomass particle shape and size, particle size distribution, density, porosity, and densification. The biomass's elemental composition (ultimate analysis), HHV, water content, density, acidity (proximate analysis), and bio-oil are among the physical and chemical parameters that need to be evaluated. The structural and chemical composition of EPFB biomass and bio-oil was elucidated using FTIR, XRD, and GC/MS analytical equipment. Data obtained from the study was analyzed using charts and tables. Findings obtained from the study showed that there is a significant change on bio-oil quality with respect to temperature change. Also, additional findings revealed that there are varied particle sizes are obtained with respect to heating rate. Further findings reveals that there is no significant correlation between variable temperatures and yield obtained from bio-oil production. Finally, it was recommended government should fund and encourage the production of bio-oil as source of fuel for automobiles as it has less harmful to the environment.
Keywords: Bio-Oil, Upgrade, Green, Energy, Environmental and Sustainability

Introduction

The excessive release of carbon and other burnt gases had posed a serious threat to our natural environment. Even the very air we breathe is constantly filled with poisonous gases that will cause cancer and other respiratory diseases. Scientist as observed the constant climate change faced by our global community mainly due to environmental pollution. Lots of research had been carried out to present a more clean and green energy to curb excessive pollution to the global environment.

Green energy is geared towards power utilization with little or no pollution to the environment. Green energy program had promoted many renewable technologies for power generation and industrial activities. So long as the technology can generate power without the release of harmful gases to the environment, the technology is described as environmentally friendly.

Bio-fuel is an emerging area under renewable energy programs. The technology is designed to generate fuel with minute or no carbon emission. Bio-fuel are termed as environmentally friendly gas that can work with automobiles and engines. Bio -oil are mainly extracted from plants through pyrolysis. In some cases, in other to utilize the natural gasoline, bio-oil are blended with fuels to produce higher yields with better combustion ability and low carbon emission. This yield can vary as they are blended and produced at different temperatures.

Biomass to bio-oil conversion is a technique that uses renewable feed-stocks to replace finite fossil fuel supplies. Bio-oil utilization norms and standards have previously been established (Oasmaa et al., 2015). Bio-oil, in comparison to fossil fuels, has several disadvantages that change with time. High viscosity, acidity, and molecular weight are undesirable properties, including phase instability and separation when it ages. Bio-oils are typically single-phase viscous liquids with approximately 300 chemical constituents (Diebold & Czernik, 1997; Diebold, 2000; Oasmaa et al., 2003). However, all fast pyrolysis bio-oils phase separate due to aging events that cause a rise in the molecular weight and water-insoluble fraction and carbonyl compound reactions that cause a drop in carbonyl content. In bio-oil obtained from extractive-rich feedstock, the production of a waxy hydrophobic top phase is prevalent.

Because of phase instability, bio-oil cannot be utilized as a direct replacement for fossil fuel. As a result, bio-oil must be stabilized and enhanced before being used as a direct engine fuel. The separation of bio-oil into phases is a critical issue since it negatively impacts fuel quality and transportation. Numerous upgrading methods have been used, including extraction, distillation, and column chromatography, with varying degrees of effectiveness to stabilize bio-oil.

Furthermore, bio-oil has a low energy density due to its vast amount of water. (Demirbas, 2007; Oasmaa & Czernik, 1999). Physical and chemical upgrading strategies could stop the aging reactions in biomass. Solvent addition (Dong et al., 2012), emulsification with diesel fuel (Westerhof et al., 2007; Garcia-Perez et al., 2008), deoxygenation using zeolite catalysts, and catalytic hydrotreating are among the upgrading methods. The top phase of bio-oil often comprises extractive chemicals obtained mainly from the lignin part of the biomass when the phases are separated. The aqueous phase also contains char and numerous other bio-oil components that are primarily present in minor amounts of the oil depending on the temperature and time of condensation.

The rate at which the bio-oil phase separates can be increased through constantly mixing. The degree of oil stability is measured by increased viscosity during storage. Furthermore, increased viscosity during storage has resulted in increased water content (Batts & Fathoni, 1991), increasing molecular weight (Vispute, 2011), and phase separation (Diebold, 2000).

Bio-oil is a colored liquid with a strong smell, and its physicochemical properties differ from those of petroleum origin. Among the vital physicochemical qualities of bio-oil are particle content, density, viscosity, water content, flash point, heating value, and several other characteristics. Bio-oil generated from EPFB, and other different biomasses is polar, thermally unstable, contains water and organic molecules, is moderately acidic, and has a poor heating value (Abdullah et al., 2007). The oil contains up to 35 to 45% wt oxygen (Abdullah et al., 2011). When heated, they stimulate the development of solid coke, rendering raw oil unsuitable for engines and storing as liquid fuel (Czemik et al., 1994). Bio-oil is polar and unstable, with several negative fuel qualities, and it can phase separate during storage enhanced at higher temperatures and with minimal moisture content (Czemik et al., 1994; Diebold, 2000). Because of the oil's high oxygen and water content, as well as the carboxylic acids and hydroxyl groups, has a low energy density and heating value, making it incompatible with fossil fuels. (Oasmaa & Czernik, 1999; Demirbas, 2007).

Bio-oil physicochemical properties vis-a-vis set ASTM standards for bio-oil are compared in Table 2.8 (Hansen et al., 2020). Because of the low pH, low H/C, and high O/C ratio, bio-oil has various quality difficulties, including corrosion, viscosity, and general instability. This ratio represents the liquid product's combustion quality. (Harries et al., 2017). The high oxygenated compound content and excess water contents of bio-oil result in lower heating values (HHV) which is comparatively lower than those of fossil-based transportation fuels. This will typically increase the cost of post-conversion treatments.

Literature Review

Combustion Property of Bio-Oil

Fuel oxidation at a high temperature is combined, followed by heat generation and chemical species conversion. Bio-oil is a clean, sustainable energy source. As a result, it may be utilized instead of fossil fuels. However, bio-oils usage in transportation is limited and restricted due to several issues encountered when it is used in standard equipment designed to burn crude oil-derived fuels. (Bridgewater, 2018). Bio-oil has low heating capabilities and a high-water content, all of which affect ignition properties adversely (Demirbas, 2007).
Extractable compounds from EPFB bio-oil

As model compounds, phenolic monomers, predominantly consisting of phenols, syringols, and guaiacols, are the easiest result of lignin breakdown in bio-oil production. Phenol and alkylated phenols are the fundamental phenolic monomers from lignin (cresol and 2-ethylphenol). The fracture of the C–OH bond is crucial in the hydrodeoxygenation process, which converts phenol to transportation fuel. Shu et al. (2020), claim that there are several typical methods for producing cycloalkanes and arenes, including aromatic ring hydrogenation followed by alcohol deoxygenation to give cycloalkanes; and C-OH bond breakdown which causes direct deoxygenation into arenes.

Guaiacol is an abundant ingredient present in the organic phase of bio-oil and has a broad industrial application. These processes convert guaiacol to phenol, including deoxygenation, demethoxylation, and demethylation. Guaiacol can also be transformed into catechol and phenol during the demethylation and demethoxylation processes. On the other hand, Catechol undergoes hydrogenation before being converted to phenol and its derivatives, such as methyl catechol. Deoxygenation of these intermediates produces methylcyclohexane, cyclohexane, benzene, and other hydrocarbons.

Bio-oil Upgrading

Bio-oil is a viable future fuel since it is ecologically beneficial and can be manufactured in a very short cycle. However, its low heating value, high viscosity, and poor stability have to be upgraded to a transportation fuel. The upgrading bio-oil to it compliant with fossil fuel infrastructure still incurs high costs in obtaining transportation fuel from biomass. According to Gameliel, (2018), although the cost function of bio-oil processing has been on a downward trend since 2010, the cost of producing fuel products with high calorific value still accounts for a large part of the bio-oil production process. There are 3 primary bio-oil upgrading methods: catalytic cracking (with or without hydrogen), esterification, and hydrotreating.

As a result, bio-oil is inferior to fossil fuels because it is highly corrosive and has harmful properties such as incompatibility with conventional fuels, chemical and thermal instability, high oxygen and moisture contents, low pH, solid contents, low heating value, poor volatility, low flash point, and high viscosity. (Yang et al., 2014; Shah et al., 2017). Due to low heating values, bio-oil has complex ignition issues when used in diesel engines. The sole reason for upgrading bio-oil is to improve the quality, reduce the deficiencies, recover biochemical and eliminate oxygen to produce comparable transport biofuel as an alternative for fossil fuel (Bridgewater, 2018). The need to upgrade bio-oil is inevitable if they must fulfill the objective of substituting fossil fuels or transportation fuels. The compatibility of bio-oil with fossil fuels is assured by upgrading it using physical, chemical, or catalytic methods to generate high-quality hydrocarbon fuels and chemicals. (Bridgwater, 2006; Yang et al., 2014; Bridgewater, 2018).

Several upgrading processes have been developed for converting bio-oil to liquid transportation fuel. These techniques are typically classified as physical or chemical approaches and may be accomplished via three primary routes:
(1) hydrodeoxygenation,
(2) catalytic cracking with zeolite, and
(3) emulsification with diesel (Panwar & Paul, 2021). C-C bond cracking in gas phase reactions at an appropriate temperature to form CO or CO_2 via decarbonylation or decarboxylation reactions is the fundamental method in catalytic cracking processes. An in-situ or ex-situ catalytic upgrading of pyrolysis gases is conceivable in the pyrolysis reactor. The primary products are catalytically upgraded to secondary products through a series of reactions. Bio-oil can phase separate, polymerize and condense over time, typically aided by high temperatures and the presence of oxygen. The separation of the bio-oil phase and the high oxygen concentration, which leads to incompatibility and immiscibility with conventional fuels, are other disadvantages that prevent its use as a transport fuel. An increase in bio-oil energy density decreased acidity and viscosity.

Purpose of the Study

The study looked at the assessment of temperature and particle size influence on the yield of bio-oil production. Specifically, the study sought to:

1. Find out the correlation between variable temperatures and yield obtained from bio-oil production.
2. Find out the correlation between particle size and heating rate of yields obtained from bio-oil production.

Research Questions

The following research questions were adopted for the study:

1. What is the correlation between variable temperatures and yield obtained from bio-oil production?
2. What is the correlation between particle size and heating rate of yields obtained from bio-oil production?

Hypothesis

The null hypothesis was tested at 0.05 level of significance.

There is no significant correlation between variable temperatures and yield obtained from bio-oil production.

Methods

The study applied the experimental research design. EPFB biomass samples was used for this study Biochemical properties used include moisture content, density, viscosity, acidity, heating value stability, percentage ash, volatile matter, fixed carbon, -+heating values, compositional analysis, and elemental composition. These characteristics are critical for their products' effective handling, use, and storage. The biomass and other products were characterized using physical and mechanical criteria such as biomass particle shape and size, particle size distribution, density, porosity, and densification. The biomass's elemental composition (ultimate analysis), HHV, water content, density, acidity (proximate analysis), and bio-oil are among the physical and chemical parameters that need to be evaluated. The structural and chemical composition of EPFB biomass and bio-oil was elucidated using FTIR, XRD, and GC/MS analytical equipment. Data obtained from the study was analyzed using charts and tables.

Data Analysis

Table 1: Yield obtained from temperature difference and quality of bio-oil produced

S/N	Temperature	Bio-Oil
1	501.962	27.008
2	513.333	26.866
3	545.103	27.030
4	530.594	26.923
5	567.828	26.685
6	534.568	27.142
7	526.213	27.124
8	520.275	26.847
9	503.583	26.824
10	501.407	26.969

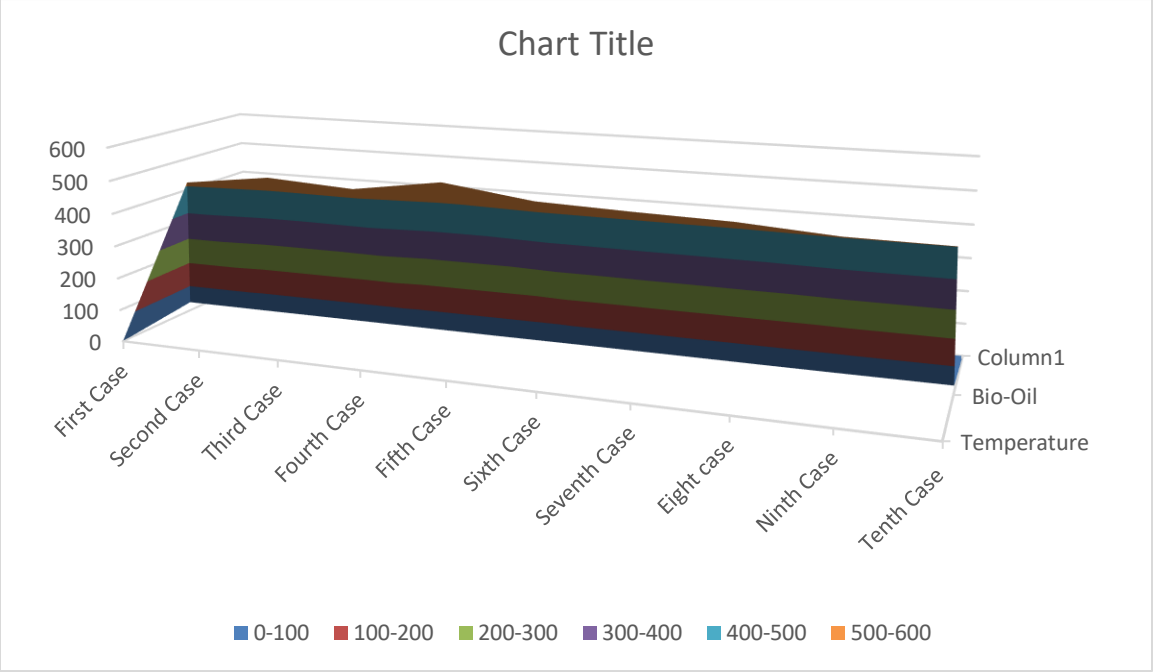
Table 2: Yield obtained from particle size difference and Heating rate of bio-oil

S/N	Particle size	Heating Rate
1	741.608	40.629
2	653.333	41.333
3	727.737	39.366
4	816.208	42.963
5	747.331	39.613
6	735.309	39.901
7	786.202	40.735
8	738.139	36.993
9	793.496	43.664
10	770.926	41.553

Research Question One

What is the correlation between variable temperatures and yield obtained from bio-oil production?

Figure 1: Correlation between variable temperatures and yield obtained from bio-oil production

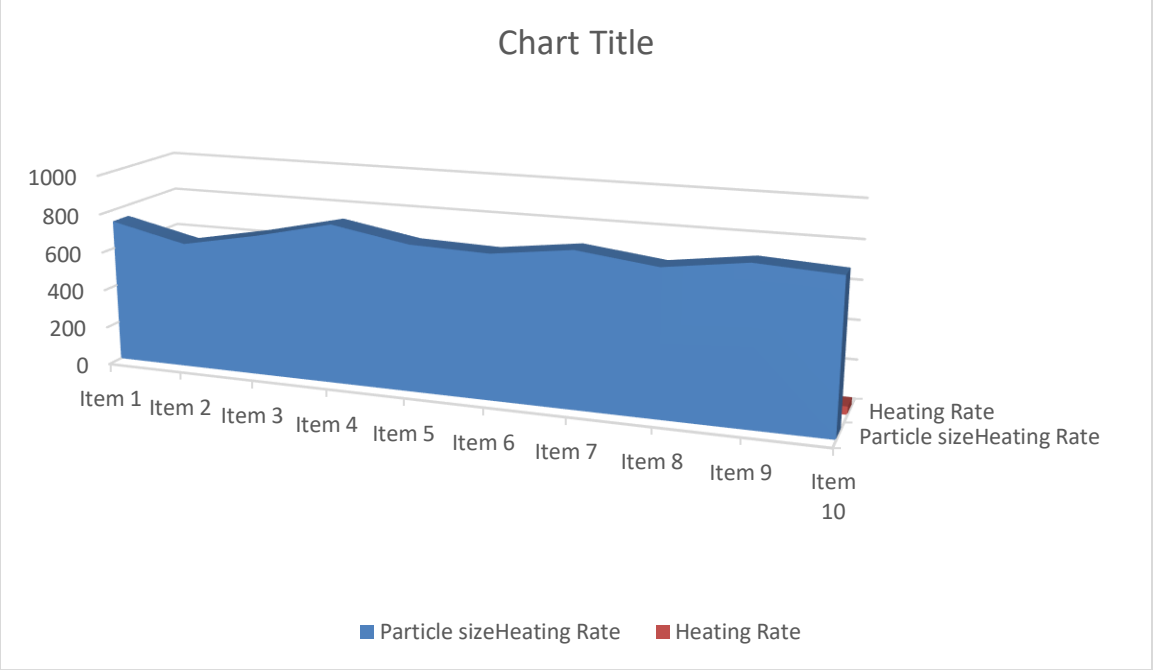


Findings obtained from research question 1 revealed that from item 1-10, there is a corresponding temperature and bio-oil yield variation of 501.962; 27.008, 513.333;26.866, 545.103;27.030, 530.594; 26.923, 567.828; 26.685, 534.568;27.142, 526.213; 27.124, 520.275;26.847, 503.583; 26.824 and 501.407; 26.969 respectively. This is indicative that there is a significant change on bio-oil quality with respect to temperature change.

Research Question Two

What is the correlation between particle size and heating rate of yields obtained from bio-oil production?

Figure 2: Correlation between particle size and heating rate of yields obtained from bio-oil production.



Findings obtained from research question 1 revealed that from item 1-10, there is a corresponding particle size and heating rate of yields obtained from bio-oil production at 741.608; 40.629, 653.333; 41.333, 727.737; 39.366, 816.208; 42.963, 747.331; 39.613, 735.309; 39.901, 786.202; 40.735, 738.139; 36.993, 793.496; 43.664 and 770.926; 41.553 respectively. This implies that varied particle sizes are obtained with respect to heating rate.

Hypothesis

There is no significant correlation between variable temperatures and yield obtained from bio-oil production.

Table 3: Correlation between variable temperatures and yield obtained from bio-oil production.

S/N	Temperature (X)	Bio-Oil (Y)	(X^2)	(Y^2)	(XY)
1	501.962	27.008	251,965.9	729.43	13,556.99
2	513.333	26.866	263,510.8	721.782	13,791.20
3	545.103	27.030	297,137.3	730.621	14,734.13
4	530.594	26.923	281,529.99	724.848	14,285.18
5	567.828	26.685	322,428.63	712.089	15,152.49
6	534.568	27.142	285,762.95	736.688	14,509.25
7	526.213	27.124	276,900.12	735.711	14,273.00
8	520.275	26.847	270,686.1	720.761	13,967.82
9	503.583	26.824	253,595.84	720.600	13,508.11
10	501.407	26.969	251,408.98	727.33	13,522.45
	∑X=5,244.866	∑Y=269.418	$\sum X^2$=2,754,926.61	$\sum Y^2$=7,259.86	∑XY=141,300.62

Findings obtained from table 3, revealed that at 19 degree of freedom r-calculated value of -0.0241 is less than r-critical value of 0.433 at 0.05 level of significance. This implies that the null hypothesis was accepted. This signifies that there is no significant correlation between variable temperatures and yield obtained from bio-oil production.

Discussion of Findings

Findings obtained from the study showed that there is a significant change on bio-oil quality with respect to temperature change. This is in line with the view of Diebold, (2000) who opined that temperature changes can alter chemical properties of bio-oil production.

Also, additional findings revealed that there are varied particle sizes are obtained with respect to heating rate. Bridgewater, (2018) biomass extraction of bio-oil can produce varied particle size with respect to heating rate.

A further finding reveals that there is no significant correlation between variable temperatures and yield obtained from bio-oil production. According to Demirbas, (2007) siad that there is significant relationship on temperature changes and and bio-oil production.

Conclusion

In all, the study showed that there is a significant change on bio-oil quality with respect to temperature change. Also, there are varied particle sizes are obtained with respect to heating rate. Additionally, there is no significant correlation between variable temperatures and yield obtained from bio-oil production.

Recommendation

Finally, it was recommended government should fund and encourage the production of bio-oil as source of fuel for automobiles as it has less harmful to the environment.

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THE NEED FOR UPGRADE OF MEDICAL INFRASTRUCTURE OF TERTIARY INSTITUTIONS IN BAYELSA STATE

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Abstract

The study investigated the need for upgrade of medical infrastructure of tertiary institutions in Bayelsa State. Two research question and one hypothesis was used in the study. The study used the descriptive survey research design. The population consists of three hundred and fifty four (354) medical consultants and management staff in various tertiary institutions in Bayelsa State. Random sampling technique was used to sample out one hundred (100) respondents used for the study. The study developed an instrument titled "Need for Upgrade of Medical Infrastructure of Tertiary Institutions" (NUMITI). The instrument was analyzed using simple mean, standard deviation, pie charts and Z-test. The findings obtained from the study showed that clinical unit requires more bed space infrastructure, standard surgical operating room for severe cases on campus, standard laboratory session for carrying out test and large environment to receive random patience to accommodate both staff and students at once for tertiary institutions in Bayelsa State. Another finding obtained from the study showed that tertiary institution clinical session are usually small, have limited bed space for students, clinical unit do not have standard laboratories and clinical units do not have surgical or intensive care units in Bayelsa State. From the findings obtained from the study, it was recommended that school management should invest and upgrade medical and clinical infrastructure in their institutions to accommodate the pressing needs of students and staff in the school.

Keywords: Upgrade, Medical, Infrastructure, Tertiary and Institutions

Introduction

Medical units require standard infrastructure to meet up public demands. Infrastructure according to Online Oxford English Dictionary is defined as the basic physical and organizational structures needed for the operation of the society or an enterprise. This means that infrastructure is an essential ingredient for the smooth function of any economy and the development of any nation. According to structuralist /functionalist theorists, the progress or otherwise of a society depends largely on the functional structures of that society. What this means is that structures in the societies will largely determine the economic development (Ademola, Ajayi, Yahya Jammeh, and Gambia, 2003). A review of the literature shows that several ideas have been used to explain infrastructure. Among such concepts are the "school plant", "learning resources", "physical resources" and "educational resources", to mention but a few (Subair, 2008). One of the essential structure need in an educational environment is the school medical unit.

The medical structure is very significant as it serves as a life saver to sick staff and students during emergency. According to Ehiametalor, (2001) infrastructure can be described as the operational inputs of every instructional program and constitutes elements that are necessary for teaching and learning. Such include buildings, laboratories, machinery, furniture, and electrical fixtures. These must be functional about other aspects of the community, such as health centers, libraries, and good roads, and must be large enough to allow for expansion as enrolments expand.

Following the opinion of Osagie, (2003) that infrastructure represents the aesthetic picture of the school conveyed by the position of structures about one another. It also represents the empirical relevance of the totality of the school environment for the realization of the school business (teaching/learning). He asserted in specific terms that school plant is made up of landscape, trees, lawns, hedges, and accompanying paths, playgrounds, buildings, security facilities, and utilities. However, a well-equipped and well-maintained physical plant can make learning a more pleasant experience and discourage early drop-outs. It can as well attract better quality teachers. In summary, therefore, infrastructure can be viewed as the totality of all that goes into education such as classrooms, lecture theatres, laboratories, libraries, electricity, water, health center, sports and recreation centers, ICT, machines, and furniture put there-in, to facilitate teaching-learning.

Health centres should be established to encourage easy accessibility of medical services by people in the neighborhood. The health sector of the Nigeria Economy is statutorily established to provide essentially health care services to Nigerians irrespective of their locations within the territorial jurisdiction of Nigeria. In short, the health sector belongs to the concurrent legislative list which empowers the Federal, the State and the Local Governments to legislate on health matters. So, the health care delivery services in Nigeria, as well as the National Health Policy, aim at addressing the provision of intensive, effective and efficient health care services to the people of Nigeria in order to allow them achieve laudable goals of health standard such that everyone will enjoy life at all levels of human endeavor.

Observation shows that most health infrastructure in tertiary institutions are built to the standard of a sick bay. This has limited the potential for the school clinic to carry out complex functions. This statutory provision lends credence to the popular adage of "Health is Wealth" and of course, this is an irrefutable statement of fact as for example, if the rich have health challenges, his wealth is of no use to him. This assertion buttresses the significance of the health sector in any nation. The health sector's principal concern is the safety of lives and good health and decent environment. However, its activities involve governmental and non-governmental institutions in a multi-sectorial approach as well as individuals and groups for effective planning and implementation of health care delivery services in the country.

In Nigeria, the first major point of contact of the populace with the health care is the Primary Health Care facilities nationwide. In essence, the pivot of health care delivery services is the Primary Health Care under the Administration of Local Government Councils in the country. Its mission or central focus is basically on preventive care. The secondary and tertiary health institutions provide curative care and render supervisory and complementary services. They also receive referral cases from the Primary and Secondary levels as the case may be. The Federal Ministry of Health formulates health policies and ensures that there is compliance in form of implementation by the Hospitals Management Boards, hospitals and health institutions/agencies. We would like to recall that the concept of health is still with multifarious problems/challenges in Nigeria and to this end, an attempt will be made to identify some of the major problems and challenges militating against the Nigeria contemporary health sector performance.

Purpose of the Study

The study investigated the need for upgrade of medical infrastructure of tertiary institutions in Bayelsa State. Specifically, the study sought to:

1. Find out the required standard infrastructure needed for medical installations in Bayelsa State?
2. Find out the perception of medical consultants and school management on the state of health infrastructure in tertiary institutions in Bayelsa State?

Research Questions

The following research questions were used as a guide for the study:

1. What is the required standard infrastructure needed for medical installations in Bayelsa State?

2. What is the perception of medical consultants and school management on the state of health infrastructure in tertiary institutions in Bayelsa State?

Hypothesis

The null hypothesis stated below was tested at 0.05 level of significance.

HO_1: There is no significant difference between the perception of medical consultants and school management on the state of health infrastructure in tertiary institutions in Bayelsa State.

Scope of the Study

The study is limited to the need for upgrade of medical infrastructure of tertiary institutions in Bayelsa State. It is also limited to the perception of medical consultants and school management on the state of health infrastructure in tertiary institutions in Bayelsa State.

Literature Review

Health Facility in Tertiary Institutions

Weak Facilities/Infrastructure may lead to poor health services. Most tertiary institutions do not have budgetary allocations and plans for the development of standard school hospitals for tertiary institutions. Arising from the gross underfunding of the health sector institutions is the weak infrastructure and logistic supports which are weak, obsolete and defective. This is due to inadequate maintenance of buildings, medical equipment and vehicles, shortage of drugs, faulty compounding of drugs, poor management of drugs, the expiry of drugs and vaccines and other essential requirements for patients care.

In some cases, the utility Boards in Nigeria often make the problem worse by engaging in irregular supply of water, erratic or rather epileptic supply of electricity and poor telecommunication services. There is the need to create an effective management system to checkmate the cause of these poor services. Absence or inadequacy of equipment had been found deficient in most of Nigerian Hospitals especially in tertiary institutions (Omoleke, 2005). Some of the public hospitals visited sometimes ago had no x-ray machine. Worse still, the poor network of roads and neglect of roads transportation do not make accessibility easy. Hence, most patients referred from the primary level of care, or secondary find it difficult to get to where they can obtain a respite for their ailment and most times worsen the case that ordinarily requires minor treatment.

Inspite of the challenges/problems and the new challenges of today in Nigeria, hope is not lost in overhauling the system to meet the standard that citizens can benefit from. However, in order to build a sustainable, reliable, accessible and standard health sector, hospitals, medical centres, health centres, health post, clinics and other health institutions should be brought to the required standard of the World Health Organization at both curative and preventive levels of health administration. These institutions must also be well equipped with modern medical gadgets, structural facilities and uninterrupted electricity supply, portable water, internet provision, and good communication system across all the wards, offices and hospital environment (The Constitution of the Federal Republic of Nigeria, 1999).

The health system has been designated to save lives of people. As life-saving institutions, it is a trite fact and of course irrefutable that hospitals require service specialization in various health fields such as medicine, surgery, gynecology, obstetrics, psychiatry, pediatrics, cardiology, public health among others. To this end, there is need for meticulous selection/recruitment of hospitals staff. It is also necessary to train and retrain the human resources on the ground for health technological updating as knowledge get rotten and obsolete if not renewed.

Hospital activities are numerous and require daily funding to keep it running. There is also a need to depoliticize allocation of funds to tertiary health institution and should be based on the approved appropriation Act/the needs of each hospital. Training of medical experts is a complex one which requires specialized training in Universities Teaching Hospitals. The various State Governments and private organizations have also established Nursing Schools and Health Technology for the training of middle level manpower in the Health Sector. To this end, the Federal, State and Local Governments must be ready and willing to finance these institutions generously.

The introduction of health institutions is to develop personnel with adequate experience to handle clinical activities in the country. For effective human resources development and utilization, the owners and managers of the hospitals must not wait until doctors, pharmacists, nurses, image scientists, laboratory technologists and hospital administrations go on industrial strikes before their grievances are addressed. This is a more civil manner to handle issues that affect human life and well-being. Intra and inter union conflicts bothering on inferiority and superiority complex among health professionals should be put to rest bearing in mind that health care delivery services are a team work involving all and sundries.

Most institutions are experiencing shortage of workers that can maintain shift during work hours. Hence harmonious relationship is a sine-qua-non for effective health care delivery services anywhere in the world. To this end, it is our opinion that training facilities in the universities, tertiary health institutions and teaching hospitals be adequately expanded and funded generously.

Additionally, state and federal government should expand hospitals, medical centres and health clinics to absorb the newly trained and inducted doctors, pharmacists etc., as it may be a waste of fund, time and human resources if health professionals are trained by Nigeria Government only to be utilized by other countries (Brain Drains). The situation calls for the urgent attention of the Federal Government of Nigeria.

It has been noted that religion, cost of health services, distance of health facilities, waiting time and quality of care, were found to be contributory to the non-utilization of health facilities. According to Adekunle, Oloyede, and Okanlawon, (2006) in a study of some factors affecting utilization of health services, in the University of Benin, Alakija (2000) stated that easy accessibility to the medical centre, time spent in waiting for treatment, students-medical staff relationship and availability of essential drugs were among factors affecting utilization of services. Alakija (2000) stated that patient satisfaction has received little research attention, and it is unclear whether the issue is being addressed in university health clinic.

In Nigeria, studies on students' utilization of health services are sparse. The aim of the study therefore is to determine the factors affecting utilization of university health services in south west Nigeria.

Methods

The study used the descriptive survey research design. The population consists of three hundred and fifty four (354) medical consultants and management staff in various tertiary institutions in Bayelsa State. Random sampling technique was used to sample one polytechnic and two universities in the Bayelsa State.

The sample size is fifty five (55) from Niger Delta University, thirty four (34) persons from Federal University, Otueke and eleven (11) respondents from Federal Polytechnic, Ekowe, Bayelsa State. This number makes a total of one hundred (100) respondents sampled out for this study. The study developed an instrument titled "Need for Upgrade of Medical Infrastructure of Tertiary Institutions" (NUMITI). The instrument is a four point rating scale consisting of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). The response options were weighed as 4, 3, 2 and 1. The instrument had a total of eight (8) items arranged accordingly. The instrument was subjected to face and content validation by two experts in the medical unit of Isaac Jasper Boro College of Education, Sagbama, Bayelsa State. The expert corrected the language content of the questionnaires. The instrument was analyzed using simple mean, standard deviation, pie charts and Z-test.

Analysis

Research Question 1

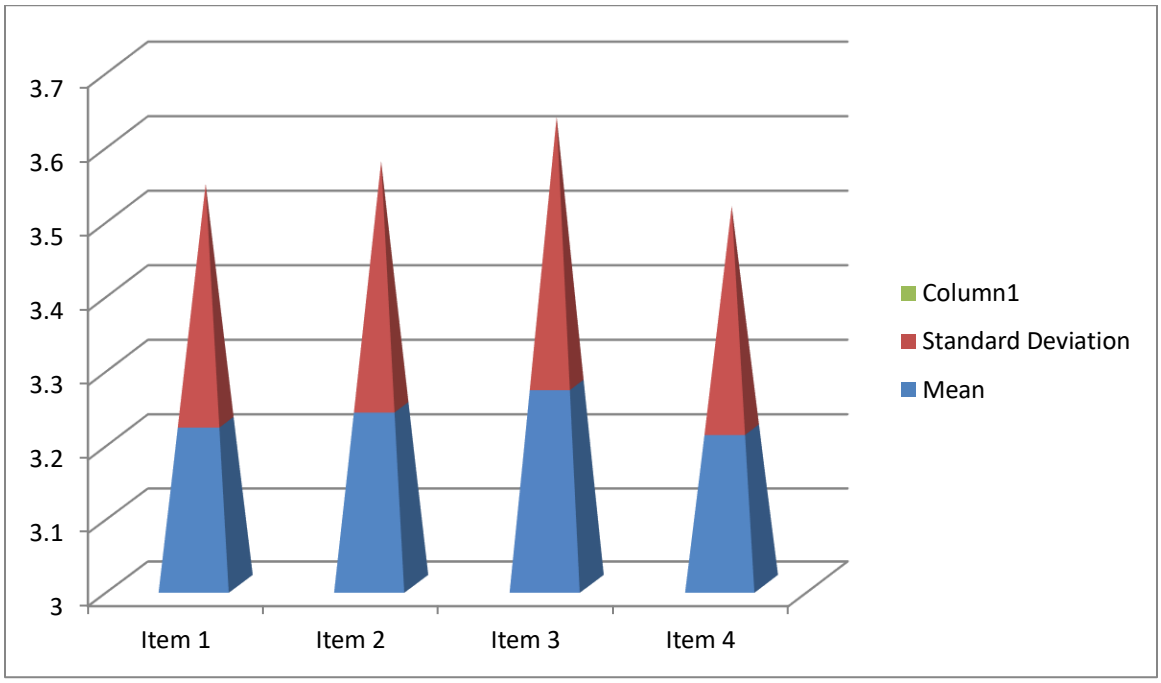
What is the required standard infrastructure needed for medical installations in Bayelsa State?

Table 1: Standard infrastructure needed for medical installations in Bayelsa State

S/N	ITEMS	Mean	SD	Remark
1	Clinical unit require more bed space infrastructure for tertiary institutions in Bayelsa State	3.22	0.32	Agree
2	Clinical unit require a standard surgical operating room for severe cases on campus	3.24	0.33	Agree
3	Clinical unit require standard laboratory session for carrying out test	3.27	0.36	Agree
4	Clinical unit require a large environment to receive random patience to accommodate both staff and students at once	3.21	0.30	Agree
	Grand Mean	**3.24**	**0.33**	

Findings obtained from research question 1, table 1, revealed that item 1, 2, 3 and 4 all agreed that clinical unit require more bed space infrastructure, standard surgical operating room for severe cases on campus, standard laboratory session for carrying out test and large environment to receive random patience to accommodate both staff and students at once for tertiary institutions in Bayelsa State.

Figure 1: Standard infrastructure needed for medical installations in Bayelsa State



Findings obtained from figure 1 showed that response items 1, 2, 3 and 4 had a mean and standard deviation scores of 3.22;0.32, 3.24;0.33, 3.27;0.36 and 3.21;0.30 respectively. This shows that there are no standard medical infrastructures to accommodate clinical activities in tertiary institution in Bayelsa State.

Research Question 2

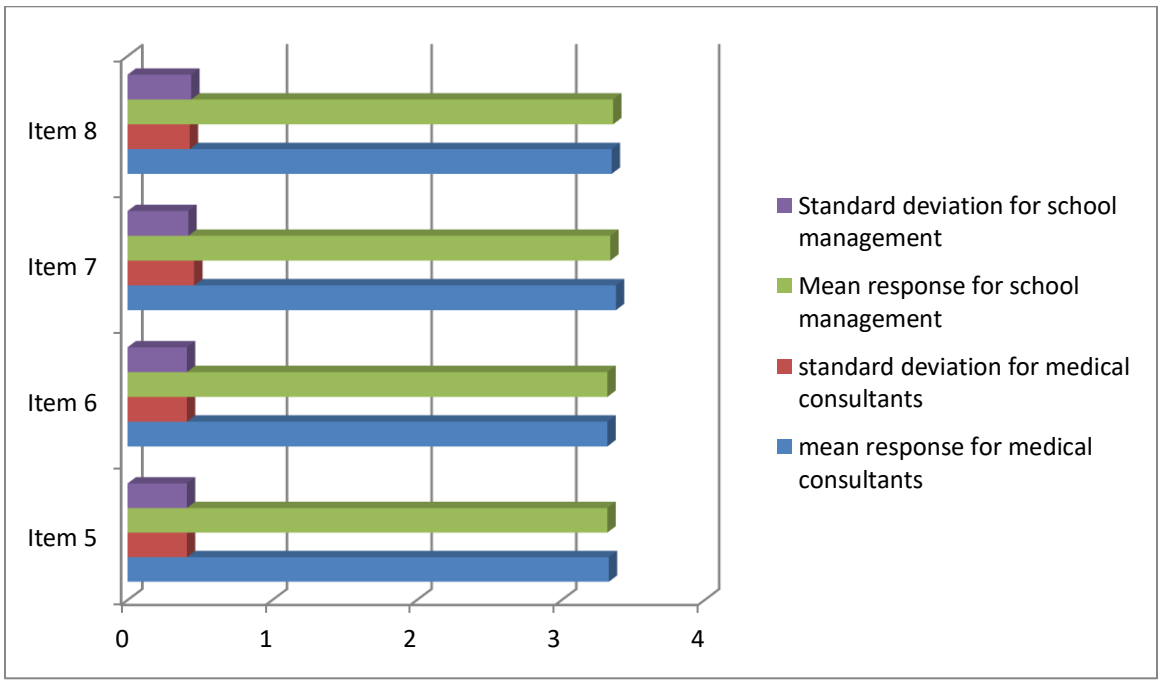
What is the perception of medical consultants and school management on the state of health infrastructure in tertiary institutions in Bayelsa State?

Table 2: Perception of medical consultants and school management on the state of health infrastructure in tertiary institutions

S/N	ITEMS	Response from Medical consultants			Responses from School management		
		Mean	SD	Remark	Mean	SD	Remark
5	Tertiary institution clinical session are usually small in Bayelsa State	3.33	0.41	Agree	3.32	0.41	Agree
6	Clinical units have limited bed space for students	3.32	0.41	Agree	3.32	0.41	Agree
7	Most clinical unit do not have standard laboratories	3.38	0.46	Agree	3.34	0.42	Agree
8	Most clinical units do not have surgical or intensive care units	3.35	0.43	Agree	3.36	0.44	Agree
	Grand Mean	**3.35**	**0.43**		**3.34**	**0.42**	

Finding obtained from research question 2, table 2, revealed that items 5, 6, 7 and 8 all agreed to the fact that tertiary institution clinical session are usually small, have limited bed space for students, clinical unit do not have standard laboratories and clinical units do not have surgical or intensive care units in Bayelsa State.

Figure 2: Perception of medical consultants and school management on the state of health infrastructure in tertiary institutions



Data obtained from figure 1 showed that medical consultants on item 5, 6, 7 and 8 had a mean and standard deviation value of 3.33; 0.41, 3.32; 0.41, 3.38; 0.46 and 3.35; 0.43 respectively. Similarly, School management had a mean and standard deviation value for items 5, 6, 7, and 8 as 3. 32; 0.41, 3.32; 0.41, 3.34; 0.42 and 3.36; 0.44 respectively. This is indicative that the clinical session in most tertiary institutions are operating below standard in Bayelsa State.

Hypothesis

There is no significant difference between the perception of medical consultants and school management on the state of health infrastructure in tertiary institutions in Bayelsa State.

Table 3: Z-test Analysis of difference between the perception of medical consultants and school management on the state of health infrastructure in tertiary institutions in Bayelsa State

S/N	Items	N	Mean	SD	Df	Z-cal	Z-tab	Decision
1	Medical consultants	100	3.35	0.43	198	2.28	1.667	Significant
2	School management	100	3.34	0.42				

Findings obtained from the hypothesis revealed that Z-calculated value of 2.28 is higher than z-critical value of 1.667 at 0.05 level of significance with 198 degree of freedom. This implies that the null hypothesis was rejected based on the decision rule. This implies that there is significant difference between the perception of medical consultants and school management on the state of health infrastructure in tertiary institutions in Bayelsa State.

Discussion of Findings

The findings obtained from the study showed that clinical unit requires more bed space infrastructure, standard surgical operating room for severe cases on campus, standard laboratory session for carrying out test and large environment to receive random patience to accommodate both staff and students at once for tertiary institutions in Bayelsa State. This is in line with the opinion of Ayis, (2006) opined that clinical units should be well equipped and prepared to handle lots of emergency cases.

Another finding obtained from the study showed that tertiary institution clinical session are usually small, have limited bed space for students, clinical unit do not have standard laboratories and clinical units do not have surgical or intensive care units in Bayelsa State. This is also in line with the view of Osagie, (2003) observed that tertiary institutions in Nigeria lack basic medical facilities needed for their optimal functionality.

Conclusion

The study revealed that clinical units in most tertiary institution are not built properly to the required standard needed to accommodate both students and staff. the medical consultants and school management also affirm that bed spaces are limited and there are no major operating rooms and laboratory to run test for sick patience.

Recommendations

From the findings obtained from the study, it was recommended that school management should invest and upgrade medical and clinical infrastructure in their institutions to accommodate the pressing needs of students and staff in the school.

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THE NEED FOR CURRICULUM REFORM IN FINANCIAL MANAGEMENT EDUCATION

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Abstract

The study looked at the need for curriculum reform in financial management education. The study used two research questions and one hypothesis. The study used the descriptive survey research design. The study used a population of 1500 bank managers from various established financial institutions in Nigeria. Random sampling technique was used to select 300 bank managers from two geopolitical zones in Nigeria. The study adopted the "Need for Curriculum Reform in Financial Management Education" (NCRFME) as instrument for data collection. The data obtained from the study was analyzed using simple mean, standard deviation and Z-test. Findings obtained from the study revealed that curriculum reform update students on current financial practice, curriculum reform aid in maintaining uniform standard practice in financial management education and curriculum reform build efficiency in students' professional career development in financial management education. Also, further findings revealed that curriculum reform in financial management education aid in exhibition of competency on job delivery, curriculum reform in financial education develops job stress management skills and curriculum reform in financial management education develops workers job skill upgrade. Based on the findings obtained from the study, it was recommended that financial management education should be taught in tertiary institutions in Nigeria. Further, financial management education curriculum should be reformed to incorporate modern financial practices in various industries.

Keywords: Need Curriculum Reform Accounting Education

Introduction

Financial management deals with fund control, disbursement and utilization. In contemporary times financial institution is complex in a digital world. Effective control and management of fund is required by financial institutions to control its utilization. Effective and functional financial management can be found in financial management (Mihajlović, Tadin, and Gordić, 2020; Irawan, Supriyatna, Widjaja, and Lin, 2021). Financial management is a financial management process that organizes financial activities from planning, implementation and control to financial accountability (Grozdanovska, Bojkovska and Jankulovski, 2017).

However, when it comes to educational institutions, the impact is quite significant. And the role to manage financial management consists of three interrelated areas namely; Capital Markets (Macro Finance), which is related to many of the topics covered by macroeconomics, Investment, which focuses on the decisions made by individuals and financial institutions in selecting securities (securities) for their investment portfolios, and financial management in relation to business management.

The three areas described above interact with each other, so corporate financial management needs to understand how capital markets work and how investors value securities. Financial management has undergone some major changes over the years. When it emerged as a distinct discipline in the early 20th century, its focus was on the legal aspects of mergers, acquisitions and start-ups and the various securities issued by companies.

The CFO must play a key role in determining the total value of the company if money is to be used to maintain standard operating procedures within the organization. This is necessary as the main objective of the company is to determine its value to the shareholders. This clause is based on the company's current share price on the stock exchange, which at the time of this writing serves as a function of the company's investment, consumption, and profit-sharing objectives.

The need for financial management can be summed up as the need to identify the objectives to be met, the right choice is the one that advances the company's objectives; usually, the objective of financial management choices is to maximize the company. Enterprise value is the amount a buyer would put up for a business if it were to be sold.

The trader makes more money, the more valuable his company is. Though in terms of economics, managing the value of a business is not the same as profit maximization because economics is referred to as the amount of wealth that is often consumed without expanding the wealth of the owner. The goal of financial management is to increase the value of the company. There are several ways to increase company value such as through investment decisions, funding decisions, asset management decisions. Investment decisions are the most important corporate decisions, the first step is to determine the total amount of assets needed by the company.

Financial managers should look for liabilities (current liabilities and long-term debt) and fixed assets (equity) on the right side of the balance sheet, while assets on the left side. Investment decisions are usually made using the formula: Assets = Assets - Capital (Liabilities). The financing decision is the second major decision, in which the finance manager deals with making decisions on the right side of the balance sheet (the passive side).

After deciding on the combined financing, the finance manager still needs to determine how well the funds are needed. The mechanisms for obtaining short-term credit, entering into long-term leases, or negotiating the sale of bonds or shares are matters that must be fully understood. The next financial management decision to increase funding within the company is the asset management decision. Once assets are acquired and adequate financing is in place, they still require effective management. Financial managers have different levels of responsibility when carrying out the management of existing assets. This responsibility requires financial managers to pay more attention to the management of fixed assets than fixed assets (Dong, Chen, and Yang, 2014).

Purpose of the Study

The study looked at the need for curriculum reform in financial management education. Specifically, the study sought to:

1. Find out the effect of curriculum reform in financial management education among tertiary education students.
2. Find out the effect of curriculum reform in financial management education on professional job delivery.

Research Questions

The following research questions were developed and used as a guide for the study:

1. What is the effect of curriculum reform in financial management education among tertiary education students?
2. What is the effect of curriculum reform in financial management education on professional job delivery?

Hypothesis

The null hypothesis was tested at 0.05 level of significance and adopted as part of the study.

There is no significant difference between the effect of curriculum reform in financial management education among tertiary education students and curriculum reform in financial management education on professional job delivery.

Scope of the Study

The study is limited to need for curriculum reform in financial management education. It is also limited to banking professionals in recognized financial institutions in Nigeria.

Literature Review

Financial Management Education

According to Gitman (2003), finance is the art and the science of managing money and is concerned with the process, institutions, markets and instruments involved in the transfer of money among individuals, institutions (including schools) and governments. School principals like any leaders of any organization have decisions to make when it comes to utilization of the funds channeled to public schools (Atieno, 2012).

These decisions according to Brigham and Houston (2012) have financial implications on the financial management of school principals who play the most crucial role in ensuring schools' effectiveness and performance taking into account the day-to-day operations of the school (Ballada and Ballada, 2012). Republic Act No. 9155 in the Philippines or commonly called as Governance of Basic Education Act of 2001 mentioned how school principals are expected to administer and manage all personnel, physical and fiscal resources of the school. In any organization, it is very important that the financial management of its leader is properly and prudently observed considering that this may lead to further success. A study defined financial management as dealing with the sources of funds, their efficient use of and minimization of cost or losses for the greater profitability.

This productivity is generally intended for business in ministerial departments and post primary institutions. Similarly, it is for the enhanced welfare of students and both the teaching and non-teaching staff. The school head's efficient and effective management of financial or material resources is considered one significant factor in the attainment of institutional objectives. On the other hand, inappropriate and inconsistent exercise of financial management may cause failure in terms of financial difficulties and mismanagement of resources. In the end, an excellent and improved performance is the ultimate aim of every organization as they align well their financial management systems by wisely observing applicable and advantageous practices.

In the school setting, the financial management of school heads prevail when they have basic knowledge and clear understanding of the basic processes involved in managing school's account, the budgeting process and the systems and controls that are necessary to ensure that the school's finances are not misappropriated, (Clarke, 2008).

School financial management involves the planning and implementation of a financial plan, accounting, reporting and the safeguarding of assets from loss, damage and fraud. Basically, the level of school heads' financial management can usually be determined through their formal education, on the-job training and experiences. Sometimes, their personal or individual characteristics are also considered respectively.

Furthermore, to manage diverse financial resources in school is as simple as handling your own finances, properties or assets. If a school administrator has enough capability on budgeting, accounting, procurement and asset management, he is not easily tempted or cannot simply commit erroneous spending. The school head will not go far beyond the financial allotment which is consistent with the approved School Operating Budget (SOB), Annual Procurement Plan (APP), Monthly Disbursement Program (MDP), Project Procurement Management Plan (PPMP) and other financial management plans.

If a school head is properly directed and guided by existing rules and regulations, guidelines and policies involving financial management and has appropriate stewardship and ethical leadership orientation, he or she can minimize or manage the number of challenges usually experienced in the field. Some problems and other sources of conflict and misunderstanding in the organization will eventually be controlled.

There is evidence on the lack of comprehensive studies on best practices in the field of financial management. While there is some research available on financial management practices in educational institutions, there is a need for more rigorous and systematic investigations that identify and evaluate the most effective strategies and approaches for managing finances in education. Specifically, there is a need for research that examines the implementation and impact of financial management practices such as budgeting, resource allocation, cost control, and financial accountability measures in educational settings. This research could investigate how different practices are being used in various educational contexts and their effects on student outcomes, school performance, and overall financial sustainability. Furthermore, there is a lack of comparative research that evaluates the effectiveness of different financial management practices across different educational systems or countries. Such studies could provide valuable insights into the transferability and adaptability of best practices in different contexts. By addressing these research gaps, policymakers, school administrators, and financial managers in the education sector can gain evidence-based guidance on the most effective financial management practices to improve resource allocation, enhance educational quality, and ensure long-term financial sustainability.

Methods

The study used the descriptive survey research design. The study used a population of 1500 bank managers from various established financial institutions in Nigeria. The population was obtained from bankers association of Nigeria. Random sampling technique was used to select 300 bank managers from two geopolitical zones in Nigeria. The study adopted the "Need for Curriculum Reform in Financial Management Education" (NCRFME) as instrument for data collection. The data obtained from the study was analyzed using simple mean, standard deviation and Z-test.

Data Analysis

Research Question One

What is the effect of curriculum reform in financial management education among tertiary education students?

Table 1: Effect of Curriculum Reform in Financial Management Education among Tertiary Education

S/N	Items	Mean	SD	Decision
1	Curriculum reform update students on current financial practice.	3.45	1.23	Agree
2	Curriculum reform aid in maintaining uniform standard practice in financial management education.	3.44	1.22	Agree
3	Curriculum reform builds efficiency in students' professional career development in financial management education.	3.67	1.32	Agree
	Grand Mean	**3.52**	**1.26**	

Based on the findings in research question 1, table 1, showed that items 1, 2 and 3 all agreed to the fact that curriculum reform update students on current financial practice, curriculum reform aid in maintaining uniform standard practice in financial management education and curriculum reform builds efficiency in students' professional career development in financial management education.

Research Question Two

What is the effect of curriculum reform in financial management education on professional job delivery?

Table 2: Effect of Curriculum Reform in Financial Management Education on Professional Job Delivery

S/N	Items	Mean	SD	Decision
4	Curriculum reform in financial management education aid in exhibition of competency on job delivery.	3.77	1.38	Agree
5	Curriculum reform in financial education develops job stress management skills.	3.64	1.31	Agree
6	Curriculum reform in financial management education develops workers job skill upgrade.	3.33	1.19	Agree
	Grand Mean	**3.58**	**1.29**	

Based on the findings in research question 2, table 2, showed that items 4, 5 and 6 all agreed to the fact that curriculum reform in financial management education aid in exhibition of competency on job delivery, curriculum reform in financial education develops job stress management skills and curriculum reform in financial management education develops workers job skill upgrade.

Hypothesis

There is no significant difference between the effect of curriculum reform in financial management education among tertiary education students and curriculum reform in financial management education on professional job delivery.

Table 3: Z-test analysis of difference between the effect of curriculum reform in financial management education among tertiary education students and curriculum reform in financial management education on professional job delivery.

S/N	Items	N	Mean	SD	df	Z-cal	Z-crit.	Decision
1	Effect of curriculum reform in financial management education among tertiary education students	300	3.52	1.26	598	0.57	1.645	Not Significant
2	Curriculum reform in financial management education on professional job delivery.	300	3.58	1.29				

Findings obtained from hypothesis one, table 3 revealed that Z-calculated value of 0.57 at 0.05 level of significance and 598 degree of freedom is less than Z-critical value of 1.645. This implies that the null hypothesis was accepted. Therefore, it would be stated that there is no significant difference between the effect of curriculum reform in financial management education among tertiary education students and curriculum reform in financial management education on professional job delivery.

Discussion of Findings

Findings obtained from table 1, showed that curriculum reform update students on current financial practice, curriculum reform aid in maintaining uniform standard practice in financial management education and curriculum reform build efficiency in students' professional career development in financial management education. This is in line with the opinion of Grozdanovska, Bojkovska and Jankulovski, (2017) that viewed that financial management education enhances students professional skills and prepare them for the labor market.

Also, further findings revealed that curriculum reform in financial management education aid in exhibition of competency on job delivery, curriculum reform in financial education develops job stress management skills and curriculum reform in financial management education develops workers job skill upgrade. This is in agreement with the perception of Ballada and Ballada, (2012) that suggest that curriculum reform in financial management education aid professionalism among banking experts in the industries.

Conclusion

In all the study showed that curriculum reform in financial management education aids professional job delivery and enhance student's skill development in the industry.

Recommendations

Based on the findings obtained from the study, it was recommended that:

1. Financial management education should be taught in tertiary institutions in Nigeria.
2. Financial management education curriculum should be reformed to incorporate modern financial practices in various industries.

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THE IMPACT OF DIGITAL BANKING SYSTEM FOR ECONOMIC DEVELOPMENT IN A THIRD WORLD COUNTRY

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Abstract

The study examined the impact of digital banking system for economic development in a third world country**.** The study employed the descriptive survey research design. The study used a population of 1200 professors in bank managers from various financial institutions in Nigeria. Random sampling technique was used to select 200 bank managers from 15 financial institutions in Nigeria. The study used the instrument titled "Impact of Digital Banking System for Economic Development in a Third World Country" (IDBSYEDTWC) as instrument for data collection. The data obtained from the study was analyzed using simple mean and charts. Findings obtained from the study revealed that digital banking system creates easy business transactions, gives accurate accountability and financial history of clients and enhances creates business opportunities for IT contractors online marketers. Further findings revealed that digital banking system creates the ease for collection of tax from customers, makes it easier for customers to carry out financial transactions globally and makes it possible to track sales record and monitor asset growth at any time. Based on the findings obtained from the study, it was recommended that **b**anking system should advance their online network system to accommodate large transactions to avoid traffics. Also, bankers should be trained adequately on digital banking systems.

Keywords: Impact, Digital, Accounting, Economic, Development, Third, World & Country

Introduction

In parallel with technological development, various changes have occurred in people's lives. Due to the emergence and spread of the technology and the effect of globalization, technology has affected many sectors. The technology has also affected, changed and transformed the banking sector, thus the use of technology in the banking sector has increased. In other words, it can be said that the banking sector is among the sectors most affected by changing and developing technology.

This process has brought about a change from traditional banking to digital banking. Digital banking can briefly be expressed as providing banking services in a digital environment and carry out banking transactions digitally with the help of computers, tablets, smartphones and other electronic distribution channels without physically going to the bank. Digital banking allows services for users to access financial data via mobile phones, credit cards for online shopping, transfer money to other banks, remote account management, and use online banking transactions simply without going directly to the bank (Tran et al., 2023).

Digital banking has positive aspects such as ease of transaction, saving on time and moreover reduction of transaction costs, and preventing paper waste as it enables banking transactions to be carried out without going to the bank. In digital banking, most banking transactions a person makes are completed with a few clicks on the computer, tablet or mobile phone at the most convenient time for the person (Finans Danmark, 2021).

With the development and progress of the technology, it has enabled the banking sector to access new products and services more quickly and easier, and there have been a decrease in the costs of these products and services (Ulusoy and Demirel, 2022). However, there is also the other side of the coin. Because it can make people vulnerable to fraud and cyber-attacks (Finans Danmark, 2021). Therefore, security problems may arise. Since no system works perfectly, accounts can be subject to phishing, hacker attacks, and malware (Fathiddinovna, 2020).

Besides, problems may arise due to difficulty in accessing customer services when needed, rapidly changing technology, infrastructure deficiencies, technical problems, and security problems. The malfunction or deficiencies of the technological infrastructure reduces the service quality and lead to weakening of contact with customers due to the virtual environment, which can reduce customer satisfaction (Uka, 2021).

The digitalization in the banking sector, the fact that most of the work is done online and the work can be done at a lower cost without depending on the personnel in the physical branch, reduces the need for personnel. Technological advance may lead to a decrease in demand for human workforce in banking sector. In other words, it may lead to a tendency towards unemployment due to less need for labor force (Meena and Parimalarani, 2020).

The first signs of digital transformation emerged with the invention of the computer in the 20th century, and then accelerated with the invention and spread of the internet, personal computers and mobile phones (Pakdemirli, 2019). Digital transformation can be defined as "a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies" (Mikalef and Parmiggiani, 2022).

Digital transformation can also be expressed as "an organizational transformation that integrates digital technologies and business processes in a digital economy" (Liu et al. 2011). Digitalization can be expressed as "the use of digital technologies to change a business model and provide new revenue and value-producing opportunities; it is the process of moving to a digital business" (Sørensen and Reiming, 2022). Digital banking in a broad sense means that customers perform their banking transactions using technological opportunities.

In other words, it refers to providing bank services through technology-based devices and applications without the need for any physical location or faceto-face contact with bank personnel (Beybur and Çetinkaya, 2020). Digital banking can also be defined as the digitalization of traditional banking transactions carried out physically in the branch (Güler, 2022).

Digital banking allows users to make banking transactions such as payments, deposits, balance inquiries, bill payments, transfer of money to other accounts etc. without physically visiting the bank branches. It is a system that uses the internet, mobile phones, and other electronic devices as a distribution channel for banking services, including all traditional services (Tran et al., 2023: Sharma and Dubey, 2022).

Digital banking can also be expressed as a banking technology that allows customers to make transactions through digital channels or alternative distribution channels without going to bank branches. For bank businesses, alternative distribution channels are distribution channels used to reach customers, unlike traditional distribution channels.

Alternative distribution channels can be listed as follows: automated teller machines (ATMs), point of sale terminals (POS), call centers, kiosk banking, internet banking, mobile banking, telephone banking etc. (Demirci Aksoy, 2021: Bayrakdaroğlu, 2012).

Purpose of the Study

The study examines the impact of digital banking system for economic development in third world countries. Specifically, the study sought to:

1. Examine the impact of digital banking system for the development of business and employment generation in third world countries.
2. Examine the impact of digital banking system for easy financial transactions and generation of tax in the third world countries.

Research Questions

The following research questions were developed and used for the study:

1. What is the impact of digital banking system for the development of business and employment generation in third world countries?
2. What is the impact of digital banking system for easy financial transactions and generation of tax in the third world countries?

Scope of the Study

The study is limited to impact of digital banking system for economic development in third world countries.

Literature Review

Digital Banking and Economic Development

In the modern era of Information technology, every work in the human life is much easier than the traditional period. It has brought a revolution in the banking sector. Conversion from the manual-based ledger system to systemized processes and the overture to internet-based facilities has given a new facet to the banking sector.

The growth of the Internet and E- banking is dramatically changing every day and the entire world is transforming into digital global village. E-banking has become the integral part of the banking sector. Electronic banking has many names like e banking, virtual banking, online banking, or internet banking. It is simply the use of electronic and telecommunications network for delivering various banking products and services.

E banking is playing a major role, in improving the service quality and strengthens the banking sector. Because of the electronic payment there is an increase in customer satisfaction level, increased productivity, reduction in cost of banking operations, faster settlement and in larger volumes. E-banking services are provided by various channels like Mobile banking, Smart cards, Electronic Fund Transfers, Telephone banking, Wallet banking etc.

E-banking provides 24 hours, 365 days a year services to the customers of the bank- it inculcates a sense of financial discipline and promotes transparency and it reduces the load on bank branches. The competition in banking sector augmented over the last few years and to stay competitive, to attain customer retention and satisfaction E-Banking is one tool towards it.

According to Iwedi et al, (2023), the use of digital financial services in contemporary intermediation process have improved the lives of people by minimizing the need to carry cash or spend time traveling over long distance to get to the nearest point of banking services. Research has considered digital financial services as a major catalyst for economic growth. Digital financial services play a critical factor in economic growth.

According to Tchamyou et al (2019), digital financial services minimize income inequalities by formalizing the financial sector, and the literature has argued that digital financial services accelerate economic growth. Anane and Nie (2022) noted that digital financial services stimulate world economic growth through software, infrastructure, and hardware that permits fast data transfer between individuals, companies, devices, networks, and systems (Roessler, 2018).

Digital financial services are those services utilized by customers through digital technology. Abbasi and Weigand (2017) noted that digital financial services improve the provision of financial services provided by conventional financial institutions through cutting-edge and advanced technologies such as mobile money, mobile banking, internet banking and digital payment platforms. According to Pazarbasioglu et al. (2020), digital financial services are the financial services that are dependent on digital technologies for delivery and use by customers.

Digital financial services in developing countries enables individuals with limited access to financial services to access these services using their mobile phones at their convenience and without physically going to the physical bank. Asian Development Bank (2016) defined digital financial services not only enable money transfers but also enables safe storage of money electronically (mobile money), payment services, savings and opportunity to a wider access of other financial services such as insurance and credit facilities.

Digital financial services enable the deposit money banks customers to access simple financial services through digital payment arrangements, mobile phones, and electronic money structures (Anane & Nie, 2022). According to Pazarbasioglu et al. (2020), countries with more technologically cutting-edge financial systems exhibit faster economic growth and more substantial decrease in inequality and poverty gaps.

Methods

The study employed the descriptive survey research design. The study used a population of 1200 professors in bank managers from various financial institutions in Nigeria. Random sampling technique was used to select 200 bank managers from 15 financial institutions in Nigeria. The study used the instrument titled "Impact of Digital Banking System for Economic Development in a Third World Country" (IDBSYEDTWC) as instrument for data collection. The data obtained from the study was analyzed using simple mean and charts.

Data Analysis

Research Question One

What is the impact of digital banking system for the development of business and employment generation in third world countries?

Table 1: Impact of digital banking system for the development of business and employment generation in third world countries

S/N	Items	Mean	Decision
1	Digital banking system creates easy business transactions.	3.11	Agree
2	Digital banking systems give accurate accountability and financial history of clients.	3.42	Agree
3	Digital banking system enhances creates business opportunities for IT contractors online marketers.	3.05	Agree

Findings obtained from research question 1, table 1 showed that item 1, 2 and 3 all agree to the fact that digital banking system creates easy business transactions, gives accurate accountability and financial history of clients and enhances creates business opportunities for IT contractors online marketers.

Research Question Two

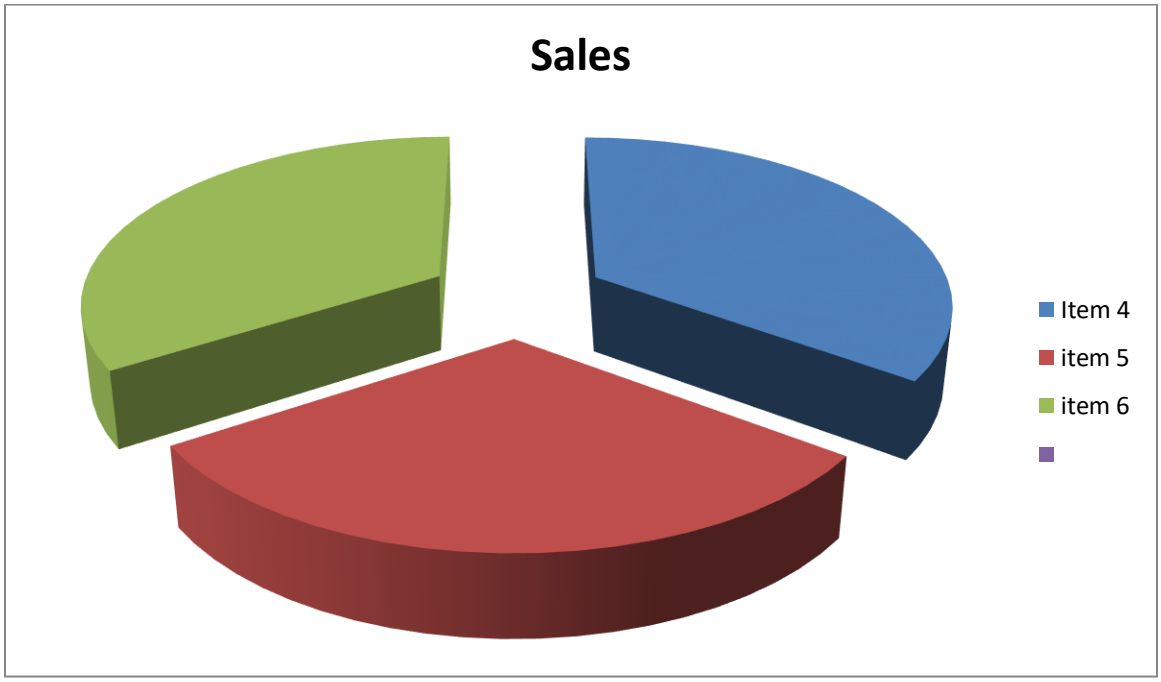
What is the impact of digital banking system for easy financial transactions and generation of tax in the third world countries?

Table 2: Impact of digital banking system for easy financial transactions and generation of tax in the third world countries

S/N	Items	Mean	Decision
4	Digital banking system creates the ease for collection of tax from customers.	3.42	Agree
5	Digital banking system makes it easier for customers to carry out financial transactions globally.	3.01	Agree
6	Digital banking system makes it possible to track sales record and monitor asset growth at any time.	3.33	Agree

Findings obtained from research question 2, table 2 showed that item 4, 5 and 6 all agree to the fact that digital banking system creates the ease for collection of tax from customers, makes it easier for customers to carry out financial transactions globally and makes it possible to track sales record and monitor asset growth at any time.

Figure 2: Chart of Impact of digital banking system for easy financial transactions and generation of tax in the third world countries



Findings obtained from figure 2 showed that item 4, 5 and 6 had a mean value of 3.42, 3.01 and 3.33 respectively. This is indicative that digital banking creates easy financial transactions and aid in tax generation in a third world country.

Discussion of Findings

Findings accrued from the study showed that digital banking system creates easy business transactions, gives accurate accountability and financial history of clients and enhances creates business opportunities for IT contractors online marketers. This is in line with the view of ADB, (2016) that opined that digital banking system creates opportunity for the development of business opportunities.

Further findings revealed that digital banking system creates the ease for collection of tax from customers, makes it easier for customers to carry out financial transactions globally and makes it possible to track sales record and monitor asset growth at any time. This also agrees with the statement of Beybur, and Çetinkaya, (2020) that states that customers can maximize the opportunities of digital banking in enhancing business transactions and sales monitoring technology.

Conclusion

The study revealed that digital banking had tremendously enhanced business opportunities by creating online financial transactions, accurate record keeping and effective asset management system.

Recommendation

Based on the findings obtained from the study, it was recommended that:

1. Banking system should advance their online network system to accommodate large transactions to avoid traffics.
2. Bankers should be trained adequately on digital banking systems.

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AN ASSESSMENT OF THE IMPACT OF INTERNATIONAL OIL COMPANIES CORPORATE SOCIAL RESPONSIBILITY PROGRAMS ON YOUTH DEVELOPMENT IN BAYELSA STATE

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Abstract

Corporate social responsibility is carried out by organisation to demonstrate their sense of appreciation and host community need for development. The study used two research questions and one hypothesis was used in the study. Findings obtained from research question 1, table 1, revealed that item 1, 2, 3 and 4 were all accepted to the various questions. This implies that corporate social responsibility program does not benefits host communities, does not provide opportunities to survive in the society, does not give sustainable employment in the society and does not meet up community welfare needs. in Bayelsa State. Findings obtained from research question 2, table 2, revealed that item 5, 6, 7 and 8 were all accepted to the various questions. This implies that corporate social responsibility program does not give youth needed opportunity to work in the oil and gas sector, does not provide economic privilege for youths in host communities, does not meet up educational needs for youths in host communities and does not create entrepreneurship training and development plans for youths in host community in Bayelsa State. Further findings from table 3 revealed that Z-calculated value of 0.455 is less than z-tabulated value of 1.653 at 0.05 level of significance. The null hypothesis was accepted. This implies that there is no significance difference between the impact of organised corporate social responsibility programs of IOCs on poverty alleviation among youths and perception of host communities on IOCs youth development programs in Bayelsa State. It was finally recommended amongst others that oil companies should refrain from doing the bare minimum when it comes to corporate social responsibility in Bayelsa state.

Keywords: Impact, International, Oil, Companies, Corporate, Social, Youth and Development

Introduction

The greater percentage of human development programmes of any country targets the youths of the nation. This is because of the ability of youths to be able to produce, provide services, and lead innovations and manpower compared to any other demographic within an economy. This is why numerous programmes target youth development, and a country like Nigeria, with its high unemployment rate, these programmes spring up constantly. Thus, Chukwuemeka, et al (2012) stated that The process of continuously enhancing youth development structures, institutions, and programmes is known as youth development. Its goals are to improve the social environment, safeguard youth rights, increase their welfare, and ensure that they can develop into fully realised human beings. Youth empowerment requires youth development as a prerequisite.

Due to the importance of youth development, as stated above, NGOs, Government and international bodies carry out programmes designed to aid and revitalize youth development in the country. One of this, which this study focuses on, is the corporate social responsibility program. This is a program for youth development carried out by business in other to provide support of a business effort to boost their image by carrying out activities ranging from philanthropic to educational in a particular area. In essence, it is done to present the business as a socially acceptable venture. Adeyanju (2012) stated that A company that practices corporate social responsibility makes a special effort to start initiatives that will benefit the environment, the host community, and the public at large. It can be interpreted as a means of admitting that certain corporate failures have a detrimental impact on society and its citizens and working to ensure that these negative consequences are mitigated. Furthermore, Eze and Bello (2016) proposed that the goal of social responsibility is to strike a balance between corporate profits and community welfare. The former is achieved through the companies' interest in social and environmental issues, the preservation of resources, and the community's potential.

This study asserts that despite the ulterior reasons that drive corporate social responsibility programs, it is noteworthy that it has an impact in specific areas like Youth Development. This is especially true in a country like Nigeria that has international companies that can have such an economic impact: Oil Companies. Thus, this is the crux of this study, seeking to assess the impact of international oil company’s corporate social responsibility programs on youth development in Bayelsa State.

Statement of the Problem

The host communities, states and regions of Oil Companies all around the world experience certain benefits. This is true even in a place like the Niger Delta where the negative impacts of oil exploration supersede the positive. The positive, which is the focus of this study, is in the aspect of corporate social responsibility programs and its impact on youth development in the Niger Delta, with Bayelsa state as the case study. The benefits of corporate social responsibility programs to a company and to the people on the receiving end are common place in research writing, as well as youth development which is a point of discussion of any country.

However, this paper identifies a gap in literature on the impact that these reoccurring corporate social responsibility programs by International Oil Companies have on youth development in Bayelsa state. This gap needs to be felt with up-to-date assessment and study on the impact this billion-dollars companies have on the relatively small state. This study, therefore, is an assessment of the impact of international oil companies' corporate social responsibility programs on youth development in Bayelsa State.

Purpose of the Study

The general purpose of the study is to carry out an assessment of the impact of international oil companies' corporate social responsibility programs on youth development in Bayelsa State.

The specific objectives of the study are:

1. To determine the impact of organised corporate social responsibility programs of IOCs on poverty alleviation among youths in Bayelsa State.
2. To determine the perception of host communities on IOCs youth development programs.
3.

Research Questions

The following are the research questions that guide the study:

1. What is the impact of organised corporate social responsibility programs of IOCs on poverty alleviation among youths in Bayelsa State?
2. What is the perception of host communities on IOCs youth development programs?

Hypothesis

The null hypothesis was tested at 0.05 level of significance.

There is no significance difference between the impact of organised corporate social responsibility programs of IOCs on poverty alleviation among youths and perception of host communities on IOCs youth development programs in Bayelsa State.

Scope of the Study

Geographically, this study covers only Bayelsa state, which is located in the Niger Delta region of Nigeria. Specifically, the scope of the study covers only the impact of international oil companies' corporate social responsibility programs on youth development in Bayelsa State.

Literature Review

Concept of corporate social responsibility

To begin with, According to Yahaya and Lamido (2022), corporate social responsibility is a type of self-regulation used by organisations to support philanthropic or charity community goals by volunteering or participating in other morally driven activities. It refers to the extent to which businesses have a social responsibility to uphold moral standards that are morally and financially sound as well as legal and ethical. Another way to put it is the idea that businesses have a direct say in how society functions. It suggests that businesses have a duty to give back to the community even when their financial targets are met. Corporate citizenship and corporate social responsibility are interchangeable terms.

Furthermore, Inyang et al. (2023) note that corporate social responsibility—which is defined as a concept that requires corporate organisations to take community members' interests into account whenever routine business decisions are made—has become more important in the voluntary integration of social and environmental issues in recent years. This social responsibility is defined as a conscientious and moral business practice that raises the standard of living for society. All stakeholders require it as a win-win situation that improves corporate sustainability. Organisations are expected by society to conduct business lawfully, morally, responsibly, and generously. The economic, social, and environmental components comprise corporate social responsibility. It has been recognised that several forms of CSR, such as corporate gifting, staff welfare programmes, and creditor days, are related to business performance.

Corporate social responsibility is still a hot topic in research because of its many advantages for businesses, governments, society, and the economy as a whole. As a way for a company to show gratitude to their host community or government, a wide range of required programmes, practices, and policies are included into their supply chains, business operations, and decision-making processes. This is known as corporate social responsibility. It entails accepting corporate and social responsibility for their past, present, and future company operations, with a focus on the host community.

In conclusion, a company is deemed socially responsible if it turns a profit, abides by the law, behaves morally, and gives back to the community. According to Windsor (2001), social expectations include financial and legal obligations, moral obligations, and acts of charity. According to the theory, corporate social responsibility (CSR) must cover the whole range of society duties that a business is expected to do, including moral, legal, ethical, and philanthropic duties (Olorunnisola and Usman, 2023).

Concept Of Corporate Social Responsibility (International Oil Companies in Nigeria)

According to Ilomaa and Chukwub (2023), companies that contaminate the ecosystems of victim communities have some of the blame for the negative environmental repercussions of their operations. It is anticipated that polluting companies will take care of certain of these communities' physical and social requirements in order to lessen the environmental burden these community's bear. A company's commitment to promoting community development, human capacity building, environmental protection, employee welfare, and the voluntary elimination of activities that are not in the public interest is referred to as corporate social responsibility. Communities often anticipate a certain amount of social concern and action to lessen the effects of environmental chaos (such as contaminated water sources and diminishing sources of income). Face-offs between the oil companies and the communities typically occur from the firms' disregard for or open refusal to address the social needs of the host communities. Many environmental polluting companies may be reluctant to participate in significant community development initiatives because of the financial burden connected with CSR operations and the worry that such expenses may outweigh the benefits derivable.

According to Isallah (2023), corporate social responsibility (CSR) enables businesses to consider issues other than just maximising profits and to demonstrate a commitment to the social, environmental, and economic issues that arise from their operations in society The government should ensure effective and fair taxation of activities of the oil and gas companies since taxation transparency is intensified.

Concept of Youth Development

No nation pursuing economic development—the good and better life—can afford to ignore its youth or let them become the main source of social unrest. This is so because young people are the driving force behind development and progress, providing or acting as a source of labour for the manufacturing of goods and services. They are also the critical masses of people whose deeds and inaction have the power to build or destroy their nation's institutions. Stated differently, they decide the nation's future (Uba & Chiwuike, 2022).

Additionally, Newo et al. (2023) claimed that young people are an important target demographic for development initiatives and that they have a great ability to influence communities all over the world. Youth make up a large portion of the world's population, making them an ideal target audience for community development initiatives. By addressing the underlying causes of poverty, these programmes can significantly alter a community's pattern. Building the human capital necessary for young people to avoid poverty, lead better lives, and potentially have more fulfilling ones requires youth development and empowerment (Awogbenle & Iwuamadi, 2010). Youth empowerment, which is defined as a process that helps young people to take ownership of their life, is a prerequisite for youth development.

Theoretical Framework

The theory applied in this study is the Positive Youth Development Theory. This theory asserts that youth well-being is paramount and that certain needs and conditions need to be met to ensure their development. The theory considers youths in any nation to be in possession of resources that should be and can be developed. In other words, it promotes teaching and enabling youths in a society. Positive youth development does not focus only on the development of individual strengths, but also devotes significant efforts at supporting positive relations between young people and their social-community resources.

Methodology

The study adopted the descriptive survey research design. The population consists of one hundred and forty (140) stakeholders in various host communities in Bayelsa State. The entire population was used as sample for the study. The developed an instrument titled “Impact of International Oil Companies Corporate Social Responsibility Programs on Youth Development” (IIOCCSRPYD). The instrument is a four-point rating scale consisting of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). The response options were weighed as 4, 3, 2 and 1 respectively. The instrument consists of a total of eight items.

The study conducted a pilot test from four respondents in two host communities in Rivers State using test-retest method. The instrument was administered to the respondent twice within two weeks interval. The data obtained was calculated to be 0.77 using Pearson Product Moment Correlation Coefficient The data obtained from the study was analyzed using mean, standard deviation, charts and Z-test analysis.

The hypothesis was tested at 0.05 level of significance. Accept null hypothesis if z-calculated value is less than z-critical value. 0on the other hand, reject null hypothesis if z-calculated value is greater than z-critical value.

Analysis

Research Question One

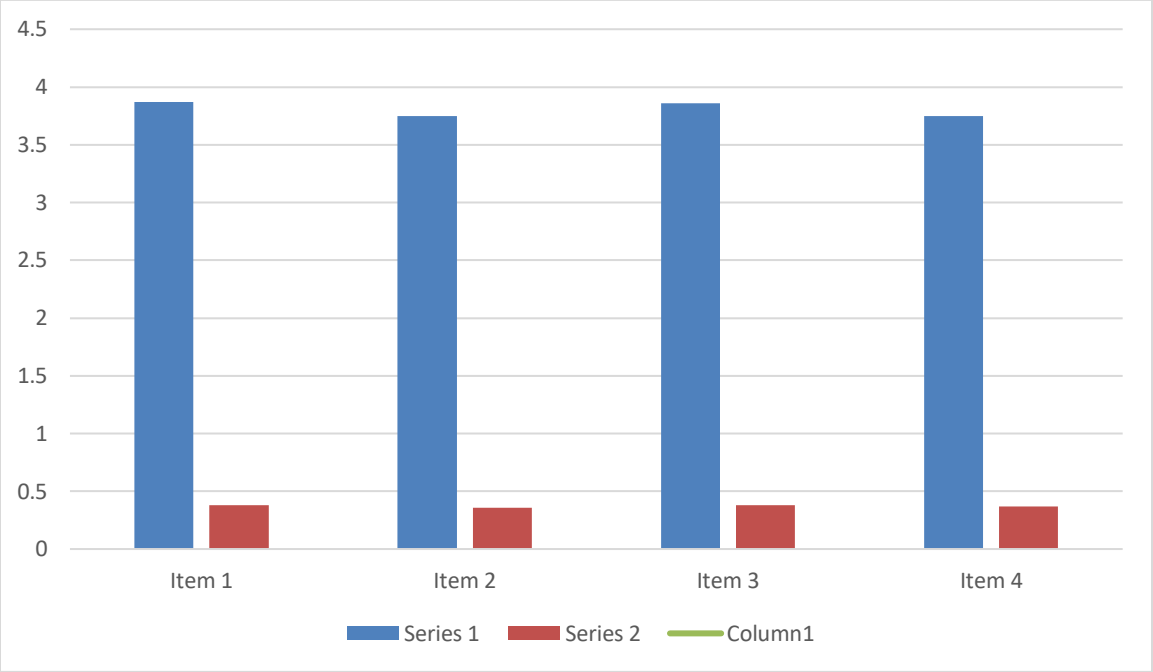
What is the impact of organised corporate social responsibility programs of IOCs on poverty alleviation among youths in Bayelsa State?

Table 1: Impact of organised corporate social responsibility programs of IOCs on poverty alleviation among youths

S/N	Items	Mean	Standard Deviation	Decision
1	Corporate social responsibility program does not benefits host communities in Bayelsa State	3.87	0.38	Accept
2	Corporate social responsibility program does not provide opportunities to survive in the society.	3.75	0.36	Accept
3	Corporate social responsibility program does not give sustainable employment in the society.	3.86	0.38	Accept
4	Corporate social responsibility program does not meet up community welfare needs.	3.75	0.36	Accept
	Grand Mean	3.81	0.37	

Findings obtained from research question 1, table 1, revealed that item 1, 2, 3 and 4 were all accepted to the various questions. This implies that corporate social responsibility program does not benefits host communities, does not provide opportunities to survive in the society, does not give sustainable employment in the society and does not meet up community welfare needs. in Bayelsa State.

Figure 1: Impact of organised corporate social responsibility programs of IOCs on poverty alleviation among youths



Findings obtained from figure 1 showed that items 1, 2, 3 and 4 had a mean and standard deviation value of 3.87; 0.38, 3.75;0.36, 3.86; 0.38 and 3.75; 0.36 respectively. This implies that organised corporate social responsibility programs of IOCs do not alleviate poverty among youths in Bayelsa State.

Research Question Two

What is the perception of host communities on IOCs youth development programs?

Table 2: Perception of host communities on IOCs youth development programs

S/N	Items	Mean	Standard Deviation	Decision
5	Corporate social responsibility program does not give youth needed opportunity to work in the oil and gas sector.	3.77	0.36	Accept
6	Corporate social responsibility program does not provide economic privilege for youths in host communities.	3.85	0.38	Accept
7	Corporate social responsibility program does not meet up educational needs for youths in host communities.	3.80	0.37	Accept
8	Corporate social responsibility program does not create entrepreneurship training and development plans for youths in host community.	3.75	0.36	Accept
	Grand Mean	3.79	0.37	

Findings obtained from research question 2, table 2, revealed that item 5, 6, 7 and 8 were all accepted to the various questions. This implies that corporate social responsibility program does not give youth needed opportunity to work in the oil and gas sector, does not provide economic privilege for youths in host communities, does not meet up educational needs for youths in host communities and does not create entrepreneurship training and development plans for youths in host community in Bayelsa State.

Hypothesis

There is no significance difference between the impact of organised corporate social responsibility programs of IOCs on poverty alleviation among youths and perception of host communities on IOCs youth development programs in Bayelsa State.

Table 3: Z-test Analysis of difference between the impact of organised corporate social responsibility programs of IOCs on poverty alleviation among youths and perception of host communities on IOCs youth development programs in Bayelsa State

S/N	Items	N	Mean	SD	df	Z-Cal	Z-tab	Decision
1	Impact of organised corporate social responsibility programs of IOCs on poverty alleviation	140	3.81	0.37	278	0.455	1.653	Not Significant
2	Perception of host communities on IOCs youth development programs	140	3.79	0.37				

Findings from table 3 revealed that Z-calculated value of 0.455 is less than z-tabulated value of 1.653 at 0.05 level of significance. The null hypothesis was accepted. This implies that there is no significance difference between the impact of organised corporate social responsibility programs of IOCs on poverty alleviation among youths and perception of host communities on IOCs youth development programs in Bayelsa State.

Discussion of Findings

Findings obtained from research question 1, revealed that corporate social responsibility program does not benefits host communities, does not provide opportunities to survive in the society, does not give sustainable employment in the society and does not meet up community welfare needs. in Bayelsa State. This is in accordance to the opinion of Adeyanju, (2012) which states that most organisation especially oil and gas firm fail to give back in commensurable quantity to the needs of their host communities.

Also, findings obtained from research question 2, revealed that corporate social responsibility program does not give youth needed opportunity to work in the oil and gas sector, does not provide economic privilege for youths in host communities, does not meet up educational needs for youths in host communities and does not create entrepreneurship training and development plans for youths in host community in Bayelsa State. This is in line with the opinion of Olorunnisola & Usman, (2023) that opined that most organisations do not incorporate youths in their bid in building the society.

Further findings revealed that there is no significance difference between the impact of organised corporate social responsibility programs of IOCs on poverty alleviation among youths and perception of host communities on IOCs youth development programs in Bayelsa State. This is in line with the perception of Eze and Bello (2016) which says that both host community do not benefit from corporate social responsibility programs of IOCs as the community still languish in poverty.

Implications of the Study

The following are the implications of the study:

1. Corporate social responsibility programs are an integral part of international oil companies and know that they cannot operate without them.
2. Youth development is Bayelsa is as a result, to a very large extent, international oil companies
3. The programmes in existence suit the socio-economic needs of Bayelsa state in the area of Youth Development.

Recommendations of the study

Based on the analysis of the study, the following recommendations are made:

1. Oil companies should refrain from doing the bare minimum when it comes to corporate social responsibility in Bayelsa state.
2. The state government should indirectly regulate and ensure these programmes are carried out unbiased and followed through.

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PERCEPTION OF MEDICAL PRACTITIONERS AND NUTRITIONIST ON THE CONSUMPTION OF PROCESSED RESIDUE OF LEGUMES ON THE REDUCTION OF CARDIOVASCULAR DISEASE AMONG AGED PERSONS IN BAYELSA STATE

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Abstract
The study examined the perception of medical practitioners and nutritionist on the consumption of processed residue of legumes on the reduction of cardiovascular disease among aged persons. One research questions and hypothesis was used in the study. The survey research design was used in this study. The entire population consists of sixty five (65) medical practitioners and nutritionist in Bayelsa State. As a result of the small population size, the entire population was used as sample for the study. The study developed an instrument titled "Perception of Medical Practitioners and Nutritionist on the Consumption of processed Residue of Legumes on the Reduction of Cardiovascular Disease (PMPNCRLRCD). The instrument is a four point rating scale consisting of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). The response options were weighed as 4, 3, 2 and 1. The data obtained from the study was analyzed using simple mean, standard deviation, charts and z-test. Findings obtained from the study showed that items 1, 2, 3 and 4 all accepted that the consumption of processed beans, soya bean, peanuts and peas residue is good for aged persons with Cardiovascular disease. The findings obtained from table 2 showed that Z-calculated value of 0.497 is less than z-critical value of 1.667 at 0.05 level of significance. This implies that the null hypothesis was accepted. This implies that there is no significant difference between the Perception of medical practitioners and nutritionist on the consumption of processed meat obtained from residue of legumes on the reduction of cardiovascular disease among aged persons. Based on the findings obtained from the study, it was recommended that aged persons should feed on processed residue of legumes on the reduction of cardiovascular disease among aged persons.

Keywords: Medical Practitioners, Nutritionist, Residue, Legumes Cardiovascular, Disease, and Aged Persons

Introduction

Aged persons are usually faced with some health challenges due to body weakness over time. In most cases if not properly handled, may lead to death. One of the most common diseases experienced by age persons is the cardiovascular disease. This disease is a heart disease that reduces the optimal functionality of the heart. Cardiovascular Diseases (CVD) is a new disease discovered ailment, at least in the epidemic proportions that we see today, and its status as the current leading cause of death is also new. The human race is "designed" to lead a physically active life. The activeness should be maintained over a long period of time even at old age.

The human being should be able to carry out sporting activities in spite of age. While humans are not as good at sprinting as many other mammals, we are one of only four groups of mammals who are superb endurance runners. The in ability to utilize our God given strength is problematic and traceable to some diseases experienced in sickness.

It is not surprising that CVD has become our society's leading cause of death. Risk factors for CVD nationwide data suggest that the primary risk factors for CVD are high cholesterol, smoking, diabetes, and high blood pressure. Secondary risk factors include low levels of physical activity and obesity (Ackermann, 2012). Among these risk factors, high cholesterol is the primary predictive factor for CVD. Longitudinal studies show a link between diets high in saturated fat and cholesterol and risk of CVD. Experiments among lab animals showed that rats fed diets high in saturated fat and cholesterol were more likely to have high blood cholesterol than rats fed diets low in saturated fat and cholesterol.

Creating and sustaining effective behavior changes and preventing CVD are also related to environmental factors, including climate, land use, population density, and culture. A geographic analysis of obesity rates and these environmental factors showed an association between spatial patterns of all these factors, indicating that they may produce environments that foster obesity (Bramble & Lieberman, 2004). These associations might be due to interactions between the ecology of a region (climate, natural environment), the built environment (food supply, land use), and social factors (population density, culture). For example, rural counties might not necessarily be correlated with high obesity rates, but a rural county with low education and high unemployment is much more likely to show high obesity rates compared to a "recreation" rural county that also has higher education and lower poverty rates. paying attention to these social and land use factors that contribute to people's interactions with the landscape can help promote or limit healthy lifestyle choices.9 food supply is also relevant (Daviglus, 2012).

Whereas climates in northeastern cities may not promote ready access to fruits and vegetables year-round, a high population density and extensive network of infrastructure allows for accessible grocery stores to stock healthy fruits and vegetables, whatever the weather. Alternatively, even in counties that are dominated by farming and have a more conducive climate, a lack of roads or population density can lead to food deserts, which lead to limited access to perishable foods like fruits and vegetables (Ford, 2007). Addressing these infrastructure issues to promote health may be best supported by regional efforts between states.

Lots of studies of nutritional epidemiology conducted to assess the diet-heart hypothesis have utilized s end-point intermediate biomarkers of cardiovascular risk (reductions in blood pressure, changes in lipids, inflammatory molecules or other biomarkers) as a proxy for the risk of ischemic heart disease or stroke. This approach could be flawed for several reasons (Hu and Willett, 2002). In first place, the existence of multiple pathways leading from diet to heart disease speaks against the simplistic approach of giving a high value to changes in any single biomarker. Second, the induction period can be variable for the different pathways in which diverse biomarkers are involved and this fact severely limits the possibility of assessing at any time point any multiple combinations of biomarkers. Third, probably there are other pathways that are still less well known and can account for a substantial proportion of clinical events. Therefore, the most sensible approach to investigate the diet-heart hypothesis is the use of hard clinical events as the end-point.

In nutritional epidemiology, food pattern analysis is a methodological approach which captures different combinations of food intake and better reflects the complexity of the diet and its relationships with disease risk. Food pattern analysis has mostly replaced the traditional single-nutrient analysis in relation to chronic diseases, because that traditional approach has been challenged by several conceptual and methodological limitations. When an outcome is likely to be caused by a single nutrient, an exclusive focus on that nutrient may be the optimal approach; however, CVD has been associated with many dietary factors and the food pattern approach may be the most useful option because it goes beyond nutrients or foods and examines the effects of the overall diet. The focus on isolated nutrients or single foods makes it difficult to take into account any interaction between them. Many foods are consumed together and there can be a wide range of potential interactions between different nutrients and foods. Food patterns adequately capture between-food synergies. In this context, for the assessment of the association between dietary factors and CVD, to shift the focus to overall dietary patterns is more useful than the reductionist and overly optimistic approach of attributing all the effect to a single nutrient or food. It is very unlikely that the intake of a single nutrient or food could exert a sufficiently strong effect as to substantially change the incidence rates of CVD.

Nuts are a good source of unsaturated fatty acids, fiber, minerals (potassium, calcium and magnesium), vitamins (folate and tocopherols) and other bioactive compounds, such as phytosterols and polyphenols. In large prospective cohort studies, the consumption of tree nuts has been reported to be associated with lower CHD incidence (Mente, de Koning, Shannon and Anand, 2009)). Overall, cardiovascular benefits of modest nut consumption (>= 2 servings/wk versus never or almost never consumption) are supported by both effects on risk factors in short-term trials and by the magnitude and consistency of reduced CVD risk observed in prospective cohort studies. An important recent pooled analysis of primary data from 25 nut consumption trials including in total 583 participants, showed impressive benefits of nut consumption on blood lipids, with reductions in total blood cholesterol concentrations of 10.9 mg/dL (5.1% change) and in low-density lipoprotein cholesterol concentration (LDL-C) of 10.2 mg/dL (7.4% change). Reductions in triglyceride levels by 20.6 mg/dL (10.2%) were obtained only in subjects with blood triglyceride levels of at least 150 mg/dL but not in those with lower levels (Sabate, Oda and Ros, 2010)). Beyond these short term trials and beyond observational studies, the large PREDIMED primary prevention randomized trial with 7,447 participants reported a 30% relative reduction in major cardiovascular events (stroke, myocardial infarction or cardiovascular death) versus a control diet after a 4.8-year intervention with Mediterranean diet supplemented with mixed nuts (mainly walnuts, but also almonds and hazel nuts) totaling a consumption of 30 g/d of mixed nuts. This finding, consistent with previous observational studies and small randomized trials on intermediate outcomes, provides a first line evidence to support the benefits of mixed nuts in cardiovascular prevention. Epidemiological evidence for cardiovascular benefits from legumes (eg, peas, beans, lentils, and chickpeas) is weaker than for nuts, although they may also provide beneficial effects taking into account the overall package of micronutrients, phytochemicals and fiber provided by them. In a meta-analysis of RCTs, consumption of soy-containing foods showed an apparent beneficial effect lowering diastolic and systolic blood pressure even though the effects did not achieve statistical significance. Isolated soy protein or is of lavones (phytoestrogens) seem to have smaller effects, producing only modest reductions in LDL cholesterol and diastolic blood pressure (Sacks, et al, 2006). More investigation of the effects of legumes on cardiovascular disease with well conducted prospective cohorts and RCTs is required.

Purpose of the Study

The study examined the perception of medical practitioners and nutritionist on the consumption of processed residue of legumes on the reduction of cardiovascular disease among aged persons. Specifically, the study sought to:

1. Examined the perception of medical practitioners and nutritionist on the consumption of processed residue of legumes on the reduction of cardiovascular disease among aged persons.

Research Questions

The research question was adopted and used for the study:

1. What is the perception of medical practitioners and nutritionist on the consumption of processed residue of legumes on the reduction of cardiovascular disease among aged persons?

Hypothesis

The null hypothesis was tested at 0.05 level of significance.

There is no significant difference between the Perception of medical practitioners and nutritionist on the consumption of processed residue of legumes on the reduction of cardiovascular disease among aged persons

Scope of Study

The study is limited to perception of medical practitioners and nutritionist on the consumption of processed residue of legumes on the reduction of cardiovascular disease among aged persons.

Literature Review

Legumes and Cardiovascular Disease

Cardiovascular disease is a heart disease caused by excessive consumption of red meat. It usually affects aged persons. Cardiovascular diseases (CVD) represent the main causes of death globally, accounting for nearly one-third of all deaths worldwide (Wong, 2014). This has become a major global issue and therefore calls for concern by health institutions in the world. The average life expectancy of those affected with this disease as reduced drastically. Moreover, as life expectancy has improved in both developed and developing countries, the number of healthy years lost due to disability has been increasing consistently. The Within this scenario, primary prevention of CVD-related morbidity and mortality represents a major priority for public health strategies to reduce the burden of such conditions. Lifestyle factors have been considered main targets to prevent CVD, because they are modifiable behaviors that could highly affect both the risk and the prognosis of the disease. A number of healthy dietary patterns have demonstrated beneficial effects in decreasing the burden of CVD-related risk factors and CVD incidence and mortality (Sofi, et al, 2014). Scientific literature suggests that a diet rich in antioxidants (such as vitamins and polyphenols), fibre, n-3 fatty acids, MUFA and PUFA may decrease the risk of the aforementioned conditions.

Among the potential mechanisms of protection, the antioxidant and anti-inflammatory action of these compounds may mediate their effects.

Legumes are widely consumed today in the world. From a nutritional point of view, legumes are a source of some of these nutrients and bioactive compounds as well as an excellent source of fibre and vegetable proteins (Guine, et al, 2016). Despite not being associated with decreased risk of CVD themselves, vegetable proteins may be a valuable alternative to animal proteins, which on the contrary are associated with saturated fats and possible adverse outcomes. Meta-analyses of studies on legume consumption and cardiovascular health demonstrated no association with stroke or diabetes. Legumes considered as part of a Mediterranean dietary pattern have been associated with a decreased risk of CVD risk and mortality in studies evaluating Mediterranean diet as main exposure (Grosso, et al, 2015), but a comprehensive evaluation of their independent role on such outcomes is lacking. The aim of the present study was to systematically review and perform a meta-analysis of prospective cohort studies exploring the association between dietary legume consumption and CVD risk, including CHD and stroke.

Without proper health medication system, patient with cardiovascular may die. Cardiovascular disease (CVD) is the leading cause of death worldwide, accounting for nearly one-third of all deaths globally (Townsend, et al, 2016). This constitutes 17% of overall national health expenditures in the US. To reduce the burden, the prevention of CVD morbidity and mortality has been increasingly prioritized in public health. It is well accepted that healthy diet has beneficial effects on decreasing the burden of CVD incidence and mortality. Legumes include peas, beans, lentils, and peanuts and are a rich source of phytosterol sand dietary fiber. Many epidemiologic studies have assessed the relationship between legume intake and all-cause mortality and CVD mortality and most found a positive association. But the magnitude soft he association varied between studies. With accumulating evidence, we conducted a meta-analysis to assess the association between legume intake and risk of CVD mortality and all-cause mortality.

Methods

The survey research design was used in this study. The entire population consists of sixty five (65) medical practitioners and nutritionist in Bayelsa State. As a result of the small population size, the entire population was used as sample for the study. The study developed an instrument titled “Perception of Medical Practitioners and Nutritionist on the Consumption of processed Residue of Legumes on the Reduction of Cardiovascular Disease (PMPNCRLRCD). The instrument is a four point rating scale consisting of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). The response options were weighed as 4, 3, 2 and 1. The data obtained from the study was analyzed using simple mean, standard deviation, charts and z-test.

Data Analysis

Research Question one

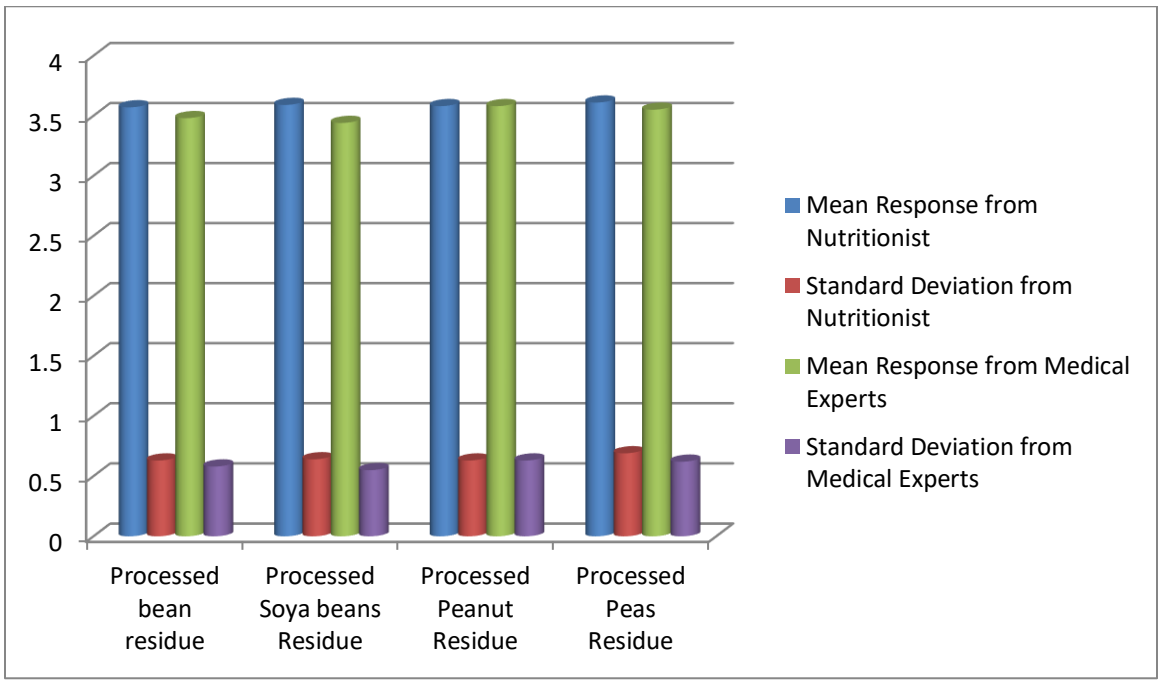
What is the perception of medical practitioners and nutritionist on the consumption of processed residue of legumes on the reduction of cardiovascular disease among aged persons?

Table 1: Perception of medical practitioners and nutritionist on the consumption of processed meat obtained from residue of legumes on the reduction of cardiovascular disease among aged persons

S/N	ITEMS	Response from Nutritionist Expert			Responses from Medical Experts		
		Mean	SD	Remark	Mean	SD	Remark
1	Consumption of processed beans residue is good for aged persons with Cardiovascular disease	3.57	0.63	Accept	3.48	0.58	Accept
2	Consumption of processed Soya bean residue is good for aged persons with Cardiovascular disease	3.59	0.64	Accept	3.44	0.55	Accept
3	Consumption of processed Peanuts residue is good for aged persons with Cardiovascular disease	3.58	0.63	Accept	3.58	0.63	Accept
4	Consumption of processed Peas residue is good for aged persons with Cardiovascular disease	3.61	0.69	Accept	3.55	0.62	Accept
	Grand Mean	**3.59**	**0.65**		**3.51**	**0.60**	

Findings obtained from research question one, table 1 showed that items 1, 2, 3 and 4 all accepted that the consumption of processed beans, soya bean, peanuts and peas residue is good for aged persons with Cardiovascular disease. This is so as the average response from nutritionist and medical experts were above average.

Figure 1: Perception of medical practitioners and nutritionist on the consumption of processed meat obtained from residue of legumes on the reduction of cardiovascular disease among aged persons



Data obtained from figure 1 showed that Nutritionist response on item 1, 2, 3 and 4 had a mean and standard deviation value of 3.57; 0.63, 3.59;0.64, 3.58;0.63 and 3.61;0.69 respectively. Similarly, Medical experts had a mean and standard deviation value of 3.48; 0.58, 3.44; 0.55, 3.58; 0.63 and 3.55; 0.62 respectively.

Hypothesis

There is no significant difference between the Perception of medical practitioners and nutritionist on the consumption of processed residue of legumes on the reduction of cardiovascular disease among aged persons

Table 2: Z-test analysis of difference between the Perception of medical practitioners and nutritionist on the consumption of processed meat obtained from residue of legumes on the reduction of cardiovascular disease among aged persons

S/N	Items	N	Mean	SD	df	Z-cal	Z-tab	Decision
1	Nutritionist Experts	25	3.59	0.65	63	0.497	1.667	Not Significant
2	Medical practitioners	40	3.51	0.60				

The findings obtained from table 2 showed that Z-calculated value of 0.497 is less than z-critical value of 1.667 at 0.05 level of significance. This implies that the null hypothesis was accepted.

This implies that there is no significant difference between the Perception of medical practitioners and nutritionist on the consumption of processed meat obtained from residue of legumes on the reduction of cardiovascular disease among aged persons.

Discussion of Findings

Based on the findings of the study, it was revealed that the consumption of processed beans, soya bean, peanuts and peas residue is good for aged persons with cardiovascular disease. This is so as the average response from nutritionist and medical experts were above average. This is in line with the view of Maphosa and Jideani (2017) that states that the consumption of legumes, reduce the risk of aged persons having cardiovascular disease.

Further findings show that there is no significant difference between the Perception of medical practitioners and nutritionist on the consumption of processed meat obtained from residue of legumes on the reduction of cardiovascular disease among aged persons. This is in resonance with reports of experts both in the medical and nutritional field which emphasized that legumes are good source for control of persons with cardiovascular disease (Guine, Ferreira, Correia et al, 2016).

Conclusion

In all, the study showed that the consumption of legumes reduce the risk of aged persons been attacked with cardiovascular disease. Also both medical and nutrition experts as recommended the consumption of legumes to reduce the risk of cardiovascular disease among aged persons.

Recommendations

Based on the findings obtained from the study, it was recommended that aged persons should feed on processed residue of legumes on the reduction of cardiovascular disease among aged persons. Also seminars should be organized in the hospitals and work places to educate aged persons on the role of processed legumes in the control of cardiovascular disease.

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