Efficiency of medical technology in measuring service quality in the Nigerian healthcare sector

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ABSTRACT

The medical sector is one of the service sectors whose core value is based on quality services. However, maintaining quality within healthcare settings is a complicated task. Medical innovations and quality care are critical in the current market environment, thus creating a strong rivalry between service providers. For this reason, healthcare centers must evaluate the standard of their care. The article examines medical technologies and the quality of the services to see if medical technology will increase the quality of services in the healthcare system in a sustainable healthcare system. This paper followed a systemic literature review using ATLAS.ti 9 tools, in which the proof was saved, classified, and interpreted. Study findings have shown the importance of medical technology in the contemporary era. Further studies found that cleanliness, sanitation, physicians' expertise, nurses' abilities, and other aspects, which can be viewed as standard care, impressed patients in the hospital environment. In general, the study results may enable hospital managers and medical staff to perceive medical technology as an essential factor that significantly determines the quality of service in Nigeria's healthcare sector.

1. Introduction

The length of life is rising, the technology is being advanced, and the medicines are expanding exceptionally rapidly. The advantages, challenges, and concerns are undeniable. The creation of healthcare is, above all, an evolution of a trend of thought: health should be regarded as social and economic investments, a catalyst of growth for circular well-being between the technology suppliers (companies), the use of technical devices during an emergency and routine care (hospitals and medical professionals) and the benefit of those (the patients). Healthcare is affordable from cost to economics if corporate strategies that enhance service standards do not inflate availability expenditure. The challenge is complicated because of the increased need for support with numbers (patients) and technical advancement (new services, new treatment methods, and monitoring).

Practitioners, politicians, and scientists all accept that modern healthcare structures are not sustainable. Costs have been increasing in tandem with the increased average population age and chronic illness. In recent decades, there has been a lack of a general public utility model, mainly when citizens' frustration with the services rendered by suppliers

of public services has been widespread. A higher cultural level of consumers determined such discontent and a contrast between the levels of service quality provided in the "market" and the quality of service offered to public and private monopoly firms as well as technical system advances to transcend the conventional operating conditions (Dezi et al., 2006; Laurenza et al., 2018). Many researchers concur that improvements are required and that health services will be more successful and responsive if emerging tools are implemented more efficiently, facilitating knowledge exchange beyond organizational borders (Department of Health, 2008; Kleinke et al., 2009). However, those innovations were hard to introduce, though transformations of how the treatment is delivered should be encouraged. This use suggests a comprehensive understanding of how these innovations can impact the health sector. The studies that have been done are currently concentrating primarily on the way service routines and business models evolve and, in particular, on disruptive operating systems that embody provider-centric care models (Laurenza et al., 2018; Ford et al., 2017; Currie et al., 2011; Braithwaite, 2010).

Technological advancement, particularly the digital revolution, fundamentally changes the way healthcare processes are handled,

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fostering collaboration between various health professionals. Health and healthcare organizations rely heavily on intelligence and the exchange of expertise (Laurenza et al., 2018; Kim et al., 2012; Lenz et al., 2012; Lenz and Reichert, 2007). Information management could also play a significant role, and technology is critical in helping these processes. The ties between contingent variables, information and communication systems, and industry effectiveness are essential (Del Giudice and Maggioni, 2014). Simultaneously, the rising scope of treatment reduced funding and expanded regulation systems face health institutions. Health insurers are seeking to boost efficiency while simultaneously reducing prices to optimize value. The availability of medical services also demands several fields of specialization and different procedures (Laurenza et al., 2018). The caregivers' combined efforts during the entire treatment period generate value for the consumer (Porter, 2010). Process management can automate services and procedures, increase performance and boost consistency and reduce response time. In general, the ecosystem acts as a hub and a place to create intangible factors and information, contributing to the generation of innovation and innovation diffusion theory (Laurenza et al., 2018; Carayannis et al., 2017).

Research has also demonstrated that technologies can enhance healthcare facilities' performance, protection, and consistency. Such programs do not entirely understand the expected targets in several developing countries and have retained their pilot stage in whole or in part (Awofala and Ogundele, 2018; Adjorlolo and Ellingsen, 2013). This study, backed by Arman & Hartati (Arman and Hartati, 2015), reported that several factors contribute to the low use of the technology system in developing countries, some of which included high cost, data protection concerns for patients, system too difficult to use, social impact, and lack of education. According to Liu & Cheng (Liu and Cheng, 2015); healthcare professionals still find it easy to deal with the paper-based system in developing countries despite technology's perceived potentials in both private and public hospitals.

In Nigeria, there has been increasing attention to the inadequate state of public and private health services. Lack of public and private clinic service is noticeable in Nigeria's strike rate, particularly in public health organizations nationwide (Yegon, 2012). Nevertheless, it is not enough that Nigeria's healthcare system also faces a range of problems. Some of these issues are: first, the health system in Nigeria faces corruption in health services; inadequate management training, poor management in healthcare; ill-trained nurses; shortage of medicines; inadequate financing; hygienic conditions; the lack of equipment (medical technology), the lack of empathy in all these regions. Second, there is no improvement in the framework of the health system (Olakunde, 2012). This has created a significant retrograde impact, which has prevented the patient from accessing treatment, particularly on the local level. Thirdly, the system faces a significant obstacle to the government's weak moral values that often cause Nigerian doctors to complain about poor pay (low salary). They are also on strike by leaving vulnerable people without care or drugs on sick beds.

Finally, many attempts have been included in the insurance scheme, but many citizens are also not covered. This is regarded as a significant obstacle to healthcare in Nigeria and is confirmed by numerous private hospitals. And hospitals that are not licensed expand in incredible locations and can have customers who public hospitals would have better served. As a result of competition from private insurance services, the public health industry is under tremendous pressure. Therefore, the development of the public and private health infrastructure is an immediate issue (Awofala and Ogundele, 2018). High-quality standards are crucial to companies' sustainability due to increased competitiveness, technological creativity, and consumer prerogatives. However, these processes and procedures are also being implemented to reconstruct the management and governance issues.

In Nigeria, private hospitals are preferred by patients over government hospitals as the individual uses the customer relationship management system (CRM) method. This principle can also be applied in healthcare systems. With this approach, practitioners can create a consistent partnership with patients to focus on preventive measures and provide a specific tool to enhance patients' well-being and satisfaction (Jones and Suh, 2000; Coyles and Gokey, 2002; Cho et al., 2004; Min and Min, 2011; Giannakis and Bullivant, 2016). Government hospitals in developed countries are better accepted and recommended than private hospitals. Patient loyalty is focused on patients' experience with hospitals, depending on whether good or poor experiences.

Thus, the client receives tangible benefits from the partnership, which means improving revenue and longevity for the organization over the long term. Various quality of service and satisfaction surveys have been carried out (Jones and Suh, 2000; Coyles and Gokey, 2002; Cho et al., 2004; Min and Min, 2011; Giannakis and Bullivant, 2016). Research showed that most studies are conducted in advanced countries such as the US, the UK, and Japan. This entails a lack of related research literature on undeveloped and emerging countries, including Nigeria. Despite these findings, private and public interest was given to the health sector (hospital). This suggests that Nigeria has not gained enough attention from studies to explore technology in hospitals' standard of care. There is also a substantial void in the related research literature on Nigeria (Awofala and Ogundele, 2018; Olakunde, 2012; Zayyad and Toycan, 2018). This study aims to bridge this gap by examining Nigeria's healthcare conditions and presenting more scientific and technological evidence to improve care standards at a Nigerian hospital. The importance of healthcare in Nigeria is government competence at the same time.

2. Methodology

2.1. Search string

The steps and procedures for this systematic assessment of the Nigeria healthcare and service quality, various separate stages are discussed in this section. Via the usage of aggregator databases like Scopus (scopus.com) and publishing databases like Elsevier (sciencedirect.com), Inderscience, Taylor & Francis (tandfonline.com), Emerald Insight (emeraldinsight.com), and Google Scholar, articles within the framework of the research have been found and extracted. Medical Technology, Service Quality, Customer Satisfaction and Implementation, Nigeria Healthcare and Medical Technology were the prevalent keywords at the same time (Fauzi, 2019). While the usage of this level of granularity of the database (aggregator and publisher level) resulted in a certain degree of correlation between the two domain tiers, this offered confirmation of the aggregate searches performed to collect all applicable material in the literature (Bastas and Liyanage, 2018). Only peer-reviewed journal articles were included in the analysis to ensure the academic fields' inclusion under the scrutiny of the most credible materials and publications of exceptional managerial effect (Thornhill et al., 2009). They contained only articles written in the English language.

The adoption of the Kyoto Protocol in 2005 was recognized as a remarkable achievement in the global innovation activities, with the bulk of medical technology adoption integration research in line with the research objective of this analysis adopting this global initiative (Rajeev et al., 2017). Centered on these main achievements in the fields of efficiency, medical technology, service quality, customer satisfaction, Nigeria healthcare, and collecting state-of-the-art publications, the quest date for this analysis was set from 2000 to 2021.

2.2. Analysis process

The approach outlined in this manuscript shows one possible way of applying qualitative research to text results. In the preparation and exploration of Nigeria healthcare and service quality, various separate stages are described. Each stage of the evaluation phase is then organized around the sections of processes, findings, and discussion,

allowing the reader to further understand how the data are evaluated and follow the process's implications and the resulting data. The papers identified were screened, filtered, and validated for inclusion in the analysis via an iterative selection method after the outlined systematic literature review procedure, as seen in Fig. 1.

Duplicates have been excluded as part of this process, eligibility has been verified from abstracts, and the complete content of an outstanding paper has been checked in the context of the study issues for the final judgment regarding the Nigeria healthcare and service quality areas under investigation (Shamseer, 2015). As per the systematic literature review protocol for this study, the 82 papers were screened and verified as valid. The 356 papers Identified were screened (Identified through database searching), Screened (Post Removal of Duplicates, 175 papers), Eligibility (Post-Abstract Review, 128 papers), and validated for Included (Post-Full-Text Review, 82). Duplicates have been excluded as part of this process, eligibility has been verified from abstracts, and the complete content of outstanding papers has been checked in the context of the study issues for the final judgment regarding the medical

technology, Nigeria healthcare, and service quality areas under examination (Shamseer, 2015). As per the systematic literature review protocol for this study, the 82 papers were screened and verified as valid.

This study proposed and validated the methodological concept developed by scholars and literature. In one instance, the descriptive analysis should explain the features of the parameters of interest. This report shows the possible changes to sustainable medical technologies to boost service efficiency in the hospital industry, increase effectiveness, recognize potential developments, address economic risks, and encourage technology investment.

2.3. A systematic review using ATLAS.ti 9 software

The ATLAS.ti 9 software package is suitable for saving, classifying, and interpreting evidence in this study. The study analysis consists of five components: 1) Objective: This thesis aims to provide insight into the Nigerian healthcare sector's current growth and ultimate potential for assessing service quality in medical technology. 2) Concentration:
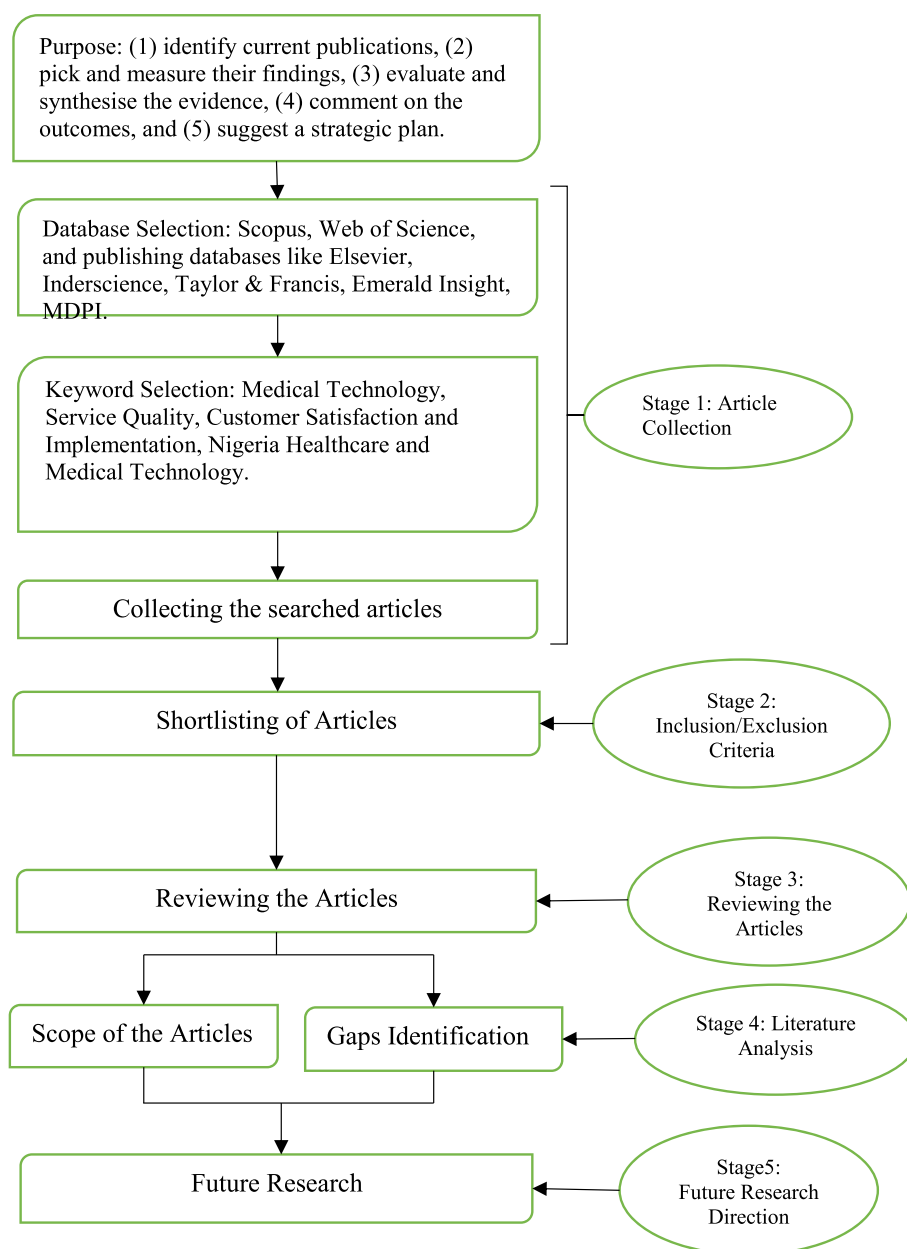

Fig. 1. Literature review methodology.

This thesis concerns medical technology characteristics for determining the level of service in the Nigerian healthcare sector in the analysis (i.e., goals, strategies, sustainability, outputs). 3) Viewpoint: This analysis has a neutral perspective on the study of posts. 4) Design: This article is first ordered and then linked by logical order. 5) Coverage: the literature is broadly covered (Chang and Hsieh, 2020). The required information for mathematics and word cloud information is shown in Figs. 2 and 3.

Word Cloud is a quick and intuitive display application often used to display text documents first. Usually, a weighted list of terms in a given spatial structure shows the most frequent words in a text (e.g., sequential, circle, random). The font sizes of the words reflect their importance for the graphic purpose or encode additional details visually. On the contrary, they often have different colours (e.g., location, orientation). Word clouds may be used as a starting point for more detailed text analyses. However, open cloud-words visualizations provide little help in comparing terms and word frequencies of different text documents (Fauzi, 2019). To solve this constraint, we have used ATLAS.ti 9 tools to manually blend and display the words of many documents in a prolonged word cloud. It outlines the papers and permits noticeable changes and commonalities in word use. The word cloud information is shown in Fig. 2.

The use of ATLAS.ti 9 (quotation, family, and network) jargon obviously does not mean much to those unaware of the program. Comparison with computing terms, works (Lu and Yuan, 2011; Coyles and Gokey, 2002) have been using and describing software to inspire reader understanding. The scientists explained the methods used, the packaged software, the version, and the characteristics used for this analysis (quotes, codes, and memos device hierarchy). It has specifically expressed the sense of quotations and the association between quotations and codes (Paulus and Bennett, 2017). The researcher briefly informed the readers how the program could be used to teach unknown people about quality software for data analysis. One benefit of ATLAS.ti 9 is that keywords, topics, relationship maps, and other analysis functionality can be accessed quickly with quotations. In ATLAS.ti 9 applications, Fig. 1 provides word cloud knowledge that enables novices to see just how interpreting software is allowed. Fig. 3 appears like a network view in software ATLAS.ti 9, which shows how the six key issues arising from medical technologies and quality of service surveys in Nigeria are linked to data codes. The authors also indicated that the data have been developed by ATLAS.ti 9 network software.

To recognize and mark as quotations all aspects of the knowledge organization where ATLAS.ti9 software has implemented the use of software from ATLAS.ti 9, the auto-code breakthrough for the primary analysis phase. These quotations were organized into various appraisal records, and the quotations were also analyzed in the research process. The study theme led to a frequent reading and explaining of all the papers to recognize repeated models and ideas (Paulus and Bennett, 2017). The materials gathered were intended to provide three types of reports. 1) Comprehensive report: their studies initially clarify the publications submitted to describe the literary assessment's general objective. 2) Complete description: This report focuses on medical technology in Nigeria to measure service quality. The papers received are distributed in six main terms. Detailed information on the items received is handled by their link with research objectives, techniques, and productivity, technological importance used (i.e., innovation in healthcare, medical technology implementation, individual perspectives, customer satisfaction, service quality, medical technology in Nigeria healthcare, sustainability, imitations tools & examination components). 3) Finally, an Interaction Analysis is an additional statement about the medical technologies used to measure quality treatment in Nigeria's advanced architecture healthcare study utilizing several articles. Besides, the following was explained for discussion about other choices, such as difficulties in introducing medical technology in the Nigerian healthcare sector (Chang and Hsieh, 2020).

3. Literature review

3.1. Overview of Nigeria healthcare

Nigeria is bordered by the surrounding countries (i.e., Benin, Niger, Chad, Cameroon), alongside the Atlantic Oceans, is situated within West Africa, on the border with the West, North, East, and the South. It lies between 4^016 and 13^053 North of latitude and 2^040 and 14^041 East of longitude, covering 923,768 square kilometres (National Bureau of Statistics, 2018). Nigeria has 36 States, Abuja, a federal capital territory, and is a multicultural society. Nigeria has more than 250 ethnic groups (Lewis et al., 2016; Koce et al., 2019), although it is an official English language. The country also has a variety of religions, including Muslim, Christian, and African traditions (Koce, 2018). There are predominantly Muslim populations in the North and Christians in the East (Olakunde and Ndukwe, 2017). The country's education sector has proven to be a challenging environment with a national level of 61.3% of adult literacy. There are, however, substantial variations between states. For example, Lagos State has a literacy level of about 92 percent, while Borno State struggles with a literacy level of about 14.5 percent (UNESCO, 2016; WHO, 2015). In 2012, the World Bank (Shamseer, 2015) approximated

Fig. 2. Word cloud information on medical technology and service quality.
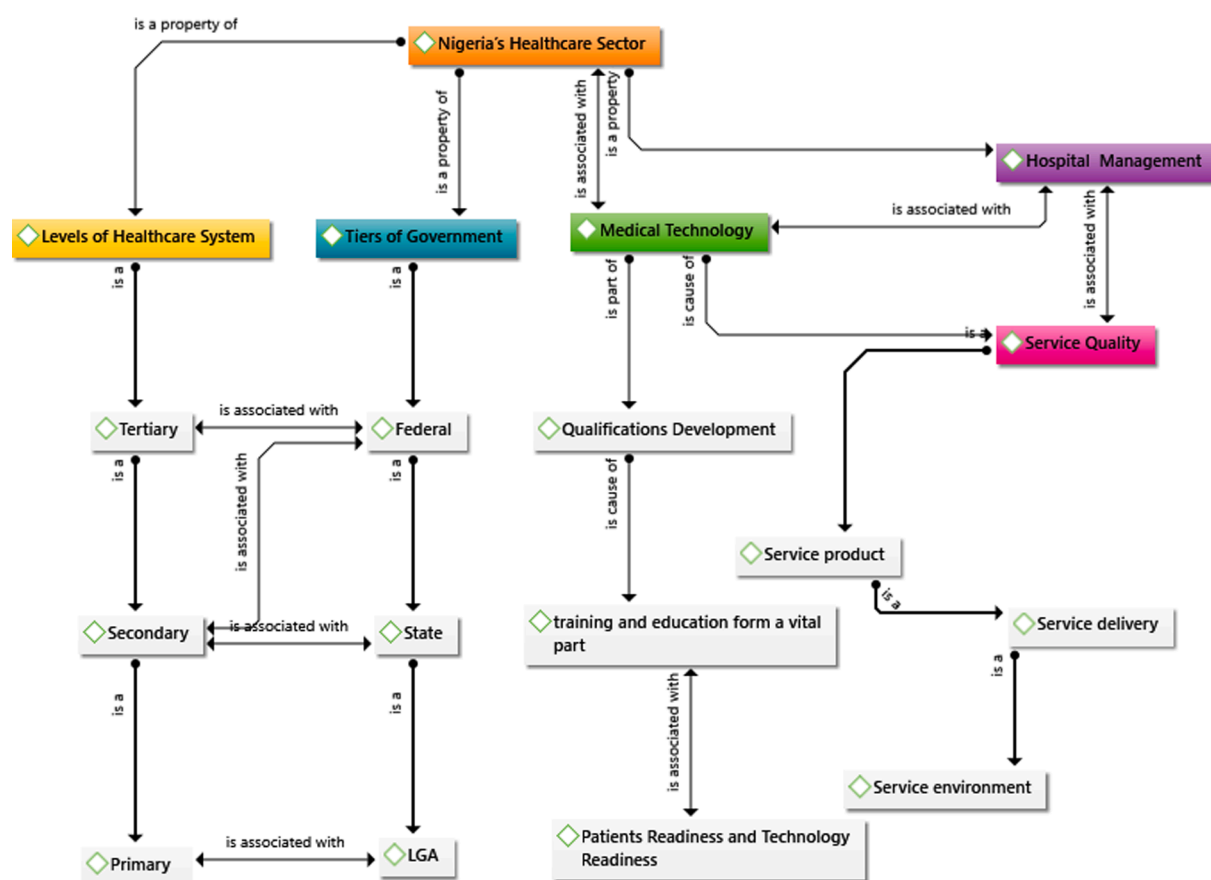
Fig. 3. Atlas.ti network view on medical technology and service quality.

the country's population as 162,470,737, rendering Nigeria the most populated African country, accounting for 47 percent of Western Africa (Koce, 2018). However, Nigeria's poor state of the healthcare system continues to present a significant challenge, as demonstrated by high morbidity and mortality levels and low birth expectancy (54 years for both sexes) (WHO, 2015). WHO (2015) also reported that Malaria, Tuberculosis (TB), and Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome were significant contributors to the country's disease burden in 2012 (Koce, 2018).

The health sector in Nigeria covers the public sector, non-governmental organizations (NGOs), private for-profit groups, traditional healthcare providers, and community-based organizations (CBOs). Public government facilities are the largest of the services (Koce, 2018). Clearly, 38% of approved facilities in the Federal Ministry of Health database are private operators; it is reported. In comparison, 75 percent of these private hospitals are primary health hospitals, while secondary facilities are the remaining 25 percent (Koce, 2018). Nigeria specifically runs three tiers of government as a federation: federal, state, and local government. The federal government sets the regulations related to the three levels of government. They are responsible for providing logistical assistance, coordinating the state's national health policy goals, and updating and implementing policies. Therefore, healthcare provision in the public sector constitutes the three-level framework (Koce, 2018) (see Fig. 4 below to represent the healthcare delivery levels in Nigeria).

Primary Healthcare in Nigeria should be the collective point of entry into the healthcare system. That doesn't perform as expected, though. It remains the health sector's backbone, primarily covering the rural region where the broader Nigerian population lives (Koce, 2018). Primary healthcare services include; community centres, hospitals, pharmacies, and post offices that typically offer curative, emergency, educational,
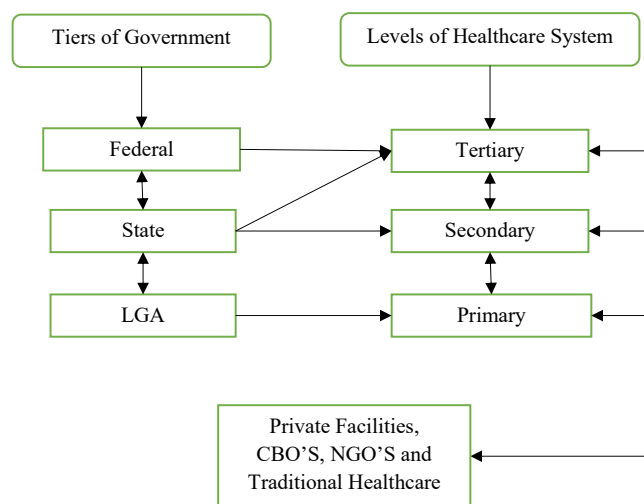

Fig. 4. Levels of Healthcare Delivery in Nigeria.

and pre-referral care (Abdul et al., 2012). Nurses, midwives, senior Community Health Extension Employees (CHEW), junior CHEW, Community Health Officers (CHO), and environmental health officers usually hire these facilities (Federal Republic of Nigeria Draft, 2015). Nigeria's 774 local government areas are responsible for running primary healthcare facilities in their districts, general welfare, including emergency care, hygiene services, and sanitation. However, these functions are controlled by the Ministry of Health of the State (Koce, 2018).

Services at the secondary level are offered in general hospitals and

integrated health centres. These hospitals are regulated by the state's government and provide numerous specialist services such as radiological, laboratory, referral, and emergency medical and surgical services (Federal Ministry of Health Nigeria, 2014). The tertiary facilities are highly specialized and should mainly focus on science, curative treatment, and teaching (Koce, 2018). In addition to specialist treatment, Tertiary hospitals also act as referral centres for primary and secondary care. Nigeria's health labour force has been identified as insufficient compared to the country's health needs (Federal Ministry of Health Nigeria, 2014).

Moreover, the deficiencies in all countries' northern regions and rural areas are noted more severely (Nigeria Academy in Technology, 2009). For example, Nigeria is dealing with an average of 12 doctors per 100,000 people, while some places (notably the north-east and north-west) have just around four doctors per 100,000 population (Koce, 2018). The figure for nurses and midwives is 21 per 100,000 nationwide (National Health Strategic Plan for Human Capital, 2007). The general population of Community Health Practitioners in Nigeria is about 115,000 licensed practitioners (Community Health Practitioners Registration Board of Nigeria, 2013). Other areas of concern that affected Nigeria's healthcare system are the concerns of insufficient resources, lack of suitable conditions, weak facilities, and facilities (Koce, 2018). These are noted to cause frustration and low morale among health practitioners, resulting in a brain drain in the health sector, leading to the relocation of healthcare workers to other countries. Moreover, the lack of adequate facilities, dilapidated infrastructure, inadequate and uncoordinated referral processes are some of the other problems found in the healthcare sector (Federal Ministry of Health Nigeria, 2014).

3.2. Medical technology

Health technology is rapidly emerging to enrich and improve people's lives. Several advanced medical instruments and methods can be obtained, which contribute to the security of countless lives. Medical science also allows many people to improve their living standards (Kinley, 2012). The relentless challenge of preserving the equipment becomes through the continual advancement of medical technologies to guarantee human protection and ability (Gyebo et al.). Healthcare equipment encompasses anything from simplistic thermometers to complex techniques, including magnetic resonance imaging (MRIs), smart inhalers, robotic surgery, handheld brain sensors, automated organs, health wearables, predictive medicine, virtual reality, telehealth, and often clustered short palindromic (CRISPR), among others. Sustaining these devices has become a daunting challenge for such a wide variety of devices and a growing need for effectiveness and safety (Kinley, 2012; Ekanoye et al., 2017; Adebara et al., 2017).

The technology is mature, and the growth is advancing rapidly (WHO, 2015). Hospitals tend to have a department for biomedical research. The Department of Biomedical Engineering consists of technicians and physicists who conduct both corrective and expected preventive maintenance (Kinley, 2012; Hedberg, 2018). They have other forms of technological assistance, too. Technology is rapidly changing (WHO, 2015). Medical technology is a dynamic industry, and any business is evolving at a high pace. But the machinery of different organizations is not constructed in the same way as each other. This results in a wide number of programs that enable the technicians to practice and stay up to date with their skills. Keeping up to date with their expertise poses a daunting challenge for the technicians (Oyekale, 2017; Yap et al., 2017). Service administration for surgical devices is known as clinical or biomedical engineering. There has been a drive to address the ground freshly by renaming healthcare technologies. This area is emerging steadily, but numerous hurdles and challenges are often increasingly broader (Kinley, 2012).

There is evidence of the strong effect technology has on organizations' managerial, financial, and organizational accomplishments. A big positive change in terms of efficiency can be seen after instigating

technology in the areas of management, development, organizational analysis, and so on. This condition has given rise to the value of skilled labor in this sector (Oyekale, 2017; Yap et al., 2017). Therefore, to maximize service quality and customer loyalty, the technology infrastructure is very critical in an organization. This scenario demonstrates that Nigerian hospitals need to be well-informed in implementing healthcare technologies, requiring the government to have the requisite funding for this situation. Therefore, technology skills among staff must be envisaged so that the essence of incorporating strategic technology plans in healthcare service quality operations can be well understood; such a step would entail the creation of strategic technology plans (Kinley, 2012). The value of technological applications should not be undermined because it has given the ability to allow transactions across a wide variety of inter-and intra-company market schemes with different inputs. Besides, technology has helped to reduce processing costs, improve transaction promptness and accuracy. Healthcare technologies eliminate inefficiencies that could arise from the lack of adequate hospital administration (Kinley, 2012).

Health professionals and their clients are connected through care providers in hospitals, such as nurses, surgeons, physiotherapists, and dieticians (WHO, 2015). Quality of service assesses the general condition of service communication between these staff and patients (Kinley, 2012; Hedberg, 2018). To effectively implement technology in every hospital environment, it is also necessary to first consider healthcare professionals' attitudes and intentions regarding using technology. The widespread use of technical innovations in the manufacturing, retail and agricultural sectors has made it vital for other industries in developing countries (WHO, 2015). For instance, the daily growth in ordering and dependence on technological innovations in a very large urban population contributed to the rapid creation of a person's firms and environment.

When the years go on and technology is evolving, there is no understanding of the next changes. These are the top ten newest medical instruments;

3.2.1. X-rays
X-ray is a type of electric radiation called radioactivity. X-rays are used to capture an image of something internally that adds large electromagnetic energy emissions of short wavelengths that can travel through objects (Gyebo et al.). The doctor takes a picture of the body's interior to consider why patients have internally fractured bones, especially with pregnant women (Kinley, 2012; Adebara et al., 2017).

3.2.2. Smart inhalers
An inhaler is the basic medication method for asthma, and 90 percent of patients would find it effective if used properly. However, the research shows that only about 50 % of patients are in charge of their condition, and as many as 94% do not use inhalers correctly. A tiny computer is attached to the inhaler with details of each impact date and period and whether it has been properly monitored (Kinley, 2012; Adebara et al., 2017). These data are then transmitted to the patient's smartphones to aid with monitoring and maintaining their well-being. Clinical tests verified that the use of the smart inhaler system performed less relieving medication and had more days without relievers (Gyebo et al.).

3.2.3. Magnetic resonance imaging (MRIs)
Magnetic resonance imaging (MRIs) offers a body picture that uses solid electromagnet and radio waves. Contrasting other diagnostic imaging tests (computed tomography and X-ray), an MRI scan may provide precision cartilage and nerve roots to the tissues, tendons, and ligaments (Kinley, 2012; Adebara et al., 2017). An MRI helps a doctor diagnose an accident or disorder, and it may observe how stable people respond to treatment. MRIs can be applied in multiple areas of the patient's body. It is useful for displaying soft tissues and delicate organs (Gyebo et al.).

3.2.4. Robotic surgery

Robotic surgery is used in minimally invasive devices and assistance to help with precision, mobility, and durability. Doctors can perform very complicated operations that are both demanding and exhausting using robotic surgery (Gyebo et al.). As technology advances, virtual reality can be combined to enable physicians to experience the patient's vital supplementary knowledge in real-time while still operating. The technology confirms fears that it will potentially replace human surgeons, only improving physicians (Kinley, 2012; Adebara et al., 2017).

3.2.5. Wireless brain sensors

Medical advances have provided physicians and scientists with the potential to integrate and create bioresorbable electronics that can be mounted in the brain and dissolve when needed (Gyebo et al.). This medical system can help physicians control the pressure and temperature inside the brain. Since the sensors will detach, the need for further operations is lowered.

3.2.6. Artificial organs

Blood vessels and artificial ovaries can be created, including the pancreas. These new bodies evolve in the corporal to replace the damaged original (Kinley, 2012; Adebara et al., 2017). The opportunity to supply artificial organs not destroyed by the body's immune system may be ground-breaking, benefiting millions of patients who each year rely on life-saving transplants (Gyebo et al.).

3.2.7. Health wearables

Since its launch in the last few years, wireless devices' demand has expanded after Bluetooth's release in 2000. Nowadays, people use their phones to monitor everything from their movements, heartbeat, and physical activity to their sleep habits (Kinley, 2012; Adebara et al., 2017). This wearable device's elevation is related to increasing chronic diseases such as diabetes and cardiovascular disease, proposing to tackle these diseases by enabling patients to monitor and improve health.

3.2.8. Clustered regularly short palindromic (CRISPR)

A short palindromic version of the ground-breaking gene-editing method is regularly transmitted. In order for it to operate, it must give the genetic devices of bacterial cell defence systems to combat viruses, which are then capable of cutting off tainted DNA strands (Kinley, 2012; Adebara et al., 2017). That is, the practitioner's approach to treating his or her disease may be altered as a result of the DNA snipping. A simple change in DNA can eliminate any of the most severe risks to human health, such as cancer and HIV, within a few years.

3.2.9. Precision medicine

Medical technology and patients care are getting more and more personalised to specific patients as it develops. For example, precision medicine helps physicians select drugs and procedures for curing illnesses, such as cancer, depending on patients' genetic makeup (Gyebo et al.). This customized treatment is substantially more effective than any other form of action when it targets tumours depending on the patient's individual genes and proteins, causing gene changes and making them more readily killed by the cancer medicines. Precise medicine can also be used to treat rheumatoid arthritis. It uses a related method to mitigate susceptible gene disorders and reduce signs and joint damage (Kinley, 2012; Adebara et al., 2017).

3.2.10. Telehealth

Telehealth depicts a quickly evolving technology that helps people receive medical services from their wireless devices rather than waiting for face-to-face appointments with their doctor (Kinley, 2012; Adebara et al., 2017). For example, highly customized smartphone applications are being created, enabling patients to effectively talk to doctors and get immediate medical advice and review. Telehealth provides people with several means of accessing treatment when and where they want it. It is particularly useful for patients who manage chronic illnesses, as it provides them with continuous, convenient, and cost-effective care.

As the year goes forward, medicine and pharmaceutical technologies will continue to evolve. People live longer, and certain conditions are known to be incurable. New medical results are elevated failure rates due to open hardware differences consisting of fatigue tubing, electronic relays, and other non-solid state instruments (Hedberg, 2018; Malmström and Hed, 2010). Besides, there were no rules and instructions for managing manufacturing processes or management of the buildings. That has developed stability, performance, and protection disparities (Kinley, 2012; Adebara et al., 2017). The protection of patients is an essential issue of medical science. Firstly, the instruments must be electrically safe, allowing patients to be protected from an awkward or dangerous electrical collision.

In conclusion, the devices must perform their planned task seamlessly and stably (Hedberg, 2018). In contemporary medicine the medical science is omnipresent. It was designed in such a manner that it saves lives regularly. Functional equipment in modern medicine is so successful that its demands enable it to function properly (Nashrath et al., 2011; Thatcher, 2016). Their diagnosis, care, and patient tracking productivity have contributed to reliance where the possibilities of replacing them with humans are limited and even non-existent (Oyekale, 2017; Yap et al., 2017).

3.3. Patients readiness and technology readiness

Despite the rapid extension of technology into most people's everyday lives, dissatisfaction may still be triggered by uncertainty and annoyance when coping with emerging technologies (Lin and Hsieh, 2006; Kayser, 2019). Researches have already shown that certain people exhibit a level of technophobia (Kayser, 2019) or are cynical about technology. Until customers are willing, Technology cannot be embraced. The consumer preparation term is a state of mind, a psychological predisposition to the use of emerging technology (Kiberu et al., 2019). Koopman et al. (Koopman et al., 2014) referred to customer preparation as a state in which a client is primed and will possibly explore new technologies in technology. The definition of technological readiness refers to individuals' willingness to adopt and use emerging innovations to meet healthcare and job goals. It is based on four dimensions: excitement, creativity, anxiety, and uncertainty. Optimism and organizational innovation are the optimistic building blocks of preparation for change, inspiring individuals to embrace technology-based solutions and to have a positive attitude toward change.

On the other hand, frustration and fear are detrimental constructions, giving consumers a deterrent to investing in medical technology. Colby & Parasuraman (Colby and Parasuraman, 2001) find that consumer product preparation application profiles differ considerably in internet-related behaviors. Kuo & Yen (Kuo and Yen, 2009) had shown a distinct readiness of customers to use technology-based services. Detailed qualitative research by Mick & Fournier (Mick and Fournier, 1998) on peoples' reactions to technology revealed eight technology paradoxes faced by consumers: freedom/slavery, control/chaos, efficiency/inefficiency, new/obsolete, assimilation/isolation, needs fulfillment/creating, engaging/disengaging and competence/incompetence. The above paradoxes suggest that technology can cause both positive and negative emotions (e.g., the paradox of competence/incompetence, enabled by technology, may produce a sense of intellect or usefulness and more feelings of failure ineptitude (Mick and Fournier, 1998). Individuals differ in outlook towards technology, with both optimistic and negative emotions. A clear positive association can also be found between the mind-set of customers or a feeling towards technology and their willingness to adopt and employ technology (i.e., their readiness to use technology).

Services must be delivered as advertised to make customers trust and rely on the service. Consumers must be aware of addressing their

problems. Therefore priority must be given to customer satisfaction. Services can also be delivered on schedule, of the best standard, and within the time required. Besides, the service should fulfill the nature of a customer's desire, wish, or expectation (Meesala and Paul, 2018). Medical technology that is introduced in the facility should be secure and perform as planned and as anticipated. If this is met, consumers will create confidence in the service, which will improve their satisfaction. Medical technology deployment allowed the healthcare sector to conduct tight regulations over each person and make the service more efficient for its clients.

The customers should find the service easy to understand. If the technology introduced in the service environment is simple to use, people will enjoy it and not discourage it. The definition of a health information system embodies people and mechanisms by leveraging technologies to sustain basic knowledge, treatment, and administration activities to enhance quality patient delivery (Jardim, 2013). The word usability describes the functionality of a system's human-to-technology dealings or connections. As a result, giving the right consistency means the method is easy to understand and easy to replicate, resulting in less bugs and providing users with a lot of satisfaction. A further element of forecasting efficiency is machine consistency (Meesala and Paul, 2018; McKinney et al., 2002).

Customers should be able to report freely and should be answered if they do so. Customer reviews should be taken very seriously, and the response process should be rapid. The software can be used to track and evaluate consumer feedback to be referred to as the company's correct region for resolution. For example, businesses can have email addresses where consumers can submit an email complaint (Potluri and Angiating, 2018).

3.4. Service quality in the hospitality industry

Service quality is perceived to be a significant tool for corporations to separate themselves from other businesses to achieve a comparative advantage. According to Hollis & Verma (Hollis and Verma, 2015), the standard of service is a secret to raising income. Moreover, the quality of service varies from the quality of a good, as goods are easy to quantify, analyze, and evaluate. In contrast, the importance of services is not so easy to assess. Quality within a service sector has become an indicator of the degree to which the service offered meets the customer's standards. Service quality is generally regarded to be an essential condition for developing and retaining a productive partnership with valued clients (Fatima et al., 2018). It adds significantly to customers' general perception of the organization's perceived inferiority/superiority and services. For both public agencies, however, the standard of operation is a secret to sustainability. Maintaining the quality of service to a certain degree and enhancing the service standard must be a lifelong pursuit for all businesses pursuing customer satisfaction. Rust & Oliver (Rust and Oliver, 1994) built on the previous model, which originated from the mechanical and functional measurements of consistency, and introduced the three-component model of three dimensions (Hollis and Verma, 2015).

3.4.1. Service product

The product of the service contains service features or service requirements on offer. The service product has been named the technological standard of what the customer currently gets from the service and the standard effect since the service is measured after the success (Hollis and Verma, 2015). Cheumar et al. (Lin and Hsieh, 2006) described a service product as a service or bundle of services usually delivered to a targeted customer. In the field of healthcare, systems are especially nuanced in their nature, are heterogeneous in their variety of medical specializations and similar facilities, and vague in the sense that the ordinary patient does not have enough specialized expertise to identify his or her individual needs or the resources needed to address them. Therefore, recognizing this uncertainty, variability, and

ambiguity, the product's consistency should be measured from the consumer's perspective and the provider's perspective (Hollis and Verma, 2015).

3.4.2. Service delivery

The second aspect of the quality of service in this system is the delivery process. Perceptions of service efficiency are essential to both staff and patients of every business organization, particularly healthcare. Services are an intrinsic product regarding healthcare. Due to the quality of care and operation, patient experiences can differ from one hospital to another and from one department to another (Alzaydi et al., 2018). Evaluation of the quality of healthcare facilities compared to actual products is difficult since certain items are comparatively high in quest values, i.e., values such as color, form, scale, and presence that a buyer can recognize and test when buying. However, in this scholar's opinion, healthcare should only be measured based on the direct practice of service efficiency (e.g., hospital care, pain relief, courtesy, and informal treatment). Improving the technical distribution capabilities, such as user-friendly testing and effective and accurate medical instruments, plays a crucial role in ensuring service delivery's seamlessness (Grimsrud, et al., 2016). Finally, in contrast with the retail business, the biomedical company requires more experience and more qualifications. For example, in this study, it is expected that most biomedical engineering department facilities in public hospitals will include biomedical technology, technological skills, and local awareness that both add to the multidimensional existence of quality-related efficiency (e.g., data networking, patient tracking systems, and self-operating diagnostic equipment). This includes substantial cooperation between healthcare professionals and biomedical engineering and technicians (Hollis and Verma, 2015).

3.4.3. Service environment

The third aspect of service quality can be divided into the internal and external environment, the business environment. The internal climate encompasses business culture, hierarchical structure, creation and retention of clients, staff support, and incentive schemes. Another element of a service's consumer experience or observable comparisons such as place is the surrounding atmosphere (Parvin et al., 2017). The business climate refers to the impact of the environment on clients' and staff's values, behaviors, and efficiency, including ambience and service quality. These observable signs may be the front-line personnel's presence, trust, and courtesy, as well as written contact and customer accounting (Hollis and Verma, 2015).

Therefore, other characteristics in the hospitality field are essential, such as identifying imprecise trends and fluttering criteria and further including the duty of creating, delivering, and assessing the standard of service (Fatima et al., 2018; Moshood et al., 2020). Several service quality determinants are not regulated where the product viewpoint, such as comfort, fairness, and sophistication, is supposed to behave differently depending on each customer and thus judged individually. Technology changed the concept of talking, listening to music, acting, shopping, playing games, and more. The reality that technology raises its presence in the healthcare sector is not surprising. Healthcare equipment increases people's health, reduces turnaround periods, and makes it more hospitable for doctors to detect diseases (Fatima et al., 2018; Bellora and Guenther, 2013).

Healthcare professionals focus on increasing technical efficiency by reducing prices, enhancing service quality and support from front-line staff to build value for patients who are their clients, as such operational success is an essential factor for a healthcare enterprise in different ways in terms of internal processes, patients and suppliers as accepted Healthcare practices include sourcing and transport to the point of use of goods or materials, patient-doctor encounters and hospital management (Nuru et al., 2015), and all these aspects of a healthcare system have a detrimental or positive influence on the understanding of patients and internal consequences (Bellora and

Guenther, 2013). It means that healthcare providers will need to give more attention to their client's or patients' needs and expectations in the future if they are to produce any unexpected outcomes in their hearts. Consequently, meeting operational goals depends on maintaining customer involvement (Koce, 2018; George et al., 2015).

4. Qualifications development

The emergence of medical technology is changing the information people will need to operate their machines and applications. It may require some job shifts, general credentials, and workers and companies having specializations (Gyebo et al.). Around the same time, employees' talents, abilities, and perspectives will be valuable instruments in the future as the workplace evolves and shifts (Moshood et al., 2020; Bahrami et al., 2019; Sundström, 2019). Therefore, these challenges are introduced to integrate the essence of the teaching and learning approaches that individuals will be expected to adopt in the future and explain the value of both the employee's responsibility and career growth management. An agency or organization's staff's experience and creativity are valuable resources for medical technology use and advancement. Employees need a chance to improve their strengths and capabilities by learning to do so. Sundström (Sundström, 2019) describes the training as a means of acquiring old knowledge and creating new knowledge. One of the goals is to improve workforce capability in enterprises. A person with a talent or expertise in a given job can successfully accomplish the task and learn to develop an idea and contribute. To do this, the worker needs the opportunity to concentrate on the job, appreciate its purpose, and combine practical and technical work experience.

Moreover, the hospital should provide tools for employees to build and raise understanding to benefit from each other and even inspire the institution to strengthen itself. Providing great preparatory assistance, an opportunity to develop and improve operators' job efficiency would yield many benefits (Sundström, 2019). Those who integrate extra productive and more effective jobs will include a more consistent interaction with managers and business employees interested in developing their employees. This is why people tend to be more focused on improvements and methods that can be considered in planning.

Training and research often form an integral part of the method of medical technology. Education is used as a tool for the introduction and improvement of best standards (Burns et al., 2020). Education is the foundation of the application of medical science, too (Gyebo et al.). Employees need to be adequately trained in using practical methods and strategies, operating in a collaborative environment, developing leadership capabilities, and organizing tasks. Continuous preparation is, thus, one of the fundamental sorts of creativity in service efficiency. Hurst et al. (2019) claimed that training was the single most critical factor in increasing the operation standard. At the same time, Murlasits et al. (2018) proposed that ongoing training would develop a shared language around the sector. Overall, the literature shows that teaching is generally accepted as a vital factor in corporate leadership experts' effectively implemented reform efforts. Training and education are necessary to train an organization for change, bring about the transition itself, and institutionalize transition as a permanent part of the enterprise. The role of training in the effective execution of innovative quality management systems is also generally recognized by scholars such as Aduma (Aduma, 2017); Burns et al. (Burns et al., 2020), as training offers an incentive for workers to be educated about service quality goals and offers the expertise and information they need to meet those goals. Lack of comprehension and appropriate preparation will lead to resistance from staff. Proper training will also provide an incentive to inspire and encourage workers, minimize workforce reluctance, and improve the chances of success in creative customer service. Besides, Carter et al. (Carter, 2019) argued that preparation is either realistic or attitudinal in general, i.e. teaching someone to do a job or a role or practising someone to view the work or task constructively. Ability training works against

attitudinal preparation at all stages of the company. When workers learn useful technical skills for the company, they can be compensated in a manner.

5. Summary and discussion

This study in literary content has shown that there is very little study in Nigerian healthcare in the field of implementation of medical technology for the standard of service. It is clear from the available literature that the implementation of medical technology within the Nigerian healthcare sector has yet to receive sufficient attention, perhaps because the implementation of medical technology in healthcare organizations, particularly in Nigeria, is still relatively poor. Concerning the question of acceptance rates for medical technology in healthcare, there is no substantial scholarly literature in Nigeria that discusses this question. This study will add significantly to the literature by gathering and commenting on medical technology acceptance patterns in Nigerian healthcare organizations. In evaluating the reasons for low rates of acceptance in medical technology, the literature indicates a range of factors ranging from resourcing problems such as insufficient funding, a lack of capable commercial options, and a lack of capable expertise in medical technology to cultural issues such as clinical aversion, and the challenge of clearly articulating benefits. Adoption hurdles and adoption factors are essential to the process for medical technology to be tackled. The literature examined confirms that medical technology is invested in clinical systems regarding the importance of incorporating medical technology in evaluating the healthcare sector's level of service in Nigeria.

Organizations must adapt their healthcare technology strategy to their context to ensure that the approach aligns with the enterprise's organizational governance approach and aligns with its overall medical technology capabilities and expertise. Literature has suggested that much of medical technology science concentrates on the structure and not medical technology work. The medical technology literature also exposed the links between medical technology and organizational strategy. This study should recognize the connection between appropriate medical technologies and a well-defined organizational strategy for assessing the quality of service in Nigeria's healthcare sector to establish a mechanism for medical controls in healthcare. Finally, the academic literature is very limited, supporting further research into this field on medical technology in the Nigerian healthcare sector. However, it is possible to start from the available literature by synthesizing the factors to address the simulation of medical technology's healthcare sector management system.

Besides, healthcare depends on knowledge and enhances the medical technology infrastructure to improve quality healthcare in every region. Quality in healthcare goes beyond patient loyalty, but it encompasses quality, efficiency, profitability, protection, and prompt delivery of services. In recent years, healthcare administrators have been confronted by challenging finance, sourcing, and provision of health services, apart from providing affordable healthcare in a dynamic environment. This unpredictable medical climate has contributed to the realization that medical technology is significant.

Healthcare delivery is a vital aspect of healthcare in society, and organizations participating in the industry are inherently committed to ensuring that their success matches consumer needs and exceeds them. The influence on medical technologies' quality of care is essential in increasing public interest in healthcare facilities. According to the literature review, cleanliness, sanitation, and well-kept facilities define care quality as patients view in a hospital setting. Patients' standard of service characteristics can include the clean and well-groomed healthcare staff and physicians, convenient patient quarters, an appropriate period for diagnosis and therapy, reduced time delay, doctors' and nurses' expertise, standards of familiarity during treatment, the respect for doctors and nurses.

Thus, the use of medical technologies in healthcare will improve

employment and promote new ecosystem policy benefits in manufacturing processes. This will also contribute considerably to prospects for environmental and economic growth, which reflect past clarifications on certain capital limits on intellectual properties. However, the need for solutions is growing, and many skills are required. Normal operations may disappear, new roles become more complicated, and the delivery of digitalization to new industries may increase. In order to address the communicative challenge of medical technology in healthcare, it is easily achievable to improve workers' work efficiency by integrating emerging skills and technological innovations sustainably. The guidelines were for the hospital to use the technical technologies to aid in the creation of a better home by the quality of care expectations of patients, the hospital to use its findings to make rational decisions to enhance its performance, and to focus more on the measurement and elimination of time lags and on developing patient interfaces.

6. Conclusion

To remain successful worldwide, the resources created by digitalizing companies are critical. Many health facilities digitalize now by choosing predominantly inexpensive medical equipment, including cameras, and entering their companies to update processes and outputs based on results. As part of innovative approaches and continuing community growth, New Technology will help healthcare reduce prices, save time, and adapt to customer requirements more effectively. It is essential to improve health facilities, fix the skill deficit, carry out clear technology protocols, and encourage digitalization funding. These are some of the challenges this healthcare and government continue to solve when it comes to implementing medical research. The state, development firms, and stakeholders have to work to gain victory. This means digitalization at the forefront of the government's medical technology strategy and collaboration to ensure that we recognize the challenges and possibilities this technological transition provides.

7. Limitations and future research

This research highlights the medical sector's goals and priorities in assessing the quality of the healthcare services in Nigeria, along with the drivers, findings, risks, and obstacles of the adoption process itself. However, it is not without its limitations. While we have carried out a systemic literature review, we might have missed a variety of contributions. A bibliometric methodology can be used in future studies to define, identify, analyze, and combine all applicable research outcomes through statistical techniques (e.g., methods for meta-analysis and co-word analysis).

Author contributions

SS and TDM conceptualized the work, TDM , GN and SO, wrote the work, TDM and S.S edit the work, SS have supervised the work. All authors agreed on the final draft.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

Abdul, R. I., Abdulraheem, S., Olapipo, A. R., & Amodu, M. O. (2012). Primary health care services in Nigeria: Critical issues and strategies for enhancing the use by the rural communities. *ournal of Public Health and Epidemiology, 4*(1), 5–13.

Adebara, O. V., Adebara, I. O., Olaide, R., Emmanuel, G. O., & Olanrewaju, O. (2017). Knowledge, attitude and willingness to use mHealth technology among doctors at a semi-urban tertiary hospital in Nigeria. *Journal of Advances in Medicine and Medical Research*, 1–10.

Adjorlolo, S., Ellingsen, G., "Readiness assessment for implementation of electronic patient record in Ghana: a case of university of Ghana hospital," *Journal of Health Informatics in Developing Countries*, vol. 7, no. 2, 2013.

Aduma, A. T. (2017). Human resource training and development and improved employee performance in Nigeria public sector organizations: Some critical policy options. *NG-Journal of Social Development, 417*(5806), 1–7.

Alzaydi, Z. M., Al-Hajla, A., Nguyen, B., & Jayawardhena, C. (2018). A review of service quality and service delivery. *Business Process Management Journal*.

Arman, A. A., Hartati, S., "Development of user acceptance model for electronic medical record system," in 2015 International Conference on Information Technology Systems and Innovation (ICITSI), 2015, pp. 1–6.

Awofala, A. A., & Ogundele, O. E. (2018). HIV epidemiology in Nigeria. *Saudi Journal of Biological Sciences, 25*(4), 697–703.

Bahrami, S., Atkin, B., & Landin, A. (2019). Journal of Engineering and Innovation diffusion through standardization : A study of building ventilation products. *J. Eng. Technol. Manag., 54*(October), 56–66. https://doi.org/10.1016/j.jengtecman.2019.11.001

Bastas, A., & Liyanage, K. (2018). Sustainable supply chain quality management: A systematic review. *Journal of Cleaner Production, 181*, 726–744.

Bellora, L., & Guenther, T. W. (2013). Drivers of innovation capital disclosure in intellectual capital statements: Evidence from Europe. *British Accounting Review, 45*(4), 255–270.

Braithwaite, J., et al. (2010). Health service accreditation as a predictor of clinical and organisational performance: A blinded, random, stratified study. *BMJ Quality & Safety, 19*(1), 14–21.

S.C. Burns et al. Exploring Mental Health Professionals' Experiences of Intimate Partner Violence-Related Training: Results From a Global Survey J. Interpers. Violence 2020 0886260520908020.

Carayannis, E. G., Grigoroudis, E., Del Giudice, M., Della Peruta, M. R., & Sindakis, S. (2017). An exploration of contemporary organizational artefacts and routines in a sustainable excellence context. *Journal of Knowledge Management*.

Carter, N. T., et al. (2019). Understanding job satisfaction in the causal attitude network (CAN) model. *Journal of Applied Psychology*.

Chang, Y., & Hsieh, S. (2020). A review of building information modeling research for green building design through building performance analysis. *Journal of Information Technology in Construction, 25*, 1–40. https://doi.org/10.36680/j.itcon.2020.001

Cho, W. H., Lee, H., Kim, C., Lee, S., & Choi, K. (2004). The impact of visit frequency on the relationship between service quality and outpatient satisfaction: A South Korean study. *Health Services Research, 39*(1), 13–34.

Colby, C. L., & Parasuraman, A. (2001). *Techno-ready marketing: How and why customers adopt technology*. Simon and Schuster.

Coyles, S., & Gokey, T. C. (2002). Customer retention are not enough: Defecting customers are far less of a problem than customers who change their buying patterns. New ways of understanding these changes can unlock the power of loyalty. *McKinsey Quarterly*, 81–90.

Currie,W. L., Finnegan, D. J., Koshy, M. A., "Applying sense-making to integrated health IT: Renal care in the UK and Sweden.," 2011.

Del Giudice, M., & Maggioni, V. (2014). Managerial practices and operative directions of knowledge management within inter-firm networks: A global view. *Journal of Knowledge Management*.

Department of Health, "'High-quality care for all: NHS next stage review final report', available at: http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/ groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_085828.pdf (accessed Janu," 2008.

Dezi, L., Gilardoni, A., Miglietta, A., & Testa, F. (2006). L'esperienza delle public utilities locali: Un modello di rapporto impresa-territorio. *Sinergie, 70*, 151–179.

Ekanoye, F., Ayeni, F., Olokunde, T., Nina, V., Donalds, C., & Mbarika, V. (2017). Telemedicine diffusion in a developing country: A case of Nigeria. *Science Journal of Public Health, 5*(4), 341–346.

Fatima, T., Malik, S. A., & Shabbir, A. (2018). Hospital healthcare service quality, patient satisfaction and loyalty. *International Journal of Quality & Reliability Management*.

Fauzi, M. A. (2019). Knowledge sharing in the Asia Pacific via virtual community platform: A systematic review. *International Journal of Web Based Communities, 15*(4), 368–394.

Federal Ministry of Health Nigeria, "Saving newborn lives in Nigeria: Newborn health in the context of the integrated maternal, newborn and child health strategy.," 2014, DOI: http://www.countdown2015mnch.org/documents/2012Report/Nigeria_Report_2ed .pdf.

Federal Republic of Nigeria Draft, "National human resources for a strategic health plan.," 2015, DOI: http://www.who.int/workforcealliance/countries/Nigeria_HRHStrategicPlan_2008_2 012.pdf.

Ford, G., Compton, M., Millett, G., Tzortzis, A., "The role of digital disruption in healthcare service innovation," in *Service business model innovation in healthcare and hospital management*, Springer, 2017, pp. 57–70.

George, A., Scott, K., Garimella, S., Mondal, S., Ved, R., & Sheikh, K. (2015). Anchoring contextual analysis in health policy and systems research: A narrative review of contextual factors influencing health committees in low and middle-income countries. *Social Science and Medicine, 133*, 159–167.

Giannakis, M., & Bullivant, N. (2016). The massification of higher education in the UK: Aspects of service quality. *Journal of Higher Education, 40*(5), 630–648.

Grimsrud, A., et al., "Reimagining HIV service delivery: the role of differentiated care from prevention to suppression," *Journal of the International AIDS Society*, vol. 19, no. 1, 2016.

A. V. Gyebo, A. Ahamat, and S. N. Yahaya, "The Effectiveness of Medical Technology in Measuring Service Quality in Nigerian Healthcare Sector.".

Hedberg, Y. S. (2018). Role of proteins in the degradation of relatively inert alloys in the human body. *npj Materials Degradation, 2*(1), 1–5.

Hollis, B. M. B. A., Verma, R., "The intersection of hospitality and healthcare: Exploring common areas of service quality, human resources, and marketing," 2015.

Hurst, J. H. et al., "Cultivating research skills during clinical training to promote pediatric-scientist development," *Pediatrics*, vol. 144, no. 2, 2019.

Jardim, S. V. B. (2013). The electronic health record and its contribution to healthcare information systems interoperability. *Procedia Technology, 9*, 940–948.

Jones, M. A., & Suh, J. (2000). Transaction-specific satisfaction and overall satisfaction: An empirical analysis. *Journal of Services Marketing*.

Kayser, L., et al. (2019). Development of the multidimensional readiness and enablement index for health technology (READHY) tool to measure individuals' health technology readiness: Initial testing in a cancer rehabilitation setting. *Journal of Medical Internet Research, 21*(2), Article e10377.

Kiberu, V. M., Scott, R. E., & Mars, M. (2019). Assessing core, e-learning, clinical and technology readiness to integrate telemedicine at public health facilities in Uganda: A health facility-based survey. *BMC Health Services Research, 19*(1), 266.

Kim, Y., Newby-Bennett, D., & Song, H. (2012). Knowledge sharing and institutionalism in the healthcare industry. *Journal of Knowledge Management*.

C.A. Kinley Healthcare Technology: A Strategic Approach to Medical Device Management 2012.

J. D. Kleinke, C. M. Christensen, J. H. Grossman, and J. Hwang, "The innovator's prescription: a disruptive solution for health care." PROJECT HOPE 7500 OLD GEORGETOWN RD, STE 600, BETHESDA, MD 20814-6133 USA, 2009.

Koce, F., Randhawa, G., & Ochieng, B. (2019). Understanding healthcare self-referral in Nigeria from the service users' perspective: A qualitative study of Niger state. *BMC Health Serv. Res., 19*(1), 209.

Koce, F. G., "Understanding healthcare self-referral in Niger state (Nigeria): the service users' and healthcare providers' perspective," 2018.

Koopman, R. J., Petroski, G. F., Canfield, S. M., Stuppy, J. A., & Mehr, D. R. (2014). Development of the PRE-HIT instrument: Patient readiness to engage in health information technology. *BMC Family Practice, 15*(1), 18.

Kuo, Y.-F., & Yen, S.-N. (2009). Towards an understanding of the behavioral intention to use 3G mobile value-added services. *Computers in Human Behavior, 25*(1), 103–110.

Laurenza, E., Quintano, M., Schiavone, F., & Vrontis, D. (2018). The effect of digital technologies adoption in the healthcare industry: A case-based analysis. *Business Process Management Journal*.

Lenz, R., Peleg, M., Reichert, M., "Healthcare process support: achievements, challenges, current research," *International Journal of Knowledge-Based Organizations*, vol. 2, no. 4, 2012.

Lenz, R., & Reichert, M. (2007). IT support for healthcare processes–premises, challenges, perspectives. *Data & Knowledge Engineering, 61*(1), 39–58.

Lewis, M. P., Simons, G. F., & Fennig, C. D. (2016). *Ethnologue: Languages of the world (Nineteenth)*. Dallas: TX SIL Int.

Lin, J. C., & Hsieh, P. (2006). The role of technology readiness in customers' perception and adoption of self-service technologies. *International Journal of Service Industry Management*.

Liu, H., & Cheng, L. (2015). Cryo-EM show the polymerase structures and an unspooled genome within a dsRNA virus. *Science (80-.), 349*(6254), 1347–1350.

Lu, W., & Yuan, H. (2011). A framework for understanding waste management studies in construction. *Waste Management, 31*(6), 1252–1260.

Malmström, D., Hed, C., "The Internationalization of SMEs within the medical technology industry.:-How to make it in the global world." 2010.

McKinney, V., Yoon, K., & "Mariam" Zahedi, F. (2002). The measurement of web-customer satisfaction: An expectation and disconfirmation approach. *Information Systems Research, 13*(3), 296–315.

Meesala, A., & Paul, J. (2018). Service quality, consumer satisfaction and loyalty in hospitals: Thinking for the future. *Journal of Retailing and Consumer Services, 40*, 261–269.

Mick, D. G., & Fournier, S. (1998). Paradoxes of technology: Consumer cognizance, emotions, and coping strategies. *Journal of Consumer Research, 25*(2), 123–143.

Min, H., & Min, H. (2011). Benchmarking the service quality of fast-food restaurant franchises in the USA. *Benchmarking: An International Journal*.

Moshood, A. Q., Nawanir, G., Sorooshian, S., Mahmud, F., & Adeleke, "Barriers and Benefits of ICT Adoption in the Nigerian Construction Industry. A Comprehensive Literature Review.," *Applied System Innovation*, vol. 3, no. 4, p. 46., 2020.

Murlasits, Z., Kneffel, Z., & Thalib, L. (2018). The physiological effects of concurrent strength and endurance training sequence: A systematic review and meta-analysis. *Journal of Sports Sciences, 36*(11), 1212–1219.

Nashrath, M., Akkadechanunt, T., & Chontawan, R. (2011). Perceived nursing service quality in a tertiary care hospital, Maldives. *Nursing & Health Sciences, 13*(4), 495–501.

National Bureau of Statistics, "The review of Nigeria economy.," 2018, doi: http://www.nigerianstat.gov.ng.

Nuru, N., Zewdu, F., Amsalu, S., & Mehretie, Y. (2015). Knowledge and practice of nurses towards prevention of pressure ulcer and associated factors in Gondar University Hospital, Northwest Ethiopia. *BMC Nursing, 14*(1), 34.

Olakunde, B. O. (2012). Public health care financing in Nigeria: Which way forward? *Annals of Nigerian Medicine, 6*(1), 4.

Olakunde, B. O., & Ndukwe, C. D. (2017). Non-adoption of Option B+ for prevention of mother-to-child transmission of HIV in Nigeria: A look at the policymaking process. *Journal of Public Health Policy, 38*(1), 105–120.

Oyekale, A. S. (2017). Assessment of primary health care facilities' service readiness in Nigeria. *BMC Health Services Research, 17*(1), 172.

Parvin, S., Wang, P. Z., & Uddin, J. (2017). Assessing two consumer behavioural intention models in a service environment. *Asia Pacific J. Mark. Logist*.

Paulus, T. M., & Bennett, A. M. (2017). ' I have a love-hate relationship with ATLAS. ti 'TM : Integrating qualitative data analysis software into a graduate research methods course. *International Journal of Research & Method in Education, 40*(1), 19–35. https://doi.org/10.1080/1743727X.2015.1056137

Porter, M. E. (2010). What is value in health care. *New England Journal of Medicine, 363*(26), 2477–2481.

Potluri, R. M., & Angiating, G. (2018). A study on service quality and customer satisfaction in Nigerian Healthcare sector. 산경연구논집 *(IJIDB), 9*(12), 7–14.

Rajeev, A., Pati, R. K., Padhi, S. S., & Govindan, K. (2017). Evolution of sustainability in supply chain management: A literature review. *Journal of Cleaner Production, 162*, 299–314.

Rust, R. T., & Oliver, R. L. (1994). Service quality: Insights and managerial implications from the frontier. *Serv. Qual. New Dir. Theory Pract.*, 1–19.

Shamseer, L., et al., "Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: elaboration and explanation," *Bmj*, vol. 349, 2015.

E. Sundström, "Control 4.0," 2019.

Thatcher, J. E., et al. (2016). Imaging techniques for clinical burn assessment with a focus on multispectral imaging. *Advances in Wound Care, 5*(8), 360–378.

Thornhill, A., Saunders, M., & Lewis, P. (2009). *Research methods for business students*. Essex Pearson Educ. Ltd.

UNESCO, "United Nations Educational, Scientific and Cultural Organization (UNESCO) (2016) Education For All Movement." 2016.

WHO, "World Health Organization (WHO) Nigeria health profile." 2015, DOI: http://www.who.int/gho/countries/nga.pdf.

Yap, J. B. H., Abdul-Rahman, H., & Chen, W. (2017). Collaborative model: Managing design changes with reusable project experiences through project learning and effective communication. *International Journal of Project Management, 35*(7), 1253–1271.

Yegon, P. K. (2012). *Predictors of early mortality in HIV infected patients starting 1st line ART*. Kenya: University of Nairobi.

Zayyad, M. A., & Toycan, M. (2018). Factors affecting sustainable adoption of e-health technology in developing countries: An exploratory survey of Nigerian hospitals from the perspective of healthcare professionals. *PeerJ, 6*, Article e4436.