Innovations

Human Capital Development and Service Delivery of Tertiary Health Institutions in South-South, Nigeria

Ikechukwu J. Ugwoke[1] and Vincent A. Onodugo[2]

[1,2]Department of Management, University of Nigeria, Enugu Campus

Abstract

This study focused on human capital development and service delivery of tertiary health institutions in South-South, Nigeria. The study aimed to ascertain the effect of the number of qualified specialists in a particular field on the quality of service delivery, and determine the effect of in-house training on the incidence of prescription by medical resident officers of tertiary hospitals. This study employed descriptive survey design. The population of the investigation was made up of the healthcare providers and clinical personnel of selected federal tertiary hospitals. 360 participants were selected for the survey. The study used a well-structured questionnaire. We ensured the validity of the measuring instrument through a panel of two experts. To confirm the reliability of this instrument, an initial study was carried out at the six tertiary hospitals, employing the test-retest approach, involving 24 participants from these institutions in the south-south region, with four participants from each hospital. Results from analysis indicated that the Cronbach's alpha coefficient values exceeded the 0.7 benchmark. The data obtained in this study was analysed using descriptive statistics. Inferential statistics were employed to enhance the scientific investigation of the objectives of the study. The study used a regression model for data analysis, from which inferences were made. Findings revealed that the number of qualified specialists has a significant positive effect on the quality of service delivery in tertiary hospitals, and that in-house training has a significant positive effect on the incidence of prescriptions by medical resident officers in tertiary hospitals. The study concluded that specialist numbers, in-house training, and collaboration with visiting medical experts have crucial roles in enhancing the quality of service delivery, effective prescription patterns, and proficiency of performing complex medical procedures in tertiary hospitals. It is recommended that healthcare institutions prioritise the recruitment and retention of a diverse and competent team of specialists, and that healthcare institutions establish structured and comprehensive in-house training programs.

Keywords: *Qualified Specialists, Quality of Service Delivery, In-House Training, Prescription, Complex Medical Procedures.*

Introduction

Every organisation encounters the challenge of ensuring its long-term survival and effective functioning, leading to an intense focus on management strategies. Among these strategies, human capital is widely recognised as a crucial factor in driving an organisation's profitability and sustainability. These skilled individuals are instrumental in the production of goods and services and play a pivotal role in the broader development of a nation. Human capital development encompasses various processes implemented by firms to enhance employee output and overall performance, including training, education, and other professional initiatives. Investing in these activities is crucial to achieving optimal productivity and maintaining a competitive edge (Vrontis et al., 2016). Without a robust human capital development scheme, organisations may suffer from reduced productivity, an unskilled workforce, higher production costs, poor service delivery, resource mismanagement, indiscipline, resistance to change, and corruption, among other issues (Marimuthu et al., 2009).

In Nigeria, the lack of focus on human capital development has contributed to incompetence in public service delivery and a significant brain drain as trained personnel seek opportunities abroad, leaving room for foreign experts to dominate various sectors of the economy. To overcome these challenges and compete at the global level, Nigeria must prioritise the development of its human resources. Nigeria has declined in the Human Development Index (HDI) ranking which is a measure of human development in three basic areas: a decent standard of living, access to knowledge, and a long and healthy life) from 158 in 2018 to 161 among 189 countries, according to the United Nations Development Programme's UNDP 2020 report (Akinyemi & Mohammed, 2023). The report showed that the HDI value for 2019 was 0.539, which placed the country in the low human development category (Saidu et al., 2023). This points to the fact that human capital development is not given the needed attention in our nation, and the consequence is reflected in the quality of service delivery in both our public and private sectors (Sima et al., 2020). According to Onodugo (2012), "an analysis of most nations that moved up fast in the ladder of development shows that they were able to do that on the basis of human resources strategy". Countries like Singapore, which had few natural resources and shared the same developing nations' tag with Nigeria years ago, have joined the league of developed countries due to its investment in developing its human resources (Bribena, 2021). South Korea has followed in the footsteps of Singapore by investing 12% of its GDP in education and is ranked among the world's emerging economies (Bergheim, 2005).

Many organisations in Nigeria pay lip service to the issue of human capital development (Ifejika, 2017). This is because they consider it a waste of resources or a drain on their income. Little wonder most of them always stipulate in their recruitment requirements that any applicant must have a given number of years of experience in order to be eligible for a job. The question will be, 'Where can a fresh graduate get such experience?' It is a fact that most organisations in developed countries have training institutions for new and old employees. Therefore, it is not surprising that their productivity and service delivery are excellent and cannot be matched with what is obtained among their counterparts in developing countries like Nigeria. Poor investment in human capital has led to incompetence in public service delivery and subsequently a low economic growth rate (Boris, 2022; Davies et al., 2019).

It is a common knowledge that most organisations in Nigeria, including our tertiary health institutions, contract their staff, units, or departments to other organisations in the name of outsourcing due to inefficiency or inability to perform (Barik & Rout, 2021). For instance, some radiology departments in our hospitals are managed by different organisations due to the inability of the former management of the unit to offer the desired services to the patients. This arrangement might not be the best for the hospital as it makes it vulnerable to intruders whose motive will be to make profit at all costs at the expense of the overall welfare of the patients. The management of our health institutions could have avoided this situation if they had invested adequately in human capital development, which is more effective and less expensive in the long run than embracing the outsourcing arrangement.

Lack of human capital development in Nigerian public organisations, especially our tertiary health institutions located in the South-South, has affected the quality of service delivery in these institutions. Without serious and sustained attention to human capital development in tertiary health institutions in the South-South States of Nigeria, employees' performance might continue to deteriorate.

From the foregoing, this research is conducted to unravel the issues concerning human capital development and service delivery using the tertiary health institutions located in south-south Nigeria as a case study.

Objectives of The Study

This study investigated the impact of human capital development on the service delivery of tertiary health institutions in the south-south region. The specific objectives of this study were to:

i. Assess the effect of the number of qualified specialists in a particular field on the quality of service delivery.
ii. Determine the effect of in-house training on the incidence of prescription by medical resident officers of tertiary hospitals.
iii. Ascertain the effect of working with visiting medical experts on foreign missions on the proficiency of performing complex medical procedures.

Review of Related Literature

Human Capital Development

The concept of HCD, also known as manpower development or employee development, is not new to the literature, as it has enjoyed robust discussion in the past because of its importance in all spheres of human endeavor. However, no discussion on this concept can be enough because, as the days go by, a new dimension to it is unravelled and will continue to elicit further attention.

HCD encompasses all activities geared towards improving the competence, capacity, knowledge, and skills of an individual in order for him or her to perform at an optimal level (Nafiu & Nafiu,

2023). These activities include education, training, internship programmes, and seminars, among others. Literally, it is the act of developing the human resources of an organisation in order to enhance their productivity. Also, it is a way of empowering people with the right knowledge and skills to perform a given task necessary for the growth of an organisation or a country. Okotoni & Erero (2005), sees HCD as an act that involves the training, education, and career development of employees. HCD involves the creation of a learning environment, which makes training possible. It is a framework that provides employees the opportunity to develop personal and organisational knowledge, abilities, and skills (Marin-Garcia & Martinez Tomas, 2016; Nafiu et al., 2022; Salvato & Vassolo, 2017). The aim of developing the human capital of an organisation is to ensure that the company has quality staff that enables it to attain its goals and improve performance. According to Marvel et al. (2014), HCD are the processes that guide and direct individuals and teams so that they will acquire the requisite knowledge, skill, and competence that will enable them to undertake organisational tasks.

In this era where competition among various organisations is rife, having a competent workforce is sine qua non to coming to the top of the industry and acquiring a large market share. This is why many companies have embraced HCD practices and incorporated them into their organisational strategies, since they are vital to the achievement of their goals and objectives. Fatile, J. O., & Hassan, K. I. (2020) concur with this opinion by stating that HCD prepares a path for greater innovativeness, which in turn leads to positive implications for a firm's performance. HCD is about creating a conducive environment for employees to maximise their potential and contribute to the achievement of organisational goals (Hamadamin & Atan, 2019; Piwowar-Sulej, 2020). It is the process by which the employees of an organisation are helped in a continuous and planned way to: acquire or sharpen capabilities required to perform various functions associated with their present or expected future roles; develop their general capabilities as individuals and discover and exploit their own inner potentials for their own and/or organisational development purposes; develop an organisational culture in which supervisor-subordinate relationships, teamwork, and collaboration among sub-units are strong and contribute to the professional well-being, motivation, and pride of employees (Anh, 2017). It involves investment in human capital through coaching, training, and internships and involves a people-centred strategy. The development and maintenance of individual workers' knowledge, skills, and competence, as well as the organisation as a whole, is hinged on the investment in the development of the employees (Arubayi et al., 2020; Otoo, 2020). HCD finds its relevance in the existence of unskilled and partly skilled persons who need training or re-training to perform a specific task for an organization.

SERVICOM and issues of Service delivery

Okon (2008) opines that service delivery in Nigeria can be described as deplorable, chaotic, epileptic, insensitive, unsatisfactory, shoddy, non-cost-effective, and inflexible, among others. He goes further to assert that it is characterised by unpleasant attitudes and traits of workers towards customers, clients, and patients: incompetence, absenteeism, lateness, red tape, lacklustre performance, and a general lackadaisical attitude to work.

Over the years, the government has adopted various strategies in order to improve service delivery in our various institutions, ministries, parastatals, agencies, hospitals, etc. One of these

strategies is SERVICOM, which is an acronym for Service Compact with all Nigerians. The objectives of SERVICOM are to:

1. Make the service delivery activities of ministries, departments, hospitals, and agencies more customer-centred.
2. Increase public awareness about the damaging consequences of service failure for the state.
3. Encourage citizens to recognise and challenge service failure and to see it as their civic right as well as their responsibility to do so (SERVICOM office, 2009).

However, SERVICOM has failed to yield little or no dividend as its objectives are not realized. This is due to the following challenges:

1. There is no baseline data that contains public perceptions of the public service before the setting up of SERVICOM, and therefore there is no benchmark for measuring its impact on service delivery after its implementation and overall system improvement.
2. There is a low level of publicity about SERVICOM, with many citizens having little knowledge on how to be part of the programme.
3. There is no adequate legislation that is used to enforce the implementation of the programme. Hardly will you see any public servant being disciplined or prosecuted in a law court for any infringement on the tenets of the programme.
4. There is a lack of continuity in the commitment towards the implementation of SERVICOM. Some successive administrations have shown apathy towards taking the programme to a higher level and, in the process, diminished the little gains made by the previous government in implementing the programme.

Human Capital Development and Service Delivery of Tertiary Health Institution

It is an accepted belief that the quality of a nation's development is dependent on the quality of its workforce. This belief is paramount to the operations of healthcare institutions. The health sector,like any other service-rendering sector in society, values the competence of its workforce in achieving its goals and objectives. The myriad of medical errors and, by extension, the general poor service delivery witnessed in healthcare institutions are among other factors attributed to incompetent healthcare personnelworking in these hospitals. Insufficiently skilled health professionals have led to professional negligence andsometimes events arising from treatment errors, which most often affect the patronage of healthcare facilities by patients. This position is supported by some studies on patients' preference and utilisation of health facilities, which show that perceptions of competence of staff, effectiveness of therapy, proximity, and overall perception of quality of service are considered in making choices of hospitals to visit for medical treatment (Oredola & Odusanya, 2017), while in another study promptness of services and availability of drugs were considered important to patients in Ilorin (Shaikh and Hatcher, 2005). Another author adds his voice by stating that qualified health personnel and facilities, among other factors, attract patients to a health facility and may be the reason for recommending a hospital to friends and relatives (Iliyasu, 2010). This issue of poor patronage of public health institutions could have been avoided if an appropriate human capital development programme were established in these hospitals.

The importance of HCD to service delivery in our healthcare institutions cannot be overemphasized. Agunyai (2015) asserts that training, being the hallmark of HCD, creates a pool of readily available and adequate replacements for personnel who may leave or move up in the organisation; enhances the company's ability to adopt and use advances in technology because of sufficiently knowledgeable employees; builds a more efficient, effective, and highly motivated team, which elevates the organisation's competitive position; improves employee morale; and ensures adequate human resources for expansion into new programs. Okotoni and Erero (2005) lists the benefits that HCD can produce, like:

1. Increased confidence, motivation, and commitment among staff.
2. Giving a feeling of personal satisfaction and achievement among staff as well as broadening opportunities for career progression.
3. Ensuring the constant availability of quality staff
4. Providing recognition, enhanced responsibility, and the possibility of increased pay and promotion

All these will undoubtedly translate into quality service delivery since the employees are fully equipped to work towards achieving the objectives of the organization. However, some organisations tend to enhance productivity and customer satisfaction at the expense of their workers (Hoe & Mansori, 2018). They do this without improving the capacity of the employees to take up the new challenge. This leads to frustration among the employees, with the feeling that the organisation is not committed to their individual development and is not ready to equip them with the skills to achieve their goals. It is a fact that a disgruntled workforce is a recipe for poor service delivery. Therefore, this approach is a wrong organisational strategy for improving service delivery.

HCD leads to enhanced productivity, encourages technological innovation, increases the sustainability of growth, and improves the return on capital, which alleviates poverty when viewed from a macro-economic perspective (Alkutich, 2016). It helps individuals acquire new information, understanding, and skills or improve on existing ones in order to take on new challenges or responsibilities or even adapt to changing conditions. Nafiu et al. (2015) emphasises the fact that training and development improve trainees prospects of finding and retaining a job; their productivity; their income-earning capacity and their general living standards. It even goes further by widening their career choices and opportunities. HCD helps improve quality, productivity, profitability, customer satisfaction, management succession, business development and morale. It has the capacity to widen people's choices and opportunities, enhance healthy living through skills and knowledge acquired, and consequently improve the nation's GDP through enhanced productivity (Arubayi et al., 2020; Marimuthu et al., 2009; Marvel et al., 2014). It enjoys great attention in national development. This is why the federal government set up the Ashby Commission to investigate the needs of Nigeria in the field of post-primary and higher education between 1960 and 1980 (Alani and Isola, 2009).

Service delivery at our tertiary health institutions leaves much to be desired. The huge disease burden and subsequent deaths are a result of this. The evidence of poor quality healthcare delivery in Nigeria can easily be seen from the increased rate of chronic diseases, medical errors, high morbidity and mortality rates, and unnecessary expenses on health services without

commensurate desired results (Amedari et al., 2021; Oyekale, 2017). Some researchers, like Oladejo et al. (2015), among others, produced evidence of increased mortality rates in our tertiary hospitals in some parts of the country as a result of poor service delivery. It is unfortunate that many of these diseases and deaths could have been prevented if the right services were provided to the patients that visit our hospitals. Many Nigerians have lost faith in our tertiary health institutions to the extent that some prefer patronising private hospitals and, in some situations, unorthodox health institutions like traditional medicine practitioners. In recent years, one has observed a boom in traditional medicine practice to the extent that our radio airwaves are flooded with their advertisements. Furthermore, health tourism has experienced increased activity over the years. Many Nigerians now boast of visas to these health tourist countries and will not hesitate to use them at the slightest discomfort to their wellbeing since they believe that the health personnel in Nigeria are incapable of managing their healthcare, among other reasons. According to the Voice of America (VOA) news bulletin of May 10, 2019, Nigeria loses $1 billion annually to medical tourism. This huge sum of money could have been invested in our health system to make it world-class. This situation could have been avoided if the right HCD policies were adopted and implemented to the fullest.

For a hospital to be effective, investing in training should be of paramount importance to the management, as training equips healthcare professionals with the relevant skills and knowledge to perform their duties effectively, which subsequently leads to enhanced service delivery. In this era where technology is changing at a faster pace, training remains a pre-requisite for companies and healthcare institutions to remain competitive (Anh, 2017; Nafiu et al., 2015). This position is supported by Kumar (2014), who argues that the effectiveness of a health institution depends on the competence of its healthcare professionals. Also, Bakker (2017) posits that employees need to be developed and equipped to face challenging work situations in an organization. The bulk of the blame for poor service delivery in Nigeria's health sector falls at the doorstep of our tertiary health institutions, including those located in the south-south. This is because they sit at the apex of healthcare delivery in the nation. They render specialist services with sophisticated healthcare structures, equipment, and machinery that can only be manned by experts. This elucidates the importance of HCD in achieving some highly qualified health personnel that can take up these demanding tasks. If the management of our tertiary healthcare institutions can invest a good amount of their budget in HCD, they will earn the respect of their employees and commitment to duty, which will translate to enhanced service delivery at the end of the day. Failure to do so will lead to difficulty in executing simple tasks, waste, rework, errors, low morale, discontent, and finally, poor service delivery. A well-trained and competent workforce is indispensable to any successful healthcare system.

Theoretical Consideration

This research is grounded in Theodore Schultz's human capital theory, initially introduced in 1961. The theory asserts that a nation's prosperity doesn't solely rely on its natural resources, financial capital, and labor force but also on the competencies and knowledge held by its people (Crocker, 2006). Essentially, an individual's capabilities significantly influence both the overall economic outcomes of society and the individual's personal welfare. In today's context, marked

by the "knowledge economy" paradigm, this theory holds significant relevance for organizations aiming to enhance productivity and secure survival in fiercely competitive industries.

Moreover, the theory argues that an individual's level of education notably impacts their earning potential. According to Dae-bong (2009), there exists a direct correlation between education and earning power, suggesting that higher levels of education are associated with increased individual income. The knowledge, skills, and abilities acquired through education are applicable to the workplace, resulting in heightened productivity. Education and training, as advocated by Becker (1994), foster the development of attitudes, aptitudes, and other essential traits for productive outcomes with an emphasis on quality.

Furthermore, the theory highlights the importance of investing in human capital to achieve optimal organizational output. Among all the factors of production, labor is recognized as the sole element capable of learning, demonstrating creativity, imagination, innovation, and other crucial capabilities (Ejere, 2011).

Aligned with this theory, this study underscores the importance of education and training as fundamental elements of human capital development. These components function as essential instruments for cultivating a skilled workforce capable of enhancing an organization's productivity and, consequently, its service delivery. Viewing investment in human capital development as a valuable undertaking, this research asserts that it ensures the long-term viability of organizations within their highly competitive operational environments.

Research Methodology

This study employed descriptive survey design since the variables researched on involves current behaviours, opinions and characteristics of the healthcare providers. Also the absence of records of the data sought after in these hospitals led to the adoption of this research design. This study is about human capital development and service delivery in tertiary healthcare institutions in the south-south of Nigeria. Therefore, the population of this investigation is made up of the healthcare providers and clinical personnel of selected federal tertiary hospitals located in the six states of south-south. These personnel include among others: doctors, pathologists and radiologists with a total population estimate of 3593. The sample of 360 was determined using Taro Yamane formula.

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

Where;
n = the sample size
N = the finite population

e = the level of significance
1 = unity (a constant)
0.05 tolerable error is assumed meaning 95% level of significance.

The study used a well-structured questionnaire. Essentially, the instrument is deemed valid because it successfully fulfils its intended purpose. We ensured the validity of the measuring instrument through a panel of two experts from the Management Department at the University of Nigeria, Enugu Campus, two from Enugu State University of Science and Technology, and one from Geoffrey Okoye University, Enugu. The expert provided insights and suggested necessary adjustments. These experts meticulously reviewed the questionnaire to ensure comprehensive coverage of the subject matter and that the questionnaire's content remained pertinent to the study. To confirm the reliability of this instrument, an initial study was carried out at the six tertiary hospitals, employing the test-retest approach, involving 24 participants from these institutions in the south-south region, with four participants from each hospital. After a three-week interval, the same group of respondents was administered the questionnaire again. The data gathered was then examined for consistency using the Cronbach Alpha coefficient method, aimed at identifying any potential weaknesses in the measuring instrument and making necessary adjustments. The results from this analysis, conducted using the SPSS software, are displayed in Table 1, indicating Cronbach's alpha coefficient values exceeding the 0.7 benchmark. This outcome suggests a strong degree of consistency within the measuring instrument. The data obtained in this study was analysed using descriptive statistics. Inferential statistics were employed to enhance the scientific investigation of the objectives of the study. The study used a regression model for data analysis, from which inferences were made.

Table 1 Constructs' Reliability

Constructs	Cronbach's Alpha	N of Items
NQS	0.786	5
IHT	0.772	5
WVF	0.864	5
QSD	0.890	5
IPE	0.711	5
PPC	0.823	5

Source: Field Survey, 2023

Data Analysis and Results

The questionnaires were administered to 360 respondents (according to the sample size determined for this study) at the various tertiary healthcare facilities in the zone while taking into consideration the population distribution of the doctors in each facility. Unfortunately, only a total of 338 questionnaires (93.9%) were returned. Thus, analyses were based on the returned questionnaires. This study involved the doctors working at tertiary healthcare institutions in south-south Nigeria, as stated in Table 2.

Table 2 Demographic characteristics of the respondents

Variables	Response	Frequency	Percentage
Work Experience	1 - 4 years	81	24
	4 - 8 Years	149	44
	Above 8 Years	108	32
Category of Doctors	Resident Doctors	244	72
	Consultants	94	28
Sex Distribution	Male	232	69
	Female	106	31

Source: Field Survey, 2023

Table 2 describes the demographic characteristics of the respondents. The table indicates the distribution of respondents based on the duration of their professional experience. It is evident that the majority of the respondents fall into the category of having 4–8 years of work experience, accounting for 44% of the total respondents. Furthermore, 32% of the respondents have over 8 years of work experience, while 24% have 1-4 years of experience.

The table categorises the respondents based on their professional roles. The table indicates that the majority, constituting 72% of the respondents, are resident doctors. On the other hand, 28% of the respondents are identified as consultants. The table represents the gender distribution of the respondents. It shows that 69% of the respondents are male, while the remaining 31% are female.

From this interpretation, it can be inferred that the survey primarily targeted doctors, gathering data about their work experience, professional roles, and gender distribution. This data can be used to gain insights into the composition of the medical community.

Table 3 Covariance among variables

	NQS	IHT	WVF
NQS	1	0.2254	0.3246
IHT	0.2254	1	0.2496
WVF	0.3246	0.2496	1
	PMP	**IPE**	**PPC**
QSD	1	0.2611	0.3541
IPE	0.2611	1	0.1687
PPC	0.3541	0.1687	1

Source: Field Survey, 2023

Table 3 presents the covariance values among different variables. The covariance between the "number of qualified specialists" and "in-house training" is 0.2254. This positive covariance indicates a moderately positive relationship between these two variables. The covariance between the "number of qualified specialists" and "working with visiting medical experts on

foreign missions" is 0.3246. This positive covariance suggests a relatively stronger positive relationship compared to the previous pair.

The covariance between "in-house training" and "working with visiting medical experts on foreign missions" is 0.2496, indicating a moderately positive relationship. However, the covariance values are less than 50%, which indicates that there is no issue of autocorrelation.

The table also presents the covariance values among different variables, which include "post-treatment mortality of patients," "incidence of prescription by medical resident officers," and "proficiency of performing complex medical procedures." These values suggest the relationships and interdependencies between the variables. The covariance between the "post-treatment mortality of patients" and the "incidence of prescription by medical resident officers" is 0.2611. This positive covariance suggests a moderately positive relationship between these two variables. The covariance between the "post-treatment mortality of patients" and the "proficiency of performing complex medical procedures" is 0.3541. This positive covariance suggests a relatively stronger positive relationship compared to the first pair. The covariance between "incidence of prescription by medical resident officers" and "proficiency of performing complex medical procedures" is 0.1687, indicating a moderately positive relationship. The covariance values also indicate that there is no issue of autocorrelation.

Table 4 Number of qualified specialists and quality of service delivery

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.477605	0.099646	4.793010	0.0000
NQS	0.865885	0.028865	29.99758	0.0000
R-squared	0.728123	Mean dependent var		3.198225
Adjusted R-squared	0.727314	S.D. dependent var		1.453247
S.E. of regression	0.758875	Akaike info criterion		2.291941
Sum squared resid	193.4997	Schwarz criterion		2.314563
Log likelihood	-385.3381	Hannan-Quinn criter.		2.300957
F-statistic	899.8549	Durbin-Watson stat		1.592022
Prob(F-statistic)	0.000000			

Source: *Author's Computation Using E-views*

Model Line: $QSD = \beta_0 + \beta_1 NQS + \varepsilon$

Regression Line: $QSD = 0.477605 + 0.865885 NQS$

Where; *QSD* = Quality of service delivery, NQS = Number of qualified specialists, and ε= Stochastic error term.

Table 4 presents the results of the statistical analysis, examining the effect of the number of qualified specialists on the quality of service delivery. In this analysis, R^2 is 0.728123, showing that 72.81% of the variation in the quality of service delivery can be explained by the number of qualified specialists. The adjusted R^2 is 0.727314, providing a similar measure while adjusting for the number of predictors in the model. The t-statistic assesses the statistical significance of the coefficient estimates. Higher values indicate that the coefficient is more significant. For the constant term, it is 4.793010, and for the number of qualified specialists, it is 29.99758. The probability is 0.0000, indicating a high level of statistical significance.

The coefficient for the constant term is 0.477605, indicating that when the number of qualified specialists is zero, the expected quality of service delivery is 0.477605. The coefficient is 0.865885, indicating that for every unit increase in the number of qualified specialists, the expected quality of service delivery increases by 0.865885 units. The standard error measures the accuracy of the coefficient estimates. Lower standard errors indicate more reliable estimates. For the constant term, it is 0.099646, and for the number of qualified specialists, it is 0.028865. From the analysis, it is clearly seen that the p-value of 0.000 is less than 0.05. So, we deduce that the number of qualified nurses has a significant positive effect on the quality of service delivery in tertiary hospitals.

Standard error of regression, Akaike information criterion, sum squared residual, Schwarz criterion, log likelihood, Hannan-Quinn criterion, F-statistic, and Durbin-Watson statistic are additional statistical metrics that assess the quality and characteristics of the regression model. The Durbin-Watson statistic is 1.592022, indicating that there is no issue of autocorrelation among the residuals.

Table 5 In-house training and incidence of prescription by medical resident officers

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.394927	0.083052	4.755153	0.0000
IHT	0.877242	0.029633	29.60338	0.0000
R-squared	0.722855	Mean dependent var		2.582840
Adjusted R-squared	0.722030	S.D. dependent var		1.321114
S.E. of regression	0.696529	Akaike info criterion		2.120486
Sum squared resid	163.0115	Schwarz criterion		2.143108
Log likelihood	-356.3622	Hannan-Quinn criter.		2.129502
F-statistic	876.3600	Durbin-Watson stat		2.071045
Prob(F-statistic)	0.000000			

Source: *Author's Computation Using E-views*

Model Line: $IPM = \beta_0 + \beta_1 IHT + \varepsilon$

Regression Line: $IPM = 0.477605 + 0.865885 NQS$

Where; *IHT* = In-house training, IPM = Incidence of prescription by medical resident officers, and ε= Stochastic error term.

Table 5 presents the results of a statistical analysis examining the effect of in-house training on the incidence of prescriptions by medical resident officers in tertiary hospitals. The R^2 is 0.722855, showing that 72.29% of the variation in the incidence of prescriptions by medical resident officers can be explained by in-house training. The adjusted R^2 is 0.722030, providing a similar measure while adjusting for the number of predictors in the model. The t-statistic assesses the statistical significance of the coefficient estimates. For the constant term, it is 4.755153, and for in-house training, it is 29.60338. In both cases, the probability is 0.0000, indicating a high level of statistical significance.

The coefficient for the constant term is 0.394927, revealing that when the in-house training is zero, the expected incidence of prescriptions by medical resident officers is 0.394927. The coefficient is 0.877242, showing that for every unit increase in in-house training, the expected incidence of prescriptions by medical resident officers increases by 0.877242 units. The standard error measures the accuracy of the coefficient estimates. Lower standard errors indicate more reliable estimates. For the constant term, it is 0.083052, and for in-house training, it is 0.029633. From the analysis, it is clearly seen that the p-value of 0.000 is less than 0.05. So, we deduce that in-house training has a significant positive effect on the incidence of prescriptions by medical resident officers in tertiary hospitals.

Standard error of regression, Akaike information criterion, sum squared residual, Schwarz criterion, log likelihood, Hannan-Quinn criterion, F-statistic, and Durbin-Watson statistic are additional statistical metrics that assess the quality and characteristics of the regression model. In the context of this analysis, the Durbin-Watson statistic value of 2.071045 indicates that the model is valid and the data points are independent of each other. There is no evidence to suggest a pattern in the residuals that the model has not accounted for. Thus, the results of the regression analysis are reliable.

Table 6 Working with visiting medical experts on foreign missions and the proficiency of performing complex medical procedures

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.401802	0.094835	4.236840	0.0000
WVF	0.924444	0.033074	27.95093	0.0000
R-squared	0.699263	Mean dependent var		2.784024
Adjusted R-squared	0.698368	S.D. dependent var		1.392257
S.E. of regression	0.764642	Akaike info criterion		2.307082
Sum squared resid	196.4517	Schwarz criterion		2.329703
Log likelihood	-387.8968	Hannan-Quinn criter.		2.316098
F-statistic	781.2546	Durbin-Watson stat		2.000064
Prob(F-statistic)	0.000000			

Source: *Author's Computation Using E-views*

Model Line: $PPC = \beta_0 + \beta_1 WVF + \varepsilon$

Regression Line: $PPC = 0.477605 + 0.865885 WVF$

Where; *PPC* = Proficiency of performing complex medical procedures, WVF = Working with visiting medical experts on foreign missions, and ε= Stochastic error term.

Table 6 presents the results of the statistical analysis, examining the link between working with visiting medical experts on foreign missions and the proficiency of performing complex medical procedures. The R^2 value is 0.699263, implying that 69.93% of the variation in proficiency in performing complex medical procedures can be explained by working with visiting medical experts on foreign missions. The adjusted R^2 value is 0.698368, providing a similar measure while adjusting for the number of predictors in the model. The t-statistic assesses the statistical significance of the coefficient estimates. For the constant term, it is 4.236840, and for "working with visiting medical experts on foreign missions," it is 27.95093. In both cases, the probability is 0.0000, indicating a high level of statistical significance.

The coefficient for the constant term is 0.401802, indicating that when the variable "working with visiting medical experts on foreign missions" is zero, the expected proficiency of performing complex medical procedures is 0.401802. The coefficient is 0.924444, indicating that for every unit increase in working with visiting medical experts on foreign missions, the expected proficiency in performing complex medical procedures increases by 0.924444 units. The standard error measures the accuracy of the coefficient estimates. For the constant term, it is 0.094835, and for the variable "working with visiting medical experts on foreign missions," it is 0.033074. From the analysis, it is clearly seen that the p-value of 0.000 is less than 0.05. So, we

deduce that working with visiting medical experts on foreign missions has a significant positive effect on the proficiency of performing complex medical procedures.

Standard error of regression, Akaike information criterion, sum squared residual, Schwarz criterion, log likelihood, Hannan-Quinn criterion, F-statistic, and Durbin-Watson statistic are additional statistical metrics that assess the quality and characteristics of the regression model. The Durbin-Watson statistic value of 2.000064 is very close to 2. This value indicates that there is no significant autocorrelation among the residuals in the regression analysis. The value of 2 for the Durbin-Watson statistic is a critical threshold; if the statistic is close to 2, it suggests that there is no first-order autocorrelation present.

Discussion of Findings

Findings revealed that the number of qualified specialists has a significant positive effect on the quality of service delivery in tertiary hospitals. This aligns with the assertion of Al-Neyadi, Abdallah, and Malik (2016) that qualified physicians can enhance the quality of service delivery. Hospitals with a higher number of specialists exhibited better patient outcomes, reduced complications, and increased patient satisfaction rates. The presence of a diverse team of specialists contributed to a comprehensive approach to patient care, resulting in improved diagnosis and treatment strategies.

Findings revealed that in-house training has a significant positive effect on the incidence of prescriptions by medical resident officers in tertiary hospitals. This supports the position of Lau et al. (2022) that in-house training determines prescribing patterns. Hospitals that invested in structured in-house training programmes witnessed a decrease in the rate of erroneous prescriptions and an increase in adherence to evidence-based practices. Training programmes that emphasised critical thinking and evidence-based decision-making positively influenced the prescription practices of medical resident officers.

Findings revealed that working with visiting medical experts on foreign missions has a significant positive effect on the proficiency of performing complex medical procedures. The research demonstrated a clear link between working with visiting medical experts on foreign missions and their proficiency in performing complex medical procedures. Collaborative experiences with international experts provided opportunities for skill enhancement, knowledge transfer, and exposure to advanced medical techniques. Hospitals that regularly hosted visiting medical experts observed an improvement in the proficiency of their staff in handling complex cases, leading to better patient outcomes and an enhanced hospital reputation.

Conclusion

This research highlights the crucial role of specialist numbers, in-house training, and collaboration with visiting medical experts in enhancing the quality of service delivery, effective prescription patterns, and proficiency of performing complex medical procedures in tertiary hospitals. A holistic approach that integrates a sufficient number of qualified specialists, structured in-house training programmes, and opportunities for international collaboration can significantly improve patient care, reduce medical errors, and elevate the overall standards of

tertiary hospitals. This research exposes the importance of strategic investments and collaborative efforts in advancing the healthcare landscape, ultimately leading to improved patient outcomes and strengthened healthcare systems.

Recommendations

Based on the findings;

i. It is recommended that healthcare institutions prioritise the recruitment and retention of a diverse and competent team of specialists. This can be achieved through targeted recruitment strategies, competitive compensation packages, and conducive working environments that foster professional growth and development. By ensuring an adequate and proficient specialist workforce, hospitals can enhance their capacity to provide comprehensive and high-quality healthcare services, leading to improved patient outcomes and overall satisfaction.

ii. It is recommended that healthcare institutions establish structured and comprehensive in-house training programs. These programmes should focus on promoting evidence-based practices, critical thinking, and continuous professional development. Furthermore, integrating regular workshops, case studies, and mentorship opportunities into the training curriculum can effectively enhance the decision-making abilities of medical resident officers and ensure adherence to best practices in prescription management.

iii. It is recommended that tertiary hospitals actively foster international collaboration and exchange programs. Encouraging the participation of local medical professionals in workshops, seminars, and collaborative projects with visiting experts can facilitate the transfer of advanced knowledge and cutting-edge techniques. Additionally, establishing long-term partnerships with reputable international institutions can create opportunities for ongoing skill development and the adoption of best practices in complex medical procedures.

References

1. *Agunyai, S.C. (2015). Manpower Development, Capacity building and Service Delivery in Ife-East L.G.A, Osun State, Nigeria, Journal of Public Administration and Policy Research, 7(1), 1-4.*
2. *Akinyemi, I. A., & Mohammed, M. O. B. (2023). Achieving national sustainable development through educational planning and administration in Nigeria: The harsh reality. African Journal of Educational Management, Teaching and Entrepreneurship Studies, 9(1), 60-75.*
3. *Alkutich, M. (2016). "Examining the Impact of School Inspection on Teaching and Learning: Dubai Private Schools as a Case Study" Grin Verlag.*
4. *Al-Neyadi, H. S., Abdallah, S., & Malik, M. (2016). Measuring patient's satisfaction of healthcare services in the UAE hospitals: Using SERVQUAL. International Journal of Healthcare Management, 11(2), 96–105.*
5. *Amedari, M. I., et al. (2021). Improving Access, Quality and Efficiency in Health Care Delivery in Nigeria: A Perspective. PAMJ - One Health, 5, 3.*

6. *Anh, N. T. K. (2017). Some Solutions Developing the High Quality Human Resources of the Education and Training in Dong Nai Province. European Journal of Training and Development Studies, 4(2), 6-18.*
7. *Arubayi, D. O., Eromafuru, E. D., & Egbule, A. C. S. (2020). Human Resource Development and Employee Performance: The Role of Individual Absorptive Capacity in the Nigerian Oil Sector. Journal of Management Information and Decision Sciences, 23(2), 1-15.*
8. *Bakker, A. B. (2017). Strategic and proactive approaches to work engagement. Organizational Dynamics, 46(2), 67–75.*
9. *Barik, S. K., & Rout, H. S. (2021). Outsourcing of healthcare services in a smart city of Eastern India. Journal of Facilities Management, 19(4), 458-478.*
10. *Becker, G. (1994). Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education, The University of Chicago Press, Chicago.*
11. *Boris, O. H. (2022). Challenges Confronting Local Government Administration in Efficient and Effective Social Service Delivery: The Nigerian Experience. International Journal of Public Administration and Management Research , 2(5), 12-22.*
12. *Bribena, K. (2021). The dynamics and complexities of natural resources and conflicts in Angola. In K. J. Ani, V. Ojakorotu, & K. Bribena (Eds.), Political Economy of Resource, Human Security and Environmental Conflicts in Africa (pp. 51-69). Palgrave Macmillan, Singapore. Crocker, R. (2006). Human Capital Development and Education. Skills and Knowledge for Canada's Future: Seven Perspectives, Canadian Policy Research Networks, 1-2.*
13. *Dae-bong, K. (2009). Human Capital and its Measurement, The Third World Forum on Statistics, Knowledge and Policy; Charting progress, Building Visions and Improving Life, Busan, Korea. 27-30th October.*
14. *Davies, I. E. E., Nwankwo, C. O., Olofinnade, O. M., & Michaels, T. A. (2019). Insight review on impact of infrastructural development in driving the SDGs in developing nations: a case study of Nigeria. IOP Conference Series: Materials Science and Engineering, 640(1), 012112.*
15. *Ejere, S.I. (2011). "Human Capital Formation as Catalyst for National Development: Nigeria in Perspective," International Business and Management, 2(2), 98-104.*
16. *Fatile, J. O., & Hassan, K. I. (2020). Technological Innovation and Human Capital Development in Nigeria: A Study Of Ogun State Technological Hub. BVIMSR Journal of Management Research, 12(2), 59-72.*
17. *Hamadamin, H. H., & Atan, T. (2019). The Impact of Strategic Human Resource Management Practices on Competitive Advantage Sustainability: The Mediation of Human Capital Development and Employee Commitment. Sustainability, 11(20), 1-19.*
18. *Hoe, L. C., & Mansori, S. (2018). The Effects of Product Quality on Customer Satisfaction and Loyalty: Evidence from Malaysian Engineering Industry. International Journal of Industrial Marketing, 3(1), 20.*
19. *Ifejika, S. I. (2017). The challenges of human capital development in Nigeria: A theoretical insight. Silpakorn University Journal of Social Sciences, Humanities, and Arts, 17(2), 41-74.*
20. *Iliyasu, Z., Abubakar, S., Lawan, U. and Gajida, A (2010). "Patient's Satisfaction with Services Obtained from Aminu Kano Teaching Hospital, Kano," Niger Clinical Practitioners, 13, 371-8.*
21. *Lau, C. L., Periyasamy, P., Saud, M. N., Robert, S. A., Gan, L. Y., Chin, S. Y., Pau, K. B., Kong, S. H., Tajurudin, F. W., Yin, M. K., et al. (2022). Plethora of Antibiotics Usage and Evaluation of Carbapenem Prescribing Pattern in Intensive Care Units: A Single-Center Experience of Malaysian Academic Hospital. Antibiotics, 11, 1-19.*

22. *Marimuthu, M., Arokiasamy, L. and Ismail M. (2009). Human Capital Development and its Impact on firm's performance: Evidence from Development Economics, The Journal of International Social Research, 2/8, 266- 272.*
23. *Marin-Garcia, J. A., & Martinez Tomas, J. (2016). Deconstructing AMO framework: a systematic review. Intangible Capital, 12(4), 1040.*
24. *Marvel, M. R., Davis, J. L., & Sproul, C. R. (2014). Human Capital and Entrepreneurship Research: A Critical Review and Future Directions. Entrepreneurship Theory and Practice, 40(3), 599–626.*
25. *Nafiu, A.T. & Nafiu, I. O. (2023), Diversity Towards the Human Capital Development and Staff Job Satisfaction in Tertiary Institutions in Kogi State. Innovare Journal of Education, 11(2), 43-48.*
26. *Nafiu, A.T., Obaje, F.O. and Yakubu, S. (2015). Imperatives of Strategy in Human Resource Training of Small and Medium Scale Enterprises in Nigeria. Facta Universitatis Series: Journal of Economics and Organization, University of Nis,Serbia. 12(3): 225 – 235*
27. *Nafiu, A.T., Orga, S.J., & Aduku, D.J. (2022). Human capital development and employee job satisfaction in public tertiary institutions of Kogi State, Nigeria. Governance and Society Review, University of Management and Technology, Lahore, 1(2), 23–42.*
28. *Okon, E. (2008). Public Service Reforms and the Concept of Service Compact with All Nigerians (SERVICOM) in Nigeria Beyond 2007: Issues, Perspectives and Challenges. Saliu, H.A, et al (ed).*
29. *Okotoni, O., Ekero, J. (2005). "Manpower Training and Development in the Nigerian Public Service," Journal of Nigerian Public Administration and Management, 16(1), 1-10.*
30. *Okotoni, O., Ekero, J. (2005). "Manpower Training and Development in the Nigerian Public Service," Journal of Nigerian Public Administration and Management, 16(1).*
31. *Oladejo, E., Umeh, O. and Ogbuefi, J. (2015). "An Example of Impact of Tertiary Health Facility Design on User Needs and Satisfaction in South-East Nigeria," Journal of Environment and Earth Science 5(5), 35-43.*
32. *Onodugo, V.A. (2012). Impact of Globalization on Human Resources Management in Africa: Evidence from Nigeria, European Journal of Business Management, 4(18).*
33. *Oredola, A.S and Odusanya, O.O (2017). A Survey of the Perception of the Quality of and Preference of Health Services Amongst Residents of Abeokuta South L.G.A, Ogun State, Nigerian Journal of Clinical Practice, 20:1088-97.*
34. *Otoo, F. N. K. (2020). Measuring the impact of human resource management (HRM) practices on pharmaceutical industry's effectiveness: the mediating role of employee competencies. Employee Relations: The International Journal, ahead-of-print(ahead-of-print).*
35. *Oyekale, A. S. (2017). Assessment of primary health care facilities' service readiness in Nigeria. BMC Health Services Research, 17(1), 172.*
36. *Piwowar-Sulej, K. (2020). Human Resources Development as an element of Sustainable HRM – with the focus on production engineers. Journal of Cleaner Production,178, 1-14.*
37. *Saidu, H., Shuaibu, A., Nuhu, U. A., Adeyeye, L., Ibrahim, A., & Owolabi, L. F. (2023). Economic evaluation of stroke in Kano, North-Western Nigeria. Nigerian Journal of Basic and Clinical Sciences, 20(1), 76-81.*
38. *Salvato, C., & Vassolo, R. (2017). The sources of dynamism in dynamic capabilities. Strategic Management Journal, 39(6), 1728–1752.*
39. *sShaikh, B.T and Hatcher J. (2005). Health Seeking Behaviour and Health Service Utilization in Pakistan: Challenging the Policy Makers, Public Health.27, 45-54.*

40. *Sima, V., Gheorghe, I. G., Subić, J., & Nancu, D. (2020). Influences of the Industry 4.0 Revolution on the Human Capital Development and Consumer Behavior: A Systematic Review. Sustainability, 12(10), 4035.*
41. *Vrontis, D., Bresciani, S., & Giacosa, E. (2016). Tradition and innovation in Italian wine family businesses. British Food Journal, 118(8), 1883-1897.*