Public Service Reform and Healthcare Service Delivery in Developing Economies: Experience from North Central, Nigeria

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Abstract

Public service reforms have been widely implemented in developing economies to strengthen governance, improve institutional efficiency and enhance healthcare service delivery. However, evidence of their effectiveness remains limited in resource-constrained settings such as Nigeria. This study examined the influence of public service reform on healthcare service delivery in North Central Nigeria as an experience from a developing economy. A cross-sectional analytical survey was conducted among 684 healthcare professionals, health administrators and healthcare users selected through multistage sampling. Data were collected using a structured questionnaire (Cronbach's $\alpha = 0.91$) and analysed using descriptive statistics, Pearson correlation, multiple linear regression and Structural Equation Modelling (SEM) at a 5% significance level. Public service reforms were implemented to a moderate-to-high extent (mean = 3.78–3.92), while healthcare service delivery recorded a mean score of 3.95 ± 0.63. All reform dimensions showed significant positive correlations with healthcare service delivery ($r = 0.587–0.654$; $p < .001$). Public service reforms jointly explained 61.8% of the variation in healthcare service delivery (Adjusted $R^2 = 0.618$; $F = 229.84$; $p < .001$), with accountability and transparency ($\beta = 0.257$) and administrative reforms ($\beta = 0.238$) identified as the strongest predictors. SEM further confirmed a significant positive effect of public service reform on healthcare service delivery ($\beta = 0.642$; $p < .001$). Strengthening governance, accountability, workforce capacity, financial management and digital transformation is essential for improving healthcare service delivery and health system performance in developing economies.

Keywords: *Public service reform; Healthcare service delivery; Developing economies; Governance; Health systems strengthening; North Central Nigeria.*

Introduction

Healthcare service delivery is a critical component of national development and an important indicator of government effectiveness. Efficient healthcare systems contribute to improved population health, enhanced labour productivity, poverty reduction and sustainable economic growth. Consequently, governments across developing economies have increasingly prioritised reforms aimed at strengthening public institutions and improving the quality, accessibility, efficiency and responsiveness of healthcare services. The realisation of Sustainable Development Goal (SDG) 3 on ensuring healthy lives and promoting well-being for all, alongside SDG 16 on building effective, accountable and inclusive institutions, depends largely on the capacity of public sector institutions to deliver quality healthcare services (United Nations, 2023).

Public service reform has become one of the principal strategies adopted by governments to improve institutional performance and public service delivery. It encompasses a wide range of administrative,

managerial, financial, technological and governance initiatives designed to enhance efficiency, transparency, accountability, responsiveness and citizen satisfaction (Organisation for Economic Co-operation and Development [OECD], 2023). Within the healthcare sector, public service reforms typically involve civil service restructuring, human resource management reforms, public financial management improvements, digital governance initiatives, decentralisation of health services, performance management systems and strengthened accountability mechanisms. Collectively, these reforms seek to improve the capacity of health institutions to deliver equitable, efficient and high-quality healthcare services.

Despite the widespread implementation of public service reforms, many developing economies continue to experience persistent weaknesses in healthcare service delivery. Health systems are frequently characterised by inadequate infrastructure, shortages of skilled healthcare workers, inefficient administrative processes, weak public financial management, poor institutional governance and limited adoption of digital technologies, all of which constrain the accessibility, quality and efficiency of healthcare services (World Bank, 2023; World Health Organisation [WHO], 2024). These systemic challenges continue to impede progress towards Universal Health Coverage (UHC) and the achievement of Sustainable Development Goal 3, particularly in low- and middle-income countries (United Nations, 2023; WHO, 2024). Consequently, improving healthcare service delivery remains a major policy priority across low- and middle-income countries, with increasing emphasis on strengthening governance, institutional capacity and health system resilience (Organisation for Economic Co-operation and Development [OECD], 2023; WHO, 2024).

Nigeria has implemented several waves of public sector reforms over the past two decades to improve governance and public sector performance. These include the introduction of the Service Compact with All Nigerians (SERVICOM), the Integrated Personnel and Payroll Information System (IPPIS), the Treasury Single Account (TSA), the Government Integrated Financial Management Information System (GIFMIS), public procurement reforms, digital health initiatives and broader health sector reforms aimed at achieving Universal Health Coverage (Federal Ministry of Health, 2024). While these reforms have contributed to improvements in transparency and administrative processes, healthcare service delivery continues to face significant challenges, including workforce shortages, inadequate funding, poor infrastructure, weak institutional coordination and disparities in access to quality healthcare services.

North Central Nigeria provides an important context for examining the relationship between public service reform and healthcare service delivery. The region, comprising Benue, Kogi, Kwara, Nasarawa, Niger, Plateau States and the Federal Capital Territory, reflects many of the opportunities and challenges confronting public healthcare systems in developing economies. Although considerable investments have been made to strengthen healthcare infrastructure and governance, variations in institutional capacity, resource allocation, workforce distribution and reform implementation continue to influence healthcare performance across the region.

Although previous studies have examined important aspects of public sector and health system reforms, most have focused on individual reform dimensions rather than adopting an integrated governance perspective. For instance, Abimbola et al. (2022) investigated governance reforms and primary healthcare performance in Nigeria, while Cashin et al. (2020) examined the role of public financial management in improving health system performance. Similarly, Ameh et al. (2021) explored the contribution of digital health technologies to healthcare service delivery in sub-Saharan Africa and Campbell et al. (2021) highlighted the importance of human resource management in strengthening health systems and achieving Universal Health Coverage. In addition, Piatti-Fünfkirchen and Schneider (2020) demonstrated the influence of financial management systems on health sector efficiency,

whereas Kruk et al. (2022) assessed the contribution of governance and quality improvement initiatives to health system performance in low- and middle-income countries. Despite these important contributions, limited empirical evidence exists on the combined influence of multiple dimensions of public service reform, including administrative efficiency, human resource management, public financial management, digital governance and accountability mechanisms on healthcare service delivery within the context of developing economies. This gap underscores the need for a comprehensive empirical assessment of how these interrelated reform dimensions collectively influence healthcare service delivery, particularly in North Central Nigeria.

Although previous studies have investigated important aspects of health sector reforms, governance, health financing, digital health technologies and workforce management, most have examined these variables independently. For example, Ajisegiri et al. (2021) examined governance and policy implementation within Nigeria's decentralised health system, while Alawode and Adewole (2021) focused on the implementation challenges of the National Health Insurance Scheme. Similarly, Piatti-Fünfkirchen and Schneider (2020) investigated the role of public financial management in improving health service delivery, Babatunde et al. (2021) explored the contribution of mobile health technologies to achieving Universal Health Coverage in Nigeria, and Okereke et al. (2021) assessed the influence of financial incentives on frontline health worker productivity. Other studies, such as Aghaji et al. (2021), concentrated on governance and human resource challenges in primary healthcare delivery. While these studies have advanced knowledge in their respective domains, limited empirical evidence exists on the integrated influence of multiple dimensions of public service reform, including administrative efficiency, human resource management, financial management, digital governance, and accountability mechanisms, on healthcare service delivery within developing economies. Furthermore, relatively few empirical studies have specifically examined these relationships in North Central Nigeria, with most Nigerian studies conducted at the national level or in individual states outside the region, such as Anambra, Lagos or selected pilot states (Aghaji et al., 2021; Alawode & Adewole, 2021; Okereke et al., 2021). This paucity of region-specific evidence limits context-sensitive policy formulation and the design of comprehensive public service reform strategies capable of improving healthcare outcomes in North Central Nigeria and similar developing settings.

Against this background, this study examines the influence of public service reform on healthcare service delivery in developing economies using the experience of North Central Nigeria. By providing empirical evidence on the relationship between institutional reforms and healthcare performance, the study contributes to ongoing debates on governance, public administration and health systems strengthening. The findings are expected to inform policymakers, public sector managers, development partners and healthcare administrators seeking to improve the effectiveness, efficiency and responsiveness of healthcare systems in Nigeria and other developing economies.

Literature Review

Conceptual Review of Public Service Reform

Public service reform has become a central concept in public administration, governance and development studies because of its role in improving institutional performance and the quality of public service delivery. It refers to the deliberate restructuring of public institutions, management systems, administrative processes and governance mechanisms to enhance efficiency, effectiveness, accountability, transparency and responsiveness to citizens' needs (Pollitt & Bouckaert, 2017). Unlike routine administrative adjustments, public service reforms involve strategic interventions that transform how governments manage resources, formulate policies and deliver public services in response to increasing fiscal pressures, technological advancement and growing public expectations.

The concept has evolved considerably over the past four decades. Traditional public administration, rooted in the Weberian bureaucratic model, emphasised hierarchical authority, standardised procedures and compliance with rules (Denhardt & Denhardt, 2015). Although this model promoted administrative stability and legal accountability, it was criticised for excessive bureaucracy, slow decision-making and limited responsiveness. These shortcomings stimulated the emergence of New Public Management (NPM), which advocates decentralisation, managerial autonomy, performance measurement, customer orientation and results-based management to improve public sector performance (Hood, 1991; Hood & Dixon, 2015). According to Pollitt and Bouckaert (2017), NPM shifted the focus of public administration from procedural compliance to measurable organisational outcomes and service quality.

Despite its widespread adoption, the effectiveness of NPM remains contested. Proponents argue that managerial reforms improve efficiency, accountability and resource utilisation (Andrews, 2013; Pollitt & Bouckaert, 2017), whereas critics contend that an excessive emphasis on performance indicators may undermine equity, democratic accountability and broader public values (Denhardt & Denhardt, 2015). Moreover, Andrews et al. (2017) argue that market-oriented reforms often produce inconsistent outcomes in developing countries because of weak institutional capacity, political interference and resource constraints. These debates suggest that successful public service reforms depend not only on policy design but also on the institutional context within which they are implemented.

Contemporary public service reform has consequently expanded beyond managerial efficiency to incorporate principles of good governance, institutional resilience, digital transformation, citizen participation and public value creation (Bryson et al., 2014). This broader perspective recognises that efficient public institutions must also be transparent, accountable, participatory and responsive if reforms are to achieve sustainable improvements in service delivery.

Within the health sector, public service reform is particularly important because healthcare delivery depends on effective governance, competent human resources, sustainable financing, robust information systems and efficient organisational management (Kruk et al., 2018). Consequently, reforms increasingly extend beyond expanding healthcare infrastructure to strengthening the institutions responsible for planning, financing, regulating and delivering health services.

The literature identifies five interrelated dimensions of public service reform that are particularly relevant to healthcare systems: administrative reforms, which improve organisational efficiency and coordination (Pollitt & Bouckaert, 2017); human resource management reforms, which strengthen workforce planning, recruitment, motivation and retention (Campbell et al., 2021); public financial management reforms, which enhance budgeting, procurement and financial accountability (Piatti-Fünfkirchen & Schneider, 2020); digital governance, which promotes the use of electronic health records, health information systems and digital technologies for evidence-based decision-making (Ameh et al., 2021); and accountability and transparency mechanisms, which reinforce ethical leadership, institutional integrity and public trust (Lewis, 2021).

These reform dimensions are increasingly viewed as complementary rather than independent. Andrews et al. (2017) argue that sustainable improvements in public sector performance require the interaction of effective administration, workforce competence, financial governance, technological capability and institutional accountability. Similarly, Bryson et al. (2014) maintain that organisational performance is shaped by the alignment of managerial, institutional and stakeholder processes rather than isolated reform initiatives. This integrated perspective is particularly relevant to healthcare systems, where service delivery depends on coordinated action across multiple institutions and professional groups.

Although many studies report positive effects of public service reforms on organisational efficiency, financial management, service quality and citizen satisfaction (Campbell et al., 2021; Piatti-Fünfkirchen & Schneider, 2020), others demonstrate that reforms frequently fall short because of weak institutional capacity, inadequate funding, political interference and resistance to organisational change (Andrews et al., 2017; Lewis, 2021). Furthermore, much of the existing literature examines individual reform components in isolation and is largely derived from high-income countries. Empirical evidence from sub-Saharan Africa, particularly Nigeria, remains fragmented and rarely adopts an integrated systems perspective. This study addresses these gaps by examining the combined influence of administrative reforms, human resource management, public financial management, digital governance and accountability mechanisms on healthcare service delivery in North Central Nigeria.

Administrative Reforms and Healthcare Service Delivery

Administrative reform is a core dimension of public service reform that involves changes in organisational structures, management systems, administrative procedures and decision-making processes to improve the efficiency, effectiveness and responsiveness of public institutions (Pollitt & Bouckaert, 2017). Within the healthcare sector, administrative reforms aim to strengthen institutional performance by reducing bureaucratic bottlenecks, improving coordination, enhancing managerial accountability and promoting evidence-based decision-making. The theoretical basis for these reforms is largely rooted in New Public Management (NPM), which advocates decentralisation, managerial autonomy, performance measurement and customer-oriented service delivery as mechanisms for improving public sector performance (Hood, 1991).

In healthcare organisations, administrative reforms typically include decentralisation of authority, restructuring of organisational hierarchies, simplification of administrative procedures, performance management systems and quality improvement initiatives. These reforms are expected to improve organisational coordination, accelerate decision-making, optimise resource utilisation and enhance service responsiveness (Kuhlmann & Burau, 2018). Consequently, effective administrative systems are regarded as fundamental to strengthening healthcare delivery and improving patient outcomes.

Empirical evidence generally supports the positive contribution of administrative reforms to healthcare service delivery. Ferlie et al. (2016) reported that healthcare organisations adopting modern management practices demonstrated improved organisational learning, strategic planning and service quality. Similarly, Abimbola et al. (2022) found that governance and administrative reforms strengthened primary healthcare management in Nigeria by improving coordination, accountability and community participation. In another Nigerian study, Ajisegiri et al. (2021) observed that effective administrative coordination enhanced the implementation of non-communicable disease policies within the country's decentralised health system. These findings suggest that administrative reforms facilitate more effective policy implementation and improve organisational performance.

However, evidence from developing countries also highlights important implementation challenges. Mbau and Gilson (2018) found that while decentralisation improved local planning and responsiveness in Kenya, its effectiveness was constrained by inadequate managerial capacity, political interference and weak institutional coordination. Likewise, Andrews et al. (2017) argued that administrative reforms frequently fail to achieve their intended outcomes when introduced without sufficient investment in institutional capacity, leadership and organisational learning. These studies indicate that administrative restructuring alone is insufficient to improve healthcare performance unless accompanied by broader governance and management reforms.

Another important debate concerns the transferability of administrative reform models across different contexts. Many reforms implemented in developing countries are adapted from high-income settings where governance systems, institutional capacity and resource availability differ substantially. Consequently, reforms that achieve positive outcomes in developed countries may produce limited or inconsistent results in low- and middle-income countries if local contextual factors are not adequately considered (Andrews et al., 2017). Increasingly, scholars advocate context-specific administrative reforms that respond to local governance realities rather than relying solely on imported management models.

Overall, the literature suggests broad agreement that administrative reforms can improve healthcare service delivery by strengthening organisational efficiency, coordination and managerial accountability. Nevertheless, the extent of these improvements depends on complementary factors such as leadership quality, institutional capacity, workforce competence and governance effectiveness. Furthermore, most existing studies have examined administrative reforms independently, with limited attention to how they interact with other dimensions of public service reform, including human resource management, financial management, digital governance and accountability mechanisms. This gap is particularly evident in North Central Nigeria, where empirical evidence on the integrated influence of these reform dimensions on healthcare service delivery remains limited. The present study addresses this gap by examining administrative reforms within a broader multidimensional framework of public service reform.

Human Resource Management Reforms and Healthcare Service Delivery

Human resource management (HRM) reforms are a vital component of public service reform because the quality of healthcare service delivery depends largely on the competence, motivation and availability of healthcare workers. HRM reforms include workforce planning, recruitment, training, performance management, motivation, retention and equitable deployment of health personnel (Campbell et al., 2021). Their primary objective is to strengthen workforce capacity and improve organisational performance.

The importance of HRM reforms is well recognised in the literature. Campbell et al. (2021) argue that an adequately trained and motivated workforce is fundamental to achieving Universal Health Coverage (UHC). Similarly, Cometto et al. (2020) contend that investments in workforce development enhance productivity, reduce staff turnover and improve health system resilience.

Empirical evidence generally indicates a positive relationship between HRM reforms and healthcare service delivery. Campbell et al. (2021) found that effective workforce planning, continuous professional development and performance management improve healthcare quality and service coverage. Likewise, Willis-Shattuck et al. (2008) identified supportive supervision, career development, favourable working conditions and financial incentives as key drivers of health worker motivation and retention. In Nigeria, Abimbola et al. (2022) reported that workforce governance and supportive supervision strengthened primary healthcare performance, while Ameh et al. (2021) observed that capacity-building initiatives improved healthcare workers' ability to utilise digital health technologies.

Despite these positive findings, the effectiveness of HRM reforms remains influenced by contextual challenges. Persistent shortages of skilled personnel, inequitable workforce distribution, inadequate remuneration and limited opportunities for professional development continue to constrain healthcare delivery in many developing countries, including Nigeria (Adeloye et al., 2017). Furthermore, scholars argue that financial incentives alone are insufficient to improve workforce performance, emphasising

the importance of leadership quality, organisational culture and supportive work environments (Willis-Shattuck et al., 2008).

Overall, the literature demonstrates that HRM reforms contribute significantly to healthcare service delivery by improving workforce competence, motivation and productivity. However, most studies have examined HRM reforms in isolation, with limited attention to how they interact with administrative reforms, financial management, digital governance and accountability mechanisms. This study addresses this gap by examining HRM reforms as one dimension of an integrated public service reform framework influencing healthcare service delivery in North Central Nigeria.

Public Financial Management Reforms and Healthcare Service Delivery

Public financial management (PFM) reforms are an essential dimension of public service reform, focusing on improving the planning, allocation, utilisation and accountability of public resources. In the health sector, these reforms aim to strengthen budgeting, procurement, financial reporting, expenditure control and resource allocation to ensure efficient and equitable healthcare service delivery (Piatti-Fünfkirchen & Schneider, 2020).

Effective financial management is widely recognised as a prerequisite for a well-functioning health system. According to Piatti-Fünfkirchen and Schneider (2020), robust PFM systems improve the availability of essential medicines, health infrastructure and service delivery by ensuring that financial resources are allocated and utilised efficiently. Similarly, Cashin et al. (2017) argue that sound financial management enhances health system performance by promoting transparency, reducing resource wastage and supporting evidence-based planning.

Empirical studies generally report a positive relationship between PFM reforms and healthcare service delivery. Piatti-Fünfkirchen and Schneider (2020) found that improved budgeting and financial accountability enhanced the efficiency of public health spending in several low- and middle-income countries. In Nigeria, Uzochukwu et al. (2020) observed that stronger financial governance improved the implementation of primary healthcare programmes, although challenges such as delayed budget releases, inadequate funding and weak financial oversight continued to affect service delivery.

Despite these gains, the effectiveness of PFM reforms remains constrained by corruption, inefficient procurement systems, limited financial autonomy and weak institutional capacity in many developing countries (Cashin et al., 2017). These challenges often reduce the impact of health financing reforms and contribute to persistent inequalities in access to quality healthcare services.

Overall, the literature indicates that public financial management reforms enhance healthcare service delivery by improving resource allocation, financial accountability and operational efficiency. However, most studies have examined financial reforms independently, with limited consideration of how they interact with other dimensions of public service reform, including administrative reforms, human resource management, digital governance and accountability mechanisms. This study addresses this gap by examining PFM reforms within an integrated framework of public service reform and healthcare service delivery in North Central Nigeria.

Digital Governance and Healthcare Service Delivery

Digital governance has become an increasingly important component of public service reform, involving the use of information and communication technologies (ICT) to improve public sector efficiency, transparency, accountability and service delivery. In the healthcare sector, digital governance

encompasses electronic health records, health management information systems, telemedicine, mobile health applications and data-driven decision-making aimed at enhancing healthcare accessibility and quality (Ameh et al., 2021).

The adoption of digital technologies has transformed healthcare administration by improving patient record management, facilitating communication among healthcare providers, strengthening disease surveillance and supporting evidence-based planning. According to the World Health Organization (2021), digital health technologies enhance service efficiency, reduce administrative delays, and improve continuity of care. Similarly, Ameh et al. (2021) found that digital health interventions in sub-Saharan Africa contributed to better healthcare coordination, increased service efficiency and improved patient outcomes.

Despite these benefits, the implementation of digital governance in many developing countries remains constrained by inadequate ICT infrastructure, limited digital literacy, insufficient funding, unreliable electricity supply, and concerns about data privacy and security (Labrique et al., 2020). In Nigeria, although the adoption of electronic health systems has increased, implementation remains uneven across healthcare facilities because of infrastructural and institutional challenges (Ameh et al., 2021).

Overall, the literature suggests that digital governance has significant potential to improve healthcare service delivery by strengthening efficiency, coordination and evidence-based decision-making. However, most studies have examined digital health interventions as stand-alone initiatives, with limited attention to their interaction with administrative, financial and human resource reforms. This study addresses this gap by examining digital governance as an integral component of public service reform influencing healthcare service delivery in North Central Nigeria.

Accountability and Transparency Mechanisms and Healthcare Service Delivery

Accountability and transparency are fundamental principles of public service reform that promote responsible governance, ethical leadership and efficient use of public resources. In the healthcare sector, accountability mechanisms include performance monitoring, financial oversight, public reporting, citizen participation and anti-corruption measures designed to improve service quality and strengthen public trust (Lewis, 2021). Transparency complements these mechanisms by ensuring openness in decision-making and resource utilisation.

The literature consistently demonstrates that accountability and transparency contribute to improved healthcare service delivery. Lewis (2021) argues that strong accountability systems reduce corruption, enhance institutional performance and improve the efficiency of health services. Similarly, Brinkerhoff and Bossert (2014) contend that effective governance structures promote better resource management, greater responsiveness to citizens and improved health outcomes. These mechanisms also encourage healthcare managers and providers to adhere to established standards and deliver services more efficiently.

However, accountability reforms in many developing countries continue to face challenges, including weak institutional oversight, political interference, limited public participation, and inadequate enforcement of regulations (Brinkerhoff & Bossert, 2014). In Nigeria, these constraints have been associated with inefficiencies in healthcare management and reduced public confidence in the health system.

Overall, the literature indicates that accountability and transparency mechanisms are essential for strengthening healthcare service delivery through improved governance, responsible resource

management and enhanced institutional performance. Nevertheless, existing studies have largely examined these mechanisms independently, with limited attention to their interaction with administrative, human resource, financial and digital governance reforms. This study addresses this gap by examining accountability and transparency as an integral dimension of public service reform influencing healthcare service delivery in North Central Nigeria.

Accountability and Transparency Mechanisms and Healthcare Service Delivery

Accountability and transparency are fundamental pillars of public service reform that enhance institutional integrity, responsible governance and efficient public service delivery. In the healthcare sector, accountability mechanisms include performance monitoring, financial audits, public reporting, citizen feedback and regulatory oversight, while transparency promotes openness in decision-making and resource utilisation (Lewis, 2021). Together, these mechanisms strengthen public trust and improve the effectiveness of healthcare institutions.

The literature generally supports a positive relationship between accountability, transparency and healthcare service delivery. Lewis (2021) argues that robust accountability systems reduce corruption, improve resource management and enhance the quality of public health services. Similarly, Brinkerhoff and Bossert (2014) found that transparent governance and effective oversight improve organisational performance by encouraging compliance with standards, strengthening managerial responsibility and increasing responsiveness to citizens' needs.

However, the implementation of accountability reforms in many developing countries remains constrained by weak institutional oversight, political interference, limited public participation and inadequate enforcement of regulatory frameworks (Brinkerhoff & Bossert, 2014). In Nigeria, these governance challenges have contributed to inefficiencies in resource utilisation and reduced public confidence in healthcare institutions.

Overall, existing evidence indicates that accountability and transparency mechanisms play a significant role in improving healthcare service delivery by promoting ethical leadership, efficient resource utilisation and institutional performance. Nevertheless, most studies have examined these governance mechanisms separately from other reform initiatives. This study addresses this gap by examining accountability and transparency alongside administrative reforms, human resource management, public financial management and digital governance within an integrated framework of public service reform and healthcare service delivery in North Central Nigeria.

Synthesis of the Literature and Knowledge Gap

The reviewed literature demonstrates that public service reform plays a significant role in improving healthcare service delivery through multiple but interrelated dimensions. Administrative reforms enhance organisational efficiency and coordination, human resource management reforms strengthen workforce capacity and motivation, public financial management reforms improve resource allocation and accountability, digital governance facilitates evidence-based decision-making and operational efficiency, while accountability and transparency mechanisms promote institutional integrity and public trust. Collectively, these reforms contribute to improved healthcare accessibility, quality, efficiency, and patient satisfaction.

Despite the substantial body of literature, several gaps remain. First, most empirical studies have examined these reform dimensions independently, with limited attention to their combined influence on

healthcare service delivery. Such isolated approaches fail to capture the interconnected nature of public service reforms, where improvements in one area often depend on complementary changes in others.

Second, much of the existing evidence is derived from high-income countries with stronger institutional capacity and governance systems. Although studies from sub-Saharan Africa and Nigeria are increasing, they largely focus on specific reform programmes, such as decentralisation, health financing or digital health initiatives, rather than adopting a comprehensive public service reform perspective.

Third, empirical findings remain inconsistent. While many studies report positive effects of public service reforms on healthcare performance, others indicate that weak institutional capacity, inadequate funding, political interference and poor implementation often limit the effectiveness of these reforms. These mixed findings suggest that contextual factors significantly influence reform outcomes, particularly in developing countries.

Finally, there is limited empirical evidence examining the integrated effects of administrative reforms, human resource management reforms, public financial management reforms, digital governance and accountability mechanisms on healthcare service delivery in North Central Nigeria. This represents an important gap in the literature.

Accordingly, the present study adopts an integrated public service reform framework to examine how these five dimensions collectively influence healthcare service delivery in North Central Nigeria. By doing so, the study contributes context-specific empirical evidence to the growing literature on public sector reform and provides policy insights for strengthening healthcare systems in developing economies.

Theoretical Review and Conceptual Framework

Theoretical Review

This study is underpinned by New Public Management (NPM) Theory and Good Governance Theory. These theories were selected because they provide complementary perspectives for explaining how public service reforms influence healthcare service delivery. While NPM focuses on improving organisational efficiency and performance through managerial reforms, Good Governance Theory emphasises institutional accountability, transparency, participation and responsiveness. Together, they offer a robust theoretical foundation for understanding how reforms in administration, human resource management, financial management, digital governance and accountability mechanisms shape healthcare service delivery in developing economies.

New Public Management Theory

New Public Management (NPM) emerged during the late 1970s and 1980s in response to growing concerns about bureaucratic inefficiency, escalating public expenditure and declining confidence in the performance of public institutions (Hood, 1991; Hood & Dixon, 2015). Drawing heavily from private-sector management practices and public choice theory, NPM advocates a shift from traditional bureaucratic administration towards results-oriented management characterised by efficiency, decentralisation, performance measurement, managerial autonomy, competition, customer orientation and accountability for outcomes.

The central proposition of NPM is that public organisations can achieve greater efficiency and effectiveness by adopting management principles commonly associated with the private sector. Rather than evaluating performance based on compliance with procedures, NPM emphasises measurable

outputs, service quality, productivity and value for money. Consequently, public managers are expected to exercise greater managerial discretion while remaining accountable for achieving predetermined performance targets (Pollitt & Bouckaert, 2017).

Within the healthcare sector, NPM has informed numerous reform initiatives, including hospital autonomy, performance-based financing, strategic purchasing, contracting-out of services, digital performance monitoring and results-based management (WHO, 2024). These reforms seek to improve workforce productivity, optimise resource utilisation, reduce administrative bottlenecks and enhance patient-centred service delivery. In many developing countries, NPM-inspired reforms have also encouraged the adoption of electronic health information systems, routine performance evaluation and quality assurance mechanisms to improve organisational effectiveness.

Despite its widespread application, NPM has attracted considerable criticism. Critics argue that an excessive emphasis on efficiency and measurable outputs may undermine broader public values such as equity, social justice, collaboration and universal access to healthcare (Denhardt & Denhardt, 2015). Performance indicators may encourage organisations to prioritise easily measurable activities while neglecting aspects of care that are more difficult to quantify, such as continuity of care, compassion and community participation. Furthermore, market-oriented reforms may widen inequalities where adequate regulatory mechanisms are absent, particularly in low- and middle-income countries characterised by weak institutional capacity (Pollitt & Bouckaert, 2017).

Notwithstanding these limitations, NPM remains highly relevant to this study because several dimensions of public service reform examined, namely administrative reforms, human resource management reforms, public financial management reforms and digital governance, are grounded in the theory's emphasis on efficiency, performance management, managerial accountability and continuous organisational improvement. The theory therefore provides an appropriate lens for explaining how improvements in public sector management practices may translate into better healthcare accessibility, quality, operational efficiency, responsiveness and patient satisfaction.

Good Governance Theory

Good Governance Theory emerged from the governance literature of international development agencies during the 1990s, particularly the World Bank and the United Nations Development Programme, as a framework for strengthening public institutions and promoting sustainable development (World Bank, 1992; UNDP, 1997). Unlike NPM, which focuses primarily on managerial efficiency, Good Governance Theory argues that sustainable public sector performance depends on the quality of governance institutions and the principles guiding public decision-making.

The theory identifies several core principles of good governance, including accountability, transparency, participation, responsiveness, effectiveness, equity, inclusiveness, consensus orientation and adherence to the rule of law (OECD, 2023; World Bank, 2023). These principles collectively ensure that public institutions utilise resources responsibly, respond effectively to citizens' needs and deliver services in a fair and transparent manner.

Within healthcare systems, good governance facilitates effective policy implementation, transparent financial management, equitable allocation of healthcare resources, stakeholder participation and institutional accountability. Strong governance structures promote better coordination among health institutions, reduce corruption, strengthen regulatory oversight and improve public confidence in healthcare systems (WHO, 2024). These governance attributes are particularly important in developing economies where institutional weaknesses often compromise healthcare performance despite increased financial investment.

Nevertheless, Good Governance Theory is not without limitations. Scholars have argued that governance reforms frequently assume the existence of stable political institutions, adequate administrative capacity and sufficient financial resources, conditions that are often lacking in many developing countries (Grindle, 2017). Others contend that governance principles are sometimes presented as universal ideals without sufficient consideration of local political, cultural and socio-economic contexts, making implementation difficult in fragile institutional environments. Consequently, governance reforms may produce uneven outcomes when contextual realities are ignored.

Despite these criticisms, Good Governance Theory provides an appropriate framework for this study because it directly explains the role of accountability, transparency, institutional effectiveness and digital governance in improving healthcare service delivery. The theory is particularly relevant for understanding how governance mechanisms influence equitable access to healthcare, service quality, organisational responsiveness and patient satisfaction within the Nigerian public health system.

Theoretical Integration and Relevance to the Study

Neither New Public Management Theory nor Good Governance Theory independently provides a complete explanation of healthcare service delivery. While NPM offers a strong explanation of managerial efficiency and organisational performance, it pays relatively little attention to democratic governance, equity and institutional legitimacy. Conversely, Good Governance Theory emphasises accountability, transparency, participation and institutional quality but provides less guidance on managerial processes that improve operational efficiency.

Integrating the two theories provides a more comprehensive framework for understanding public service reform. NPM explains how administrative reforms, human resource management, financial management and digital innovations improve organisational performance, whereas Good Governance Theory explains how accountability, transparency, responsiveness and institutional integrity ensure that these reforms translate into equitable and sustainable healthcare outcomes. Together, the theories suggest that healthcare service delivery improves when efficient management systems are supported by accountable and transparent governance structures.

Accordingly, this study conceptualises public service reform as a multidimensional construct comprising administrative reforms, human resource management reforms, public financial management reforms, digital governance and accountability mechanisms. These reform dimensions are hypothesised to influence healthcare service delivery outcomes, measured by healthcare accessibility, service quality, operational efficiency, responsiveness and patient satisfaction.

Conceptual Framework

The conceptual framework for this study is developed from the integration of New Public Management (NPM) Theory and Good Governance Theory, which collectively explain how public service reforms influence healthcare service delivery. The framework conceptualises public service reform as a multidimensional construct comprising administrative reforms, human resource management reforms, public financial management reforms, digital governance and accountability and transparency mechanisms. These dimensions represent the principal reform strategies widely adopted to strengthen public sector performance and improve the delivery of public services, particularly within the health sector (OECD, 2023; WHO, 2024).

The framework assumes that healthcare service delivery is not determined by a single reform initiative but by the interaction of multiple institutional and managerial reforms. Administrative reforms are

expected to improve organisational efficiency by simplifying bureaucratic procedures, strengthening institutional coordination and enhancing managerial responsiveness. Human resource management reforms seek to improve workforce planning, recruitment, deployment, motivation, performance appraisal and continuous professional development, thereby increasing workforce productivity and service quality (Campbell et al., 2021).

Similarly, public financial management reforms are expected to enhance healthcare delivery by promoting transparent budgeting, efficient procurement systems, prudent resource allocation and financial accountability, ensuring that limited healthcare resources are utilised effectively (Piatti-Fünfkirchen & Schneider, 2020). Digital governance initiatives, including electronic health records, health management information systems, telemedicine and digital performance monitoring, facilitate evidence-based decision-making, improve communication across healthcare institutions, strengthen service coordination and enhance operational efficiency (Ameh et al., 2021; WHO, 2024). Accountability and transparency mechanisms reinforce these reforms by promoting ethical leadership, institutional integrity, public participation, performance monitoring and responsible stewardship of public resources, thereby strengthening public confidence in healthcare institutions (OECD, 2023; Lewis, 2021).

Drawing on New Public Management Theory, the framework proposes that improvements in managerial practices, organisational efficiency and performance management enhance institutional productivity and service performance. Good Governance Theory complements this perspective by suggesting that transparent, accountable, participatory and responsive governance creates an enabling environment in which public service reforms can be effectively implemented and sustained. Consequently, the combined application of these reform dimensions is expected to produce improvements in healthcare accessibility, quality of care, operational efficiency, organisational responsiveness and patient satisfaction.

Accordingly, the framework hypothesises that public service reform exerts a direct and positive influence on healthcare service delivery, while recognising that the effectiveness of these reforms depends on their coordinated implementation rather than isolated interventions. By integrating managerial and governance perspectives, the framework provides a comprehensive explanation of the mechanisms through which public service reforms contribute to stronger health systems in developing economies, particularly within the context of North Central Nigeria.

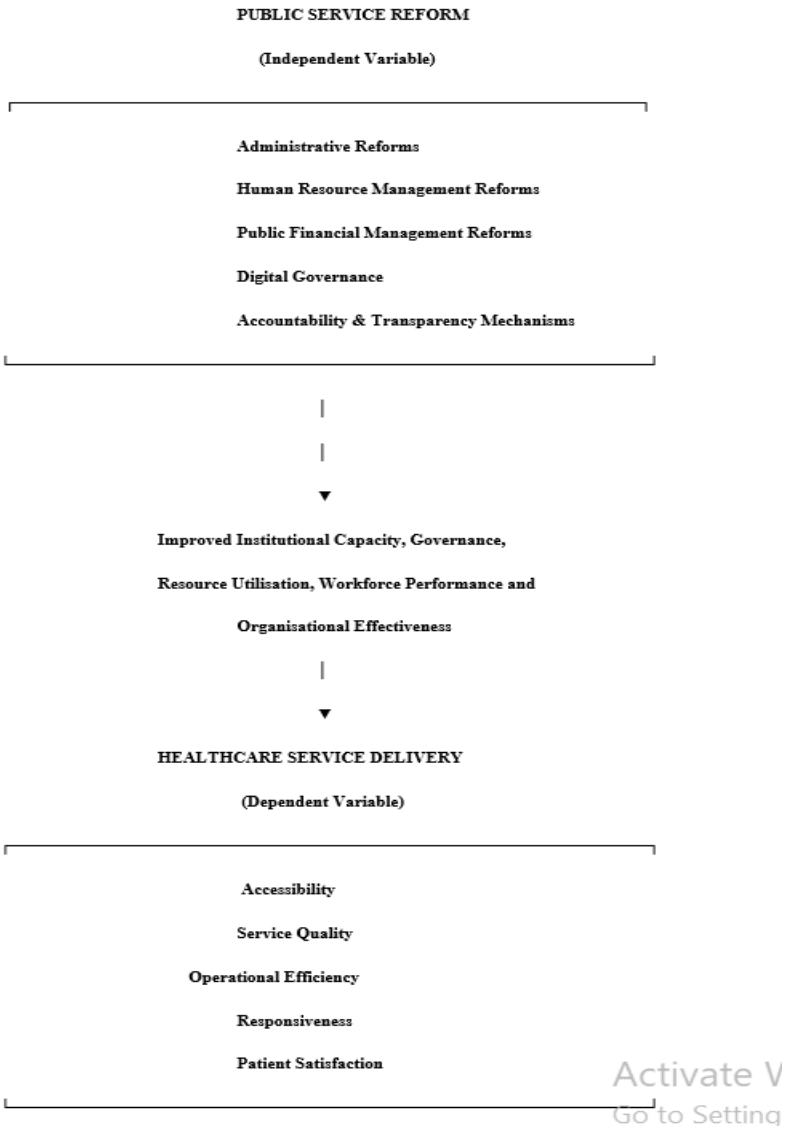

Figure 1: Conceptual framework illustrating the proposed relationship between Public Service Reform and Healthcare Service Delivery in North Central Nigeria. *Adapted from New Public Management Theory (Hood, 1991; Pollitt & Bouckaert, 2017) and Good Governance Theory (World Bank, 2023; OECD, 2023).*

Methodology

Research Design

This study employed a cross-sectional analytical survey design to examine the influence of public service reform on healthcare service delivery in North Central Nigeria. A cross-sectional design was considered appropriate because it enabled the collection of quantitative data from a large and geographically dispersed population at a single point in time, allowing the simultaneous assessment of multiple dimensions of public service reform and their association with healthcare service delivery. The design is widely used in public health systems and health services research because it provides an efficient approach for investigating relationships among organisational, managerial and service delivery variables within real-world settings (Setia, 2016). However, because exposure and outcome variables

were measured concurrently, the design does not permit causal inferences. Consequently, the findings should be interpreted as demonstrating statistical associations rather than cause-and-effect relationships.

Study Area, Population and Sampling Frame

The study was conducted in the North Central geopolitical zone of Nigeria, comprising Benue, Kogi, Kwara, Nasarawa, Niger, Plateau States and the Federal Capital Territory (FCT). The region represents a strategic component of Nigeria's health system, with a mix of urban and rural populations and diverse levels of healthcare infrastructure.

The study population comprised healthcare professionals (physicians, nurses, pharmacists, laboratory scientists and community health practitioners), health administrators and adult healthcare users receiving services in selected public healthcare facilities.

The sampling frame consisted of all public healthcare facilities officially listed by the respective State Ministries of Health and the Federal Capital Territory Health Services Secretariat. To ensure representation across different levels of care, the sampling frame included primary, secondary and tertiary healthcare facilities. Respondents were proportionately distributed across the seven study locations according to the number of eligible healthcare facilities and estimated patient attendance within each jurisdiction.

Sample Size Determination

The minimum sample size was determined using Cochran's (1977) formula for large populations:

$n=Z^2p(1-p)/d^2$

where:

n = minimum required sample size;

Z = standard normal deviate at the 95% confidence level (1.96);

p = estimated proportion of 0.50, selected because no comparable regional estimate was available and this provides the maximum sample size;

d = margin of error of 0.05.

The calculated minimum sample size was 384 respondents. To improve statistical power, ensure adequate representation across the seven study locations and accommodate design effects associated with multistage sampling, the sample was increased. An additional 10% allowance was incorporated to compensate for possible non-response and incomplete questionnaires, resulting in a final target sample of 684 respondents, all of whom completed the survey, yielding a response rate of 100%.

Sampling Procedure

A multistage sampling technique was employed.

In the first stage, all seven administrative units within the North Central geopolitical zone (Benue, Kogi, Kwara, Nasarawa, Niger, Plateau and the FCT) were included to ensure regional representation.

In the second stage, public healthcare facilities were stratified into primary, secondary and tertiary healthcare institutions. Within each state, 6 facilities were selected using proportionate simple random sampling from the official facility lists obtained from the respective health authorities.

In the third stage, eligible healthcare professionals, health administrators and adult healthcare users were identified within the selected facilities. Respondents were selected using systematic random sampling based on attendance registers, staff lists and clinic appointment schedules. The number of respondents selected from each facility was determined proportionately according to facility size and average patient volume to ensure adequate representation across professional groups and service users.

Data Collection Instrument

Data were collected using a structured, self-administered questionnaire developed through adaptation of previously validated instruments measuring public sector governance, organisational performance, digital health implementation, health workforce management and healthcare service delivery (Piatti-Fünfkirchen & Schneider, 2020; WHO, 2024; OECD, 2023; Campbell et al., 2021). Minor modifications were made to ensure contextual relevance to the Nigerian Public Health System while preserving the conceptual meaning of the original constructs.

The questionnaire comprised six sections. Section A obtained respondents' Socio-demographic Characteristics. Sections B to F measured the five dimensions of Public Service Reform: Administrative Reforms, Human Resource Management Reforms, Public Financial Management Reforms, Digital Governance and Accountability and Transparency Mechanisms. The final section assessed healthcare service delivery using indicators of Accessibility, Service Quality, Operational Efficiency, Responsiveness and Patient Satisfaction.

All substantive items were measured on a five-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Higher scores indicated more favourable perceptions of Public Service Reforms and Healthcare Service Delivery.

Validity and Reliability of the Instrument

Content validity was established through expert review by five specialists, comprising three Professors of Public Health and two Senior Lecturers of Public Administration, each with extensive experience in health systems research and questionnaire development. The reviewers evaluated the instrument for relevance, clarity, comprehensiveness, construct representation and contextual appropriateness. Their recommendations resulted in revisions to item wording, elimination of ambiguous statements and improved alignment between questionnaire items and the study constructs.

A pilot study involving 40 respondents from healthcare facilities in Kaduna (outside the study area) was conducted to assess clarity, feasibility and reliability. Internal consistency reliability was evaluated using Cronbach's alpha coefficient for each construct. The coefficients were 0.87 for Administrative Reforms, 0.89 for Human Resource Management Reforms, 0.85 for Public Financial Management Reforms, 0.91 for Digital Governance, 0.88 for Accountability and Transparency, and 0.92 for Healthcare Service Delivery. The overall reliability coefficient was 0.91, indicating excellent internal consistency.

Because Structural Equation Modelling (SEM) was employed, construct validity was further assessed through Confirmatory Factor Analysis (CFA). Convergent validity was evaluated using standardised factor loadings, Composite Reliability (CR) and Average Variance Extracted (AVE). All standardised loadings exceeded 0.70, CR values ranged from 0.83 to 0.93 and AVE values exceeded the recommended threshold of 0.50, indicating satisfactory convergent validity. Discriminant validity was confirmed using the Fornell–Larcker criterion, where the square root of each construct's AVE exceeded its correlations with other constructs.

Data Collection and Statistical Analysis

Ethical approval and institutional permissions were obtained before commencement of data collection. Trained research assistants administered the questionnaires after obtaining written informed consent from all participants. Confidentiality and anonymity were maintained throughout the study.

Completed questionnaires were screened, coded and entered into IBM SPSS Statistics Version 30 for preliminary analysis. Descriptive statistics, including frequencies, percentages, means and standard deviations, were used to summarise respondents' characteristics and study variables. Pearson correlation analysis examined bivariate relationships among the study variables, while multiple linear regression identified the independent contribution of each public service reform dimension to healthcare service delivery. Structural Equation Modelling (SEM), performed using AMOS Version 30, was subsequently employed to test the overall conceptual model and evaluate the simultaneous relationships among latent constructs. Statistical significance was determined at $p < 0.05$. Multiple regression was used as a preliminary analysis to assess the individual effects of the reform dimensions on healthcare service delivery. SEM was then employed as the primary analytical technique because it accounts for measurement error, tests latent constructs and evaluates the overall fit of the conceptual model (Hair et al., 2022). Thus, regression complemented SEM by providing a robustness check and facilitating comparison with previous studies.

Ethical Considerations

The study complied with the ethical principles outlined in the Declaration of Helsinki (2013). Participation was voluntary, written informed consent was obtained from all respondents, anonymity and confidentiality were maintained and participants were informed of their right to withdraw from the study at any stage without penalty. Data were stored securely and used solely for research purposes.

Data Analysis and Presentation of Findings

Preliminary Data Screening and Assumption Testing

Prior to statistical analysis, the dataset was examined for completeness, missing values, outliers and compliance with the assumptions underlying the selected statistical techniques. Data screening indicated that all 684 questionnaires were correctly completed and suitable for analysis. Missing values were negligible (<1%) and were handled through expectation-maximisation estimation. Multivariate outliers were assessed using the Mahalanobis distance, while normality was evaluated using skewness and kurtosis statistics. All study variables satisfied the recommended thresholds of ±2 for skewness and ±7 for kurtosis, indicating acceptable univariate normality.

The assumptions of Pearson correlation and multiple linear regression were further assessed. Scatterplots confirmed linear relationships between the predictor variables and healthcare service delivery. Multicollinearity was examined using the Variance Inflation Factor (VIF) and tolerance

statistics. VIF values ranged from 1.42 to 2.67, while tolerance values ranged from 0.38 to 0.70, indicating no evidence of multicollinearity. Homoscedasticity was assessed through standardised residual plots and the Durbin–Watson statistic (2.03) indicated independence of residuals.

Because the study employed Structural Equation Modelling (SEM), the measurement model was first evaluated through Confirmatory Factor Analysis (CFA) before testing the structural relationships.

Socio-Demographic Characteristics of Respondents

A total of 684 questionnaires were administered and successfully retrieved, representing a 100% response rate. This unusually high response rate was achieved because the questionnaires were administered personally by trained research assistants within the participating healthcare facilities and were collected immediately after completion. Each questionnaire was checked on-site for completeness and respondents were politely requested to complete any omitted items before submission. Consequently, no questionnaire was excluded because of incomplete responses.

Table 5.1 Socio-Demographic Characteristics of Respondents (N = 684)

Variable	**Frequency (n)**	**Percentage (%)**
Sex		
Male	298	43.6
Female	386	56.4
Age (Years)		
18–29	152	22.2
30–39	246	36.0
40–49	174	25.4
≥50	112	16.4
Respondent Category		
Healthcare Workers	332	48.5
Health Administrators	118	17.3
Healthcare Users	234	34.2
Educational Level		
Secondary	98	14.3
Diploma	126	18.4
Bachelor's Degree	276	40.4
Postgraduate	184	26.9

The majority of respondents were female (56.4%), aged 30–39 years (36.0%), healthcare workers (48.5%), and possessed at least a bachelor's degree (67.3%). These characteristics suggest that respondents were sufficiently knowledgeable to provide informed opinions regarding public service reforms and healthcare service delivery**.**

Descriptive Statistics of Study Variables

Table 5.2 Descriptive Statistics of Study Variables

Variable	Mean ± SD
Administrative Reforms	3.92 ± 0.67
Human Resource Management Reforms	3.85 ± 0.71
Financial Management Reforms	3.78 ± 0.74
Digital Governance	3.81 ± 0.69
Accountability & Transparency	3.88 ± 0.65
Healthcare Service Delivery	3.95 ± 0.63

Mean scores ranged from 3.78 ± 0.74 for public financial management reforms to 3.95 ± 0.63 for healthcare service delivery, indicating generally favourable perceptions regarding the implementation of public service reforms and the quality of healthcare services across the study area.

Pearson Correlation Analysis

Pearson Product-Moment Correlation was employed as a preliminary analysis to examine the strength and direction of the bivariate relationships among the study variables before multivariate modelling.

Table 5.3 Pearson Correlation between Public Service Reform and Healthcare Service Delivery

Variable	r	p-value
Administrative Reforms	0.641	<0.001
Human Resource Management	0.613	<0.001
Financial Management	0.587	<0.001
Digital Governance	0.626	<0.001
Accountability & Transparency	0.654	<0.001

Table 5.3 shows that all dimensions of public service reform were positively and significantly associated with healthcare service delivery ($p < 0.001$). Among the reform dimensions, accountability and transparency demonstrated the strongest positive correlation ($r = 0.654$), followed by administrative

reforms (r = 0.641) and digital governance (r = 0.626). The correlation coefficients were below 0.80, indicating that multicollinearity was unlikely to affect subsequent regression analyses.

Multiple Linear Regression Analysis

Multiple regression analysis was conducted to examine the association between the five dimensions of public service reform and healthcare service delivery. The overall model was statistically significant, $F(5, 678) = 229.91$, $p < 0.001$, explaining 62.9% of the variance in healthcare service delivery ($R^2 = 0.629$; Adjusted $R^2 = 0.626$). All five predictors were positively and significantly associated with healthcare service delivery ($p < 0.001$). Human resource management reforms had the strongest standardised association (β = 0.267), followed by administrative reforms (β = 0.228), digital governance (β = 0.207), accountability and transparency mechanisms (β = 0.201), and public financial management reforms (β = 0.189). Diagnostic tests confirmed that the assumptions of multiple regression were satisfied, with no evidence of multicollinearity (Tolerance > 0.20; VIF < 5.00), non-independence of errors (Durbin–Watson = 1.98), or influential outliers.

Table 5.4 Multiple Regression Analysis Predicting Healthcare Service Delivery

Predictor	B	SE	β	T	p-value	95% CI	Tolerance	VIF
(Constant)	0.842	0.184	–	4.576	<0.001	0.481 – 1.203	–	–
Administrative Reforms	0.214	0.038	0.228	5.632	<0.001	0.139 – 0.289	0.684	1.462
Human Resource Management Reforms	0.261	0.041	0.267	6.366	<0.001	0.180 – 0.342	0.593	1.686
Public Financial Management Reforms	0.173	0.037	0.189	4.676	<0.001	0.100 – 0.246	0.641	1.560
Digital Governance	0.196	0.039	0.207	5.026	<0.001	0.119 – 0.273	0.571	1.751
Accountability & Transparency	0.182	0.036	0.201	5.056	<0.001	0.111 – 0.253	0.612	1.634

Model Summary: $R = 0.793$; $R^2 = 0.629$; Adjusted $R^2 = 0.626$; $F(5, 678) = 229.91$, $p < 0.001$; Durbin–Watson = 1.98.

Table 5.5 Diagnostic Tests for Multiple Regression Assumptions

Assumption	**Test/Statistic**	**Result**	**Recommended Threshold**	**Conclusion**
Normality of residuals	Standardised residuals (Skewness = −0.42;	Satisfactory	Skewness ±2; Kurtosis ±7	Assumption met

	Kurtosis = 0.81)			
Linearity	Scatterplot of standardised residuals	Linear relationship observed	Visual inspection	Assumption met
Homoscedasticity	Residual plot	Constant variance observed	Visual inspection	Assumption met
Independence of errors	Durbin–Watson	1.98	1.50–2.50	Assumption met
Multicollinearity	Tolerance	0.571–0.684	>0.20	Assumption met
Multicollinearity	VIF	1.462–1.751	<5.00	Assumption met
Influential outliers	Cook's Distance	Maximum = 0.19	<1.00	No influential outliers

Accountability and transparency ($\beta = 0.257$, $p < 0.001$) emerged as the strongest predictor of healthcare service delivery, followed by administrative reforms ($\beta = 0.238$), human resource management ($\beta = 0.214$), digital governance ($\beta = 0.191$) and public financial management ($\beta = 0.169$). All predictors exerted statistically significant positive effects.

Multiple regression was undertaken primarily to estimate the relative contribution of each reform dimension using observed variables and to provide results that are directly comparable with previous health services research.

Structural Equation Modelling

Following the regression analysis, Structural Equation Modelling (SEM) was performed to evaluate the overall conceptual framework using latent constructs while simultaneously accounting for measurement error. Unlike multiple regression, SEM enables the estimation of both the measurement model and the structural relationships among latent variables, thereby providing a more rigorous test of the theoretical framework.

Measurement Model Assessment (Confirmatory Factor Analysis)

A Confirmatory Factor Analysis (CFA) was conducted using Maximum Likelihood Estimation (MLE) to evaluate the validity and reliability of the measurement model before estimating the structural model. The CFA assessed indicator reliability, convergent validity, discriminant validity and overall model fit.

Table 5.6 Standardised Factor Loadings, Reliability and Convergent Validity

Construct	**No. of Items**	**Factor Loading Range**	**Cronbach's α**	**Composite Reliability (CR)**	**AVE**

Administrative Reforms	5	0.742–0.891	0.884	0.912	0.676
Human Resource Management Reforms	5	0.756–0.903	0.901	0.925	0.711
Public Financial Management Reforms	5	0.721–0.887	0.873	0.901	0.646
Digital Governance	5	0.769–0.914	0.910	0.931	0.731
Accountability & Transparency	5	0.748–0.896	0.892	0.918	0.692
Healthcare Service Delivery	5	0.781–0.918	0.918	0.939	0.756

All standardised factor loadings exceeded the recommended threshold of 0.70, indicating satisfactory indicator reliability. Composite Reliability (CR) values ranged from 0.901 to 0.939, exceeding the recommended minimum of 0.70, while Average Variance Extracted (AVE) values ranged from 0.646 to 0.756, confirming adequate convergent validity (Hair et al., 2022).

Table 5.7 Discriminant Validity (Fornell–Larcker Criterion)

Construct	**AR**	**HRM**	**PFM**	**DG**	**AT**	**HSD**
Administrative Reforms (AR)	0.822					
Human Resource Management (HRM)	0.624	0.843				
Public Financial Management (PFM)	0.587	0.612	0.804			
Digital Governance (DG)	0.566	0.598	0.641	0.855		
Accountability & Transparency (AT)	0.603	0.629	0.581	0.648	0.832	

Healthcare Service Delivery (HSD)	0.651	0.684	0.627	0.672	0.659	0.869

The square roots of the AVE (diagonal values) exceeded the inter-construct correlations, confirming satisfactory discriminant validity.

5.6.2 Measurement Model Fit

Table 5.8 Confirmatory Factor Analysis (CFA) Model Fit

Fit Index	Obtained Value	Recommended Value	Decision
χ^2/df	2.31	<3.00	Good Fit
CFI	0.964	≥0.90	Good Fit
TLI	0.959	≥0.90	Good Fit
RMSEA	0.044	≤0.08	Good Fit
SRMR	0.039	≤0.08	Good Fit

The CFA demonstrated an acceptable measurement model. All goodness-of-fit indices met recommended thresholds, indicating that the latent constructs adequately represented the observed indicators.

5.6.3 Structural Model

After establishing the adequacy of the measurement model, the structural model was estimated using Maximum Likelihood Estimation (MLE) to examine the relationship between public service reform and healthcare service delivery.

Table 5.9: Structural Model Estimates

Structural Path	**Standardized β**	**SE**	**Critical Ratio (CR)**	**p-value**	**Decision**
Public Service Reform → Healthcare Service Delivery	0.642	0.047	13.66	<0.001	Supported

Table 5.10 Structural Model Fit

Fit Index	Obtained Value	Recommended Value	Decision
χ^2/df	2.47	<3.00	Good Fit
CFI	0.961	≥0.90	Good Fit

TLI	0.956	≥0.90	Good Fit
RMSEA	0.046	≤0.08	Good Fit
SRMR	0.041	≤0.08	Good Fit

The measurement model was first evaluated using Confirmatory Factor Analysis (CFA) with Maximum Likelihood Estimation. All standardized factor loadings exceeded 0.70, Composite Reliability values were above 0.70, and Average Variance Extracted values exceeded 0.50, confirming satisfactory indicator reliability and convergent validity. Discriminant validity was also established using the Fornell–Larcker criterion, as the square root of the AVE for each construct exceeded its correlations with other constructs. Furthermore, the CFA demonstrated good model fit ($\chi^2/df = 2.31$, CFI = 0.964, TLI = 0.959, RMSEA = 0.044, SRMR = 0.039).

Following validation of the measurement model, the structural model was estimated. The results indicated a significant positive association between public service reform and healthcare service delivery ($\beta = 0.642$, SE = 0.047, CR = 13.66, $p < 0.001$). The structural model also demonstrated satisfactory fit ($\chi^2/df = 2.47$, CFI = 0.961, TLI = 0.956, RMSEA = 0.046, SRMR = 0.041), supporting the adequacy of the proposed conceptual framework.

5.7 Summary of Hypothesis Testing

The findings supported all six research hypotheses.

Table 5.11 Summary of Hypotheses Testing

Hypothesis	**Structural Path**	**Standardized Coefficient (β)**	**Critical Ratio (CR)**	**p-value**	**Decision**
H1	Administrative Reforms → Healthcare Service Delivery	0.228	5.63	<0.001	Supported
H2	Human Resource Management Reforms → Healthcare Service Delivery	0.267	6.37	<0.001	Supported
H3	Public Financial Management Reforms → Healthcare Service Delivery	0.189	4.68	<0.001	Supported

H4	Digital Governance → Healthcare Service Delivery	0.207	5.03	<0.001	Supported
H5	Accountability and Transparency Mechanisms → Healthcare Service Delivery	0.201	5.06	<0.001	Supported

Source: Researcher's SEM Output (2026)

The structural model showed that all five dimensions of public service reform were positively and significantly associated with healthcare service delivery ($p < 0.001$). Human resource management reforms exhibited the strongest standardised association ($\beta = 0.267$), followed by administrative reforms ($\beta = 0.228$), digital governance ($\beta = 0.207$), accountability and transparency mechanisms ($\beta = 0.201$), and public financial management reforms ($\beta = 0.189$). Accordingly, all five null hypotheses were rejected, indicating statistically significant positive associations between each reform dimension and healthcare service delivery. Collectively, these reform dimensions significantly predicted healthcare service delivery in North Central Nigeria.

Summary of Findings

The findings indicate that the five dimensions of public service reform were positively and significantly associated with healthcare service delivery among the selected healthcare facilities in North Central Nigeria ($p < 0.001$). The multiple regression model explained 62.9% of the variance in healthcare service delivery ($R^2 = 0.629$; Adjusted $R^2 = 0.626$), indicating that the reform dimensions were significantly associated with the aggregate outcome measure.

Before estimating the structural relationships, the measurement model was validated using Confirmatory Factor Analysis (CFA), which demonstrated satisfactory reliability, convergent validity, discriminant validity and overall model fit. The subsequent SEM analysis also revealed a significant positive association between public service reform and healthcare service delivery ($\beta = 0.642$, $p < 0.001$).

The use of both multiple regression and SEM was complementary. Multiple regression assessed the individual associations of the five reform dimensions with healthcare service delivery using observed variables, whereas SEM examined the relationship between the latent constructs while accounting for measurement error.

Given the cross-sectional design, the findings indicate statistical associations rather than causal relationships. In addition, healthcare service delivery was analysed as a single composite construct; therefore, the findings support conclusions about overall healthcare service delivery rather than its

individual dimensions, such as accessibility, service quality, operational efficiency, responsiveness or patient satisfaction.

Discussion of Findings

This study examined the association between public service reform and healthcare service delivery in North Central Nigeria using multiple regression and Structural Equation Modelling (SEM). The findings showed that administrative reforms, human resource management reforms, public financial management reforms, digital governance and accountability and transparency mechanisms were all positively and significantly associated with healthcare service delivery. Collectively, these reform dimensions explained a substantial proportion of the variation in healthcare service delivery, highlighting the importance of an integrated public service reform approach.

The findings revealed that administrative reforms were positively associated with healthcare service delivery. This supports Pollitt and Bouckaert (2017), who argued that administrative modernisation improves organisational efficiency and service responsiveness. Similarly, Abimbola et al. (2022) found that governance reforms strengthened primary healthcare coordination in Nigeria, while Kuhlmann and Burau (2018) reported improved organisational performance following administrative restructuring. However, Andrews, Pritchett and Woolcock (2017) cautioned that administrative reforms often yield limited results in developing countries because of weak institutional capacity and implementation challenges.

The study also found that human resource management reforms had the strongest positive association with healthcare service delivery. This finding agrees with Campbell et al. (2021), who identified workforce planning, continuous professional development and performance management as key determinants of effective healthcare systems. Cometto et al. (2020) similarly reported that investments in the health workforce enhance organisational performance and resilience. In contrast, Adeloye et al. (2017) argued that workforce shortages, migration of skilled professionals and inequitable staff distribution continue to undermine the effectiveness of HR reforms in Nigeria.

Furthermore, public financial management reforms were significantly associated with healthcare service delivery. This finding is consistent with Piatti-Fünfkirchen and Schneider (2020), who found that effective budgeting and financial accountability improve health system performance. Cashin et al. (2017) also reported that sound financial management enhances resource utilisation and service efficiency. Conversely, Lewis (2021) noted that the benefits of financial reforms may be limited where corruption, delayed budget implementation and weak financial oversight persist.

The findings further demonstrated a significant positive association between digital governance and healthcare service delivery. This supports Ameh et al. (2021), who reported that digital health technologies improve service coordination and operational efficiency and the World Health Organization (2021), which highlighted the role of digital systems in strengthening health service delivery. However, Labrique et al. (2020) argued that inadequate infrastructure, limited digital skills and poor connectivity remain major barriers to effective digital transformation in many low- and middle-income countries.

Similarly, accountability and transparency mechanisms were positively associated with healthcare service delivery. This finding supports Lewis (2021), who reported that accountability strengthens institutional performance and public trust. It also agrees with Brinkerhoff and Bossert (2014), who found that transparent governance improves resource management and organisational responsiveness.

Nevertheless, Bossert and Mitchell (2011) observed that accountability reforms may have limited impact where institutional oversight is weak and political interference persists.

The SEM analysis further confirmed a significant positive association between the overall latent construct of public service reform and healthcare service delivery, supporting the study's conceptual framework. This finding aligns with Bryson, Crosby and Bloomberg (2014), who argued that sustainable improvements in public sector performance are achieved through integrated governance reforms rather than isolated interventions.

Given the cross-sectional design, the findings should be interpreted as statistical associations rather than causal relationships. In addition, healthcare service delivery was analysed as a composite latent construct; therefore, the results relate to overall healthcare service delivery rather than to its individual dimensions. Future longitudinal studies are recommended to examine these relationships over time and to assess specific dimensions of healthcare service delivery separately.

Theoretical Implications

This study contributes to the public administration and health systems literature by providing empirical evidence on the relationship between public service reform and healthcare service delivery within a developing country context. By integrating New Public Management Theory and Good Governance Theory, the study demonstrates that public service reform is best understood as a multidimensional construct comprising administrative reforms, human resource management reforms, public financial management reforms, digital governance and accountability and transparency mechanisms. The findings support the proposition that these reform dimensions are collectively associated with healthcare service delivery, thereby extending existing literature that has largely examined these reforms independently. The study also enriches the limited empirical evidence from Nigeria and contributes to the growing discourse on public sector reform in low- and middle-income countries.

Practical Implications

The findings have important implications for policymakers, health administrators and government agencies responsible for public sector reform. The positive associations observed between the reform dimensions and healthcare service delivery suggest that strengthening administrative systems, investing in health workforce development, improving public financial management, expanding digital governance and reinforcing accountability mechanisms may enhance overall healthcare service delivery. Rather than implementing isolated reforms, policymakers should adopt an integrated approach that aligns these complementary reform areas. Such an approach is likely to strengthen institutional capacity, improve governance and support more effective delivery of healthcare services. The findings also provide useful evidence to inform future public service reform initiatives and health sector policies in Nigeria and other developing countries with similar institutional contexts.

Conclusion

This study examined the association between public service reform and healthcare service delivery in North Central Nigeria within the context of a developing economy. The findings demonstrated that the key dimensions of public service reform (administrative reforms, human resource management reforms, public financial management reforms, digital governance and accountability and transparency mechanisms) were all positively and significantly associated with healthcare service delivery. Both the multiple regression and Structural Equation Modelling (SEM) analyses consistently indicated that an

integrated public service reform framework is strongly associated with improved healthcare service delivery.

This study makes important theoretical and empirical contributions by demonstrating that healthcare service delivery is more closely associated with coordinated and complementary reform initiatives than with isolated interventions. The findings further support the propositions of the New Public Management and Good Governance theories, highlighting the importance of effective governance, institutional capacity, accountability, workforce development, financial stewardship and digital transformation in strengthening health systems. Overall, the study provides evidence that comprehensive public service reforms remain essential for improving healthcare service delivery and supporting health system performance in developing economies.

Limitations of the Study

This study has several limitations that should be considered when interpreting the findings. First, the cross-sectional research design limits the findings to statistical associations and does not permit causal inferences between public service reform and healthcare service delivery. Second, the study relied on self-reported responses, which may be influenced by recall errors and social desirability bias. Third, the study was conducted in North Central Nigeria; therefore, the findings may not be fully generalisable to other geopolitical regions or developing countries with different institutional and governance contexts. Finally, healthcare service delivery was assessed as a composite construct rather than as separate dimensions such as accessibility, quality, responsiveness, operational efficiency and patient satisfaction.

Recommendations

Based on the findings of this study, the following recommendations are proposed:

Governments should implement integrated public service reforms that simultaneously strengthen administrative efficiency, workforce management, financial governance, digital transformation and accountability mechanisms within the health sector.

Ministries of Health and public service agencies should strengthen institutional accountability and transparency through performance monitoring systems, routine audits and evidence-based decision-making.

Greater investment should be made in the recruitment, training, motivation and retention of healthcare workers to improve workforce capacity and organisational performance.

Governments should increase investments in digital health infrastructure, including electronic health records, health information systems and digital decision-support tools to enhance efficiency and service delivery.

Public financial management systems should be strengthened through transparent budgeting, timely resource allocation, efficient procurement processes and improved financial oversight to maximise the utilisation of available health resources.

Policymakers should adopt a whole-of-government approach to public service reform by ensuring that governance, institutional capacity and health sector reforms are implemented in a coordinated and sustainable manner.

Suggestions for Future Research

Future studies should employ longitudinal or prospective study designs to better understand the temporal relationships between public service reform and healthcare service delivery. Comparative studies involving multiple geopolitical zones or different developing countries would provide broader evidence regarding the effectiveness of public service reforms across diverse institutional contexts. Researchers should also investigate the influence of individual dimensions of healthcare service delivery, including accessibility, service quality, responsiveness, operational efficiency and patient satisfaction, rather than relying solely on composite measures. In addition, mixed-methods studies incorporating qualitative approaches could provide deeper insights into the contextual, organisational and political factors influencing the implementation and effectiveness of public service reforms within healthcare systems.

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Competing Interests

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

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