

Health

Best Practice Case Study: 03

Biometric Attendance
System for Human
Resource for Health

[A Case Study of Gombe State Civil
Service]

**NIGERIA
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Figure 1: Stages of Biometric system deployment and governance structure in Gombe State

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Acronyms



HCF	Health Care Facilities
HSRL	Health Sector Reform Law
HSL	Health Scheme Law
ICT	Information Technology
KII	Key Informant Interview
FMoH	Federal Ministry of Health
MDA	Ministries, Departments and Agencies
NGF	Nigeria Governors' Forum
NHA	National Health Act
NMA	Nigerian Medical Association
EDSPHCB	Edo State Primary Health Care Board
SOP	Standard Operating Procedures
SWOT	Strengths Weaknesses Opportunities Threats
SMoH	State Ministry of Health
SMoJ	State Ministry of Justice
SPHCDA	State Primary Health Care Development Agency
SPHCMB	State Primary Health Care Management Board
WHO	World Health Organization
UHC	Universal Health Coverage



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The successful execution of the Integrating Biometric Systems to Reposition Healthcare Service Delivery Case Study in Gombe State would not have been possible without the invaluable support and collaboration of various stakeholders. We extend our heartfelt appreciation to:

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Finally, we would like to extend our sincere appreciation to The Nigeria Governors Forum for providing the necessary resources for the study. We appreciate their guidance and support throughout the project, which enabled its smooth implementation and impactful outcomes.

Background

This case study explores the implementation of a biometric tracking system to enhance health worker productivity in Gombe State, Nigeria. Drawing from field interviews of key informants involved in implementation and health care staff and client utilizing the biometrics system, this case study aims to unravel the intricacies of Gombe State's journey towards integrating biometrics in healthcare, shedding light on the motivations, implementation strategies, challenges faced, and the outcomes achieved. Through thematic analysis, key themes such as project objectives, implementation strategies, stakeholder involvement, and the role of political will and technology emerged, shedding light on the complexities and successes of the initiative.

Purpose

The purpose of this case study is to comprehensively examine the implementation and impact of the Biometric System in Gombe State within the context of healthcare reforms.

Research Question

How has the integration of the Biometric System impacted personnel management, attendance tracking, and overall healthcare delivery in Gombe State, Nigeria, and what are the key factors influencing its success or challenges?

Methodology

This case study adopts a qualitative approach to provide a holistic understanding of integrating the biometric System in Gombe State's healthcare sector. The study employed qualitative analysis of interview transcripts with key stakeholders involved in the project. Thematic coding was used to identify recurring themes and patterns in the data, providing insights into the project's design, implementation, and outcomes.

Outcome:	Successful implementation of Biometrics attendance tracking system leading to a more efficient and accountable payroll system, increased attendance and motivation of health care workers.
Evidence of Impact	First comprehensive database in the state that has current list of employees, where they work and all their biometric details.
60,000:	Number of state personnel successfully verified and captured in the Biometrics System demonstrating the systems' capacity to Increase accountability and transparency in the states workforce and payment system.
NGN 1.5billion:	Amount of money saved to date as a result of no shows discovered during the biometrics verification exercise.
\$4 million:	the amount of development partner grant attracted to the state from the World Bank to support the Biometrics Attendance Tracking System.
About 500 workers	The number of ghost workers identified and stopped through the implementation of the biometric system, highlighting the system's effectiveness in curbing fraudulent practices and ensuring accountability in the workforce.
35,000	The backlog of promotions implemented for workers in the local government, demonstrating the system's ability to streamline administrative processes and address long-standing issues such as delayed promotions.

The desire for efficient and accountable public service delivery has been a critical priority for many governments worldwide. In their search for innovative solutions that can turn around the civil service, these governments are increasingly turning to technologies and biometrics as tools to foster transformative changes as part of civil service reforms. As one such example, Gombe State, Nigeria, faced challenges in monitoring health worker productivity, leading to inefficiencies in service delivery. In response, the state government initiated a project to track health worker attendance using a biometric system. This initiative is with the aim to use biometric Systems to reposition its health sector for efficient service delivery. This case study delves into the multifaceted dimensions of the Biometric System implementation in Gombe State, exploring its role in catalyzing significant reforms and enhancing the quality and effectiveness of healthcare services. It explores the implementation process, challenges encountered, and lessons learned from the project.

Objectives of the Study

The case study is conducted to achieve the following objectives

1. Investigate and document the State's strategies and processes to integrate biometrics systems into the healthcare sector. This objective will focus on the technological infrastructure, training programs, and stakeholder engagement.
2. Examine the underlying motives behind integrating Biometric Systems in healthcare administration.
3. Examine the impact of the biometric system on resource allocation in the states, specifically on preventing ghost workers, ensuring accurate payroll disbursement, and ensuring the productivity of civil service employees.
4. Identify challenges faced while implementing the biometric systems and understand the strategies employed to overcome the obstacles.
5. Provide evidence-based recommendations and lessons learned to inform future policy decisions and practices within Gombe State and other regions contemplating the integration of biometrics in healthcare and civil service reforms.

What is Biometrics System:

Biometrics is an automated method of recognizing a person based on a physiological or behavioral characteristic. It serves as a means of identification, verification, access control, and crime control, among others. The use of biometric data in everyday life is becoming increasingly popular. Therefore, public institutions are also increasingly adopting biometric technology to enhance their operations; one such use is in monitoring employee attendance and its impact on productivity and performance. Incorporating biometrics in civil service reforms holds significant importance, offering a range of benefits contributing to the modernization and enhancement of public administration. This benefits include accurate and unique methods for verifying individuals' identities using fingerprints, facial recognition, and iris scans; eradication of fictitious or non-existent employees (ghost workers) from the payroll, ensuring that public funds are allocated and disbursed accurately to reduce financial leakages; automation of time and attendance tracking, promoting punctuality and reducing instances of time fraud; and linking individuals' biometric data to their payroll information and minimizing the likelihood of payroll fraud. This ensures that salaries are disbursed accurately, reducing financial losses resulting from fraudulent activities.



About Gombe State

Gombe State was created in 1996 out of the old Bauchi State. The State is located in the northeastern region of Nigeria and shares a border with all the other States in the zone, namely, Adamawa, Bauchi, Borno, Taraba, and Yobe. The State comprises eleven local government areas with a total land mass of about 20,265 sq. km. The last official census in 2006 puts the population of Gombe state at 2,365,040, made up of 1,244,228 (52.28 percent) males and 1,120,812 (47.71 percent) females. This figure was projected to have risen to 3,585,131 by 2019. Gombe has a rich cultural heterogeneity, and the State is multilingual and multi-religious. Although traditional religion is being practiced among indigenous communities, Islam and Christianity remain the predominant religions.

The major ethnic groups in Gombe State include the Fulani, Hausa, Tera, Tangale, Waja, and others. This diversity contributes to a rich cultural tapestry. The land is richly blessed with natural resources such as gypsum, limestone, gemstones, and petroleum, which was recently discovered. Gombe's economy is still largely agrarian, and its farmers mainly produce crops like millet, maize, sorghum, and groundnuts. Livestock farming, particularly cattle rearing, is also significant. Although the state capital is considered the State's commercial hub, its many businesses are still at micro, small, and medium levels. The government is regarded as the largest employer of labour in the formal sector, followed by the private sector.

While Gombe state is relatively stable, especially compared with the political instability experienced by other states in the region, the State is still faced with endemic poverty. The National Bureau of Statistics ranked Gombe State as the fourth poorest State in Nigeria in 2019. Also, Gombe State has an education index of 0.55 against the national average of 0.81 in the year 2013, while in 2016, the index dropped to 0.49 against the national average of 0.80. The life expectancy index for the same period shows 45 years for males and 49 for females against the national average of 47 and 52, respectivelyⁱ. This highlights the significance of the state civil service and its role in delivering critical social services to the State's people to bring about sustainable development.

Overview of Gombe State Health Sector

The Gombe State health system is based on the Primary Health care approach and is focused on attaining universal health coverage. The state health architecture is made up of 3 levels of health care delivery system including the Primary, secondary and tertiary health care facilities. The state has 11 Local Government Areas (LGAs), 114 political wards. The state has 114 Primary Health Care facilities, 203 Health Clinics and 210 Health Postsⁱⁱ.

The state has a high burden of maternal, newborn and child mortality; Maternal Mortality Rate is estimated at 1,549 per 100,000 live births, Newborn Maternity Rate is 45 per 1,000 live births, Infant mortality rate of 104 per 1,000 live births, Under-5 Mortality Rate is 189 per 1,000 live births, and stillbirth rate of 55 per 1,000 live births. Also only about 46.4 % of pregnant women were reported to have received antenatal care from a skilled provider and only 27.7% of women delivered in health facilities with around 72.2% opting to deliver at homeⁱⁱⁱ. According to the 2021 Nigeria MICS, Gombe's health indices are significantly lower than the national average and are the highest in the north east region^{iv}.



Challenges of Health Care services in Gombe State

According to the 2021 Nigeria MICS, Gombe's health indices are significantly lower than the national average and are the highest in the north east region. To address these issues, the Gombe state government embarked on several initiatives with the support of different partners. One of such initiative is the renovation of one PHC in each of the 114 political wards of the 11 local government councils of the state. Each of these healthcare facilities have a certain number of beneficiaries registered to enjoy the free services provided by the Basic Health Care Provision Fund scheme. The government has also recruited and posted 2,364 health care workers across the state, and has developed a state context-specific maternal, newborn and child health strategy to improve RMNCH+N services building on extensive partner support in the state.

Coordination platforms for the enhanced delivery of services include the Reproductive Health TWG, MNCH Coalition & Advocacy TWG, TWG on Nutrition and the State Emergency Maternal and Child Health Intervention Centre (SEMCHIC), and the state has set up its state health insurance agency for the effective deployment of the basic healthcare provision fund which is expected to improve the operational funding at PHC facility level towards improving service delivery. However, a report by Daily trust in 2022 revealed that all the facilities visited lacked qualified medical doctors and ancillary healthcare workers to provide healthcare services. The next section highlights some key challenges of delivering health care services in Gombe state.

Provision of health care services in Gombe state is hampered by several challenges. Below are a few key challenges:

Shortage of qualified staff

In spite of the government's efforts at recruiting more health care workers in the state, the population of over 3.5 million is still grossly under-served. Shortage of staff has affected the capacity of the government to provide quality health care services especially to those living in the rural areas.

Inadequate basic infrastructure and equipment

Many residents of the state particularly those living in rural areas have to travel many hours to access health care services. 41.2% of respondents in Gombe had problems accessing health care services due to distance to health facility

Poor remuneration and compensation

Health workers are unsatisfied with the conditions of service. This challenge is not peculiar to Gombe state as the health sector in the country has experienced a massive migration to countries that can offer better conditions of service.



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Why Gombe Implemented the Biometric Systems Attendance Tracking

The governance challenges faced by Gombe state following the election of His Excellency, the Governor, in 2019 are deeply rooted in the state's fiscal dynamics and administrative inefficiencies. Prior to his assumption of office, discussions surrounding governance encompassed promises made during campaigns and the need for innovative outside the box thinking in addressing impending challenges. However, upon assuming office, stark realities emerged, highlighting significant disparities between revenue streams and expenditure requirements. The financial landscape of Gombe state in 2019 was characterized by a substantial deficit in recurrent expenditure. Despite efforts to balance expenditures with available revenue, the state faced a deficit of approximately NGN3.6 billion, necessitating borrowing to meet basic operational costs. This deficit primarily stemmed from the substantial portion of the state's revenue allocated to recurrent expenses, leaving limited resources for capital projects and fulfilling campaign promises. Notably, recurrent expenses, primarily comprised of wage bills, absorbed a significant portion of the state's revenue, with salaries alone accounting for nearly 58% of the Federation account allocation.

The disproportionate allocation of resources towards salaries becomes more pronounced when considering the scale of the state's workforce relative to its population. With an estimated population of 3.5 to 4 million residents, Gombe state supported a workforce of around 60,000 employees, constituting less than 2% of the total population. However, this small fraction of the population consumed a substantial portion of the state's revenue, leaving limited resources for essential services and infrastructure development. Moreover, administrative discrepancies further exacerbated the financial strain, as inefficiencies in personnel management led to continued payments to individuals who were no longer active employees due to retirement or death.

The financial challenges facing Gombe state underscore the urgent need for comprehensive fiscal reforms and administrative restructuring. Addressing the imbalance between recurrent expenses and revenue allocation is crucial for achieving sustainable governance and fostering socio-economic development. Furthermore, improving transparency and accountability in personnel management is imperative to mitigate wastage and ensure efficient utilization of public funds. By implementing strategic fiscal policies and enhancing administrative efficiency, Gombe state can navigate its fiscal challenges and realize its development objectives.

One of the stakeholders interviewed alluded that *"the state Government recognized the gap in human resources in the health sector especially. And when this government came in, it saw the need to or he saw the gap of resources especially in the health sector, there was a wide gap even though the gap may have been caused by the lack of recruitment..... And then even the ones on ground in the health sector, were not working optimally. They were not at their duty post and the wage bill was still the same. People were retiring, people were dying, people were leaving the system, but the wage bill was still the same. So the governor thought it wise to come up with a system or with a reform that will ensure maximum utilization of the human resources on ground and then to save costs from those staff that have left the system. And it was noticed that over the years, health worker audit was done. But it made no difference because just a one-time audit, we do a one-time audit and people come in, people will decide to come in, participate in the audit and then afterwards, they will leave. So there was a need to put a system in place that will consistently monitor not just one time off process. And that was why the governor came up with the biometric system that will track healthcare workers in real time."*

The Gombe State Biometrics System

The Gombe state Biometrics System used finger print and facial recognition technologies to track employee attendance in public healthcare institutions and later expanded to all public institutions at State and LGA levels. The technology consists of biometrics machine deployed in each health care facility. The machines are linked to a central database connected to the states payroll system. Staff are expected to register daily attendance using the biometrics machine.

Our findings unraveled some critical stages leading to the implement the Gombe State Biometrics System.

Setting Clear Project Objectives and Design:

The project aimed to improve health worker productivity and save cost through the implementation of a biometric tracking system. It involved capturing worker attendance data using biometric devices. The Biometrics system was designed as a departure from the old manual staff verification system conducted every two years or thereabout. The manual verification was not dependable and had not been able to clean the payment system or plug financial gaps as a result of fraudulent activities perpetrated by unscrupulous employees of the state civil service

Initiation Phase:

In 2019, the Gombe State Government collaborated with Human Capital Managers (HCM) Ltd (a technology driven solution service provider in the area of human capital development) to conceptualize initiate and implement the Gombe State Biometrics attendance tracking system. During this phase highest level political will was a critical factor in ensuring that the initial NGN1.5 billion investments to implement the programme was secured. HCM in collaboration with the state government agreed on the terms and scope of the Biometrics systems including the type of hardware and total budget.

Implementation phase: Purchase of Biometric hardware and software

There are different types of biometric machines but it is imperative to source for a biometrics machine that has the capacity to achieve the goal of the project. The hardware and software for Biometrics purchased had to be re-engineered and redesigned, even though it was a good technology, it was not sufficient to achieve the project's objectives.

One of the principal actors in the implementation of the biometrics attendance tracking system stated that "The second input is technology. Really, the technology needs to be robust and scalable and very reliable. There are so many biometric technologies in the market that are very cheap. Like if you remember I told you the price tag of what we've done is around NGN1.5 billion, at the time this was committed everybody thought it was a waste of time and waste of money. But if state wants to go into this, they really really shouldn't look at the money" Human Capital Managers, 2023.

Biometrics Verification Exercise

The next step in the process was the verification and biometrics capture exercise. Employees of the state were invited to designated areas to conduct verification and take their biometrics data. The verification exercise is a crucial step in the attendance tracking system. It enabled the government ensure that all of the employees on its payroll are who they claim to be. Another key activity that was conducted at this stage is the scanning and freezing of employees files. This process is necessary to ensure that staff employment records are kept electronically to prevent anyone from tampering with them in future.

Pilot Phase :

The Gombe Biometrics Attendance tracking project started with a pilot phase in one LGA. Yamaltu Deba local government area was selected as the first pilot LGA in Gombe state in 2020. Another four local governments were then added in October 2021. Verification was done in all of these five local governments for two years straight mostly in the primary healthcare sector. The pilot phase allowed for the implementers to understand the system in practice, gauge challenges and refine their strategies based on lessons learnt, feedback and challenges encountered. For example, in the beginning of the implementation, the government and its partners did not purchase sufficient biometrics to go round all primary health care centers (PHCs). They adopted the clustering approach where a number of PHCs were clustered together and served by one biometrics. On paper, this seems like a logical or economically sensible thing to do, especially if you place the capacity of the biometrics machine side by side the average number of employees in the PHCs. But in practice, it made implementation a challenge as employees will have to travel to the facility where the biometrics is placed to sign in before proceeding to their places of work. This was counter-productive as most of the stakeholders interviewed conformed. The pilot phase allowed the implementers to adapt their strategies to current realities.

A facility manager stated that "And some people, where they are thumb printing is different from where they are working, they have to go and thumbprint and go back to their working places which is very awkward, they are not really finding it easy. But for us here we have it here close to us even though that thing has been ironed, that issue of thumb printing somewhere and going back to work, it has been resolved. yes, they have provided every location with their own thumb printing machine."

Advocacy and Stakeholder Engagement:

The entire process developed above was based on the backdrop of effective and consistent advocacy and stakeholder engagement. Key stakeholders were consulted though out the entire process. Stakeholders consulted included the Nigeria Labour Congress, Traditional and religious leaders, employees, and ministries, department and agencies (MDAs). Media campaigns was implemented to raise awareness and share information to the general public on the benefits of the biometrics attendance system on public service delivery.

Establishment of Governance Structure:

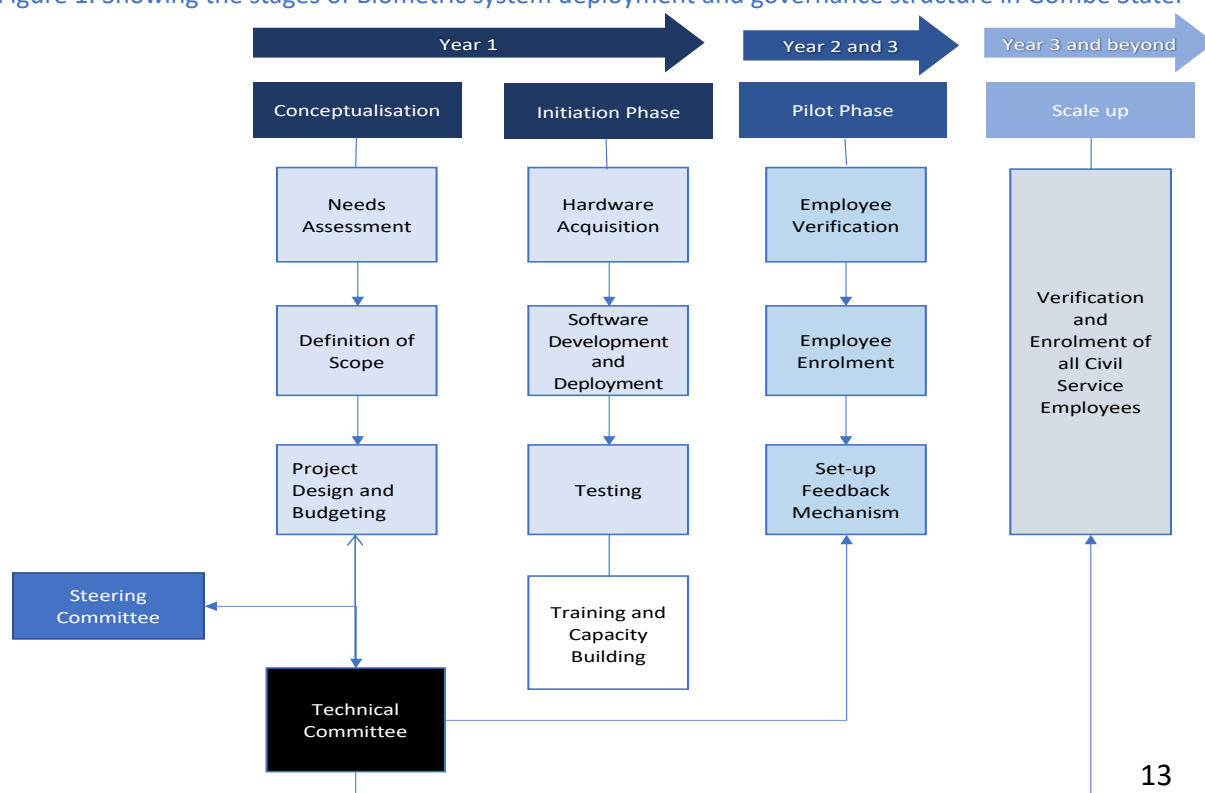
A governance structure was established by the state government to ensure that all relevant stakeholders are involved in the decision making and implementation of the project. There are two levels of governance that manages the project. The first and the highest level is the Steering Committee. The steering committee is responsible for ratifying recommendations and decisions made by the Technical Committee. This committee is chaired by the Head of Service. The steering Committee meets once a quarter. Other members of the Steering Committee include;

- Civil Service Commission chairperson,
- Representative of the Ministry of Justice,
- Ministry of Local Government,
- Teachers Service Union,
- Local government Pension,
- State Pension,
- Accountant General of the state,
- The Auditor General of the State,

The next level governance structure is the Technical Committee. This technical committee has 21 members from different MDAs and the Technical Partner HCM. All the members are in the cadre of Directors and above. They meet more than once a month to review complaints and the operations of the biometrics system. The Technical Committee is chaired by the Accountant General of the State and members include;

- Head of the Hospital Management Board,
- Head of GoHealth,
- Executive Secretary- Primary Health Care Development Agency,
- Medical Director-Specialist Hospital Gombe,
- Technical Partner (HCM) and
- Other key line Ministries.

Figure 1: Showing the stages of Biometric system deployment and governance structure in Gombe State.



Future Plans and Potentials of the Biometric Attendance System

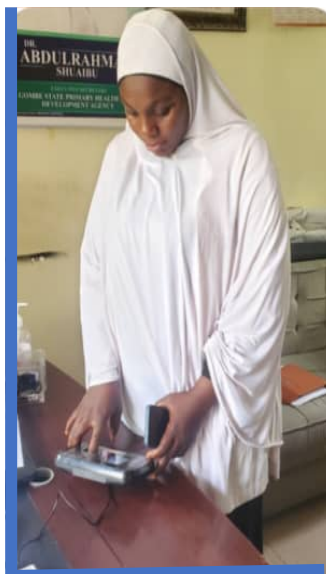
Building upon the success of the biometric attendance system, there are ambitious future plans and potentials for further enhancing the utilization of the system in Gombe state.

The Bill and Melinda Gates Foundation, recognizing the effectiveness of the existing infrastructure, has committed to funding a two-year project aimed at tracking health worker productivity. This initiative acknowledges the need to go beyond mere attendance tracking and delve into assessing the actual productivity of health workers. The project, funded with approximately \$1.6 million, focuses on leveraging the existing biometric system to capture not only the presence of health workers but also the visitation of patients. By utilizing the excess capacity of the biometric machines, patient visitation data will be collected alongside health worker attendance records. This integration enables the correlation of services provided to patients with the specific health workers attending to them.

Through this approach, a comprehensive scorecard for each health worker can be generated, detailing metrics such as the number of patients attended to, types of services provided, days present, and days absent. This data-driven assessment facilitates evidence-based decision-making processes within the healthcare sector. For instance, it enables the identification of centers where health workers are overworked, prompting the recruitment of additional staff or the redistribution of personnel to better address workload imbalances.

Moreover, the project opens avenues for optimizing resource allocation and enhancing service delivery by strategically deploying health workers based on expertise and community needs. For instance, in areas with a high prevalence of elderly populations, skilled midwives can be relocated to ensure quality maternal care, while areas experiencing higher birth rates can benefit from increased obstetric expertise.

This initiative underscores the potential of partnerships in driving innovation and improving service delivery across various sectors. By leveraging existing infrastructure and collaborating with stakeholders, Gombe state can continue to harness the full potential of the biometric system to drive positive change and enhance public service delivery.





1

Success factors Responsible for the Successful Implementation of Biometrics

Political will:

This is perhaps the biggest success factor. It is the main ingredient in implementing a successful project of this magnitude. As a result of the multi-sectoral nature of the project, it is important that support for this kind of project comes from the highest political level. In this case the support for the project was derived from the highest political authority in the state, the Office of the Executive Governor. The Executive Governor's passion to deliver good governance and ensure that the people get dividends of democracy in line with his election campaigns gave added impetus to the implementation of the project. The implementation team were able to overcome the many challenges and opposition to the project because the Executive Governor was resolute in his desire to clean up the system and ensure that productivity of state employees is improved.

Link to Payment of Salary:

Learning from past attempts to verify employee status and improve productivity, the state government made a decision early to link the attendance tracking system to the payment of salaries. Recognizing that a system that does not provide for deterrent is less likely to succeed, the payment of salaries based on attendance was automated. This ensures that there is no human interference in the decision to suspend an employee's salary. Payment of salaries is completely dependent on the employee meeting the pre-determined monthly attendance threshold.

Technical Partner:

Another critical success factor is the engagement of a strong technical partner with the requisite skill, experience and expertise to support the state government in implementing the attendance tracking system. The Technical partner provides technical advice, operational support.

2

Challenges of Implementing the Biometrics Attendance System

Insufficient Biometric Machines:

The limited availability of biometric machines posed a significant challenge to the effective implementation of the system in Gombe state. The decision to cluster facilities and share one machine resulted in employees having to travel to centralized locations to record their attendance before commencing their work duties. This logistical hurdle not only disrupted workflow but also added strain to already scarce resources, impacting overall productivity.

Heavy Reliance on Human Supervision:

The design of the biometrics attendance tracking system allowed employees to register their attendance at any time, necessitating extensive human supervision to ensure compliance. This heavy reliance on manual oversight increased administrative burden and resource allocation to monitor staff punctuality and presence at work, diverting attention from other core responsibilities.

Limited Capacity to Track Productivity:

The primary focus of the biometric system on attendance tracking overlooked the crucial aspect of monitoring productivity. While the system efficiently recorded staff attendance, it lacked mechanisms to measure punctuality and late arrivals, which are vital indicators of workforce productivity. This oversight hindered the ability to effectively evaluate employee performance and optimize resource allocation.

Impact of High Cost of Living and Poor Remuneration:

The prevailing high cost of living expenses combined with inadequate remuneration provided a convenient justification for staff absenteeism. These economic factors not only contributed to absenteeism but also fueled resentment and opposition towards the biometric system. The perception of unfairness and dissatisfaction among employees further complicated system adoption and compliance efforts.

What Could Have Been Done Differently

The implementation of the Biometrics Attendance System in Gombe state paved the way for how a successful system can be implemented in other parts of the country. It has also provided an opportunity for learning that others desirous of implementing similar initiative can take a cue from. Below are some of the key lessons learnt

Aligning Attendance with Productivity:

Despite the successful implementation of the Biometrics Attendance System in Gombe state, it became evident that merely tracking attendance did not directly translate into improved employee productivity. While the system effectively managed records and attendance, ensuring staff meet minimum attendance requirements, it lacked mechanisms to ensure actual engagement and performance during work hours. As a result, the impact on enhancing service quality was hindered.

Understanding Absenteeism Drivers:

A critical lesson learnt was the necessity to comprehensively understand the root causes of absenteeism. Factors such as the high cost of living, low remuneration, and transportation challenges significantly contributed to absenteeism among government employees. Failure to account for these factors in the initial system design led to challenges during implementation. Adjustments, such as reducing attendance thresholds, were necessary but could have been preempted with a deeper understanding of the workforce's unique circumstances.

Implementation of Change Management Strategy:

The absence of a robust change management strategy proved to be a significant drawback during the system rollout. While training and orientation were provided, they were insufficient in preparing employees for the system's demands. Instances of salary suspension for staff on approved leave due to system inaccuracies underscored the need for more comprehensive change management. A well-planned strategy could have anticipated and addressed such challenges, ensuring smoother adoption and compliance.

Lack of Documented Programme Design:

One glaring oversight was the absence of a documented programme design guiding the system implementation and tracking progress. This deficiency not only hindered institutional memory but also complicated troubleshooting and future modifications. A clearly outlined programme design would have provided a roadmap for implementation, monitoring, and evaluation, enhancing overall effectiveness and sustainability.

Establishment of Grievance Redress Mechanism:

The implementation highlighted the critical need for a dedicated Grievance Redress Mechanism (GRM) to address employee concerns promptly. Without an accessible channel for lodging complaints, employees faced frustration and resistance towards the system. Establishing a GRM would have alleviated anxieties and improved stakeholder satisfaction by providing a transparent avenue for conflict resolution.

Benefits of the Biometrics Attendance System in Health Sector

Increased Attendance of Health Care workers:

Before the Biometrics System was implemented, absenteeism was rampant. The situation was so bad that the state had health care workers on its payroll who had never been to work. Some of them reside in other states and even have employment with other organizations in different states or countries. While there is no official record of attendance found during the case study gathering, every participant interviewed alluded to the fact that there is a noticeable increase in attendance as the biometrics is tied to payment of salaries and staff are forced to attend to reach the attendance threshold to activate payment of salaries.

More Efficient Health Care Services:

Although the Biometric Attendance Tracking System does not yet have the capacity to track health care worker productivity, a health care facility client interviewed agreed that since the implementation of the biometrics attendance system, she has noticed an improvement in quality of health care services.

Increased Health Care Staff Motivation:

Frequent absenteeism among healthcare workers significantly impacts the morale and motivation of dedicated staff. The implementation of biometrics has bolstered staff motivation by establishing accountability for absenteeism and neglect of duties. Diligent employees now recognize that those who opt to skip work will not receive their salary, fostering a more conscientious work environment.

Clarity on status of health care workers:

The Primary Health Care system employed over 4000 workers. After the initial biometric verification, it was found that approximately 10% of these workers were enrolled in training programs, costing the government about NGN 75 million monthly. Some of these trainees had extended their leave without proper authorization. The biometric system effectively identified workers in training and those who extended their absence, prompting more healthcare workers to return to their posts and resume service provision to clients.





The implementation of the Biometrics Attendance System in Gombe state marks a significant milestone in the state's pursuit of efficient and accountable public service delivery, particularly within the healthcare sector. The successful integration of biometric technology has led to tangible improvements in personnel management, attendance tracking, and overall healthcare delivery. The evidence of impact underscores the transformative potential of technology-driven solutions in addressing longstanding challenges and fostering positive change.

Through the establishment of a comprehensive database and the successful verification of over 60,000 state personnel, the Biometrics System has significantly enhanced accountability and transparency in the state's workforce and payment system. The savings of NGN 1.5 billion and the attraction of \$4 million in development partner grants highlight the economic benefits derived from the system's implementation, further emphasizing its value in resource optimization and fiscal management.

Moreover, the identification and cessation of approximately 500 ghost workers underscore the system's effectiveness in curbing fraudulent practices and ensuring the integrity of the state's workforce. The backlog of promotions implemented for over 35,000 workers further demonstrates the system's capacity to streamline administrative processes and address longstanding issues within the civil service.

However, amidst these successes, several challenges were encountered, providing valuable lessons for future implementations. The need to align attendance tracking with productivity, understand the underlying drivers of absenteeism, implement robust change management strategies, document programme designs, and establish grievance redress mechanisms emerged as critical insights from the project.

In conclusion, the Biometrics System in Gombe state serves as a testament to the transformative power of technology in driving administrative reforms and enhancing service delivery. While the journey was not without obstacles, the achievements realized underscore the importance of innovation, collaboration, and strategic leadership in effecting positive change. Moving forward, it is imperative for Gombe state to build upon these successes, address identified challenges, and leverage emerging technologies to continue advancing towards a more efficient, accountable, and responsive public service delivery system.



Recommendation for Adoption of Biometrics Attendance Tracking Systems in the Health Sector for Other States

Step 1: Conduct Needs Assessment and Planning

Assess Requirements:

The first key step is to identify the specific needs and objectives for implementing the attendance tracking biometrics system. Consider factors such as population size, security concerns, and existing infrastructure.

Define Scope:

Determine the scope of the project, including the target population, types of biometric data to be collected, and potential applications. In Gombe state the attendance tracking was piloted in the health sector but its target population was the entire state civil service employees. According to stakeholders interviewed, limiting the biometrics system only to a particular sector such as the health sector might present peculiar challenges that hamper its implementation. For instance, it will be difficult to tie the system to payment of salaries if it is done only in one sector.

Budgeting and Resource Allocation:

Estimate the budget required for hardware procurement, software development, personnel training, and ongoing maintenance. In Gombe state this total initial financial outlay for the project was NGN1.5 billion naira. However, the cost of implementing a similar project will vary depending on several factors, including inflation, type of biometrics machine etc. At this stage, state government can begin to explore and identify potential partners to provide technical and financial support for the implementation of the project

Technical Partners:

Identify a reputable and experienced Technical Partner to support implementation and deployment of biometrics system. This needs to be done at the beginning, so the Technical Partner is able to advice on budgeting and other technical specifications of the system.

Step 2: Legal and Regulatory Compliance

Legal Framework:

The Nigeria Data Protection Act (NDPA) 2023 and other guidelines and laws like the Nigeria Data Protection Regulation 2019 ("NDPR") and the NDPR Implementation Framework 2020, issued by the National Information Technology Development Agency ("NDPR Implementation Framework") guides the collection, storage and use of biometric data in Nigeria. States must ensure compliance with these laws and guidelines.

Local laws and Policies:

In Gombe State, the attendance tracking biometrics system project started organically and mostly rely on the goodwill and interest of the current Executive Governor of the state for its implementation and funding. This does not guarantee sustainability of the initiative. A new government can easily deprioritize funding and scrap the programme all together. It is important that states explore the possibility of developing policies and enacting laws and frameworks that guarantee continued implementation of the attendance tracking system.

Stakeholder Engagement:

Consult with relevant stakeholders, including government agencies, legal experts, civil society organizations, labour unions, traditional and religious leaders and the public, to garner support and address concerns. This is important to proactively reduce opposition to the implementation of the project and to ensure that all stakeholders understand the importance of the biometrics system. The messaging of the engagement must reflect benefits of the biometrics to employees and the general public

Step 3: Hardware Acquisition and Setup

Hardware Specifications:

Procure biometric devices such as fingerprint scanners, iris scanners, and facial recognition cameras from reputable vendors. Ensure compatibility with existing infrastructure and scalability for future expansion. Below are key factors to consider when choosing a biometrics system:

- **Accuracy and Reliability:** Check systems capacity to verify employees without providing false negatives and positives
- **Scalability and Integration:** Due to the large number of government employees choosing a system with the capacity to accommodate the numbers is important, however, it is also important to choose a system that can accommodate future growth in number of employees without compromising performance. In the case of Gombe, their system can be adapted to accommodate client information because it has a capacity beyond the immediate needs of the facilities the machines are deployed in.
- **User Experience and Ease of Use:** This factor can influence how quickly employees adopt and accept the system.
- **Cost Consideration:** While cost is a critical factor, the state must strike a good balance between cost and quality. The Gombe experience shows that ensuring that a quality biometrics machine is purchased is a critical success factor.
- **Security Measures:** Security is paramount when deploying a biometric attendance system. Check out the system's security features, including data encryption, access control, and anti-tampering measures
- **Vendor Support:** Ensure that only established, reputable and experienced vendors with good reviews and a track record of providing ongoing maintenance support are chosen.
- **Integration to payroll management system:** choose systems that have the capability to send data directly to the state's payroll system. In Gombe state, linking the biometrics system to the payroll system is the single most important factor in the successful implementation of the project.

Installation and Integration:

Deploy hardware components at designated locations, such as government offices, immigration checkpoints, and healthcare facilities. Integrate biometric devices with backend systems for data processing and authentication.

Step 4: Software Development and Deployment

Customization:

Develop or customize software applications for biometric data capture, storage, matching, and analysis. Ensure usability, reliability, and compatibility with diverse hardware platforms.

Database Management:

Implement robust database management systems to securely store biometric templates and associated demographic information. Implement encryption and access controls to safeguard sensitive data.

User Interface:

Design intuitive user interfaces for data capture stations and administrative consoles. Provide training and support to end-users to ensure efficient operation and troubleshooting.

Step 5: Testing and Quality Assurance

Functional Testing:

Conduct comprehensive testing of hardware and software components to verify functionality, accuracy, and performance under various conditions.

Useability Testing:

Solicit feedback from end-users to identify usability issues and refine user interfaces for optimal user experience.

Security Assessment:

Engage independent security experts to perform penetration testing and vulnerability assessments to identify and remediate potential security vulnerabilities.

Step 6: Training and Capacity Building

Training Programs:

Provide training to government personnel, and other stakeholders on the operation, maintenance, and ethical use of the biometrics system.

Capacity Building:

Establish a framework for continuous learning and skill development to ensure the sustainability of the biometrics program over the long term.


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**Step 7:
Rollout and Monitoring**

Phased Deployment:

Implement the biometrics system in phases, starting with pilot programs in select locations before expanding to broader deployment.

Performance Monitoring:

Establish key performance indicators (KPIs) to measure the effectiveness and impact of the biometrics system on various objectives, such as improving service delivery, enhancing security, and reducing identity fraud.

Feedback Mechanisms:

Solicit feedback from end-users and stakeholders to identify areas for improvement and address emerging challenges promptly.

**Step 8:
Ongoing Maintenance and Support**

Maintenance Schedule:

Develop a schedule for routine maintenance, software updates, and hardware upgrades to ensure the reliability and longevity of the biometrics system.

Technical Support:

Provide helpdesk support and technical assistance to address issues encountered by end-users and administrators in real-time.

Continuous Improvement:

Establish mechanisms for continuous evaluation and improvement of the biometrics system based on user feedback, technological advancements, and changing regulatory requirements.



ⁱ Nigeria Human Development Indices Report- NBS, 2017

ⁱⁱ <https://gsphcda.gm.gov.ng/home/>

ⁱⁱⁱ National Demographic Health Survey(NDHS) 2018

^{iv} Multiple Indicator Cluster Survey (2021) <https://nigerianstat.gov.ng/elibrary/read/1241209>