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Discourse, Materiality, and the Users of Mobile Health Technologies: A Nigerian Case Study

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DISCOURSE, MATERIALITY, AND THE USERS OF MOBILE HEALTH TECHNOLOGIES: A NIGERIAN CASE STUDY

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List of Abbreviations

CDA – Critical discourse analysis

CDS – Critical discourse studies

FMOH – Federal ministry of health

ICT – Information and communications technology

KWIC – Keywords in context

L&I – Landscape and inventory

LMICs – Low-to-lower-middle-income-countries

NHIS – National health insurance scheme

NHP – National Health Policy

NHW – Nigeria Health Watch

PHC – Primary Healthcare Center

RHM – Rhetoric of Health and Medicine

ROP – Review of policies

Abstract

mHealth, which is the use of mobile phones and other handheld information and communication technologies (ICTs), has been increasingly advocated as the solution to the problems, primarily infrastructure and personnel, facing the healthcare sector of many low-to-lower-middle-income countries (LMICs). Following a series of United Nations Foundation research and advisory publications (in 2012, 2014 and 2016) arguing that mobile phones are approaching ubiquity in Nigeria and across the world, the UN strongly recommended that LMICs undertake mHealth initiatives. Subsequently, Nigeria's Federal Ministry of Health (FMOH) published a National Health ICT Strategic Framework (*Strategic Framework*), 2015-2020; the rallying call of this document is that "Health ICTs will deliver universal healthcare [in Nigeria] by 2020." The document takes a techno-optimistic position that celebrates and advocates for the creation of mHealth technologies, yet it fails to acknowledge the dire lack of the basic, necessary infrastructures for such electronic health systems, particularly in rural areas, including a scarcity of reliable electrical systems or the trained personnel who would understand how to use such technologies. This creates and sustains a healthcare precarity for poor and rural Nigerians.

The rhetoric of health and medicine has taken up precarity as a framework for understanding how modern discourses contribute to the material positioning of humans with respect to technological systems. Using material-discursive critique and precarity as analytical frameworks, I tie the history of western medicine in Nigeria to the prevailing top-down approach which created widespread healthcare deserts. Using Critical (Policy) Discourse Analysis, I also examine discursive positioning of agents, e.g., "stakeholders" in the *Strategic Framework* and "heroes" in an mHealth technology developed and advertised locally in Nigeria, to reveal how policy documents and popular advertisements around mHealth are manipulated to camouflage these healthcare deserts with techno-optimistic rhetoric. Only when we address both the actual material

conditions and the rhetorical and linguistic silencing of the people in these rural or poor areas will we be able to approach the promised benefits of mHealth systems in universal healthcare.

1 Introduction: A Call for Health ICTs in Nigeria

1.1 Background

Circa 2015, Nigeria's federal ministry of health (FMOH) published the *National Health ICT Strategic Framework* 2015-2020 (henceforth *Strategic Framework*)—the policy document intended to guide the nation's efforts at integrating information and communication technologies (ICTs) into all aspects of the country's healthcare system. According to the *Strategic Framework*, health ICTs refers to the "means of ensuring that correct health information is provided in a timely, coordinated and secure manner via electronic means for the purpose of improving the quality and efficiency of delivery of health services and prevention programs" (*National Health ICT Strategic Framework*, 2015)— a claim which is essentially system-focused and does not reflect any of the challenges that the users of the system might encounter. Primarily, the health ICTs referred to are understood in broader discourses on health and ICTs as mHealth or eHealth. According to the World Health Organization Global Observatory on eHealth (2011), mHealth or mobile health is

> medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants (PDAs), and other wireless devices. mHealth involves the use and capitalization on a mobile phone's core utility of voice and short messaging service (SMS) as well as more complex functionalities and applications including general packet radio service (GPRS), third and fourth generation mobile telecommunications (3G and 4G systems), global positioning system (GPS), and Bluetooth technology. (p.6)

mHealth-powered services may include collection, storage and transfer of patient records and prescriptions; medical logistics; telemedicine; monitoring and management of chronic health conditions; infectious disease monitoring and treatment adherence; vaccination updates; training of health professionals; maternal and child care and mortality prevention; mental health advocacy; reproductive and sexual health advocacy; coordination of health care logistics; monitoring of bodily function and daily activities, etc. Participants in the mHealth space include individuals and organizations, including patients, healthcare professionals, healthcare institutions, insurance payment service providers, government institutions, medical technology developers, telecommunication service providers, etc. Mhealth is subsumed under the broader category of electronic or eHealth. The definition of eHealth itself is rather unfixed but can be summarized as the use of electronic information and communication technologies to deliver health care (Oh, Rizo, Enkin & Jadad, 2005). I use these three terms, mHealth, eHealth, and health ICTs interchangeably in this dissertation to refer to the various applications of electronic information and communication devices either for health care delivery (more related to what governments and health service providers do) or access (more related to what patients do).

This dissertation considers the material-discursive and rhetorical dimensions to the adoption of health information and communication technologies (health ICTs) on a national level in Nigeria, a lower-middle-income country in West Africa (The World Bank, n.d, World Bank country and lending groups), following an observed upsurge in the use of mobile phones and internet services in the country. As I explain in 1.1.3, the idea that mobile phones have achieved near-ubiquity in Nigeria flattens the experience of

mobile phone users and effectively effaces the material reality surrounding the use of mobile phones across the country where a significant portion of the population do not have access to ICT-supportive infrastructure such as electricity, cellular towers and internet connectivity. In fact, the reality in these areas is that they are economic deserts, infrastructure deserts, technology deserts and health deserts all at once as a result of various systems of marginalization which consider remote geographical locations as places with limited infrastructural needs. Thus, I problematize the discourses of mHealth in Nigeria as precarious by focusing on the ways by which material realities facilitate the conceptualization, deployment and discourses of health ICTs for patients whom I consider to be the ultimate, embodied users of the technologies and the healthcare system they support.

The concepts of precarity and precaritization have been used by scholars in the humanities and social sciences (see for instance, Butler, 2016; Hesford, Licona and Teston, 2020; Teston, 2016) to uncover and analyze the "politically induced condition[s] in which certain populations suffer from failing social and economic networks of support and become differentially exposed to injury, violence and death" (Butler, 2016, p.25, Kindle location 709). More generally, precarity refers to the human conditions associated with uncertainties regarding employment and livelihood. Precarious conditions affect the majority of people in LMICs and as Butler (2016) explains, we cannot expect that the individual is able to overcome these conditions without the support of human and non-human social structures, and political and material infrastructures.

By material realities I refer to those existing infrastructural, technological, and contextual factors which necessarily support the implementation of health ICTs and the

activation of human agency in the use of health ICTs. Material realities are important because they are an inseparable component of discourse—why and how it emerges and how it expands and changes form even as the material realities change form. For instance, prior to the existence and subsequent widespread use of mobile phones, text messaging as a distinct mode of communication did not exist even though multiple ways by which people exchanged messages were already in existence. The introduction of mobile phones did not only add to already existing communication modes, the language with which we describe the simple act of exchanging information also expanded as a result. Words like text and email, direct message (DM), etc. have now become everyday lexical items. Barad (2003) considers the relationship between the material and the discursive as one of "mutual entailment" in which "neither is articulated/articulable in the absence of the other" (p. 822). In other words, both discourse and materiality co-construct each other. There cannot be a discourse of mHealth without the actual use of electronic and mobile devices to achieve health care outcomes. Also, the way that users conceptualize the use and functions of electronic and mobile devices are also never quite fixed or static. Users often realize new, innovative and metistic possibilities with the technologies which are not intended in the design of technology, but which users discover due to their situated demands on technology.

Therefore, in deploying precarity as an analytical framework for the rhetoric of mHealth, I consider how material realities contribute to the disproportionate structural marginalization of human agents as knowers who can use mHealth to achieve health outcomes in different roles as stakeholders in healthcare. For instance, in Chapter 4 where I detail, through an inductive linguistic analysis, who is considered a stakeholder

in the design and implementation of health ICT policies, I show how the near-erasure of patients as users and designers of mHealth leads to a lack of consideration of the conditions under which mHealth will be used by patients in rural communities which are multiply disadvantaged by linguistic, economic and infrastructural configurations required to successfully use ICTs for healthcare.

I became interested in the use of mobile phones for healthcare delivery after observing the development and deployment of a mobile-phone-based SMS platform for mobilizing parents to vaccinate their newborns in Sokoto State Nigeria in 2017[1]. The process I observed involved an extensive network of communication between experts from different fields (doctors, data analysts, web developers, field workers, translators, and sponsors). The program managers included community engagement as part of their design process. For instance, the program managers sought the permission of community leaders before inviting new mothers and caregivers to bring their infants for vaccination and data-capturing sessions. The process of community engagement yielded some discussion about what was considered culturally acceptable communication norms for the people. For instance, it was considered unacceptable for a male stranger to call a woman and then for her to act on his orders without first consulting with her husband or the head of the household. Also, the project managers learned that it would be better to use the voice of recognized community leaders rather than a random robocall voice, so that the message would be taken seriously. These contributions suggest what Agboka (2013)

[1] For more details on this project, see USAID Publications. (2019). Automating public health: How texts and calls from trusted community leaders remind families to get children vaccinated. Retrieved from Automating public health by USAID publications - Exposure on 11/2/2021.

refers to as the "participatory localization" of technologies. Participatory localization is a user-centered approach to technical communication and technology design that is "reflective of the sociopolitical issues existing in the user's site—an approach that will be undertaken from the ground up" (Agboka, 2013, p. 42). The process of participatory localization can, therefore, be considered as one in which technology designers co-create with the end user while considering the social and material contexts in which the user of the technology will deploy it, rather than one in which technologies are created at the designer's site and then transferred to the user's site to be adapted however the user sees fit.

What the vaccination project team was doing seemed like a great project, given the context. However, in a summary of the project that appeared in Boost, a US-based story collective on immunization initiatives around the world, the CEO of Black Swan Tech, the local organization that ran the program, reported a technical challenge the project faced, which suggests that act of participatory localization was just as important as the discourse around participatory localization—which gives verbal credit to local users who influence the design of technological implementation.

According to the CEO of Black Swan, the caregivers were hesitant in accepting vaccines for their wards, whereas they wanted the incentives of pictures of their children that were given at the beginning of the process of vaccination. He described the process thus:

> The solution
>
> The WeMUNIZE program identified local community leaders to send pre-recorded calls featuring influential local leaders as well as SMS messages to

mothers and caregivers, urging them to immunize their children. An existing network of health workers was trained to follow-up with these caregivers and refer them to health facilities. Workers at health facilities would use the WeMUNIZE app to digitally record which vaccines were being administered and take a photo of the child after each vaccination visit. The printed photo was given to the child's caregiver and a copy was kept at the facility to track with the child's vaccination record. The vaccination coverage data was then shared with the Sokoto State Primary Health Care Development Agency.

Twists and Turns

At the project's outset, photos would be given on arrival at the health facility – however, while many caregivers wanted the photo, due to prevailing attitudes within the community they did not want their children to receive immunizations. In response, the WeMUNIZE program approach was reordered so that first children would receive their immunization(s), and then the photo was taken. These baby photos were cherished by families in the community; parents were eager to display these in their homes. Quite unexpectedly, the use of photos to incentivize caregivers to seek immunization services became the cornerstone of the project.

Results

The WeMUNIZE program enrolled approximately 4,000 children in two local government areas. **Of all the interventions deployed during the pilot phase, the introduction of photos proved to be the most impactful: 97% of surveyed**

caregivers were satisfied with the program and named the photos as the main driver for vaccination attendance. (Mogbeyiteren, n.d.; emphasis mine)

Figure 1-1 A screenshot of a publication about the use of mobile phones for health care in Sokoto State, Nigeria. Source: https://www.sabin.org/sites/sabin.org/files/nigeria_-_putting_communities_back_in_the_picture.pdf

According to Mogbeyiteren, the caregivers' behavior was congruent with the "prevailing attitudes within the community," referring to a recent history of vaccine hesitancy in Northern Nigeria which Ayodele (2007) has described as resulting from a complex interplay of factors including "lack of trust in modern medicine, political and religious motives, a history of betrayal by the federal government, the medical establishment and big business, and a conceivably genuine—albeit misplaced and ineffective—attempt by the local leadership to protect its people" (par. 37). What concerns me about Mogbeyiteren's passing comment on the local attitude is that "the prevailing attitude" constitutes the exigency for his intervention in the region in the first

place. However, more importantly, the action of the caregivers informs multiple interpretive layers for thinking about persuasion and rhetorical agency in the face of "culturally-informed" technological intervention as proposed through the use of mHealth in low-to-lower-middle-income-countries (LMICs). The caregivers' preference for a picture without vaccination not only forced the organization to restrategize and make the pictures an incentive that would come only after the infants had been vaccinated, it also indicates two things: 1) Although the organization's goal of getting the caregivers to the vaccination center by involving the community leaders was achieved, the caregivers still maintained their agency as individuals and primary decision makers for their infants; and, 2) the end users of a technology do not simply conform to the scripted manual for its use as indicated in the design; they can and do negotiate or transgress against the design to achieve their own ends. The caregivers' attitude towards this data exchange could be interpreted as an instrument of negotiation which informed their co-construction of the vaccination process as well as determined that they also had other uses for the vaccination documentation; though it is now an official record for their child, it is also seen as an artifact of value to families. It could also just be that the caregivers interpreted it as an opportunity to give their children official recognition within a system that has previously marginalized the poor and uneducated in national data capturing events and activities (Dingo, 2008). However, what their resistance to the vaccines shows is that some members of the community remained un(der)persuaded that vaccines are important to the health of their children and community and that even though the vaccination process was adjusted to ensure that the infants are eventually vaccinated, the action of the

organization could still fuel the distrust in vaccines since making the pictures an incentive is a manipulative process to ensure vaccination.

In all the work that went into the design, one thing became apparent: to successfully create this technology, consideration must be given to the different discourses which enable all the social actors involved to achieve their goals within that specific context. More importantly, other socio-cultural factors such as linguistic, religious, and cultural considerations needed to be considered to successfully deploy the technology, yet these were not highlighted in Mogbeyiteren's report, perhaps due to rhetorical considerations related to the medium of delivery (a report) or the audience (possible funders, rather than local community members). Without highlighting the contributions of technology users in unenfranchised zones (Agboka, 2013), users may see such technologies as an inconvenience they need to endure or recognize them as manipulative gestures that they need to resist and so, may discontinue its use in the absence of persuasion or the presence of an alternative. Despite the efforts made through the development of this service, the WeMUNIZE project faced difficulties with expansion due to lack of funding, amongst other issues which have been raised about eHealth in LMICs, and which I shall elaborate upon in Chapters 4 and 5.

I continued to explore my interest in the use of mobile phones for healthcare delivery in Nigeria even further when I realized that there was a federal strategy (*the National Health ICT Strategic Framework, 2015-2020, or Strategic Framework*) to incorporate the use of phones and other mobile information and telecommunication technologies into Nigeria's health care system. I was curious to know how such a large-scale endeavor was going to serve communities like the one where my family resides and

many others like it—rural communities with limited public infrastructure to support even the basic use of mobile phones for calling and texting, no paved access roads, piped-in water, electricity, working hospitals, etc. Therefore, I picked up the policy document and started to read it more closely. I wanted to understand how the use of mobile phones was going to make healthcare more accessible for rural dwellers when there were no hospitals and a paucity of medical personnel to provide health care in these places. The policy document did little to address my concerns. In fact, it seemed like there was no answer to be found in the document; rather, it became clear that the strategy document did not address nor integrate feedback from the very people who would end up at the receiving end of its impact— the patients. It was also clear that the policy document exists as a result of an ongoing international push to make the ubiquity of mobile phones in places like Nigeria relevant to the healthcare system. So, I set to trace the discourses surrounding health care in Nigeria to see how it came to be that health policies did not include patients as their audience or as active participants in the design process. An extension of that research also led me to ask how patients or citizens respond to this lack of inclusion in policy design, especially when they try to solve healthcare problems within their own localities and what the material implications of this discursive exclusion might be for situated users of Nigeria's health care system.

My goal for this study is to explore the complexities in the discourses surrounding the use of ICTs in healthcare using the concerns that have been raised in humanities disciplines such as critical discourse studies (CDS), technical communication (TC), and the rhetoric of health and medicine (RHM). These concerns include: how discourses construct social problems; how the rhetoric of technology and technical documents

accounts for users and users' agency as knowers and problem solvers; how the discourse of health accounts for the bodies in the construction of health and the technological systems of healthcare; and how context, materiality and precarity complicate the emergence and interpretation of discourse.

Specifically, this work considers how the deployment of the discourse on the use of ICTs for healthcare can influence patient outcomes primarily through the involvement of patient-users in the design and implementation of health ICTs in LMICs and other resource-constrained contexts. It is my contention that the discourse surrounding the development of ICTs for healthcare service delivery is undergirded by entrenched notions that place the power to inform what technologies get to be developed and for what purposes not in the hands of indigenous developers and users of the health care system but in the hands of transnational superpowers whose ideology is often driven by models of healthcare which fail to consider pre-existing indigenous models that are recognized, accepted, and utilized by the people to meet their own health care needs.

Moreover, because discourses have concrete, material realities, this dissertation is not entirely focused on analyzing language. I will also discuss issues relating to materiality and infrastructure in the immediate contexts to which health ICTs are to be located—issues which are pertinent to the design and implementation of technology that will work for the end user. For instance, in my discussion with Mr. Adebiyi Olusolape, one of the people responsible for the WeMUNIZE project discussed earlier, the challenge of materiality came up when we talked about how the context influenced/informed the design and use of the data capturing technology that was used to support the vaccination process. According to Mr. Olusolape, the design team had to revise the project from time

to time because a complex of human, environmental, socio-cultural, political, and technological factors rendered their initial design impossible to implement. He explained that, if the project had been designed for Lagos, a busy and densely populated city with a better developed business and technological infrastructure, the software and hardware adjustments they would have needed may not have been as elaborate. Also, their approach would not have required considering the cultural implications of gender and religion in non-personal communication.

Mr. Olusolape's detailed story about the very involved process of redesigning that WeMUNIZE went through at the project site echoes a problem that the field of technical communication has already identified about the translocalization of technology from the developer's site to the users', i.e., "that users are not cast as agents who initiate and implement change themselves" (Spinuzzi, 2004, p. 8), rather, that "users are constructed as passive consumers (even if unintentionally) with little to no agency to create and re-create" (Agboka, 2013, p. 30). Thus, it is important that discourses surrounding the deployment of technologies be explored to determine not just how users adopt such technologies, but also, how they can shape and co-construct the design and implementation of technology.

The remaining sections of this chapter contextualize my research and explain the organization of the dissertation. It is divided into three sections. The remainder of Section 1.1 provides the background to the research and the research context. My research questions, and a brief review of the data analyzed are presented in Section 1.2. Section 1.3 discusses the scope and limitations of the study. Section 1.4 outlines the significance of the study. Finally, section 1.5 presents an overview of the rest of the dissertation.

1.1.1 mHealth: Definition, discourse, and scope

mHealth has been promoted as a global solution for addressing health disparities, infrastructural deficit, and the provision of affordable health care. It finds its roots in the notable boom in global mobile connectivity and the uptake of mobile phones, particularly in low- and lower-middle-income countries (LMICs). Studies of and reports about mHealth implementation in LMIC contexts are often accompanied by positive reviews which glorify their positive effects (Chib, 2013). Also, many of the studies have focused on examining the design of mHealth from the perspectives of the designers, as well as a few that examine the view of health workers as the relevant "end users." Within LMIC contexts, very few studies have considered the implications of mHealth technologies on patient users (Salami, 2015; Larsen-Cooper, et al., 2015).

An array of research studies and policy documents have been created to support the claim that mHealth will radically change health care service delivery in LMICs (including the WHO Global Observatory on eHealth and Nigeria's National Health Information and Communication Technology Strategic Framework). These documents and policies leave not only a trail of scenarios for enacting ICTs in health care, but also national-level mandates for the implementation of ICTs in healthcare, but they largely fail to capture contextual nuances such as linguistic, material, and technological access, all of which may pose a challenge for the actual patients who use the system. I consider such reports and policies to be technical documents, which serve as a basis for international health care organizations and funders to argue that new systems should be built that depend on mobile phones and other ICTs. If indeed rhetoric and technical communication are centered around getting people to do things, then it is important to

explore how the data and policies are used to construct mHealth and eHealth as viable alternatives for LMICs and how these claims are implemented, embraced, transgressed, and/or rejected within these contexts.

Furthermore, due to an increasingly globalized world, technological models and discourses become transcoded (Dingo, 2008) from place to place at such a rapid rate that it is almost impossible to say whether one particular technology or idea belongs to one location in its entirety. Differences in context influence technological interpretations and interactions in ways that are rooted in understanding the discourse surrounding the implementation and adoption of technology. This dissertation, therefore, interrogates the public-facing discourses of mHealth in Nigeria, such as policy documents and actual mHealth application interfaces, to examine the differences in communicative practices deployed by the proponents and producers of mHealth and their implications for patient-users. The next section contextualizes Nigeria's health situation as a precursor for understanding the role the mHealth is expected to play in Nigeria's health sector.

1.1.2 Nigeria's Healthcare Situation and the role of MHealth

Nigeria, with a population of over 200 million people, has a high disease burden due to 333 named diseases and injuries and 84 risk factors which resulted in 1,353,949 deaths in 2016 (according to the Global Burden of Diseases, 2016). The country is also listed as one of the fifty-seven countries affected by the human resources for health crisis (HRC). Among the human resource challenges facing the country are a shortage of health personnel, perpetual emigration of health workers, and the concentration of health professionals in urban centers, while rural areas are left un(der)staffed. The UNESCO Institute of Statistics reports that 48% of Nigerians live in rural areas and often rely on

western medicine, alternative, and traditional systems of health delivery which are not coordinated in any formal way and are mostly outside of government oversight (WHO, Workforce Alliance, n.d.). These conditions make the country one in dire need of healthcare intervention.

Historically, the first attempt to coordinate Nigeria's health system began with the Federal Ministry of Health's (1988) *National health policy and strategy to achieve health for all Nigerians* (NHP), which sought to put an end to precolonial and colonial arrangements that provided healthcare access for only members of the civil service, the military, and their families (see more about this in Chapter Three). However, since the publication of the NHP (1988) and its subsequent revisions (2004, 2014), Nigeria has implemented a broader healthcare system which is based on the primary health care (PHC) model. The implication of this is that healthcare provision has been divided into those services provided by the government, which is highly subsidized and (supposedly–though rarely) available to all, and those provided by the private sector which is often unregulated, available to those who can afford it, and able to expand into more areas of healthcare which are often not captured by public health services.

In 2012, the Federal Government of Nigeria (FGN) launched the Saving One Million Lives project (SOML) which was targeted at reducing maternal and infant mortality, one of the country's topmost healthcare burdens. SOML was also created in line with meeting the United Nations Sustainable Development Goals 3 (Ensure healthy lives and promote well-being for all, at every stage of life). Information and communication technologies (ICTs) were forecast in the Landscape report as instrumental to achieving the SOML goals and thus the country looked to mHealth

(Federal Ministry of Health, 2013). A health technology landscape report in 2014 shows electronic and mobile devices have been used by non-governmental organizations and other sponsored health initiatives to support healthcare in the country prior to this time. The landscape report documents at least thirty-five such programs that may be leveraged to support the SOML project (United Nations Foundation, Landscape Report, 2014). However, the report failed to capture other community-led initiatives which had been used by disadvantaged communities for several years before corporate-style interventions were introduced. By ignoring the contribution of such community-led initiatives, the report essentially limited the category of interventions which would be considered as legitimate and expandable for use in the health sector.

In their review of health challenges in Nigeria, Aliyu and Amadu (2017) noted that the increasing urbanization of Nigeria, as marked by rapid movement of high percentages of the population from rural areas to city centers across different geopolitical zones, is an unplanned project which has increased the burden on already inadequate infrastructure, including healthcare. Thus, while health services continue to expand in cities to accommodate population growth, services to rural areas face neglect and lack of expansion. Yet, having been accustomed to the inadequacies of the PHC model, rural dwellers, recent urban migrants, and other marginal categories of people have devised alternative means for accessing healthcare services. A solution that many Nigerians have resorted to for learning how to meet their healthcare needs, besides traditional healing, is the use of mobile services—through calls to family and social network members, internet searches, and belonging to different social media groups. Young women, in particular, join support groups on social media to learn about accessing reproductive health services,

parenting advice, etc. For instance, one such group which targets first-time parents, Mamalette.ng, has 233,348 Facebook followers and 192.7k group members. Discussions on the group page include topics drawn from western as well as traditional medicine so that members are informed about available options for the care they seek. As more people get connected to mobile phone- and internet-supported health, in the rural reaches, even more people are getting disconnected due to reduced investment in infrastructure and commercial activities in rural areas. Nigeria's healthcare system, therefore, presents a situation in which the move to support the health system with ICT-driven technologies under the categories of mHealth is fraught with challenges which are omitted from the discourse, yet are the basis for the discourse (i.e., the ICTs are expected to contribute to the solution needed to address lack of infrastructure).

Beyond the challenges of Nigeria's healthcare system, a major rationale for the call for the use of mHealth in Nigeria has been due to the data indicating that Nigeria has a fast-growing population of mobile phone and internet service users (The World Bank, Mobile cellular subscriptions). However, such data are fraught with inaccuracies (Bankole, 2015; Mirani 2015), as I detail in the next section.

1.1.3 The Issue with Mobile Phone Penetration Data

Following the return to democratic governance in 1999, the government of Nigeria began to provide licenses for private telecommunication companies to establish businesses in the country. This move disrupted the existing national phone grid which made telecommunication affordable for only corporate organizations and the upper- and upper-middle-class. By 2001, mobile phone services and internet access had begun to

spread in city centers throughout the country, albeit at a high cost. By 2004, the cost of these services started to plummet (All Africa, 2004). Cellular phones became more affordable and a more democratized system of subscriber identification module (SIM) card availability, whereby users could choose their preferred network provider and buy phones they could afford, made the use of mobile phones proliferate even faster. According to data from the International Telecommunications Union (ITU), 99.03% of Nigeria had mobile phone subscriptions as of 2020 (see Figure 1.2 below) and only 33.6% internet connections as of 2019 (see Figure 1.3). Despite the relative affordability of mobile phones and the massive expansion the telecommunications industry has witnessed in Nigeria, up to 25 million, or approximately 12.5% of Nigerians remain unconnected or under-connected to the network (Adepetun, 2021). The figure expands even further if internet access data were captured in the data. Many Nigerians remain off the grid and just as the telecommunication industry, one of the most expansive industries of the 21st century, has left them out, so have many other technological developments, including access to quality healthcare. Thus, if indeed mHealth is designed to meet the healthcare needs of remote people in LMICs, it is important that the real picture of the context starts by accounting for who those people are, what technologies are really available and utilized by them, and what their health needs are instead of working with rosily optimistic figures from the ITU (such as seen in Figure 1.2) which do not provide the necessary or sufficient information for contextualizing the potential patient-users, their technological access, or what matters to them when it comes to improving health care access through mobile technologies.

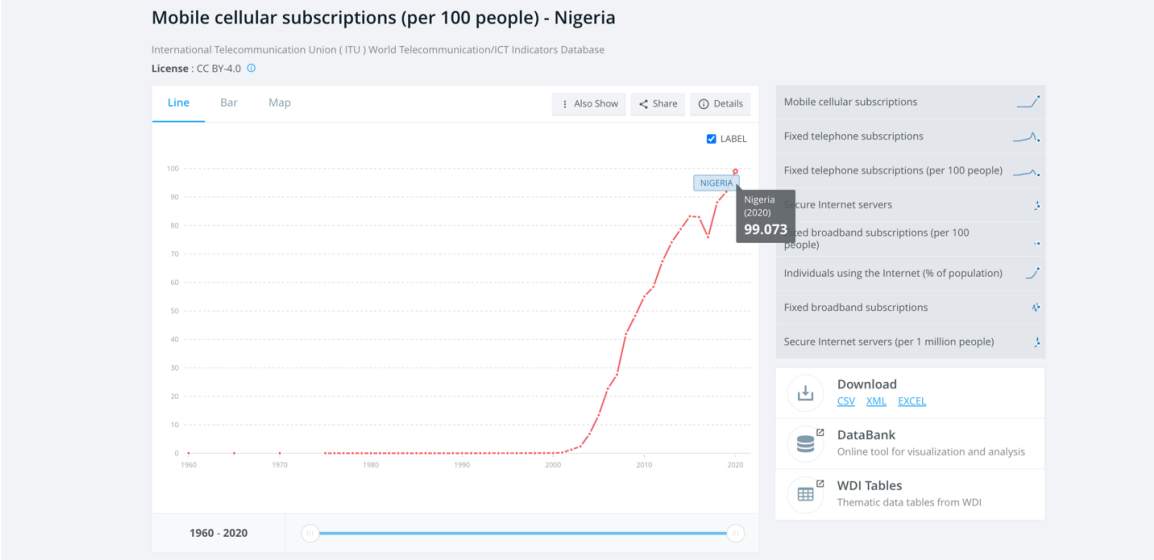

Figure 1-2 International Telecommunication Union (ITU) data showing that 99.073 out of every 100 Nigerians have a mobile phone. Source: https://data.worldbank.org/indicator/IT.CEL.SETS.P2?locations=NG

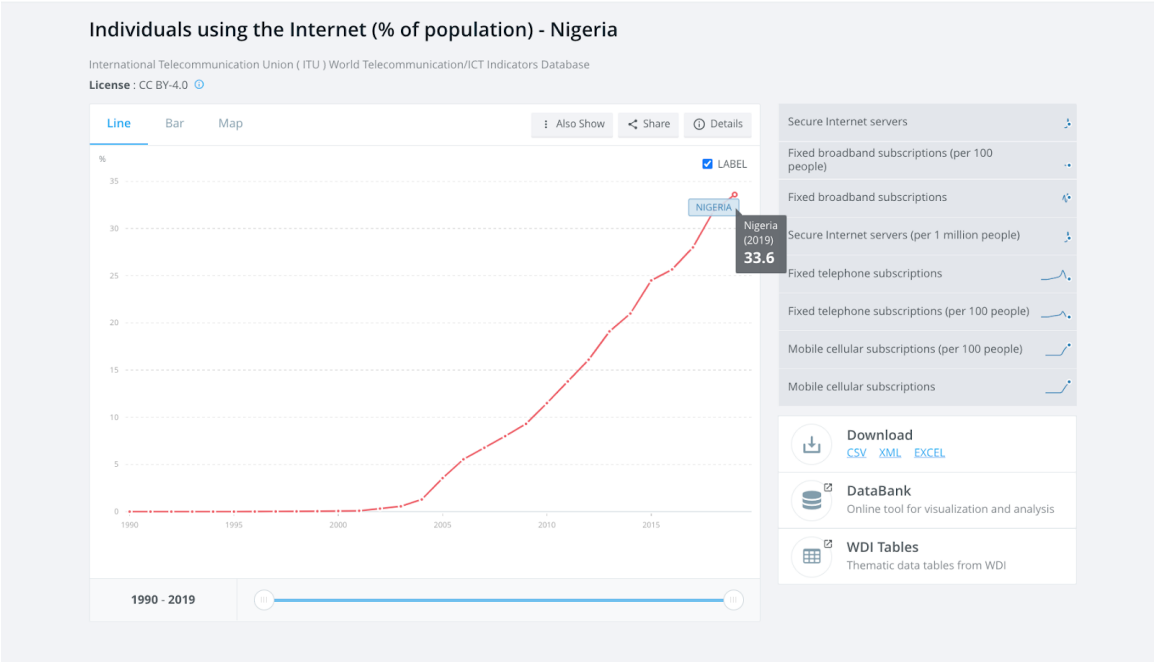

Figure 1-3 Screenshot showing the percentage of Nigeria's Population connected to the internet from 1990-2019. Source: The World Bank, International Telecommunications Union. https://data.worldbank.org/indicator/IT.NET.USER.ZS?locations=NG

Considering those who remain unconnected to mobile technology and internet access, the data supporting the popularity of cellular connectivity has often been referred to as a myth that does not reflect the true nature of cellphone usage in LMICs (Mirani, 2015). According to Mirani, sixty-six percent of Nigerian cellphone users have multi-SIM phones, where two or three SIM cards from different network providers are inserted into one phone so that each can pick up a signal, depending on their availability. Multi-SIM phones make it difficult to ascertain the actual number of people with phones and even the distribution of cellphone usage, since a single phone can have multiple active connections. The use of multiple phones and multi-SIM phones is an adaptive strategy for dealing with inadequate cellular coverage across the country, even in cities.

Figure 1-4 A dual-SIM mobile phone with an expandable memory chip. Source: Author

On another level, and as I shall discuss further in Chapter Three, data accounting for how mobile phones support the mundane activities of ordinary people, including those in rural and marginal contexts, often fails to account for the creative uses that the people have developed for themselves. For example, money kiosks and point of sale (POS) machines which are now hailed as innovative initiatives for supporting the unbanked, and which were eventually recruiting across Africa (Russon, 2019), existed in non-institutionalized forms before capitalist models were designed to institutionalize them. As a university undergraduate, I and other students would have parents transfer airtime codes to us which were then exchanged for cash. This system of transfer helped students avoid the cost of transportation to banks (which were at that time located off campus), as well as the wait time it took to withdraw cash from the bank. Individuals who migrated to other locations for jobs send remittances to their family and friends in remote locations using this means as well. This indicates that savvy users adapt technologies to solve their immediate problems in ways that the technologies were not initially intended. Eventually money kiosks based on this organically derived model became monetized and institutionalized. Although these institutionalized versions are now hailed for their ingenuity, their historical background of local innovation is lost. The knowledge created by the creative uses to which ordinary users have put mobile phones became unacknowledged.

1.1.4 The Myth of a Democratized Internet

In my own autoethnographic research into what mHealth really offers for users across various contexts, I have often tried to cross-reference data and experiences between the United States and Nigeria as I traveled between these countries for personal

and research reasons. I have since found out that the experience of the internet is often not the same each time I travel. Accessing some US-based websites from outside the US is, at least, challenging, if not frustrating or totally impossible. This is due to what has been technically referred to as geo-blocking. According to McDonalds (2018), geo-blocking "is when companies block [web]traffic from other countries… rather than increasing the security of vulnerable systems" (para. 3). Basically, geo-blocking prevents people in a geographical or geopolitical region from accessing goods and services by restricting access to such services. In an increasingly globalizing world, there are ways to circumvent geo-blocking for certain purposes if you have the skills and resources to do so. However, for me, the reality of geo-blocking materialized when I couldn't access my medical records through any of my US-based patient portals whenever I was in Nigeria. Figure 1.4 provides an example of a blocked service response when I tried to access my records from a US-based patient portal while in Nigeria. It did not matter that I had the relevant login details to access my records; without access to the website from every possible location, my records became unavailable when I needed them. The idea that electronic health records are easily accessible and transferable dissolves when confronted by the political economy of web-service availability. The overemphasis on the democratic nature of digital health would appear to be gaslighting users who are constrained to use such technologies in one context but are prevented from using it in other

contexts

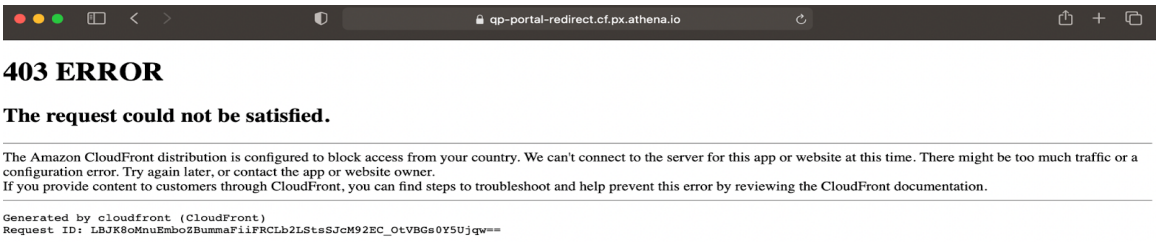

Figure 1-5 Screenshot of an error message for a blocked website.

The logic of geo-blocking falls apart when we consider the fact that despite blocking access to certain services or entire websites in other countries, advertising the products and services of blocked websites does not stop in these countries. In fact, an attempt to access a website or service is more than likely to direct advertising traffic towards the user's IP address. Moreover, people who have access to virtual private networks (VPN) can still access such websites, thereby exposing the economic, classist motives behind geo-blocking.

The material impact of geo-blocking can be felt more when we consider the fact that the low-cost smartphones which are more common in LMICs often come preloaded with multiple apps which are irrelevant to the context and therefore would never be used by those who buy these phones. Also, despite the oversaturation of the app stores with medical apps (see Google's Play Store and Apple's AppStore), people in LMICs typically do not get recommendations for apps that are relevant to or workable in their context. App suggestions are often based on the most popular apps rather than the most relevant apps regardless of the search engine's capacity to identify the searcher's location and other information.

The contributory factors to the material realities in which mobile phone users in LMICs operate are not only infrastructural, but they are also economic, political, and socio-cultural. How people use mobile technologies will depend on their goals and the capacities of the technology they own. Yet, mHealth discourses, including those emanating from the WHO and those from institutions within the country focus on the technology to the exclusion of the relevant contextual details that users need to be aware of in order to determine the additional uses to which users might put their phones.

1.2 Articulation of Research Questions

Deborah Lupton, who has studied mobile health and associated apps extensively, suggests that the impact of any given electronic health technology should not be studied based merely on the radical changes that such technologies cause on the production and transfer of health data (2014). Rather, she recommends they should be properly studied from a perspective that allows for emancipatory uses that enable users who may not be considered as ideal users in the conceptualization, design, and delivery of such technologies, so they can truly benefit from these technologies. Therefore, to guide my research, I will be exploring the following questions:

1. Considering that the domains of eHealth discourses traverse several social fields (such as government policy-making, international healthcare policy-making, finance, medicine and public health, and information technology) and that multiple social actors are involved, how do power and ideology shape eHealth discourses? How are the ideological underpinnings of eHealth discursive and in what forms do they materialize on patient outcomes?

b. In line with goals of social justice in technical communication, and the emancipatory goals associated with critical discourse studies and the rhetoric of health and medicine, how might studying the discourses around and about mHealth help provide better healthcare in LMICs and other resource-constrained contexts?

2. Without leaning towards technological determinism, whereby it is assumed that the affordances of mobile technology in other contexts (geopolitical, e.g., in some parts of Global North; and economic, e.g., the financial sector) are transferrable, in what ways does eHealth guarantee material, functional, and critical access to its users such that their situated health needs are met regardless of their linguistic, socio-cultural, and economic backgrounds?

To answer these questions, I focus on two data sets. The first data set, which will be analyzed in Chapter Four, is the National Health Information Communication and Telecommunications Strategic Framework, 2015-2020 (*Strategic Framework*). The *Strategic Framework* was produced by Nigeria's Federal Ministry of Health (FMOH) in response to the United Nation's call for the use of mobile phones to support healthcare delivery in Nigeria and in line with the WHO's Sustainable Development Goals 3 (SDG 3). The second data set, analyzed in Chapter Five, is a compilation of publications by and about LifeBank, a medical logistics company that prides itself on the ability to use ICTs to promote blood donation and distribution in Nigeria. The second data set includes speeches by the founder of LifeBank, newspaper reports, social media posts from 2017 to 2021, and screenshots from the company's website and blood donor app. LifeBank

exemplifies a locally designed health technology that constructs and positions its users based on the exigencies of the context.

1.2.1 Some clarifications about the nature of this work

Several studies have explored the sociological (Lupton 2013, 2014) and rhetorical (Teston 2016; Tweedale, 2018) work of mHealth technologies in non-LMICs contexts. Although many of these studies are localized and specify their context, an underlying assumption is generally that mHealth apps are encountered in the same way across multiple contexts: that is to say, if it can be used in a particular way in one context, it can be duplicated elsewhere. However, several conditions reflect the fact that this assumption does not materialize in LMIC contexts. For instance, many LMICs are multilingual and multicultural in dimensions that make it significantly more difficult to access technologies developed primarily in English, rendering them useless to a considerable population of users. Also, in many LMIC contexts, as I will discuss in Chapter Four, when technologies are introduced, this is often done top-down through institutions rather than bottom-up through individual uptake; as such, whether or not users agree to use these technologies does not matter. If you don't use them, you simply do not get access to health care. Also, the technologies that local users employ or adapt often depend on personal knowledge networks, and as such, they are unrecognized or considered unacceptable by institutions. Thus, these linguistic and proprietary factors make the adoption of mHealth technologies for personal use somewhat different in LMICs.

This study is focused on the discourse of mHealth technologies which are produced within the Nigerian context and applicable to Nigeria and other similar

contexts. I do not assume that all LMICs are similarly configured or that health services in LMIC contexts have the same challenges. However, I conduct my analysis with the hope that aspects of my conclusion may become relevant inputs in other contexts.

Finally, prior to this dissertation, I considered myself an uninterested observer of health systems and what goes on within health institutions, mostly because I did not have many occasions to engage with the system. However, through the process of writing this dissertation, I have immersed myself in the rhetoric and business of healthcare not just for the dissertation, but also for meeting my own health needs. I have learned to navigate the unfamiliar health systems between the United States and Nigeria, comparing notes and observations as I go. I have downloaded and used several apps which were designed primarily for the users in each context. Many of those notes and observations come up in my discussions in this work. Thus, this dissertation is not an autoethnography, but it is informed by autoethnographic experience.

1.3 Scope of the Study/ Limitations

When I began to actively think about the role of mobile phones in healthcare delivery in Nigeria in 2017, the mHealth industry in western contexts was booming. At that time, the information available on mHealth, especially from the Global South, was limited but as the years went by, the COVID-19 pandemic occurred, which led to many changes in how we think about healthcare in different contexts. I have tried to capture some of these changes within this dissertation, but much research still needs to be done and the work cannot stop; hence it would be important for future studies to consider the changes in the design and use of ICTs shape healthcare discourse in the post-pandemic era (if ever there is one).

1.4 Significance

This dissertation contributes to knowledge in three ways: 1) it examines multilayered complexity involved in the construction of the discourse of mHealth technologies by following its discursivity across transnational, global, and local contexts; 2) it contributes to our understanding of technical communication from the Global South; and 3) it suggests ways for developing and enacting localized technologies for continued engagement. I will expand upon these points further in Chapter Six.

1.5 Overview of Chapters

So far, this chapter has provided some background into the influences that have shaped the discourse of health ICTs in Nigeria, especially from a technological perspective. In the rest of the dissertation, I will expand on some of the issues raised here as well as other historical and contextual factors that influence the discourse of the use of ICTs for healthcare in Nigeria. My research takes an interdisciplinary approach which is grounded by frameworks and methods discussed in Chapter Two. In Chapter Three, I situate the discourse of healthcare in the Nigerian context within a history of discourses influenced by top-down, political conceptualizations of access to health that is based on class and geographical divides.

In Chapter Four, I discuss the policies and politics of the use of ICTs in Nigeria by examining the National Health ICT Strategic Framework, 2015-2020, as a product of top-down macro-level problematization and problem-solving for LMIC contexts. I consider how the top-down approach of the policy linguistically foregrounds certain users of technical documents and technological systems while excluding others. I proceed to

discuss the embodied material implications of top-down exclusion for situated users in under-resourced rural contexts.

Following the discussion in Chapter Four, I discuss the case of a locally developed ICT-supported health service in Chapter Five. My analysis focuses on how context, materiality and the medium of communication complicate the rhetoric of the case study and the impact of the company's rhetoric on situated users who inform its rhetoric but are excluded from the solution the company provides. Chapter Six concludes the dissertation by drawing out the theoretical, policy and contextual implications of the arguments made.

2 Discourse, Rhetoric, and Health ICTs

2.1 Introduction

I conceptualize this dissertation as an interdisciplinary research project which draws from the major disciplines of critical discourse studies (with a focus on policy) and rhetoric (focusing on the rhetoric of health and medicine) to explore the discourse of health ICTs. I combine these theoretical and methodological approaches as a way to elucidate the micro- and macro-level concerns that overlap in the discourse of mHealth and health ICTs. This chapter presents, broadly, the theoretical frameworks that influence the study. Specific applications of methods are described in the respective analysis chapters (Chapters 4 and 5).

2.2 Discourse

Language influences the way we see the world and discourse organizes the way we see the world through language. According to Norman Fairclough (2015), "[d]iscourse is language viewed in a certain way, as part of a social process (part of social life) which is related to other parts" (p. 7), including time, space, place, beliefs, institutions, material practices, and social relations of power. Fairclough considers discourse a social practice which is determined by social structures, associated with the conventions of social institutions, and ordered by ideology and power relations (p. 51). Under this view, discourse as social practice involves social conditions of production and interpretation for which language is a tool (i.e., a technology for organizing the way we see and interpret the world).

2.2.1 Critical Discourse Studies and their Applications

In order to understand how language and discourse influence and organize the world, some scholars of discourse have taken on a critical approach known as Critical Discourse Studies (CDS). CDS is concerned with identifying and correcting social wrongs through the use of critique (Fairclough, 2016). Hence, CDS scholars are interested in the critique of text or discourse to discover inconsistencies, (self)-contradictions, paradoxes and dilemmas that are internal to the text or discourse, including multimodal discourse. According to Jancsary, Höllerer, and Meyer (2016), critical discourse analysis to considers other modes or semiotization, especially the visual mode, to uncover how social actors create signs which are "strictly oriented towards their own needs, while their interpretive work is left to the audience" (p. 184). Overall, CDS uses contextual knowledge as socio-diagnostic critique towards uncovering the manipulative character of discursive practices (Reisigl &Wodak, 2016).

CDS scholarship on technology seeks to "engage with the politics of technology where they are practiced—namely, in the everyday" (Roderick, 2016, p. 5). Roderick (2016) focuses his multimodal approach to CDS on examining technology and technoculture. His approach is based on the premise that technologies, just like discourse, are developed around social needs, practices, and purposes which make the separation of technology from the social impossible. Because technology is closely embedded in social life, it is able to rematerialize and recontextualize existing patterns of social relationships and to reproduce the structural asymmetries and inequalities that already exist within the society. Thus, the way we experience technology, and the way technology evolves are informed by the way we talk about and represent technology (i.e., that technology and

culture exist in a co-constitutive relationship with each other). Roderick, therefore, suggests that we consider the relationship between technology as a form of technoculture which is "a contested terrain upon which social actors engage in struggles over values, resources and meanings" (p. 2).

Thinking more broadly about everyday life and the discourses and technological systems that frame them, CDS scholarship has recently begun to consider the relevance of policies—i.e., "the discursive simplification of an infinitely complex terrain of political action, and the assumed landscape of possibility for government intervention" (Mulderrig, Montessori and Farrelly, 2019, p. 6)—as a technological system which shapes society through discourse. CDS scholarship focuses on policy work with the assumption that the language of policy plays a significant role in conceptualizing policy problems and legitimizing the solutions it proposes (for a collection of CDS studies on policy, see Mulderrig, Montessori and Farrelly, 2019). In other words, policy functions in society as a technology for limiting political action discursively.

As an analytical framework for investigating policy, CDS captures and conceptualizes the often-overlooked details of texts which are relevant for understanding how policies are developed, understood, and implemented. It also takes an interpretive approach to understanding how political practices are influenced by the individual and collective beliefs, values, and traditions of policymakers.

In Chapter Four, I apply CDS methods (Machin and Mayr, 2015; Wodak and Meyer, 2016) to the analysis of a policy document which positions information and telecommunication technologies, especially mobile phones, as the solution to the problem of universal health care unavailability in Nigeria. Considering the goals of CDS to be the

application of the outcome of linguistic research to the corrective ends changing a social wrong (Fairclough, 2016), I discuss the implications of my analysis for the field and my research context in Chapter 6.

Using the methods of critical discourse analysis, I perform phase-by-phase analyses at the three levels of the text itself, the discourse practice level, and an analysis of discursive events as sociocultural practice, in order to explore the interconnectedness of the policy documents to the situation they were created to address. In interpreting and analyzing the texts, I take up Fairclough's (2015) suggestion not to separate texts from the discourses that produced them, to ensure textual analysis is informed by those discourse processes. According to Fairclough, a text is the product of "the process of production, of which the text is a part of and the process of interpretation, for which the text is a resource" (p.57). To create a framework for situating the *Strategic Framework* within health policy discourse in Nigeria, for example, I historicize the history of healthcare in Nigeria in Chapter 3 by focusing on how the separation between different levels of care provided for different social classes contributed contemporary understandings of what healthcare is for separate groups of people.

2.2.2 The Role of Policy Documents in Social Structures

A policy refers to a plan of action to which a government or an organization has committed itself. According to Fischer (2003) the history of policies can be traced to the ideas or beliefs that political actors consider to be important and therefore politics of policy "is grounded in disputes about the good life and the means of realizing it, policy politics by its nature centres around controversial ideas and beliefs about the best courses of action" (p.26). Fischer (following Schmidt, 2001) explains that policy is concerned

with changing a particular situation and that discourse contributes to change by accounting for the social, cultural, and material relevance associated with adopting change.

Texts such as Nigeria's *Health ICT Strategic Framework* (or *Strategic Framework,* see a more detailed description of this in section 4.2.1) result from a discourse that draws upon presuppositions about the state of Nigeria's healthcare system and where it needs to be. Health policy such as this document do not merely provide an assessment of the status of Nigeria's healthcare system, they also provide a roadmap for future action in infrastructure building and spending. They influence the organization of society and the relationship between social actors and institutions. Thus, such documents are regularly reviewed and updated to reflect new national goals. For instance, the documents analyzed in Chapter 4 were created between 2014 and 2017 during a time when there was increased pressure for LMICs to implement eHealth on a large scale (WHO, GOe 3, 2011). Of course, the call came during a period of extensive digitization in other sectors of the Nigerian economy, particularly in the financial sector. However, while the financial sector had the impetus of the Federal Government through the Central Bank of Nigeria that forced banks to impose charges on cash-paying customers, this approach cannot be easily adopted for the development of eHealth due to its relationship to real human beings. Unlike the financial sector where transactions are about movement of funds which can be represented easily in digits, healthcare involves a complex network of actors with different goals whose activities impact patients with diverse health issues.

Much as language frames the social world, it is also framed by the non-linguistic parts of society (Fairclough, 2015, p. 57). Social problems are identified and debated,

navigated through language. The process of seeking a change to social problems often requires an argumentative process where problems are identified, and claims and warrants are provided for proposed solutions. However, the material realities may affect what can be said about social problems such that some messages are foregrounded while others are backgrounded or even omitted. For instance, policies tend to frame the problems they will address through the lens of the solution that is considered logical, rational and within the limits of what the government or institution is willing to commit to. The language of policy documents often deploys suggestive and hopeful language while appearing to consider all the necessary conditions for success. However, within the Nigerian context, health policies and programs have always had the component of ideological underpinning and foreign investment that has not guaranteed modern healthcare for all citizens. Moreover, the current situation of Nigeria's health care system is marked by gross infrastructural, personnel and access inadequacies. According to the FMOH (2016, National Standards) Nigeria has a doctor-to-patient ratio of 1:6500, with annual emigration of thousands of Nigerian-trained doctors, nurses and other health practitioners, uneven distribution of health service infrastructure and providers between rural and urban areas. Given this, one would see that grandiose plans without activated agents to execute them and without a means of accountability ought to be analyzed as a serious concern for social good (Fairclough, 2015).

Also, by proposing that Nigeria develops a framework for guiding the use of technologies in health care, other discursive considerations are required for users to fully participate in the use of emerging health technologies. For instance, Salami (2015) has suggested that the privacy of users' needs to be better understood and data privacy

policies need to be in place. Although a good suggestion, Salami's proposal fails to look at Nigeria's immediate context as she proffers a solution to the attendant need for data privacy protection. Her recommendation of the European Union's model is comparable to the development of the *Strategic Framework* based on suggested best practices from transnational agencies. While a definite data privacy policy for digital health data sharing is yet to be provided, it is important that such a policy must be informed by the context in which the technology is used and, more importantly, it should not recreate the problematic features predominant in digital data privacy policies, such as the lack of agency for users.

Publications such as the *Nigeria Digital Health Landscape* (2017), and the *Assessment of Enabling Environment for ICTs for Health in Nigeria, Review of Policies* (2014), published by the United Nations Foundation, point out that the fragmented nature of digital health technology in the country accounts for its insignificant impact. These publications are directly referenced in the *Strategic Framework*. Yet, the *Strategic Framework* does not capture how these technologies might affect the existing system. It presupposes that the current health system has the capacity to adopt and absolve the logics required for the "interoperability" of an ICT-enabled system. According to Asangansi (2016), the hierarchical structure of data reporting in many health ministries in LMICs involves power dynamics which places the reporter/baseline health worker at a lower ranking scale than the person to whom the data is reported: as such, a records officer at a primary health center ranks lower than one at a state and federal level, etc. While data necessarily has to be collected and stored by the baseline health worker, accessing such data becomes more difficult the higher up the chain one goes. The

networked logic behind ICT-driven data collection and circulation requires a more democratized process of data input and access. Asangansi (2016) refers to this situation as a paradox where although mHealth or Health ICTs may be beneficial to the system but are resisted by persons operating within the hierarchical structure of the system. Thus, it is important to understand how different agents are positioned as actors within the ICT driven health system that is proposed by the *Strategic Framework*.

Furthermore, the *Strategic Framework* like other health policies remain in the background of the discourse of healthcare in Nigeria because actors such as health ministers and commissioners do not foreground them in their public engagements. This makes the public uninformed and disengaged from how the healthcare system is structured to affect their lives. Thus, while policies are drafted and implemented, the accounts of how they affect different users of the healthcare system continues to be ignored, yet new policies are created to address the failures of the system, but still prioritize a top-down system-centered approach.

2.2.3 Policy Documents as Technical Communication

Policy making is a deliberative process where concerned parties, often referred to as stakeholders, deliberate on an issue. Deliberations may be informed by past and current events, but the goal is usually to take a decision on a future action. Studies in political sciences such as Dye (2012) argue that policy is "whatever governments choose to do or not do" (p. 12). Others have also argued that policy is an "officially expressed intention backed by a sanction which can be a reward or a punishment" (Lowi and Grinsburg, 1998, p. 607). Colebatch and Hoppe (2018) suggest that policy be seen as the process by which governments problematize issues for future action. These definitions

point to the understanding of policy as a deliberative process which involves problem identification and solution proffering and follow up action by a group of social actors, in this case governments.

The document examined in this Chapter 4 makes the case for an ICT-enabled health care system on a national scale in Nigeria, based on the consideration that such technologies have been deployed at a rate that has been determined as efficient and successful (see United Nations Foundation, 2014). Thus, the expansion being proposed is a future action. The current situation that contributes to the argument for Health ICTs includes the disorganized nature of the existing applications as well as the conditions of the existing health care system compared to the desired healthcare system—a problem which was identified based on the research done for the United Nations Foundation *Landscape and Inventory report* (2014).

As a technical document, the *Strategic Framework* problematizes the problem with Nigeria's healthcare system as ICT-related and constructs how a national Health ICT should be understood, implemented, and used by "stakeholders." It is therefore important to examine how the *Strategic Framework* does this and for whom the system will work (or not). After all, according to Langdon Winner, artifacts have politics that can be traced to the policies and processes that are documented in the texts that construct them, and those can and should be questioned before the inadvertent results of their materiality become fixed and unchangeable. In Winner's words,

> Consciously or not, deliberately or inadvertently, societies choose structures for technologies that influence how people are going to work, communicate, travel, consume, and so forth over a long time. In the process by which structuring

> decisions are made, different people are differently situated and possess unequal degrees of power as well as unequal levels of awareness. By far the greatest latitude of choice exists the very first time a particular instrument, system, or technique is introduced. Because choices tend to become strongly fixed in material equipment, economic investment and social habit, the original flexibility vanishes for all practical purposes once the initial commitments are made. In that sense, technological innovations are similar to legislative acts or political foundings that establish a framework for public order that will endure over many generations. (Winner, 1980, p. 127-128)

As I mentioned earlier, the *Strategic Framework* reflects the recommendations from other documents produced by transnational organizations like the WHO-ITU, UN Foundation and others. Specifically, when I consider how the *Strategic Framework* uses the publications from these organizations as a form of ethos-building, it becomes important to examine what aspects of the recommendations of these documents have been adopted or adapted to the Nigerian context. For example, according to the *Strategic Framework*, using the World Health Organization-International Telecommunications Union eHealth Strategy Toolkit should ensure that the vision can be achieved (p.12). Yet, upon considering the recommendations of the WHO-ITU toolkit, I found the following statements in its introduction:

> The Toolkit provides a framework and method for the development of a national eHealth vision, action plan and monitoring framework. It is a resource that can be applied by all governments that are developing or revitalizing a national eHealth strategy, whatever their current level of eHealth advancement. **It is a practical,**

> **comprehensive, step-by-step guide**, **directed chiefly towards the most relevant government departments and agencies, particularly ministries of health and ministries of information technology and communication.** (WHO-ITU, 2012, p. iv, emphasis mine)

In the quote above, the Toolkit is described as a "step-by-step guide, directed chiefly towards the most relevant government departments and agencies…." This clearly marks the document as a technical document which is intended to be used to build something in a context that is removed from that of its designers. The introduction goes on to admonish the primary audience (ministries of health and ministries of information technology and communication) that

> …**the Toolkit's approach keeps the general public firmly in mind, recognizing that it is the public who will be the ultimate beneficiaries of eHealth in their country**. (WHO-ITU, p. v, emphasis mine)

This recommendation to keep the public in mind as beneficiaries comes at the end of the introduction to the Toolkit. In the hierarchy of importance of issues raised within the Toolkit, the public, who are the real end-users of the system, are not regarded as the most important or central consideration in eHealth policy development. Additionally, the recommendation also considers the public as "beneficiaries", thereby positioning the government and policy makers as agentive benefactors when in fact the expectation for a design of health care needs to imagine that everyone, including policy makers and government officials will, at some point be direct or indirect users of the system. Consequently, the *Strategic Framework* excludes patient-users as a target audience to

whom the policy addresses and for whom an ICT-enabled healthcare system to be established is meant to work.

By ignoring the public in the policymaking process and in the plan for the implementation of the policy, Nigeria's FMOH indicates that certain members of the population do not count as knowers who are agents in the process of building a health system that works. Also, when policy documents fail to address the limitations of the context such as the scarcity of doctors and the fact that difficult working conditions make migration an issue for medical personnel, it is as though the solution being offered via Health ICT only pays lip service to the demands of international organizations. Indeed, many mHealth services are being developed daily; however, we find that in the competition for scarce resources, only those people who can afford to pay for digital healthcare will have access. Also, the more lucrative that aspects of mHealth, such as telemedicine, become for doctors, the more there exists the possibility of reduction in the number of physicians and other medical personnel who would be willing to practice in the physical healthcare delivery environment, especially in a context where the physical infrastructure to support such care is grossly lacking. One effect of this is that access to quality health care will continue to elude those who need it the most, while those who can afford it will begin to over-use the available system because of ease of access.

In my analysis in Chapter Four, I look more closely at how the *Strategic Framework* positions different users of the healthcare system and then I go on to triangulate how the contexts in which different health-related actions take place complicate the positionalities of the differently situated users.

2.3 Rhetoric and Technology

The term "rhetoric" has been used to refer to the ways by which persuasive arguments are constructed and the means by which arguments, which have been judged to be persuasive, are analyzed. According to Johnson (1998) rhetoric is interested in language as a tool and as a political force with social, ethical, and moral dimensions (p. 19). Rhetorical theory, therefore, explores the ways by which persuasion is created by communicators and experienced by audiences. Rhetorical studies center the construction of audiences as agentive receptors of communication whose response is dependent on their ability to recognize the communicator's intent or purpose. Rhetoricians also study how communicators, media and modal affordances, as well as contextual contingencies promote or efface the agency of audiences.

Scholars of rhetoric who engage with technology are concerned with how rhetoric compares with technology in its approach to getting things done in the real world. Some have argued that rhetoric or language, just like technology can "make, shape, or fix" (Johnson, 1998, p. 18) social conditions. Rhetoricians also focus on how the rhetoric of technology is constructed and contested in society.

Technology is a term with many broad applications. According to Kline (2003), technology can be understood from four usage perspectives: 1) As human-made hardware or artifacts; 2) As a sociotechnical system of manufacture, e.g., all the elements needed to manufacture a piece of hardware, including people, machinery, resources, etc.; 3) As knowledge, technique, or know-how; 4) As a sociotechnical system of use, i.e., a system that combines hardware with requisite knowledge for accomplishing tasks. Because all four definitions relate technology with doing things, a lot of attention has been focused

on the design of technology. However, some researchers have argued the need to investigate the ends of technology both by examining the technology itself (see for instance Winner, 1980) and what the users of technology do when they use technology (Johnson, 1998).

Robert Johnson refers to the connection between rhetoric and technology as "a connection of ends" (Johnson, 1998, p.19) in which we must position the user at the end to understand whether rhetoric or technology is for good or evil. Similarly, Charles Bazerman has argued that technology "has always been part of human needs, desires, values, and evaluation, articulated in language and at the very heart of rhetoric" (Bazerman, 1998, p. 383). The connection between rhetoric and technology can be traced back to Aristotelian rhetoric which identifies *technē* or craft-knowledge as having two inseparable sides—one concerned with reason unto action (rhetoric) and the other with production (technology) (Aristotle, On "Technē" and "Epistēmē"). Aristotle also informs the understanding of the relevance of the user of technology by noting that "the user, or, in other words, the master, of the house will be an even better judge than the builder, just as the pilot will judge better of the rudder than the carpenter, and the guest will judge better of the feast than the cook" (Aristotle, *Politica*, as quoted in Johnson 1998, p. 3). Thus, in this work, I examine the rhetorical positioning of health technologies and their users in order to explain the ends of both phenomena. I do this by investigating what constitutes usable technology for situated users, as well as the questions that have arisen in relation to the challenge of using technology in spaces not considered in the design of technology.

2.3.1 Usable Technologies, Localization and Participatory Localization

Two of the four definitions of technology provided by Kline (2003), i.e., technology as knowledge, technique and know-how and technology as a sociotechnical system of use have been widely engaged in the field of technical communication. Technical communication scholars have tried to understand how technologies are designed, how design is communicated and adapted to the user and more importantly the role of users in the design of technology. By examining issues of usability and localization in technological design, technical communication researchers have shown that not only do users have to be at the center of technological design (Johnson 1998), but consideration must also made for the cultural, political, legal, linguistic, economic, functional and gendered situatedness of users (Agboka 2013; Spinuzzi 2004; Sun 2006). Johnson (1998) offers a rhetorical theory of usability which places users at the center of technological design. For Johnson, user-centered technology involves situating the user at the center of technological design in such a way that the user's situatedness informs the design of the technology right from the beginning stages, rather than the designer's notion of the ideal user shaping how the technology should work.

Successful usability has been associated with technology's capacity to be adjusted to the cultural and material realities of situated users (Agboka 2013; Sun 2006). This is evidenced, for example, by Sun's (2006) exploration of the localization of text messaging in US and Chinese contexts despite mobile phones not being the easiest interface to type with. Sun's research shows that users are co-creators in adapting technologies for uses and spaces that they were not originally configured to serve (e.g., with Chinese users, text messages were used to maintain important social relationships that may otherwise be

strained if they complied with work ethics of not using voice calls for its disruptive qualities, especially if calls are not job-related). Yet, the user's contribution to such adaptability continues to be neglected in technological design, especially where unenfranchised and international contexts are concerned. The role of technical communicators in bridging this gap has thus been emphasized (Agboka, 2013, 2014). According to Agboka (2013), localization efforts through technical documents have been limited to the translation and standardization of documentation, a limitation which he says could be detrimental to users in unenfranchised[2] contexts since such documentation are typically done in the designer's domain instead of the user's domain and completely decontextualized (p. 37-38). Agboka therefore redefines localization as

> a **user-driven approach**, in which a user (an individual or the local community) identifies a need and works with the designer or developer to develop a mutually beneficial product that mirrors the sociocultural, economic, linguistic and legal needs of the user… [U]sers (made up of communities of people) will be considered as active designers in the design process (not consumers of finished products), who know and care about what impacts their lives… [D]esign will become a partnership of some sort between developers and users, and this partnership will help developers learn more about a community before the design process begins. (p. 44, emphasis mine).

[2] Agboka borrows this term from Mattson (2011) to represent the technology localization processes "otherize" cultural others by overlooking local knowledge systems, political issues, economic implications and legal systems prevailing at users' context.

By choosing the phrase "user-driven," Agboka's definition encompasses the contingent situation of the cultural localization of technology. User-driven technology is not merely task-based; rather its design is informed by cultural, political, and economic conditions of its human users. Such a design is a collaborative effort, as described in Chapter One. It is not the sole product of the developer for the user.

The discourse on usability in technical communication has also been viewed in relation to access to technological systems and how the documentation of technological systems may affect the agency of the users of such systems. The rhetorical work of technological systems which are not necessarily associated with hardware technology is often less visible to users, but they exist in abundance. The healthcare system is one example. Different aspects of a healthcare system can also be regarded as technological systems which persuade users to act in specific ways in order to achieve desired ends. According to Banks (2006), whose work is on digital technologies and race and Seigel (2014), who has considered the technological systems of pregnancy care, access to technology includes material access, functional access, experiential access, and critical access. Seigel summarizes the value of each type of access thus:

> …people must have all different types of access to technologies and technological systems. First, they must have material access to the technologies. Second, they must have functional access, "the knowledge and skills necessary to use these tools." Third, they must have experiential access, or the opportunity to use the technologies frequently and to integrate them into their lives. Finally, they must have critical access, to "understand the benefits and problems of these technologies well enough to be able to critique them when necessary and use

them when necessary" (and, I would add, to not use them when necessary; Banks 2006, 138). (p. 3, Kindle Edition)

Usable health technology within the context of my research is one that is materially, functionally, and critically accessible to users because it has been created with the user at the center regardless of whether the technology was created elsewhere or localized to the users' context. In this regard, accessible healthcare for Nigerians will be one that delivered the full scope of health services, such as, the availability of fully functional health infrastructure, personnel and services regardless of location and ability to pay rather than a focus on ICTs that would further remove the availability and accessibility of health services from people in marginal, remote, and rural locations whose daily lives are enveloped by precarious conditions. Usable technology must also account for the different creative or metistic ways that users use the system to support their own desired outcomes.

Therefore, as I explore the discourse surrounding the uptake of mHealth in Nigeria, I shall be thinking about the different constructions of mHealth, its uses, users and their contexts, as well as the implications of all these issues on users of Nigeria's healthcare system who will be marginalized by the implementation of mHealth in Nigeria's healthcare system.

2.4 Health Information and Communication Technologies

The use of information and communication technologies (ICTs) is not new in healthcare. According to Hannah, Ball, and Edwards (2006), computers have been used in the healthcare industry as far back as 1958 when Dielbold and Associates

computerized hospital processes at Baylor University Medical Center in the United States. According to Hannah, et al. (2006), the computerization of hospital processes covered two broad areas:

> 1) a set of business and financial applications, and 2) a set of hospital–medical applications that would require on-line terminals at nursing stations and departments throughout the hospital. Such a system could be used for the following purposes:
>
> - As a communications and message-switching device to route physicians' orders and test results to their proper destinations.
> - As a data-gathering device to capture charges and patient medical information
> - As a scheduler to prepare such items as nursing station medication schedules
> - As a database manager with report preparation and inquiry capabilities. (Hannah, Ball and Edwards, 2006, p. 31.)

The medical and business applications of computers in healthcare continue till today. In fact, multiple models and software now exist for using computers for the medical and business sides of healthcare. Many people now have access to computerized versions of their medical records through the different institutions that facilitate healthcare. Yet access has not been equally distributed due to constraints which are related to the digital divide (Banks, 2006) access to health documentation have remained limited or impossible for many groups in high-income countries and for entire countries in LMICs. According to Adam Banks, in *Race, rhetoric and technology,* the term digital divide is both "a

rhetorical problem as much as it is a technological one" (2006, p.11) because we cannot separate language from the technologies of language. Digital minorities are often also linguistic minorities who are unable to access information and communication technologies because they cannot speak or read standard English. Banks's argument is relevant to LMICs contexts where many technologies are designed and accessible in languages that the people do not speak or write. More significantly, some technologies are often unsuitable for LMIC contexts because communities do not have the functional infrastructure to support such technologies. For example, many communities in LMICs remain unconnected to any electric grid and as such are unable to participate in economic activities which are electricity-driven on a large enough scale to gain significant benefits from such activities. To be clear, it is not the fault or responsibility of these communities to provide functioning amenities for themselves, especially since such communities are part of countries where the development of social infrastructure is connected to government bureaucracy.

Hence, while ICTs have enjoyed an association with social progress in almost every industry, so much so that large scale implementation of computers into different aspects of daily life have become the norm and while ICTs have enjoyed this techno-optimistic rhetoric which continues to promote investment in ICTs, concerns about the lack of infrastructure that supports ICTs in marginalized communities have been relegated to the background, especially due to the divide in socio-economic and material configurations that separate high- and middle-income countries (typically, the global north) from low- to lower-middle-income countries (typically in the global south). Without a consideration of the contextual, infrastructural, and linguistic challenges that pose a limitation to access to

Health ICTs for large populations across the world, the mHealth discourse would only be promoting precarity among those populations.

Besides the digital divide, the discourse surrounding the use of ICTs in healthcare, particularly, mHealth has been characterized by different studies as involving issues of self-quantification, bio-citizenship, and healthism—which bear significant effects on human bodies—and precarity, which relates such bodily issues with the material conditions under which these bodies exist.

2.4.1 Between Quantified Selves, Healthism, a Culture of Health and Saving a Million Lives

Emergent rhetorics from the use of mHealth devices by individuals include the rhetorics of the quantified self and healthism. The idea that the self can be quantified comes from the incorporation of mHealth devices and apps which can measure and record bodily functions and health indicators such as heart rate, glucose levels, temperature, bodyweight, etc. These technologies may also be used to generate data correlating bodily functions and health indicators to the user's daily activities as a way to determine health status, achieve health goals, or signal an emergency in cases where they are used to monitor chronic health conditions. The data generated from these devices are often rendered in figures allowing users to self-track by learning to associate numbers and icons with their health status (www.quantifiedself.com; Smarr, 2012; Lupton, 2013). Swan (2012) considers the idea that data emanating from digital self-tracking promotes a form of "participatory biocitizenship" that can personalize health care through crowdsourcing. She articulates her argument by evoking "*Health 2050"* as a "meme" that can be deployed by health institutions, government agencies, conferences and research

institutions to promote principles for "the **empowerment** of the individual, at any age, to self-monitor and self-manage health and wellness, and conditions of higher risk and existing diagnoses, … with tools that are already available" (p. 94, emphasis mine). Thus, quantifying the self-evokes neoliberal rhetorics of empowerment that transfer the burden of medical knowledge and the prevention and cure of disease away from institutions and onto users of mHealth in what scholars have referred to as rhetorics of health citizenship (Spoel, Harris and Henwood, 2014).

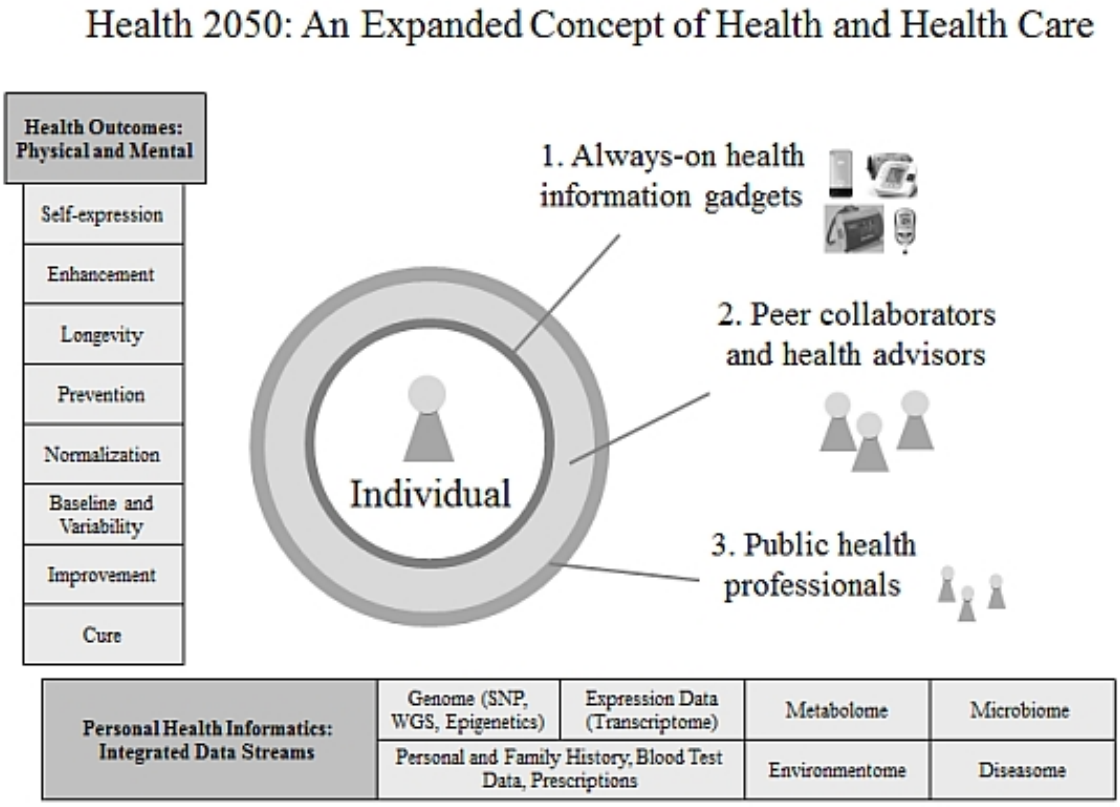

Figure 2-1 Swan's model of personalized preventive healthcare derived from self-tracking (Swan, 2012)

Within Swan's model of participatory biocitizenship, the individual becomes a data focal point that gives and gives to "always-on health information gadgets," "peer collaborators and health advisors,", and "public health professionals." To this list I add

data-driven companies, pharmaceuticals, medical device manufacturers, etc. The model bears no direct connection to how the individual's health needs will be met; rather, health citizens can expect physical and mental gains such as "self-expression," "enhancement," "longevity," "prevention," "normalization," "baseline and variability," "improvement," and "cure" (Swan, 2012, p. 95). Participatory biocitizenship propagates itself through different mHealth devices and downloadable software applications ("apps," for short) which users can use continuously to self-monitor and gain passive or actionable knowledge about their bodies. The idea that there is an app for everything, promoted by Apple for marketing its iPhone3g as far back as 2009, has gained much ground in the health sector. Today, there are almost 100,000 healthcare apps that can be accessed through the Google PlayStore and Apple Store on mobile phones (Statista). Apple's claim is that "An app a day keeps the doctor away" (Apple.com), equating technology with medicine or food by adopting the popular proverbial dietary recommendation, "an apple a day keeps the doctor away." By promoting quantifiable selves which can be acted upon by human and non-human actants within mHealth's networked infrastructure, users' agency over their bodies may be enhanced or hindered.

Participatory biocitizenship through health apps promotes a more socialized form of healthism by giving users information they can share either with health practitioners or as part of social media conversations where knowledge of the self is necessary for niched conversations about health such as in women's reproductive health, fitness, diets, etc. Robert Crawford (1980) defines healthism as a "preoccupation with personal health as a primary — often *the* primary— focus for the definition and achievement of well-being; a goal which is to be attained primarily through the modification of lifestyles, with or

without therapeutic help" (p. 368). When promoters of mHealth target individuals with health citizenship rhetorics that favor self-tracking and self-monitoring, they encourage users to become preoccupied with their personal health and to imbue daily and cumulative health data with interpretation about the status of their health. This can be problematic for several reasons. The conditions of daily life make the use-context of mHealth technologies rather unpredictable. While data algorithms can adapt endlessly, but not unproblematically, to behavioral patterns of technology users, mHealth users cannot afford to be flexible in their use of the technology if they desire data output that is useful for achieving specific personal health outcomes such as improving sleep quality or monitoring blood pressure during pregnancy. This lack of flexibility for users can thus lead to a preoccupation with an aspect of their personal health that can cause discouraging outcomes in the long run. For instance, I have attempted to deal with the health challenges I have faced during the course of this dissertation by getting apps to help me understand my health better. I have used health apps on my phone to track my sleep pattern, daily steps, screen time (outside of hours spent on my computer), periods and the changes that occur from month-to-month. In all these areas, I have at different times considered the data produced by these apps unreliable because the different functions to which I put my phone tend to interact with the data that apps are able to collect about my health behaviors. When one piece of technology wears so many hats, it is difficult for it to function effectively for every situation. Thus, collected data may be misrepresentative.

An extension of the flexibility problem is that this misrepresentative data will be collected and codified by the app and sent as a representation of what I am in comparison

to a million other users. Thus, while the rhetoric of healthism may continue to receive a boost through mHealth apps, the possibility of achieving well-being through data-driven lifestyle modification with or without therapeutic assistance will elude many users and, in some cases, it could become "a burden rather than a vital source of self-knowledge and empowerment" (Lupton, 2013, p. 401).

Beyond the individual, discourses around mHealth implementation also promise benefits to societies. In high-income countries like the United States, an abundance of health data collected through mHealth apps and devices has culminated in the pursuit of "a culture of health" by institutions like the Robert Wood Johnson Foundation (RWJF), America's largest health philanthropy. In 2015, the foundation organized around the theme "Data for health" based on

> an explosion of apps and devices that track fitness, mood and sleep, and of technologies that passively capture information as people communicate with one another, shop, work, or do any number of activities that leave "digital footprints" ... [which] has the potential to help individuals, healthcare providers and communities make smarter, faster decisions that improve the health of the public and promote healthy lifestyles. (RWJF, 2014).

Christa Teston (2016), who carried out a situational analysis of transcripts from the data for health listening events organized by the RWJF, noted that panelists drew on epideictic rhetorics that made assumptions about mHeath technologies, praised the power of data translation and collaboration in creating a culture of health, and highlighted the power of technological design as a key contributor to achieving a culture of health, without acknowledging its limitations. She concludes that such techo-optimistic discourses are

precarious rhetorics that reproduce patterns in health disparities especially because they fail to account for "bodies as material-discursive phenomena" which interact with institutional systems and structures (p.266).

Similarly, in LMIC contexts the implementation of mHealth is described as having globalizing effects such as the reduction of maternal and infant mortality or the emphasis on the implementation of mHealth in LMICs for achieving the United Nations' Sustainable Development Goal 3—Ensure healthy lives and good health for all at all ages. What this translates to is that there is an overemphasis on the use of certain applications of mHealth over others. For example, the mHealth technologies that focus on reducing maternal and infant mortality get better visibility in developing nations than fitness or activity apps and even women's period trackers. In particular, Nigeria's health ministry started paying serious attention to mHealth as a tool for its 2012 Information and Communication Technologies for Saving a Million Lives (ICT4SOML) project. In an ICT landscape report prepared by the UN Foundation in support of the project (United Nations Foundation, 2014), all thirty-five health technologies listed targeted marginalized populations like pregnant women and children, nomads, refugees and displaced persons, persons living with HIV/AIDS and other terminal diseases, etc. While it would seem that Nigeria deviates from the normative discourse of mHealth to consider its relevance from individualized, institutional and technological perspectives as found in higher income countries, this is not the case. Relevant documents typically highlight the use of mHealth technologies within institutional frameworks, while backgrounding or subordinating the role of end-users and patients in the construction and use of such technologies. Consider,

for example, this section of the Landscape and Inventory report which summarizes the lessons learned from current ICT for health interventions as follows:

1. Proper use of the right ICT within the health sector has been found to increase the quality of services provided, create efficiency, and increase the number of people served by reducing common barriers to accessibility of health information and services especially in rural areas. The potential of mobile devices as a means of communication and data collection within the health sector cannot be over emphasized as mobile devices are relatively inexpensive and are already in use across the country.
2. Large scale ICT for Health projects and initiatives require ministerial-level champions and should have the support of relevant authorities and provisions for them should be made at policy levels.
3. To ensure participation of all stakeholders in both the ICT and health sectors, there should be relevant incentives and adequate sensitization and engagement of all relevant stakeholders (regulators, policy makers, implementers, vendors, users etc.). This will also promote the program's sustainability.
4. If clients and health service providers are trained on technologies, it not only reduces the turnaround time for service delivery, but also increases their sense of comfort with these technologies over time.
5. For most ICT for Health initiatives, maintenance and quality assurance are continuous, cost intensive and time consuming. This can be compensated

by the efficiency generated in the use of technology. (United Nations Foundation, 2014, p. 32)

From the first point, we can observe various levels of linguistic subordination: in (1), rural areas are the last to be considered when thinking about how ICTs can increase patient/end users served by health services; in (2), large scale ICTs are to be prioritized over small and medium scale ones which are likely to operate closer to the people; in (3), "stakeholders" considered for incentives refer to several specific groups, but not patients; and in (4), "clients" does not imply patients in under-resourced, rural communities. Evidently, health ICT users' bodies and the materiality of their lived experiences are not considered as able to contribute to the achievement of health outcomes; rather, this text emphasizes that users need to learn to use the technology to release its potentially beneficial "efficiency generated in the use of the technology." The use of technology, as described above, prioritizes the benefits to the healthcare system, through emphasis on "service-provision," top-down "ministerial-level policy-making," "turn-around time for service delivery," and "efficiency generated in the use of technology." This system-focus leaves largely unconsidered the impacts of technologies on actual users who are embodied and situated in various use-contexts.

2.4.2 Bodies and mHealth Technologies

In section 2.2.1, I noted that discourse scholars consider technology as being imbricated with everyday life and technology can reconstruct and rematerialize the conditions of human life in many ways which may not be immediately obvious. To understand the different ways by which technology is woven into everyday life, Michel

Foucault (1982) discusses technologies as matrices of practicality which are divisible into four categories:

1. technologies of production, which permit us to produce, transform, or manipulate things;
2. technologies of sign systems, which permit us to use signs, meanings, symbols, or signification;
3. technologies of power, which determine the conduct of individuals and submit them to certain ends or domination, an objectivizing of the subject;
4. technologies of the self, which permit individuals to effect by their own means or with the help of others a certain number of operations on their own bodies and souls, thoughts, conduct, and way of being, so as to transform themselves in order to attain a certain state of happiness, purity, wisdom, perfection, or immortality. (Foucault, 1982, section I)

As technologies of production, I consider how mHealth apps either use existing methods or create methods to construct usable identities for app users. By usable identities, I mean the information that is interpreted as data that users can act upon. Acting on generated data can be considered as interacting with sign systems—how we interpret the information that apps produce, how we talk about it, and the ideologies that evolve and/or circulate as a result of this interaction, all of which work together to constitute a sign system which can be interrogated. Although Foucault considers all four categories as intricately related, he regards the last two as technologies which promote governmentality: conduct or activities which shape, guide and affect the conduct of

people. mHealth can be considered an example of both technologies of power and technologies of the self. mHealth apps shape public and individual attitudes towards health and wellness as I have pointed out in the case with healthism and biocitizenship. mHealth can also be used as tools of control for achieving individual and collective health goals. However, to agree that mHealth constitutes technologies of the power and the self requires a consideration of who and what constitutes a person who can act and be acted upon in the context of health care and through the discourse of institutions that set up health care practices. The categories of those who can act and be acted upon are not fixed in that to act can be variously defined as the ability to provide care to seek health care. Similarly, to be acted upon requires being a patient (user) of the system—a position that everyone is going to be in at some point in their life. In this position is where the body most interacts with technology as an actor and the acted upon while the technology becomes an interface.

The interface of bodies with technologies in the context of health has invited careful critiques from feminist, rhetorical, and technical communication scholars. For example, Segal (2009) questions the popular assumption that health information on the Web empowers users and posits instead that such information rhetorically constructs users in ways the users may not be fully aware. Focusing more on women's health and the technological systems that support them, Kim Hensley Owens (2009) analyzed women's birthing plans and found that technologies can silence and "supplant, rather than supplement, bodily knowledge" (p. 251). Similarly, Seigel (2014) has challenged the ways that the technological systems of pregnancy care construct pregnant bodies as "risky bodies" to make them conform to the technological system of care rather than

providing them with the agency to access or refuse different aspects of pregnancy care. In their comparative analysis of *Our Bodies, Our Selves* (OBOS) and female reproductive technologies, Novotny and Hutchinson (2019b) note that OBOS laid the foundation for "valuing new methods that enhanced women's health literacies by fusing both embodied and medical expertise into one text with a goal to increase female agency and sense of empowerment" (646). They argued that mHealth technologies such as health apps on mobile devices extend this work, but limit users' agency by profiting from women's data in ways that are not sanctioned by the owners of the data. Elsewhere, Novotny and Hutchinson (2019a) have also argued that by reframing legal documentation such as Terms of Service and Privacy Policy used in female mHealth technologies, such technologies can promote women's empowerment and agency over their bodies. In the US, this argument becomes even more relevant in the light of the reversal of Roe v. Wade in June 2022. It is yet unclear how the data generated by mHealth apps may be used against women who may be unaware of how the personal information recorded by their health apps may be used by third party companies if released without the women's knowledge or by states which have criminalized abortions (see Dannaugh Roche's article in Newsweek Why Delete Period Tracking App? Roe v. Wade Ruling Sparks Panic Over Data on June 25, 2022.).

Examining further the case of women and their reproductive health data, mHealth technologies may also be considered as technologies of production (Foucault, 1982) since the output of any health data input process is a data self which is shareable and readable across multiple networks to achieve or operationalize different goals for the individual,

the health institution, and the society (in the case of data collection for epidemiological studies).

mHealth is also a technology of a sign system (of discourse and rhetoric), because the process of generating mHealth data teaches users to encode bodies as a system of signs which translate bodily functions and natural processes into codes that are readable for the computer program and its subscribers. Take, for example, the idea that by representing a person's weight, height and age as figures which can be entered into a digital app, it is possible to now consider the person as either fit or unfit without necessarily considering the person's lifestyle. Similarly, and in anticipation of the analysis that is to come in Chapter Five, it is now possible to take an individual's act of donating blood as a sign that the person saves lives and to equate the amount of blood given to the number of lives saved. One thread here, so far, is that mHealth could be used as a technology of sign systems to create not only meaningful indicators of health, but also decontextualized meanings of health which can then produce misrepresentations.

Lupton (2014) considers mHealth apps as sociocultural artifacts—a perspective that "acknowledges that apps are digital objects that are the products of human decision-making, underpinned by tacit assumptions, norms and discourses already circulating in the social and cultural contexts in which they are generated, marketed and used" (p.607). It is within this framework that the implications of what mHealth is and can be to the society in which it is deployed can be studied and understood. However, what this perspective doesn't capture is the fact that technology also shapes the discourse of everyday life. Health technologies, and the infrastructures that support them, in particular, have produced different ways of being in the world which can sometimes

expand or limit individual and collective agency. For instance, as I will show in the case studies in Chapter Four and Five, while some mHealth apps are available for free and mobile phones have truly become such commonplace technology in most parts of the world, multiple and complex factors account for why mHealth technologies may not be as widespread or useful in LMIC contexts.

Furthermore, while studies on mHealth have tended to focus on sociological and individual dimensions, a discussion of how rhetorical, material and contextual factors determine the limitations of these technologies has not yet received sufficient scholarly attention. For instance, how can material and contextual factors become frames or filters for mHealth discourses?

The case study presented in in Chapter Five therefore explores the rhetorical and material trajectory of an mHealth idea/technology/solution/company[3] in Nigeria. The company, LifeBank, represents how precarity and materiality complicate and challenge the grand narratives associated with discourses surrounding mHealth technologies and their applications in LMIC contexts. Specifically, my analysis explores the rhetorical tactics that LifeBank deploys in order to identify a social problem for which it provides a solution through the use of technology. I deploy precarity—a condition associated with economic uncertainty and complicated limited access to appropriate infrastructural services—as a key framework for the analysis done in this chapter. In her application of precarity as an analytic framework for assessing the discourse of mHealth at a US

[3] I use each of these words here to reflect the different aspects of the case study as is reflected through the data collected for this study. To be clear, the case study focuses on a company which runs with an idea that is supported by information and communication technology and claims to be solving the problem of emergency blood shortages in Nigeria.

organization, Teston (2016), noted that precarity is a valuable framework for rhetoricians to account for "the derivative of complex and competing material and discursive renderings of health, wellness, and human being …[or] risk falling into the very same healthist, techno-optimist, futurist trappings we critique" (p. 266). To account for precarity in LifeBank's rhetorical situation, I expand the consideration of the audience of LifeBank's communication to capture those who are more likely to be impacted by LifeBank's work as a result of the affordances and constraints of the company's physical location, operational scope, and mode of communication, all of which reflect a focus on city centers rather than "last mile or hard-to-reach" users.

2.5 Rhetorical Commitments, Theoretical and Methodological

In Chapter Five, where I examine the rhetorical dimensions of mHealth in detail, I will highlight how issues of biocitizenship, healthism, and quantifiable selves play a rhetorical role in the construction of users of health ICTs in Nigeria. To focus my analysis, I will draw on rhetorical theories relation to the rhetorical situation (Bitzer, 1968), rhetorical ecologies (Edbauer, 2005), and visual rhetoric (Foss, 2011; Sturken & Cartwright, 2017). My engagement with rhetorical theory mainly focuses on the rhetorical situation, which Bitzer (1968) defines as a complex of persons, events, objects, and relations presenting an actual or potential exigence which can be completely or partially removed if discourse, introduced into the situation, can so constrain human decision or action as to bring about the significant modification of the exigence" (p.6). With a view of "rhetoric-as-essentially-related to situation" (p.3), Bitzer explains that the rhetorical situation characterizes the nature of the contexts in which rhetorical discourse

produces action or change in the world. The rhetorical situation determines what the observable conditions necessitating discourse are and constrains the language needed in order to change those conditions. Bitzer's rhetorical situation fails to account for those circumstances which are not fixed in time and place to the rhetorical situation but contribute to the discourse emerging out of a specific situation. To understand how this works, Edbauer (2005) suggests that we consider the rhetorical situation as part of "an ongoing social flux" of public interactions and processes that bleed into each other (p. 9). Edbauer proposes a conceptual framework for analyzing the rhetorical-situation-as-ongoing-social-flux—affective ecologies. According to Edbauer, affective ecologies "recontextualize rhetorics in their temporal, historical and lived fluxes" (p.9), i.e., considering the rhetorical situation through the framework of ecologies allows rhetoricians account for other discursive, contextual, and historical factors which contribute to the situation under consideration.

The paradigms of both Bitzer's rhetorical situation and Edbauer's rhetorical ecologies, therefore, allow me to account for how aspects of Nigeria's health system and the larger socio-economic situation of the country inform LifeBank's rhetoric, especially the construction of ICT-based technologies as rhetoric, the ineffectiveness of such rhetoric and the persistence of social wrong despite the presence of social action.

The visual aspects of my analysis will be supported by methods drawn from visual rhetoric. Foss (2011) defines visual rhetoric as the end-product of the process in which individuals use visual symbols for the purpose of communicating. Foss also defines it as an interpretive perspective scholars apply that focuses on the symbolic processes by which images perform communication. As an interpretive approach,

scholars of rhetoric have used visual rhetoric to account for the impact of visual imagery on contemporary culture and the discursive aspects of symbolic communication that isn't captured by discourse as text or talk. Analyses using the visual rhetoric perspective typically describe the presented and suggested elements of visual communication; they clarify the function of the image from the perspective of the viewer; and evaluate how the image accomplishes its function and the implication of such functions.

According to Foss, not all visual communication is rhetorical. Visual communications with rhetorical quality are typically symbolic, i.e., they deploy arbitrary signs bearing no direct relationship to their referents; they require conscious human action to create and deploy as communication; and they imply an audience through the use of rhetorical appeals (Foss, 2011, p. 144). Visual communication is rhetorical when its purpose cannot be achieved by discursive rhetoric alone or when it adds to the viewer's understanding of discursive rhetoric. Visual rhetoric is steeped in visual culture which, according to Sturken and Cartwright (2017), is "produced through the complex networks of making, watching, talking, gesturing, looking, and acting—networks through which meanings are negotiated among members of a society or group" (p.7). Sturken and Cartwright explain that as cultural objects, visual objects interact with communicators by taking on the meaning communicators give to them and in turn give meaning to the communicators and their actions. In other words, visual communication is contextually bound to the culture and practices of looking that are recognized and used in the context of production.

Considering these theoretical and methodological commitments, I will explore LifeBank's rhetorical situation in Chapter Five, including any ecological investments in

the circulation of the rhetoric of mHealth which contributes to LifeBank's ethos. Then, I will take an inductive approach to rhetorical analysis of visual data as a way to unravel how the visual communication practices of LifeBank function rhetorically across multiple digital media platforms.

3 The Discourse of Healthcare in Nigeria

In this chapter, I explore some of the ways that existing discourses around healthcare in Nigeria frame the response to and evolution of eHealth. This chapter is divided into four sections. Section 3.1 discusses the history of health services in Nigeria and highlights the predominant features of historical eras that linger up to this day. In particular, it considers the roles of race, class, and the political economy as they influenced the development of Nigeria's health sector.

3.1 The Development of Health Services in Nigeria

The development of Nigeria's public health system can be understood from four major epochs: pre-colonial, colonial, post-colonial, and (in the light of the objectives of this dissertation) the digital health era. In this section, I briefly explore each era to highlight the major features of each in relation to the agents with power and their framing of public health discourses. I conclude the section by drawing on the implications of a chronological understanding of the health services for the implementation of e-Health services in the current era.

3.1.1 Health Services in Pre-colonial Nigeria (-1861)

Pre-colonial Nigeria existed as decentralized kingdoms and empires to the North and South of the rivers Niger and Benue. British colonial rule would not begin until 1861 and the North and South were not amalgamated until 1914. Thus, prior to the existence of Nigeria, the kingdoms and empires practiced different trades including farming, pottery, smithery and healing. What is usually referred to as traditional healing in modern-day Nigeria has its roots in healing practices from this era which have been passed down for many generations. Skilled practitioners within traditional healing practices include, but

are not limited to, herbalists, midwives, bonesetters, magicians, diviners, etc. These skill-sets could be seen as the various specializations using tools and passed-down lore and knowledge available at the time. Since the predominant family structure at the time included a communal residential arrangement for both immediate and extended family members within the same compound, it was not unusual for each household to have its own local healer to whom simple ailments such as coughs, colds, headaches, and fever were referred. If the local healer could not cure an ailment, it was then referred to a more experienced or specialized healer within the immediate community or neighboring community until the ailment was resolved (Ityavyar, 1987, p. 487). Healing services in precolonial Nigeria were decentralized and therefore available to all, albeit with factors relating to class affecting to what degree each individual had access (Fadipe, 1970, p. 180-187).

In what he refers to as the economy of medicine and healing in precolonial Nigeria, Ityavyar (1987) explains that factors such as the severity of sickness determined the method of consultation. For instance, general ailments such as colds, coughs and headaches and stomachaches often did not require the patient's physical consultation with the healer. Cures could be procured and sent to the sick. When more serious ailments rendered patients chronically ill and incapacitated, this not only required physical consultation, but they also often required the patients to reside within the premises of the healer or at a preferred location where the healer had access to them (something akin to today's hospitals). For other kinds of ailments or conditions which did not involve chronic illness or incapacitation such as those related to childbirth, the healer was usually invited into the patient's home for care. Thus, within pre-colonial Nigeria, there was

already an established system of care that was community-based and depended on a system of needs.

Other structural components of the precolonial medical economy in Nigeria included the recognition of illness as having social, cultural, spiritual, environmental, and physical dimensions. The healing practices were based on therapies that incorporated all these dimensions. Medicines, and cures were administered, preparations were made to make the patient's environment more conducive either by rearrangement or complete removal of the patient to another setting, and spirits and offended individuals were appeased so that the medicines could work appropriately to cure the patients. These considerations still remain in many Nigerian settings up to today. However, despite the affinity of many Nigerian ethnic groups for traditional healing and the fact that traditional healers remain the first and/or only access to healthcare for many in rural and remote locations across the country, the remarkable difference in the sociocultural construction of health and wellness makes complete assimilation into the modern health care system impossible (Offiong, 1999). Asuni (1979) has also highlighted issues relating to literacy, documentation of patient data and treatment, and the lack of understanding of the side effects of herbal medicines on patients as some of the factors that inhibit the possibility of integrating the two systems.

A final factor in the precolonial era was the relationship of traditional healers to the seat of power. Highly skilled healers who often succeeded in healing patients often enjoyed some measure of power through a system of retainership with the ruling class and powerful families. Ityavyar (1987) suggests that this system of retainership could be a means to understand the importance of class to healthcare access in pre-colonial

Nigeria. Despite the availability of access to all persons, certain classes had a higher chance of being attended to since traditional healing did not thrive on capitalist logics and were not for the personal enrichment of the healer, although the healers still depended on paying customers for their own subsistence. Healers were also known to be influential in decision-making at the state level especially since they often doubled as spiritualists and diviners. Thus, healers in precolonial Nigeria had cultural and social capital with which they could influence public opinion.

These characteristics of pre-colonial health services would remain for a long time in Nigeria even during colonialism as traditional healing remained the only available option for the larger population. However, the Christian Missionary Society (CMS) also played a role in establishing the foundations for Western medicine during this era through the establishment of hospitals and dispensaries and by bringing to West Africa two Liberia-born African physicians of Nigerian ancestry, Dr. Africanus Beale Horton and Dr. William Broughton Davies, who had qualified as physicians in England. The practice and publications of these physicians formed the foundations of Western medical practice during the colonial era including Horton's (1859) thesis, *The Medical Topography of the West Coast of Africa, with sketches of its botany* which was later expanded into a 1967 book publication, *Physical and medical climate and meteorology of West Coast of Africa. With hints to Europeans for the preservation of health in the tropic*s. According to Adeloye (1974), while Davies didn't have any publications, Horton's publications provided a guide for European physicians who would later come to Nigeria as part of the colonial administration on how to survive in West Africa where malaria was considered perilous. His publications also played a role in dismissing traditional healing as an

ineffective practice and advocating instead for the training of Africans in Western medicine and other sciences. Horton also advocated for the establishment of African colleges and universities (Adeloye, 1974, p. 282). The story is often told of how Nigerians prefer to go to traditional healers instead of going to hospitals and clinics as a way to show their distrust for western medicine. Less frequently is it mentioned that in the establishment of western medicine, traditional healing practices which were more available to the people were demonized, much like traditional religions were in precolonial Nigeria, yet the people were left without alternatives.

3.1.2 Health Services in Colonial Nigeria (1867-1960)

While the previous sections have established the predominance and multi-layered nature of traditional healing in precolonial Nigeria and the lack of western healthcare despite British presence during that time, this section looks at the efforts to establish health services to tackle the diseases that plagued British-controlled West Africa generally and Nigeria particularly during the colonial era.

According to Ityavar (1987), "imperialism is the midwife of Western health services in Nigeria" (p. 489) and its role can be traced through the activities of Christian missionaries from Europe and North America who used health services as a tool to propagate not only the gospel, but also the colonial rule of the British government and the nationalist movements which demanded that the colonial administration extend social and economic services to the local population.

As previously noted, Christian missionary groups had been active in the West African area and Nigeria since precolonial times; however, their limited activities were predominantly in the southern parts Nigeria such as the cities of (and regions nearby)

Lagos, Calabar, Abeokuta, Onitsha, etc. which were either on the coast or close by, due to safety concerns and limited access to the hinterlands. Following an agreement with the then-colonial government that they would focus on healthcare provision and education rather than proselytizing, the activities of the missionaries advanced towards the north where indigenes had embraced Islam for several centuries before the arrival of the Europeans. According to Ityavar (1987), between 1897 and 1960 when Nigeria gained independence, there were 89 mission hospitals with 352 doctors and 7241 beds spread thinly across the millions of people in the country. Not only did the missionaries build hospitals, but they also built schools and facilitated the education of Nigerians both within the country and overseas. Many Nigerians who would later become active members of the political class that emerged shortly before independence were trained at mission schools. By educating a small population of the indigenous population, the Christian missionaries effectively created a class structure that would come to define the society as one comprising those who accepted, patronized, and practiced western medicine versus those who continued in the practice of traditional healing.

The work of the Christian missionaries was supported by the activities of the colonial government, which also took part in the creation of health services and schools, albeit at a lower rate and with more focus on the Europeans, and only much later on the locals who were in the colonial government's employ. However, it was not until 1931 that the colonial government began to include the work that was being done in the health sector of the country in its reports. In a 1920 report on the British colony of Nigeria, the population was reportedly an estimated 16.25 million local people with an expected 1921 census that would "show that the estimate is too low" (Colonial Reports, 1920, p. 7-8).

The population of Europeans was placed at 3000. The report was very detailed about the economic potential of the country's natural resources and geographical features and constructed the increase in reports on crime and the adjudication of divorce as positive effects of colonial justice administration; it also noted the high rates of diseases like cerebrospinal meningitis and smallpox. However, there was no mention that anything had been done to provide health services where such diseases could have been treated or any efforts made at prevention. For comparison, items 19 and 23 on page 7 of the report are presented below:

> 19. The number of criminal cases brought before the Courts continues to increase but this is probably due to the more efficient administration of the country… What is now called slavery is merely a definite and reciprocal contract of service which is to a certain extent enforced by the Native Courts of the Northern Provinces but not by the Protectorate Courts. The fact that all persons born since 1901 are free is becoming widely known, even in the most distant parts, and the institution of slavery in the Muhammedan Provinces will shortly die a natural death.
>
> 23. During the year there was a serious epidemic of cerebrospinal meningitis in Sokoto Province, the case mortality being exceedingly high. Towards the end of the year the epidemic invaded the northern portion of Kotangora Province. There was also an epidemic of smallpox throughout the Southern Provinces, which was of a virulent type. (Colonial Reports, 1920, p. 7-8)

These excerpts show that as of 1920, the colonial administration did not prioritize the health of the African population. While crime could significantly impact the economy and the abolition of slavery[4] and slave trade was of interest to the empire, efforts were made to prevent these, but there is no mention of how the colonial government would deal (or not) with the disease which could decimate the population. Item 23 was the only mention about health or disease in the entire document. However, by the 1931 report, an entire chapter was dedicated to healthcare which recognized that diseases such as yaws, malaria, syphilis, dysentery, and gonorrhea were among the top diseases treated at government institutions. The report also details activities on medical and health staff training, establishment of hospitals and dispensaries, and preventive health measures. However, while the report showed progress, it also marked the beginning of healthcare disparity within the population. For instance, while the native population of the country was estimated at 20.7 million in 1931 compared to 16.25 million in 1920, the European and non-European but not African foreign population was placed at 4,115 compared to 3,000 ten years earlier. Yet, of the number of health facilities that had been built, twelve, with a total of 137 beds, were solely for Europeans, while there were only fifty-two African hospitals with 2,630 beds. Of these 2,630 beds, 360 were in the largest hospital in Lagos which was the capital of the colonial government (Colonial Reports, 1931, p. 13). Thus, the disparity was nuanced by race, class, geopolitics, and economic relevance.

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[4] Note that the sense of Islamic slavery referred to here is different from the western sense. For more on Islamic slavery, see Tainted legacy - Islam, colonialism and slavery in Northern Nigeria, Yusufu Turaki : book review | International Journal for Religious Freedom

The health disparity practiced by the colonial administration was not merely limited to the provision of access to health care; it also extended to the providers of health services. For instance, in Ralph Schram's (1971) A *History of the Nigerian Health Services* which documents the activities of the medical field in the country from 1850 to 1960, Schram noted that African/Nigerian doctors who had trained in Europe were described as lacking the confidence of European patients and were thus circumscribed to treating only African patients, if they were even employed in government hospitals (a practice that began only after a group of Nigerian doctors protested the discriminatory practices of the colonial government). A report that would follow deliberations after that protest noted that:

> We do not believe that in professional capabilities, West African native doctors were on par, except in very rare instances, with European doctors or that they possess the confidence of European patients on the coast. **Social conditions, particularly in Southern Nigeria, where European officers live together and have their meals in common under the mess system, and in Northern Nigeria where a larger population of the European staff consists of officers of the regular army makes it extremely undesirable to introduce native medical officers in those protectorates…in hospitals where patients are practically natives, it may be desirable to employ a native doctor, but such cases may be regarded as exceptional**, and may be left to the discretion of the local governments… **[I]f they are employed, they should be put in separate roster and European officers should in no circumstances be placed under their orders** (Schram, p. 134; quoted in Ityavar, 1987, p. 493; emphasis mine).

This report shows that even those African doctors who had been trained in western medicine were still discriminated against by the colonial government based on their race. Even in the "rare instances" when "West African native doctors were on par," their race made them unfit for work in white-dominated government hospitals which were built to cater to the health of Europeans. Yet, according to Adeloye (1977), it was the African doctors who worked on identifying, understanding, and documenting the diseases local to the area and the local plants that were used as cures by traditional healers. The research of the African doctors provided a background upon which Europeans could be cured if afflicted by any of these diseases, especially malaria.

Racial discrimination led many Nigerian doctors, at the time, to found and/or become active participants in nationalist movements and the struggle for Nigeria's independence. However, by virtue of their western training, they also believed themselves and their practice superior to what traditional healers had to offer. These tensions between the colonial government and medical practitioners continued to influence the practice of medicine even in the post-colonial era, when government when government policies and development plans included health care for all and not just a few.

3.1.3 Nigeria's Health Sector Post-independence (1960-)

Healthcare system in Nigeria sought to distance itself from the colonial focus on providing healthcare to only the military and members of the colonial administration (in this case civil service) to embrace a more public-facing healthcare system as part of the country's economic development plan. According to the National Health Policy (NHP, 1988), public health services in Nigeria evolved from the British Army Medical Services

to extend health services to civil servants and their relatives. Although, the provision of health services to the local population was only an "incidental service" (p.3), it became part of the national economic plan of the government which at the time saw health development as "an essential component of the package of social and economic development as well as being an instrument of social justice and national security" (p.7). Within this framework, provision of health care was a primary duty of the government. Therefore, the healthcare system was divided along the three tiers of government—Federal, State, and Local Governments—with the Federal Ministry of Health playing the overall supervisory role. The NHP (1988) also acknowledged the participation of non-governmental agencies and private organizations as complementary to the work of the government.

The NHP (1988) identifies three levels of care for health services—primary, secondary, and tertiary. Primary health care services support preventive, curative, and rehabilitative services at the level closest to the population, thus it is administered by the local government. Primary health care recognizes and supports the existence of traditional systems of care and works together with the local community to promote such systems. Secondary health care, which was under the purview of the State Governments was intended to operate above the level of primary health care by providing specialized health services, such as diagnostic testing, physiotherapy and surgeries, as supportive services which are unavailable at the primary level. At the tertiary level of care, hospitals for specialized care, training and research were to be established across different regions to support the work of primary and secondary services, especially in the care of specific diseases or groups of persons. Tertiary care is under the federal government's

administration and therefore closer to the center in terms of governments economic commitment and oversight.

Connecting the three levels of care is a proposed referral system which will ensure that primary health care services remained available and well-supported for all Nigerians, especially for "remote and isolated communities which have special logistics problems" (NHP, 1988, p.14). However, despite the development of more public-facing policies and systems of health administration, as elaborated in the NHP (1988 and its subsequent amendments), healthcare in Nigeria still faces many challenges. The emphasis on providing a system of primary health care that serves people at all levels simply by being closer to the people has suffered a major setback due to several reasons including, insufficient budgetary allocations for health care, lack of supportive infrastructure in remote and isolated communities (see more about this in Chapter Four), and an acute shortage of medical personnel who are willing work under the unpredictable conditions in resource-poor communities.

More than ever, the gap between those who have access public health care and those who do not has widened since the focus on western medicine. It is not yet clear what forms of health care has now occupied this gap. However, the rise in traditional approaches to healthcare, particularly amongst people in remote and resource-poor locations is an indication that in the absence of public health services, people who need these services will take whatever is available to them rather than wait for the promise of a policy 34-years in the making.

3.2 Medical Discourse in Nigeria: Exploring the

Intersection of Public Health and Technology

Apart from the political and economic aspects of Nigeria's healthcare discourse, there is also the dimension of patient-doctor relationship. Despite elaborate health programs and policies, the ratio of patients to doctors remains high, predominantly in rural areas. Rural-urban imbalance remains a major challenge (Okafor, 1982). Recently, the effects of population density in urban areas, especially in the suburbs, has now made such imbalances in health access, personnel, and facilities prevalent in Nigerian discourse. For example, Osakwe (2017) reported on the dilapidated state of Primary Health Care (PHCs) centers in Lagos and Nigeria Health Watch has a series of documentaries reporting the state of PHCs in Nigeria's middle belt states. This means that the conditions existing in the rural reaches also exist within cities and therefore blurs the distinction between the geographical consideration of developed centers as cities and the rural areas as the margins where the healthcare system is more underdeveloped, underutilized, and therefore not in need of infrastructural development

Also, globalization is a feature that has informed health practices since the Declaration of Alma Ata. Many countries around the world align their healthcare services with WHO goals and policies. Thus, if the WHO thinks it is time to incorporate electronic health on a global scale, then it must be time for all nations to align themselves. This alignment is demonstrated through policy documents and development and curation of health infrastructure and the design of measurable goals which usually sets wealthier nations as the models for the so-called developing world.

3.3 "Mobile healthcare is the biggest technology of our

time"? Making Correlation equal Causation

Circa 2008, the boom in the use of mobile phones across the world began to be equated with the possibility of addressing healthcare disparities and infrastructural failures across the world. By 2011, the US Health and Human Services secretary, Kathleen Sebelius referred to mHealth as "the biggest technology breakthrough of our time being used to address our greatest national challenge" (Sibelius, Mhealth Summit 2011, Sebelius: Let's keep mobile health safe, secure, American | MobiHealthNews). Literature on mHealth from diverse fields celebrates the ubiquity of mobile technology and its applicability for meeting healthcare needs regardless of socio-economic context (Chib, 2013). In Particular, the implementation of mHealth was considered a sustainable means for achieving the United Nations' Sustainable Development Goal (SDG) 3: Ensure healthy lives and promote well-being for all at all ages. It was argued that in low and lower-middle income countries (see World Bank, n.d., for how countries are categorized) where health care infrastructure and personnel were at a disproportionately low ratio compared to population size, mHealth stands to fill the gap at a more affordable cost in terms of finance and time (WHO, MHealth new horizons, 2009). However, PWC's "Emerging MHealth" report notes that the differences in the functionality of healthcare systems across the world would suggest that "mobile is ... a tool, not a new type of medicine, and its meaning will emerge from how it is applied within existing healthcare systems" (p.9).

In 2009, the International Telecommunications Union (ITU) reported a global increase in the use of Information Communication Technologies (ICT) which was driven by mobile technologies. A remarkable 4.6 billion mobile subscriptions was projected for

the end of the year. Yet, an ominous omen lurking in the report is the looming digital divide, which made it difficult to read this mobile technology takeover as a global phenomenon—Asia and Pacific, Europe and the Americas had the highest subscription rates. In the Americas, the US accounted for 82.5% of the subscriptions while in Asia and the Pacific, only two countries, Japan and the Republic of Korea, accounted for 70%. Africa had over 400 million subscriptions but was still out of the league of the top contenders. The report compared countries and regions by two categories: "mobile cellular penetration" and "infant mortality". Sweden was the benchmark for both categories. Developed countries trailed Sweden by 2.3 years compared to developing countries' 9.4 years in the mobile cellular penetration category. In the infant mortality category, developing countries had 72 years to catch up to Sweden while developed countries had 12 years (International Telecommunications Union, 2009).

The correlation of technological innovation with the welfare of nations is not a recent development. According to Cutler, Meara & Richards-Shubik (2014), infant mortality provides "a useful setting to learn about induced innovation because the outcome is easy to measure (deaths) and disparities in outcomes are so widely noted" (p.456). Thus, association of the ubiquity of mobile technology with SDG 3 continues a discourse that has proven over time that induced technological innovation in health leads to more health inequalities among different groups (Cutler, et al., 2014). Beyond the direct impacts of mHealth on patient outcomes, Asangansi (2016) also notes that the use of mHealth technologies for data collection could be disruptive to hierarchical institutional logics in the healthcare system in many developing countries, thereby

entrenching healthcare disparities due to policies based on inaccurate data. The question then is, for whom and in what context is mHealth the great technological breakthrough?

Working with the understanding that material and physical infrastructure contribute to the functionality and ability of ICTs to support health systems, it is possible to see that the idea that internet-enabled, mobile ICTs are decentralized and ubiquitous is not consistently true in every context. Within the Nigerian context, for instance, the penetration of mobile phones and internet services has not benefited a significant portion of the population because basic supportive infrastructure such as electricity is unavailable or minimally available in places with limited economic activities and/or places whose economic activities do not depend heavily on ICTs.

Similarly, despite access to mHealth apps operating in an almost-open-access economy, there are limitations to access which are related to the material aspects of the social function of apps. Apps which connect users to services that can only be accessed by visiting a physical location are constrained by the limitations to the geographical locations where the infrastructure for associated services are available. So, if an app exists for connecting blood donors and recipients to blood banks, such an app will only be relevant in a context where infrastructure exists to support blood donation and storage and transfusion.

3.4 Health Policies in Nigeria

In this section, I briefly review Nigeria's past health policies with a view to drawing attention to the connected discursive strands that tie them to the specific policies that I will analyze further in Chapter Four. I argue that connecting Nigeria's health goals to global goals set by transnational institutions like the UN and the WHO limits the

impact of such policies on the local population because the policies take a top-down approach which does not allow for the contribution of the local population in the determination of the definition of health within the local context.

As discussed above, Health policies in Nigeria have long been centered around health targets. Prior to independence in 1960, Nigeria's public healthcare system, established and run by the colonial government, served the colonial government and members of an elite class of Nigerians who worked in the civil service or as part of the military and their families. The rest of the local population received medical services at the clinics, dispensaries and hospitals which were built by different missionary groups, religious bodies, and private agencies (National Health Policy, 1988, pp. 3-4). Post-independence, the division in health service delivery between those in the civil service and the general population continues to inform the healthcare delivery system in Nigeria to today. Military hospitals, civil service clinics, university clinics, and teaching hospitals continue to be better staffed and better funded than general hospitals and clinics and primary health care centers which are open to the public.

Nigeria's first national health policy (NHP) was drawn up in 1988. Previous attempts at health planning were developed as part of different National Development Plans such as the development plans of 1946, 1970-74 and 1975-80. While healthcare was not central to any of these plans, the healthcare goals of each plan were to correct deficiencies in health services, such as improving access (1970-74); disease control, expansion of medical research, health planning and management (1975-80). The 1988 policy was focused on the Primary Health Care (PHC) model advocated by the Alma Ata Declaration of 1978 and sought to correct the defective nature of public healthcare as

introduced by the colonial government of Nigeria. The NHP was branded as a new step forward with the declaration that it is "a national health policy to achieve health for all Nigerians [is] based on the national philosophy of social justice and equity" (NHP, 1988, p. 7). Although the NHP (1988) seeks to pursue a reorganization of the existing elitist structure of public health, it also extends the model for previous health plans from one which was tailored to the needs of the colonial government to one which captures national economic development logics and relies on models handed down by the United Nations with the acknowledgement that

> [H]ealth development shall not be seen solely in humanitarian terms but as an essential component of the package of social and economic development as well as being an instrument of social justice and national security…
>
> **Primary Health Care as defined by the Alma Ata Declaration shall be the key to the development of the National Health Policy.** (National Health Policy, 1988, p. 7, emphasis mine)

Thus, it is implied that NHP (1988) situated Nigeria's public health plan within the goals of Alma Ata at the international level, although those goals also stood to benefit national developmental goals.

The NHP (1988) lacked any essential component with which to assess the success of its implementation. It essentially defined the roles of the different tiers of government in providing healthcare for Nigerians. It did not attach any of these roles to any specific outcomes. Moreover, while the NHP (1988) considered it the right and duty of citizens to partner with the government in building a health care model for the country (p.1), it also referred to the people as uninformed communities unable to make rational choices: "The

involvement of the community is minimal at critical points in the decision-making process. Because the communities are not well informed on matters affecting their health, they are often unable to make rational choices" (p. 5, item d). This lack of target outcomes, coupled with the representation of citizens as unable to contribute, reflects a social imbalance between the formal and informal segments of the country's population. The ruling class makes policies while the rest of the population are portrayed as lacking the agency to determine the structure of the health care system and to participate in it productively. This lack of inclusive policy-making could also have contributed to the perceived failure of the 1988 plan and the need for a revision to the NHP a few years after it was established, for as I have argued above, socio-economic, locational, infrastructural access, and educational factors inform the choices people make with their health care.

The revision to NHP (1988) started in 1995 and resulted in the Revised National Health Policy (RNHP, 2004). Like its predecessor, the RNHP projects Nigeria's subscription to several international and local healthcare goals such as the Health Strategy for New Partnership for Africa's Development (NEPAD), the United Nations Millennium Development Goals (MDGs), and the National Economic Empowerment and Development Strategy (NEEDS). The overall policy objective of the RNHP was "[t]o strengthen the national health system such that it would be able to provide effective, efficient, quality, accessible and affordable health services that will improve the health status of Nigerians through **the achievement of the health-related Millennium Development Goals (MDGs)"** (RNHP, 2004, p. 7-8, emphasis mine). Although the RNHP provides significant coverage for how it intends to tackle problems that are

specific to Nigeria, it does so mostly in connection to the United Nations MDGs for healthcare. This positioning secures Nigeria's health goals more to a global agenda than it does to a local agenda which is based on the health status of Nigeria's citizens.

In September 2016, the Federal Ministry of Health (FMOH) released yet another national health policy (NHP, 2016). According to this latest update, a revision was necessitated by the need to

> reflect new realities and trends, **including the unfinished agenda of the Millenium Development Goals (MDGs), the new Sustainable Development Goals (SDGs), emerging health issues, especially epidemics, the provisions of the National Health Act 2014, the new PHC governance reform of bringing PHC Under One Roof (PHCUOR)** and Nigeria's renewed commitment to universal health coverage. ...globalization, climate change, the challenge of insurgency and its impact on the Nigerian health system. (NHP, 2016, p.1, emphasis mine)

The bolded portion of the above quote reflects a common thread in all the national policies Nigeria has had so far– that they were not driven by an internal need for new health policies. Rather they were created in response to external forces such as the World Bank, the WHO, and the United Nations to reflect the country's alignment with the agenda of these institutions.

Besides the main policy documents discussed here and in Chapter Four in greater detail, there are other minor policy documents to cover different aspects of healthcare delivery. The primary policy document analyzed in chapter Four, the National Health Information and Communication Technology Strategic Framework (*Strategic*

Framework), is an adjoining policy document which provides the framework for incorporating ICTs into healthcare delivery as well as health data collection and sharing.

The *Strategic Framework* continues the trend of connecting health policies in Nigeria to the priorities of international organizations and donor agencies. For instance, according to the *Strategic Framework*, the action for implementing ICTs in Nigeria's health care systems is based on "key stakeholders' inputs and needs" (*Strategic Framework*, p. 30). A review of the description of the *Strategic Framework* reveals a narrow conceptualization of "stakeholders" to be policy makers and members of internationally sponsored organizations who have used mobile phones to complete short-term projects within Nigeria's health care sector. However, the use of ICTs, especially mobile phones in health care has been popularized as fostering patient-centered care generally and promoting better coordination for service providers nationally, and thus it is pertinent to explore the conceptualization of the role of the users of policies such as the *Strategic Framework*, especially, patient-users who will be the most impacted by the outcomes of such policies.

Furthermore, since health policies in Nigeria respond to macro-level discourses which require that social structures and actions be organized through policies which become reference points for future actions, it is important to understand the effect of such macro-level discourses on micro-level concerns which are often backgrounded to promote a cohesive policy. Doing this is instructive for a clear understanding of how issues related to health disparities are encoded into policy documents and what solutions individual policies contribute to the resolution of health disparities.

In Chapter Four, I undertake a detailed analysis of how health disparities are encoded within and promulgated by the discursive practices of those who write these top-down policy-making documents.

4 Mainstreaming mHealth: A Critical Discourse Analysis of Health Policy Documents

4.1 Introduction

As I argued in Chapter Two (section 2.2.2), policy documents are central to the organization of societies and social infrastructure, including healthcare. According to Thomas Dye, a policy is "whatever governments choose to do or not do" (Dye, 2012, p. 12). Policy adoption and changes can be used to map epochs in societal development. More importantly, they are relevant for understanding how power relations are written into spaces, systems, and structures. Policy formulation is therefore a way to formalize political, economic, social, legislative agenda within different societies. Policies bring issues to the fore for the public, so that the public can understand how a government or institution recognizes problematic issues and the proposed solutions to those issues. For example, as discussed in Chapter Three (section 3.4), the Declaration of Alma-Ata (WHO, 1978; Chan, n.d.) proposed the global adoption of a primary healthcare model, especially in Low-and-Middle-Income Countries (LMICs) to address disparities in healthcare access. Alma-Ata was where the need for localized models of care which factored in the sociocultural, economic, and political configurations of different countries and communities was first prioritized on a global scale. Although many of the goals of Alma-Ata remain un(der)achieved, the policy continues to influence the model of healthcare adopted in many LMIC contexts. It also informs interventions to reduce health disparities within higher income countries (Chokshi & Cohen, 2018). When social or political action is guided by policy, it means that state and institutional resources are channeled toward achieving the goals of the policy.

According to Dingo (2007, 2008) institutions often deploy top-down logics of "rhetorical mainstreaming" to foreground social problems and to logically situate their intervention as the solution to the problem they have identified. Dingo (2007) explains mainstreaming as process of fitting into the mainstream by "becoming standardized and comprehensible" (p.100) to the predetermined standard. Similarly, health policies are a way to mainstream ideas about what constitutes a healthy population and to determine the infrastructural, economic, political, financial structures that need to be in place to ensure a healthy population. Health policies offer an avenue for exploring how social actors and discursive events shape the discourse on healthcare.

In this chapter, I respond to research question 1:

> Considering that the domains of eHealth discourses traverse several social fields (such as government policy-making, international healthcare policy-making, finance, medicine and public health, media coverage, user opinions and information technology) and that multiple social actors are involved, how do power and ideology shape eHealth discourses? How are the ideological underpinnings of eHealth discursive and in what forms do they affect patient outcomes?

I trace the discursive rise of eHealth and mHealth technologies in Nigeria specifically through international calls for the increased use of these technologies in LMICs by institutions like the WHO (WHO, *Global Observatory on eHealth 3,* 2011; WHO-ITU, *National eHealth strategy toolkit,* 2012). Such calls have led to the development of advisory and national policy documents, and the increasing interest in data-mining from Africa and other LMIC contexts by multinational information and

communication technology (ICT) companies. I explore media coverage of electronic and mobile health to document public opinions about the role of ICTs in healthcare delivery. Using methods of critical discourse analysis, I explore how the language of policies contributes to reinforcing power and ideological dispositions to policy design, implementation and uptake. Finally, I discuss the implications of my analysis for critical policy discourse analysis, technical communication and the rhetoric of health and medicine.

By exploring the discourse of health policies and technologies, I position this research at the intersection of the fields of critical policy discourse analysis (CPDA), technical communication, and the rhetoric of health and medicine (RHM). Policies are technical documents which need to be accessible to users (both users as implementers and users who would be impacted by the outcomes of such implementation). Technical communication scholarship and critical discourse analysis show that technical documents are often ideological and may not necessarily advocate the interests of the people they claim to represent (Dingo, 2007, 2008) and policymakers often do not provide sufficient information needed to assess the impact of policies, even global policies like the World Bank's policies on gender and health (Winters, et al., 2018). I use CDA methods to analyze language use and the discourse of technical documents. RHM as a developing subfield of rhetorical studies invites scholars to question social constructions of health but limited attention has been turned to policies and health technologies within the field. This chapter therefore contributes to the exploration of health policies within RHM.

4.2 An Overview of the data

Between 2014 and 2016, Nigeria's Federal Ministry of Health (FMOH) and other health agencies such as the United Nations Foundation produced three major advisory and policy documents (besides the National Health Act of 2014 and the National Health Policy of 2016) which today influence the direction of health care service provision in the country. These documents are rhetorically significant to my analysis due to their deliberative influence on government investment in healthcare which in turn affects health outcomes for people at different social and economic levels. In particular, an analysis of these documents allows me to trace the discursive moves that attend to the infrastructural turn in healthcare delivery which appear to have shifted the discourse of health care from that of the lack of infrastructures to the use of mobile devices for healthcare access and management. To facilitate tracing the discourse of mHealth and eHealth technologies across various discursive platforms, the main document I focus on is Nigeria's National Health ICT Strategic Framework 2015-2020 (hereafter *Strategic Framework*). I also consider two other advisory documents by the UN Foundation: *Assessing the enabling environment for ICTs for health in Nigeria: A landscape and inventory* (United Nations Foundation, 2014, 2017; hereafter L&I) and *Assessing the enabling environment for ICTs for Health in Nigeria: A review of policies* (UN Foundation, 2016; hereafter RoP). Brief descriptions of the documents are presented below in sections 4.2.1-4.2.3:

4.2.1 *National Health ICT Strategic Framework* (*Strategic Framework*), 2015-2020

The *Strategic Framework* is a 62-page document which was created through the joint efforts of the Federal Ministry of Health (FMOH), the Federal Ministry of Communication Technology (FMCT), and other partners to chart the course for the implementation of a nation-wide policy that would allow for eHealth and mHealth to be successfully implemented and beneficial for Nigeria and her citizens. The document recognizes, following an initial eHealth landscape and inventory report that noted that at least thirty-five eHealth and mHealth solutions in the country were run by the private sector, that "without an overarching national strategy, ICT initiatives are left at the hands of individual organizations without coordination and guarantee that they are in the best interest of the clients[5]" (p. 9). Hence, the goal of the framework is to ensure that Health ICTs are deployed collaboratively and effectively in a way that benefits its users.

Through the *Strategic Framework*, Nigeria presents a health ICT framework which claims to expand beyond "electronic" to "involve concepts and systems." What this means is that the *Strategic Framework* positions itself as having considered the specific needs of the Nigerian context in the design of the policy. Moreover, in an effort to clarify the role ICTs play in the nation's healthcare sector, the *Strategic Framework*

[5] Note the use of the word "clients" here. This establishes a business language mode rather than focusing on users as patients. Also note the disconnection between the use of this word and the "strategic context" which necessitates the use of Health ICTs in the first place. "Clients" does not depict a user at the margins either by class, status, or location. Basically, it would seem that with Health ICT, anyone who is able to pay can use the service, thereby creating an illusion of equity or parity amongst all users. However, in reality we are likely to find that the cost of making digital healthcare available for users may not be equivalent to reduced healthcare cost for users. Yet, we have to acknowledge that with health-information sharing, some of the cost may be reduced.

claims that the phrase “Health ICT” is a more encompassing term which captures the more popular but hard to define eHealth/mHealth.

> Both Health Information and Communication Technology (Health ICT) and electronic health (eHealth) refer to the use of information and communication technology (ICT) in support of health and health-related fields, including health care services; health surveillance; health literature; and health education, knowledge and research. However, Health ICT is a more accessible term and extends beyond ‘electronic’ to involve concepts and systems (e.g., architecture and information systems) and communication (e.g., phone calls, bi-directional transfer of information) along with necessary physical and technology infrastructure. Health ICT is more than electronic health records; it is applied across the health system and services to ensure continuity of patient care across time. It includes mobile health (mHealth) services, telehealth, health research, consumer health informatics to support individuals in health decision-making, and eLearning by health workers. In practical terms, Health ICT is a means for the purpose of improving the quality and efficiency of delivery of health services and prevention programs. mHealth services, in particular, focus on the application of mobile and wireless technologies for health systems strengthening (*Strategic Framework*, p. 9).

By its definition from the above, the *Strategic Framework* broadens the conceptualization of the possible role of ICTs and removes any limitation to the scope of the use of ICTs in healthcare in the country. On a more global scale, the *Strategic Framework* positions Nigeria as one of the countries which has taken a holistic approach to addressing its

healthcare needs through information and communication technologies. (I shall explore the implications of this positioning in section 4.7.1).

Perhaps the most significant contribution of the *Strategic Framework* is that it stands as the primary means of delivering the projections of The National Health Act, 2014 and The National Health Policy, 2016 considering that it was developed while these two main policy documents were in process. It is worthy of note that both the L&I and the ROI (discussed in the next sections were created by the UN Foundation for Nigeria. They inform both the language of the *Strategic Framework* and are its *raison d'être*. Finally, the *Strategic Framework* is positioned to address health disparities resulting from the country's increasing rural-urban divide, maternal and infant mortality, poverty, burden of infectious and non-communicable diseases, and low health coverage and financing using information and communication technologies (*Strategic Framework*, 2015, p. 14). My analysis will explore how this objective becomes instrumentalized the conceptualization of the *Strategic Framework* and the implications of this positioning on users of Nigeria's healthcare system.

4.2.2 *Assessing the Enabling Environment for ICTs for Health in Nigeria: A Landscape and Inventory, 2014 (L&I)*

The L&I is a report of a United Nations Foundation review of existing ICT-based health initiatives which could be leveraged by Nigeria's government for the Saving One Million Lives (hereafter ICT4SOML)[6] project launched in 2012. It provides information

[6] ICT for Saving One Million Lives is a health initiative which used ICTs to provide information, monitor and collect the pregnant women and infants prenatal and immunization records in Nigeria in 2012.

about the "geographic coverage and spread, technological platform, funders, level of scale, and interoperability with other systems" (p. 20). Furthermore, according to the document, its review process

> confirmed the significant need for a strategy specific to ICT for health in Nigeria, including the promotion of standards, interoperability, and collaboration, identifying sustainable funding mechanisms, and training of health workers in the use of ICT for Health. Through addressing the gaps identified in this report (and the related policy-re- view document, titled 'Assessing the Enabling Environment for ICTs for Health in Nigeria: A Review of Policies'), the enabling environment in Nigeria can become a more conducive environment for scaling up and sustaining ICT for health initiatives, and in the long run, save lives in Nigeria. (p. 9)

The above stance of the L&I report makes it relevant for understanding influences on the Health ICT Strategic Framework which was a later publication of the FMOH for deploying Health ICTs for universal healthcare in Nigeria.

4.2.3 *Assessing the Enabling Environment for ICTs for Health in Nigeria: A Review of Policies*, 2014 (ROP)

The ROP is the second part of the two documents on "Assessing the enabling environment for ICTS in Nigeria." It was also prepared by the UN Foundation in support of ICT4SOML with its primary purpose being to "provide policy makers and other key stakeholders with an understanding of the current ICT for health enabling environment in Nigeria as it relates to legislation, policy and compliance" (p.11). The ROP includes

strong recommendations for a national strategic framework with emphasis on moving the use of ICTs in healthcare from experimentation and early adoption levels to full-scale implementation.

Other policy documents I explore in this analysis include the National Health Act of 2014 and the National Health Policy of 2016. These documents provide a more general overview of what healthcare should be to and do for Nigerians.

As I briefly summarized in Chapter Two, I approach this chapter from the perspective that healthcare is a social construct based on specific ideologies (Foucault, 1973/1994). The ideological underpinnings of social, political, and infrastructural (as is the case with mHealth) phenomena can be found in the discourses that produced them (Fairclough, 2015, p.56; Winner, 1980). Policies precede the execution of these projects; it is therefore important to examine the construction of healthcare policy documents. Also, since the introduction of ICT into healthcare, a whole new range of vocabulary has evolved and continues to evolve for describing the relationship between the two fields. For instance, over the choice of what to call the inclusion of cellphones and other ICTs in healthcare delivery, "mHealth" and "eHealth" have been the popular choices; however, as we see in the case of Nigeria, while neither of these two terms have been dismissed, the *Strategic Framework* promotes "Health ICT" as a concept that is better suited for the context for reasons which are not of themselves sufficiently explanatory. It can be inferred from the document that "Health ICTs" refer to system-sustaining (Johnson, 1998; Seigel, 2014) methods of healthcare implementation rather than one that targets the promotion of the agency of patients within the healthcare system. Since policy documents get picked up by groups and persons interested in establishing businesses within that

sector of the economy, a rhetoric of standardization (Fairclough, 2015, p. 55) evolves to ensure that the language associated with the industry is imbued with legitimizing ideology, communicates class and power, and serves to exclude outgroups. For instance, Owolabi, et al. (2018) have noted the lack of awareness about terms such as mHealth and eHealth amongst medical doctors and nurses in Nigeria despite using different forms of these services in their daily practice. Thus, for the *Strategic Framework*

1. I read the document as a cluster of meanings organized by the basic questions of what, how, who and when. Although 'when' is a little obvious, given that the document provides a timeline of 2016-2020, it was still important to ask the 'when' question in order to discuss the other socio-economic, political, cultural, human, national and transnational issues that help to highlight the complexity of the context of the Nigerian healthcare system which this document addresses.
2. I explore each of these questions further by examining the semiotic choices made within the document to describe what Health ICT is and its role in Nigeria's healthcare system. Through discussions of word connotation, transitivity, presupposition and nominalization (Machin and Mayr, 2012), I explore how the *Strategic Framework* discursively positions health ICTS as relevant for achieving universal health care (UHC) in Nigeria.
3. I also examine how the document positions its users and users of Health ICTs in Nigeria.

4. Finally, I explore interdiscursivity and intertextuality as contextual features of the policymaking and documentation process by examining who is regarded as agents in the process and post-process. I explored the discursive life of the policy document through the media interviews granted by key stakeholders in the policy-making process.

To understand the *Strategic Framework* not just in terms of input and output processes, but in terms of the interests, values and assumptions that inform the decision to adopt a national health ICT framework, I have adopted a critical discourse studies approach for this chapter. As I noted in Chapter Two, according to Mulderrig, Montessori and Farelly (2019), critical discourse analysis (CDA) contributes to policy analysis at the textual level by capturing the details of policy texts which are often overlooked in policy analysis, but which have effects on how policy is understood, developed and implemented (p.1). CDA can be used to investigate the processes by which language (re)produces social practices and helps privilege certain ways of doing, thinking, and being over others. It can also be used to investigate how language is used to constitute, contest and transform social problems or account for social change. According to Mulderrig, et al. (2019), CDA is relevant to policy analysis since policy is "a discursively mediated process of problematisation and deliberation which requires interpretation, narrative analysis and argumentation" (p. 3). This means that the process of policy making is one characterized by the setting up of a social problem which is then discussed and negotiated in order to arrive at a specific solution to the exclusion of other possible solutions. In both the fields of CDS and critical policy studies (CPS) this process of problematization and solution-proffering are recognized as a political process in which

language is used to conceptualize and legitimize the problem and solution proposed in specific ways (Fairclough 2003; Fischer 2003).

Therefore, methods of critical discourse analysis (Machin & Mayr, 2012; Montessori, Farrelly & Mulderrig, 2019; Wodak and Meyer 2016) were adopted for this work. In doing this study, I did not consider critical discourse analysis as a specific method of analysis; rather, I chose from an array of methods used in CDS to explore and explain the phenomenon under consideration. Thus, as I carried out a close reading (Brummet 2019) of the *Strategic Framework*, I incorporated Norman Fairclough's (2016) Dialectical-relational approach to CDA to determine if there is a social problem in the document, what the social problem is and if such a problem is justifiable in the context of the *Strategic Framework* and if not, what can be done to rectify the problem. For example, I observed that although the *Strategic Framework* targets groups of people who are referred to as "stakeholders" as the implementers of the policy who need to be aware of their roles and timelines, the document was silent about the role of patients as stakeholders in the policy-making and implementation processes. I also observed that in problematizing the issue with the healthcare system that warrants the health ICT solution being proffered, the patients and their needs were not centered. Rather, it appears that the emphasis was placed on the argument that mobile phone ubiquity can deliver universal health care regardless of the social, economic, geographical, and infrastructural limitations, thus focusing on technology rather than patients.

I also employed corpus linguistics to explore my observations from the close reading. For example, when I observed that patients were not recognized as users of Health ICTs, I wanted to find out if the observation was accurate and what the rationale

for such an exclusion would be. I used AntConc (Anthony, 2020), a concordance tool to analyze the document and see whether my observations were accurate and, if so, how the document then positions its users and users of the Health ICTs within Nigeria's healthcare system.

AntConc is a downloadable corpus analysis tool, created by Lawrence Anthony, which can help linguists verify their observations through the analysis of quantitative and contextual language use within a text or corpora (Mautner, 2016). Corpus analysis was used to determine word frequency for the keywords relevant to my analysis. I also used it to explore these keywords-in-context (KWIC) and to compare and determine the syntactic and semantic positioning of participants within the document.

The process of using AntConc involves converting documents into readable .txt files which the software can use for its processes. The conversion can distort files and the researcher may need to painstakingly reorganize the .txt files so that the outputs of KWIC searches and concordance lines are meaningful and useful for further analysis.

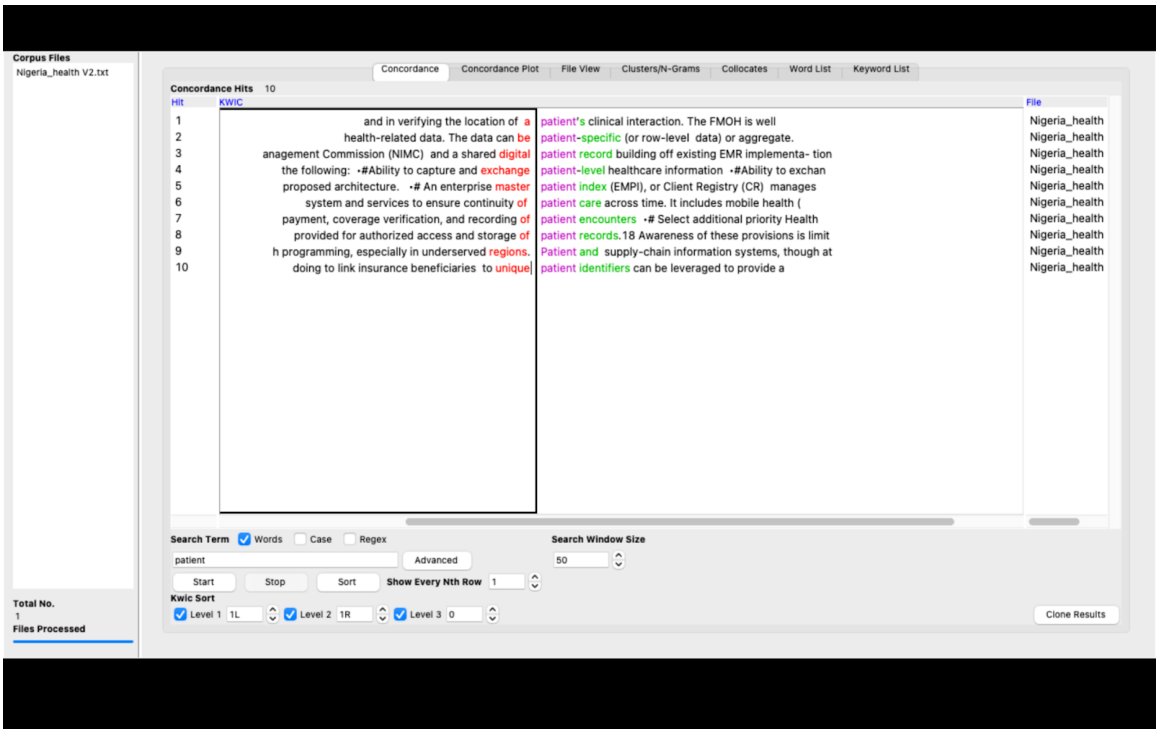

Figure 4-1 An example of the AntConc interface showing corpus analysis results for "patient" and its collocates.

Information about frequency of occurrence, patterns of occurrence and context of occurrence can be tracked using the AntConc tool. For example, throughout the document, the word "patient" occurs ten times and as a nominal qualifier rather than as an agent in subject position.

Finally, I combined my observations from the close reading of the *Strategic Framework* under quantitative and contextual language analysis with the analysis of linguistic processes of transitivity and nominalization for data interpretation and analysis. All data were interpreted with a focus on the context and problem that the text engages with. In other words, my analysis synchronizes the micro-level analysis of the data as text and the macro-level analysis of the social context of health care in Nigeria.

4.3 Data Analysis

In the following sections, I present the results of my analysis of the *Strategic Framework* in detail using CDA methods described in section 4.2 above.

4.3.1 Pardon My Meaning: Neoliberal Rhetoric and Word Connotations in the *Strategic Framework*

In their discussion of dominant discourses in the positioning of institutions, Machin and Mayr (2012) note that not only do many institutions now include a vision and mission statement, but institutions also use language that connotes movement in these statements because contemporary society values speed and prefers things to be done more quickly. As such, technologies that promote speed are "presented as good in themselves" (p.35) without any questions about why speed is desirable compared to other attributes. They ask,

> …in our contemporary society, 'speed' is also highly prized. The things that are done quickly and the technology that allows more urgency are presented as good in themselves. But why should this be the case? If we are always 'forward looking', does this mean that we are not attending to the present? If we do things quickly, again does this mean we are not attending to the actual process of doing it or doing it haphazardly? If 'innovation' is good, does this mean that what we already know should always be quickly discarded? (ibid.)

These questions are pertinent to my discussion of the language of the *Strategic Framework* because in the problematization of the healthcare system phrases such as "life expectancy," "disease burden," and "human resources index," umbrella terms typically used to capture issues in development and economic discourses, have been deployed to

argue for the need for a quick solution for the problems of Nigeria's health care system, hence the introduction of Health ICTs (*Strategic Framework*, p. 14). This kind of language can be compared to what Chiapello and Fairclough (2002) have tagged the "empty rhetoric of corporate-speak," i.e., they do not inform the audience about concrete situations and actions; rather they become empty signifiers, figures and statistics which are deployed in order to create a sense of a state of emergency to justify the need for the proposed intervention. This is not to say that terms such as "disease burden" or "low life expectancy" do not portray serious economic concerns deriving from the health sector; rather it is to point out that within discourses that are specific to the health system, claims and warrants need to be solidly defined by micro-level concerns that present how different elements such as persons, location, human and infrastructural resources contribute to the making of a complex problem and the recommended solution. Instead, these terms, as used in the *Strategic Framework*, represent higher level methods of semiotization which can only be interpreted by a small percentage of the population that it speaks about. Moreover, such statements give room for superfluous claims about what ICTs in Nigeria's healthcare can do to remediate an extremely complex situation.

For example, consider the "Vision for Health ICT" which the *Strategic Framework* provides:

> VISION FOR HEALTH ICT
>
> The FMOH, in collaboration with the FMCT and other Government of Nigeria Ministries, Departments and Agencies (MDAs); donors; and implementing partners, (see Appendix 1) has developed, through an inclusive and iterative process, a collective vision for the use of Health ICTs in Nigeria.

"By 2020, health ICT will help enable and deliver universal health coverage in Nigeria."

> UHC [universal health care] attainment will ensure that all Nigerians have access to the services they need without incurring financial risks. Specifically, UHC means health insurance becomes economical, whereby the cost of care is not a burden. It means equitable access to affordable and quality health services. It also means that the health system must be functional to ensure that supply meets the needs specified by demand. It is because of this last point that the value of Health ICT is so substantial. With its ability to support health systems strengthening, Health ICT can be used to improve the health system and ensure its adequacy for scaling up health insurance and health coverage over the next five years [2015-2020]. (*Strategic Framework*, p. 16, emphasis in original)

This vision statement is particularly important to my analysis because despite naming the government and non-governmental agencies and foreign partners responsible for creating and actualizing this vision in the appendix, there is no information about what each group of participants will do specifically. Also, obviously absent are representations at state and local government levels which are the levels of government closest to the people and able to discuss the peculiarities of the challenges faced by the users of the healthcare system at those levels. These obvious absences reflect a strategic non-identification of the issues around health care which warrant the need for Health ICTs. Rather, it connects Health ICTs to one agenda—the achievement of universal health care (UHC) which is an aspect

of healthcare that is narrowly defined by the provision of health insurance for the Nigerian public.

Similarly, the FMOH, which is the primary author and sponsor of the *Strategic Framework*, has vision and mission statements which are couched in neoliberal rhetorics of business and development. For example, the ministry's website describes its vision, mission and mandate and core values.

> Our Mandate: Provision of quality stewardship and services for the health of all Nigerians
>
> Our Vision: A World-Class Government Institution that ensures a healthy Nigeria
>
> Our Mission: To develop and implement policies that strengthen the national health system for effective, efficient, accessible and affordable delivery of health services in partnership with other stakeholders.
>
> Our Core Values: Excellence, Competence, Integrity, Diligence, Innovation, Accountability Equity, Teamwork (FMOH, health.gov.ng, About Us, Vision and Mission)

While the FMOH's mission statement tells visitors to the website that the ministry develops and implements policies, that it develops policies is more evidentially supported than how the ministry implements or accounts for policy outcomes. Such information is evidently lacking from the publications of the ministry and limits how visitors to the website can connect the claims made about the work the ministry claims it does to the actual situation of healthcare in Nigeria. CDS scholarship on language and neoliberalism have said that this kind of communication can make not just material accessibility

difficult, but it can also limit functional and critical access (Seigel, 2014) in terms of how users of Nigeria's healthcare system interpret and interact with the system. Since language is the principal tool for achieving this obfuscation of meaning, I will now account for linguistic strategies observed in the *Strategic Framework*.

4.3.2 Nominalizations

Nominalization is a form of grammatical manipulation in which a verbal process or an adjective is replaced by a nominal construction. For example, consider the following sentences

a. "Provision of stewardship and services for the health of all Nigerians" (FMOH website)

b. Provide health stewardship and services for Nigerians

In (a), excerpted from the FMOH mission statement, "provision" is derived from the verb *provide*. By using the nominal phrase *provision of …*, specifics about the role of the ministry and its capacity as agents in the process of providing services are elided. No clear action is indicated in the phrase. Sentence (b) on the other hand, presents a direct clause maintaining basic (S)ubject (V)erb (O)bject (O)bject(indirect) structure where the nature of the *stewardship and services* is specified and the prepositional phrase *for Nigerians* indicates the recipients of the action.

Nominalizations can occur in everyday texts as part of communicative processes. For example, while randomly scanning my car radio for a program, an interviewee responded to a question by the radio host:

"There was a decline."

I immediately chose to listen further to this channel because I was interested in finding out what economic phenomenon the show was discussing, only to find out that the interviewee had given the response in answer to a query about a **political** press chat. "*There was a decline"* is a passive construction in which *a decline* could reflect a state of being that complements the stative, non-transitive verb *was.* Its use here translates to

*The politician **declined** an interview*

The agency expressed in declining or refusing to be interviewed was thus reduced to a passivized, nominal construction rather than a verbal process, which distanced and elided the politician's role in this process.

The relevance of nominalizations to critical discourse studies lies in the fact that they can obscure the agency of participants, actions, and responsibility for action. For instance, in the mandate of the FMOH above, **"Provision of stewardship and services for the health of all Nigerians"** does not specify what an act stewardship is or what services the ministry or others are expected to provide specifically. Indeed, its role as the government department with the responsibility for health care provision makes it possible to imagine a broad array of services the FMOH supervises and provides. However, by eliminating the responsibility of the ministry as a nominal phrase "provision of" the responsibilities of the FMOH are obscured—allowing readers to imagine a wide range of providers without the requirement of the FMOH to take specific action. the actual responsibilities, information about who has given this mandate and to whom the ministry is accountable for its stewardship and service is left unarticulated. Ordinarily, this should be the citizens and users of the healthcare system, since at some point, a majority of the

people, if not everyone, will interact with the system as either patient, worker, caregiver/family member, etc.

Another effect of nominalizations is that they can distort semantic roles when syntactic roles are realized in complex structures. For example, by portraying the **Nigerians** as the beneficiary (both literal and syntactic) of the FMOH's stewardship and services, they position the citizens as being acted upon rather than being agents in the design and implementation of whatever services the ministry provides. This positioning as beneficiary often has material implications. For instance, citizens and the press often complain that members of the upper, the upper-middle classes and the political class often do not patronize government/public health facilities, because though they are part of the decision-making body that designed a health system they themselves cannot trust it to work for them (Obiezu, 2019; Yusuf, 2021). Rather than being just beneficiaries of the system, if the semantic role of Nigerians were that of actor/initiator of the design of national health system, perhaps, the system would be designed around users' specific health challenges and the desire to improve patients' health outcomes, rather than merely as serving an economic system or responding to UN development calls.

Similar cases of nominalizations were observed in the *Strategic Framework* where verbal processes were rendered as nominal qualifiers or as objects of the prepositions. he prepositions. See, for example, Figure 4.1 which shows the verbal process "to increase" being realized as nominal qualifiers and experiences.

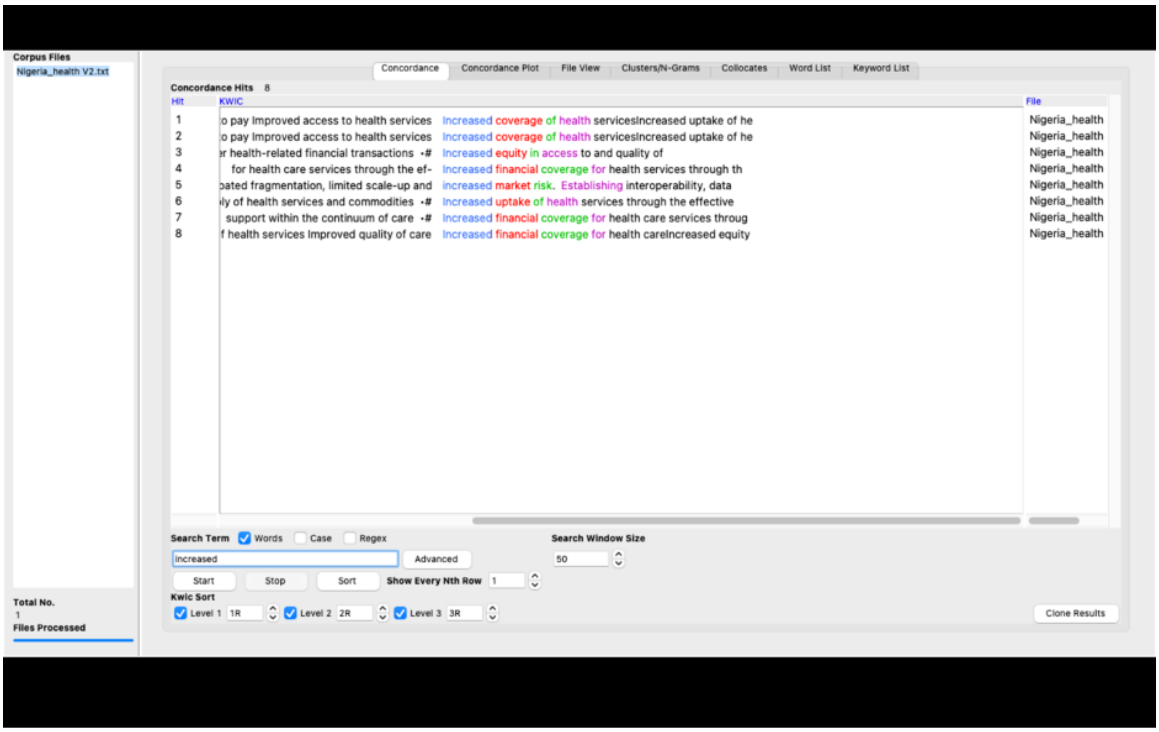

Figure 4-2 Concordance lines showing *increased* as a nominal qualifier for adjectives and noun phrases such as coverage, equity; financial coverage, market risk respectively. Note that "*increased"* occurs only 6 times throughout the document and all six times it is used as a qualifier.

Example

> Therefore, it is essential for Nigeria to establish a National Health ICT Steering Committee and supporting structure. The Steering Committee will be responsible for **overseeing** Health ICT **planning, implementation, coordination, governance and evaluation** to the achievement of the Health ICT Vision. Specifically, the National Health ICT Governance Committee will be responsible for the following: (*Strategic Framework*, p.21, emphasis mine)

The example above shows the nominalization of the verbal processes "planning, implementation, coordination, governance, and evaluation" such that these nouns are now receivers of the process of "overseeing" which the Steering Committee is responsible for.

The Steering Committee does not plan or implement or coordinate or govern or evaluate Health ICT directly nor is the group responsible for all of these processes named. This raises the question of accountability especially within a sociopolitical structure where administrative positions are tenured and newly appointed political officials are unlikely to continue the work of their predecessors in a bid to put their own mark on achievements, rather than following through with the plans of other political parties' appointees[7].

I also observed a repetition of the word "**outcomes**," and a variant of it "**output**." (See Figure 4.2 for examples of the use of "outcomes" and "outputs.") Outcomes and outputs can be interpreted as the end results of a series of inputs, yet nothing is said about what work will be done to achieve those outcomes. While the outcomes described may relate to desirable applications of ICT in healthcare, without specifying what is being done to achieve those outcomes, feasibility, and viability assessments by users of the document may be limited, if not impossible. Furthermore, if outcome is considered from both the systemic and the individual perspectives, it is possible to conceive of the sum of positive individual outcomes leading to positive systemic outcomes. But if the system fails, then individual health outcomes cannot be actualized.

Besides obscuring agency, nominalization can also be deployed to reduce the impact of verbal processes. For instance, the document identifies "**demand**" as both a user-driven activity, as well as an intended outcome of the implementation of ICTs. It is

[7] It is important to note that this analysis of the *Strategic Framework* is being carried more than a year out after its expected implementation schedule of 2015-2020. Health ICTs are still not an integral part of Nigeria's healthcare system. Although a different health minister now supervises the FMOH, the Federal Government administration has not changed since 2015. It is therefore unclear why there appears to be no progress with implementing the *Strategic Framework*.

important to note the implications of these two uses of the word “demand”. Demand as a user-driven activity means that any Health ICT Framework should consider how users from the bottom-up are using mobile phones and applications to access healthcare services to determine how best to make adjustments to the system to accommodate, encourage, and improve such usage. On the other hand, increasing demand as an outcome for the implementation of ICTs may connote a top-down forced implementation which may lead to the suppression of users’ agency. The relevance of understanding the implications of these two applications of “demand” lies in the fact that ICTs (especially as they are projected to be used in Nigeria) involves a complex negotiation between what constitutes a networked access to health care and what needs of users present. A properly networked health information system may be beneficial for health planning, but will that be at the cost of sacrificing the needs of a significant proportion of the citizenry for whom access to healthcare is important, but limited?

FIGURE 2. Nigeria National Health ICT Vision

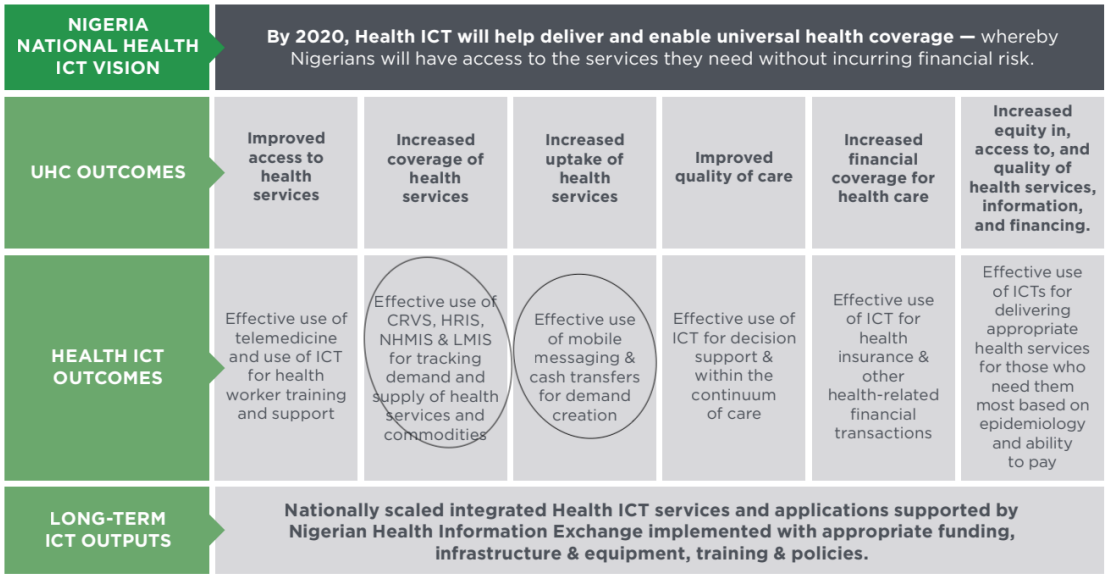

Figure 4-3 The two uses of "demand" (circled, bottom-up on the left and top-down on the right) as outcomes in the *Strategic Framework* vision.

Having looked at nominalization as a strategy avoiding agency and responsibility for aspects of health care directly related to the implementation of Health ICTs as outlined in the *Strategic Framework*, the next section examines the representation of the users.

4.3.3 Representing Users in *Strategic Framework*: A Case in Backgrounding

In his book, *User-centered technology,* Robert Johnson argues for the place of the situated user of technology as the basis for the design and that the place of user knowledge should be considered in human-technology interaction rather than a focus on the technology's potential in a deterministic manner (Johnson, 1998). The concept of user-centered technology does not only apply to the technologies themselves. The articulation of who the user of a technology is begins long before the technology itself is

designed and may continue to evolve as the technology is put to continuous use. In his influential article "Do artifacts have politics?", Langdon Winner (1980) reminds us that

> Consciously or not, deliberately or inadvertently, societies choose structures for technologies that influence how people are going to work, communicate, travel, consume, and so forth over a long time. In the process by which structuring decisions are made, different people are differently situated and possess unequal degrees of power as well as unequal levels of awareness. By far the greatest latitude of choice exists the very first time a particular instrument, system, or technique is introduced. Because choices tend to become strongly fixed in material equipment, economic investment and social habit, the original flexibility vanishes for all practical purposes once the initial commitments are made. In that sense, technological innovations are similar to legislative acts or political foundings that establish a framework for public order that will endure over many generations. (p. 127-128)

In other words, what Winner is calling attention to is that language, through the articulation of the policies that promote the development of certain technologies, can frame what we conceive of as possible and necessary for our social, cultural, economic and political existence. In the case of health care systems and policies, two ideas need to be foregrounded: that users of the systems can be conceptualized into two categories—patients and health workers—and that both sets of users are embodied and situated[8]. This

[8] Although the focus of this chapter is the patient-user, contextual factors in the Nigerian health care system, such as the lack of basic infrastructure like constant electricity, water, hygiene facilities, etc., and workforce capacity development affect both patient-users and health workers adversely. Medical

simple classification allows for the assumption that while every citizen may not be a healthcare provider, all citizens, including policymakers, can be patients who will use the system directly or indirectly at some point. Therefore, the most important user of a health system is the patient-user for whom the outcome of interacting with the system has the most impact.

I examined how the *Strategic Framework* identifies and positions "users" within Health ICT and Nigeria's healthcare system beginning with the foreword of the FMOH's document. In his foreword to the *Strategic Framework*, Isaac Adewole, the minister of health during whose term the policy document was crafted, identifies the primary users of the document as "State ministries of Health, Development Partners and the Private Sector"' (*Strategic Framework*, 2015, p. 4). That is, these are the people who will be responsible for achieving the goals of the document. This portrays a narrow conceptualization of the "users" of the policy, especially since a policy is not a static document without material impacts on the context to which it applies. The purpose of a policy is to effect a change to a particular situation. Therefore, the conceptualization of "users," or a commonly given related term,"stakeholders," should not be constrained by a narrow definition of those with technical expertise to design and implement policy. It must include a consideration of the non-expert end-users situated at the final, vital link in a chain of stakeholders. An expansion of the conceptualization of the stakeholders of a health policy would mean that all categories of people would be considered as knowers who are able to contribute both to policy design and its successful implementation. As

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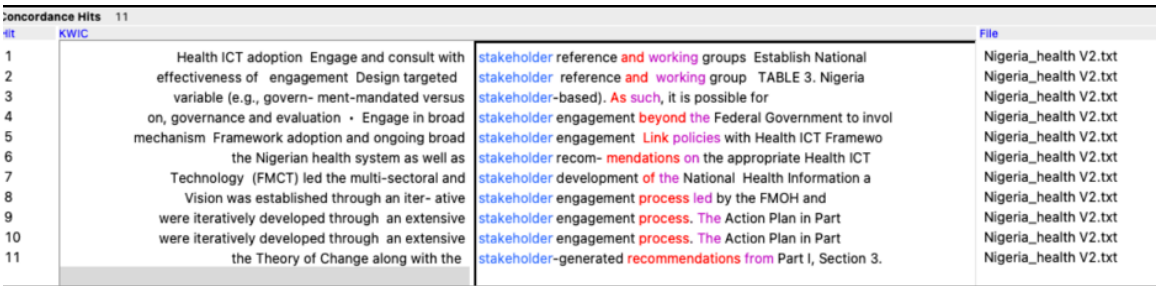
practitioners often protest the unsafe conditions of their work and patients are adversely affected by such protests, especially when protests take the form of strike actions.

knowers, non-expert end-users who are included in the design and implementation of policies will come to be able to understand how ICTs can promote the achievement of their desired health outcomes and be willing to cooperate with expert users instead of being antagonized by them. Also, including non-expert users can promote a sense of ownership within the local communities, so that users make efforts to improve the system rather than alienate it or think of it as alienating towards them.

Besides the limited identification of stakeholders, a look at the collocates of the term “stakeholders” reveals that they are portrayed in this *Strategic Framework* document as expert-knowers whose references and recommendations have not only developed the *Strategic Framework*, but who will also help implement the integration of Health ICTs. For example, the Figure 4.4 shows that “stakeholder” collocates with top-down inferences like “reference”, “recommendation” and “engagement.” In generating the results in Figure 4.4, I observed that there is a limitation with the phrasal extent portrayed in the AntConc result for the context of words which suggests a disjointed interpretation of the contexts in which “stakeholder" was used in the document. Although by clicking on each concordance line, one could expand the results for more contextual information, sometimes, this is often still insufficient to fully understand that context. Hence, I further examined the use *stakeholder* throughout the document. When “stakeholder” collocated with “reference” to form the phrase “stakeholder reference,” for instance, it was to refer to the recommendations of the WHO-ITU Toolkit. This is a form of indirect reference which backgrounds the interests and agenda of the WHO-ITU in making mHealth a global phenomenon. The toolkit itself is merely an instrument. Therefore, it cannot be regarded as a stakeholder. Rather we need to consider the

sponsoring organizations to fully understand the sense in which a phrase like *stakeholder reference* applies.



Concordance Hits 11

	KWIC		File
1	Health ICT adoption Engage and consult with	stakeholder reference and working groups Establish National	Nigeria_health V2.txt
2	effectiveness of engagement Design targeted	stakeholder reference and working group TABLE 3. Nigeria	Nigeria_health V2.txt
3	variable (e.g., govern- ment-mandated versus	stakeholder-based). As such, it is possible for	Nigeria_health V2.txt
4	on, governance and evaluation • Engage in broad	stakeholder engagement beyond the Federal Government to invol	Nigeria_health V2.txt
5	mechanism Framework adoption and ongoing broad	stakeholder engagement Link policies with Health ICT Framewo	Nigeria_health V2.txt
6	the Nigerian health system as well as	stakeholder recom- mendations on the appropriate Health ICT	Nigeria_health V2.txt
7	Technology (FMCT) led the multi-sectoral and	stakeholder development of the National Health Information a	Nigeria_health V2.txt
8	Vision was established through an iter- ative	stakeholder engagement process led by the FMOH and	Nigeria_health V2.txt
9	were iteratively developed through an extensive	stakeholder engagement process. The Action Plan in Part	Nigeria_health V2.txt
10	were iteratively developed through an extensive	stakeholder engagement process. The Action Plan in Part	Nigeria_health V2.txt
11	the Theory of Change along with the	stakeholder-generated recommendations from Part I, Section 3.	Nigeria_health V2.txt

Figure 4-4 Concordance lines showing the frequency and context of use of "stakeholders" in the Strategic Framework

With regards to Health ICTs, multiple users were identified. Several keywords generated from the AntConc word-frequency search and examined using the keyword - in-context (or KWIC) function revealed that words such as “end-users”, “patients”, “Nigerians”, “workers”, and “citizens” are employed to indicate different users of Health ICTs. However, throughout the document, “Nigerians” and “citizens” are shown in non-agentive beneficiary (syntactic) positions (i.e., they do not contribute agentively to the system, rather the actions of the policy and system are directed at them). Figures 4.5 and 4.6 contain examples of the use of the words “Nigerians,” and “citizens” respectively. In figure 4.5. “Nigerians” is realized in the semantic role of beneficiaries who will “have access to …” (lines 1-3) or survive or have their disease burden reduced (lines 4 & 5). In figure 4.6, “citizens” is used in the place of “Nigerians”, but still as beneficiaries.

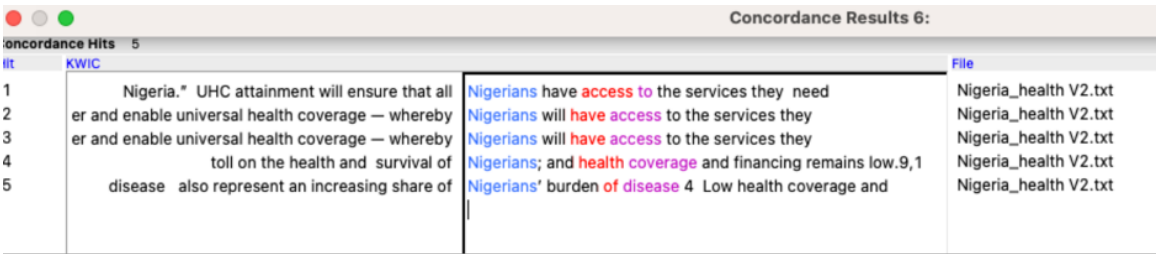


Figure 4-5 Concordance lines showing "Nigerians" as possible beneficiaries of Health ICTs

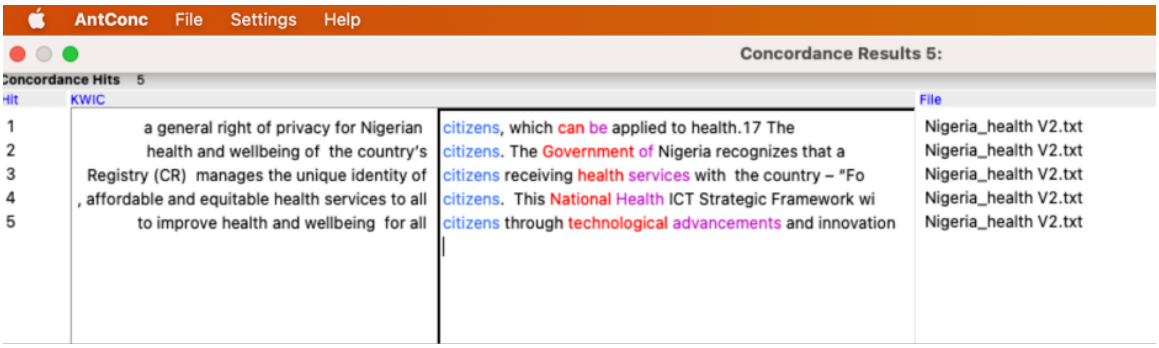


Figure 4-6 Concordance lines showing the use of "citizens" as objects of prepositions in context in the Strategic Framework

Without a conceptualization of citizens as knowers and active agents whose participation in policy-making and implementation can be beneficial, how can they be expected to take part in a system not well designed to achieve their desired health outcomes?

It is also critical to note that the report projected that by midway into the projected 5-year (2015-2020) completion time, communities were expected to "support, maintain and use ICT services and applications" (*Strategic Framework*, p. 34, Table 3)--a goal that clearly wasn't attained (even by the time of this writing, 2022)--a goal clearly not feasible, particularly without the participatory inclusion of patient-users in the design process. This is not to say that situated users cannot use established technologies, they

often can and they do, sometimes with poor consequences. However, since embodiment and situatedness are significant factors in accessing technological systems such as a health care system, it is important that users and technologies of health co-construct each other rather than assume that health ICT technologies can be designed, managed, and imposed upon users to the benefit of all.

To buttress this point, during the 2014 Ebola outbreak in Nigeria, which is often regarded as the country's first attempt to use mobile phones to curtail the spread of a disease, misinformation that bathing with and drinking salt water could prevent Ebola was circulated widely by word-of-mouth, text messaging and social media. The message caught on like a wildfire and by the time the government issued an official statement marking it as misinformation, several lives had been lost across the country. Many blamed social media for the spread of this misinformation (Ogala & Ibeh, 2014). However, according to Balami and Meleh (2019) who carried out a digital survey to determine the spread and use of the salt-water-remedy information, social media proved to be "an effective tool for propagating health information (both correct and wrong) yet it was not effectively used by consumers to verify the accuracy of said information" (p. 180). Factors such as semi-literacy, lack of expertise, or the perceived credibility of individual sharers, etc., may account for why consumers do not bother to verify information shared through social media. The point here is that users of ICTs may organically pick up such technologies without having the requisite skills to fully understand and deploy them regardless of their educational level. It is therefore dangerous to presuppose that the ubiquity of mobile phones and increasing web connectivity amongst populations can lead to successful health outcomes.

The terms “Nigerians,” “citizens,” and “end-users” (words I refer to collectively as “patient-user” category words) also occurred a few times in the document, with *Nigerians* and *citizens* occurring five times each and *end users* having the least number of occurrences (three times only). When compared with *stakeholder*, and (health)*worker,* which tended to occur more frequently in the *Strategic Framework*, eleven and twelve times respectively, the patient-user category words were backgrounded or deemphasized. This approach is problematic especially because it reflects a policy formulation strategy of rhetorical silencing which forecloses any discussion or implementation of aspects not contained in the policy document (i.e., what the government has chosen not to do). How does discourse on health and technology exclude those for whom the system is designed to serve? Who are the actual “users” of this technological system? Whose input will count as knowledge for improving the systems?

In the sections that follow, I will examine the implications of properly defining who the stakeholders are in health care and, similar to what the *Strategic Framework* has done by including the illustration, I will examine how the material conditions of the Nigerian context influence the health outcomes of patient users of the system in a way that is obfuscated by the language.

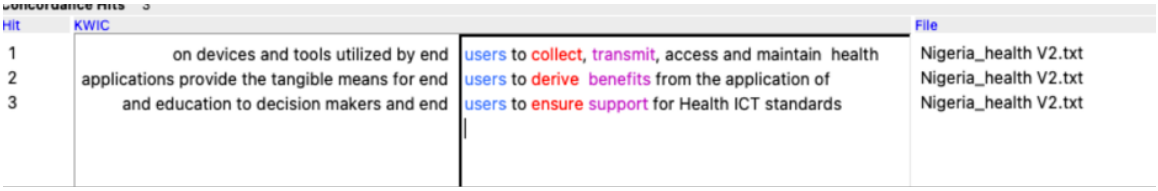
4.3.4 Defining “stakeholder” in the Design of Healthcare

A primary concern in this dissertation as a project in technical communication and interpretive policy analysis is the conceptualization of the users of policies. Users of health policies can be understood from multiple perspectives, including those which reflect users as creators, interpreters and executors of policies, as well as users of the

system that results from the implementation of the policy. While there are several layers to each of these user categories, of immediate concern here is the latter group (i.e., the users of the ensuing system). I further divide this group of users into two categories: health workers and patients. Users of health policies and the system they describe have (elsewhere) often been referred to as "stakeholders" (See the title of Ritz, et al., 2014, which lists *patient* in first position in a string of stakeholders: *Connecting Health information systems for better health: Leveraging interoperability standards to link* ***patient****, provider, payor, and policymaker data*. See also Centers for Medicare and Medicaid (n.d.) where it is used to describe policymakers, *patients*, payers, payor, caregivers, healthcare workers, etc.).

The term "stakeholder" comes from business-related discourse and has been defined as "**a person or company** that is involved in a particular organization, project, system, etc., especially **because they have invested money in it**" (Oxford Advanced Learner's Dictionary, Online; emphasis added). The term appeared as one of the most frequent words used in the *Strategic Framework* and I was curious to know how it was used, who it referred to, and what the circumstances of each occurrence was based on contiguous words. Recall Figure 4.4, which shows the concordance lines for "stakeholder" in the *Strategic Framework*. The word appeared eleven times in the entire document. I observed that each appearance indicates a reference to either participant *organizations* in the policymaking process (lines 8-11), potential *organizations* who might want to develop an ICT-driven health initiative (lines 5, 6, 7) or consulted *texts* which provided the template for the *Strategic Framework* (lines 1, 2). None of the references referred to patients or health workers as stakeholders. This indicates an

assumption that health workers and patients are not the direct or even indirect audience of the policy document. However, when I investigated the use of the phrase *end user,* which came up as one of the less frequently used terms in the document, the concordance search returned with an association of end-users engaged more with the technological system itself (see Figure 4.7 below, items 1&2) and not the policy document.



Hit	KWIC		File
1	on devices and tools utilized by end	users to collect, transmit, access and maintain health	Nigeria_health V2.txt
2	applications provide the tangible means for end	users to derive benefits from the application of	Nigeria_health V2.txt
3	and education to decision makers and end	users to ensure support for Health ICT standards	Nigeria_health V2.txt

Figure 4-7 Concordance lines showing "(end) users" in context in the Strategic Framework. End users are portrayed as health workers (1), patient users? (2) and creators of ICT-enabled health care solutions

The distinction between *stakeholder* and *end user* makes a remarkable differentiation in that it presupposes that stakeholders already have the knowledge of a technological system (even one that is yet to be designed) and can define who the end users of the system are and the roles they play within the system. Yet, it is safe to assume that the category of end users (who are both textually and conceptually absent from the planning process) are *already* users of the health care system who might already have used and continue to use ICTs to access healthcare across different locations. This category of already-users is more likely to contribute to the understanding of how ICTs can be better-leveraged for healthcare through studying their actual patterns of usage, context, and how they navigate different infrastructural affordances and limitations. To be clear, this is not to say that new models or structures of ICT usage in health care cannot be designed, but

the most productive ICT models and technologies to start with would be the ones which bottom-up users find rather convenient or organic.

Despite the obvious backgrounding of the (patient) end-users of the *Strategic Framework*, there was a singular, instance of patient-users being recognized as stakeholders in the Health ICT framework (noteworthy because of both its placement and its focus on a (fictive) end-user of this technological system. This instance is illustrated in the section titled "Scenario: The health ICT vision in practice–impact on stakeholders (*Strategic Framework*, p. 20; a more elaborate version of the scenario can be found in Appendix 2 of the *Strategic Framework*), which I will analyze in the next section.

4.3.5 "Fatima, 33 year old female, G4P2" vs. Amina in Bidafujafa

To facilitate a discourse of healthcare that uses technology to support its users, it is important to understand who the users of the healthcare system are and what role they play within the system. The *Strategic Framework*, to the limited extent that it considers "users" at all, clearly identifies two sets of users of ICT Nigeria's health care system—the health worker and the patient. However, it prioritizes the healthworker's functional needs over those of the patients by excluding aspects of the lived experience of the user in order to foreground how Health ICT can support health care delivery. To illustrate how the *Strategic Framework* ignores the lived experiences of policy-relevant publics in its bid to meet recommended standards for an ICT-supported healthcare system, I examine the sole illustration provided within the 62-page policy document to support the claim that ICT can deliver UHC in Nigeria. The *Strategic Framework* presents an illustration of the role of ICT in health delivery through the following scenario:

HEALTH ICT SCENARIO ILLUSTRATING CHANGE AND IMPACT ON STAKEHOLDERS SCENARIO: THE HEALTH ICT VISION IN PRACTICE

[1] A few months ago, Fatima registered her children in the NHIS* through the Primary School Enrollment Process. At that time, Fatima and her husband were also enrolled in the NHIS and they were issued NHIS Cards that can be used for healthcare services.

[2] Mary woke up early. She checked her phone. It was 6 AM. She had 30 minutes to get ready before going to work. She scrolled through her apps to double check the shift calendar. Earlier on in the week, she had received a request to swap shifts with one of her co-workers who was headed out of town to attend to a family matter. She started getting ready.

[3] Around the same time, Fatima was going about her day. She was expecting and due at any time. She had developed a birth plan with the local midwife. When she first learned that she was pregnant, she decided to sign up for weekly SMS* notifications about her pregnancy and to receive appointment reminders. She found the messages and pictures informative and even enjoyable, and would often discuss them with her sisters. She was especially proud that she had not missed a single appointment. This was unlike her previous pregnancies. She sighed as she recalled her previous experiences. Back then, she did not know the importance of antenatal visits or setting up a birth plan. Sometimes she would make appointments, but not show up. This time was different… Fatima felt a contraction.

[4] Mary arrived at work right on time. She was excited for the day. During shift hand-off, she and her co-worker huddled over one of the clinic's tablets going through the different cases of clients present at the clinic. They prioritized the cases and she got to work.

[5] Fatima notified her family members that she needed to be taken to the clinic. She then directed one of her sisters to text the local clinic about the situation. A taxi was called and Fatima proceeded to the clinic.

[6][Alert.] Mary checked the clinic tablet. She read that a 33 year old female, G4P2 (Gravida of 4, Parity of 2)*, in labor was headed to the clinic.

[7] When Fatima arrived, she and her husband realized they had left the NHIS card at home in the hurry. But they were lucky; her NIN* was stored in her husband's phone contact. With the cross-reference she was triaged and encouraged to relax or walk about until the contractions came closer together.

[8] During her assessment of Fatima, Mary observed that the baby was in a breech position. When she had a break, she decided to read up on breech deliveries. She browsed the resources on the clinic tablet and began reading. After reading, Mary decided to review Fatima's chart again through the EMR system accessible using the tablet. Fatima had mentioned a history of pregnancy complications, but Mary did not see that in the clinic's system so she checked the Nigerian Health Exchange to see if the records were there. Mary retrieved Fatima's shared health record and learned that the first baby had been breech and did not survive. It had been a home delivery in a different village. To be safe, Mary decided to request a brief consult with the obstetrics/gynecology department at the referral hospital.

She sent of[sic] the request through the hospital tablet. Within a few short minutes, she was on the phone with the on-call physician in that department.

[9] Fatima's contractions shortened. Mary checked up on her and moved her to the delivery room. Mary had instructions to contact the on-call physician her[sic] through phone or videoconference if any complications arose. Mary felt confident going into the delivery and provided support to Fatima.

[10] Fatima, G4P3, delivered a healthy baby boy weighing 3.4 kgs, 49.3 cm in length at 17h21 on... Mary typed into the clinic computer, updating Fatima's chart as she smiled. Through the chart update, the baby was registered in the Civil Registration and Vital Statistics database. The data were also automatically transmitted to the NHIS database for facility reimbursement, the facility's LMIS* to account for supplies used during the birth and the NHMIS* for health services planning. Meanwhile, mum and baby were doing fine in the recovery unit.

[11] One week later, Oye, the local government M&E* officer was reviewing aggregate electronic NHMIS reports from each of the LGAs*. That week, the decline in maternal and neonatal mortality continued. He concluded his day by emailing of [sic]performance reports to each of the supervisors in his department and fulfilling supply requests and systems prompts.

* EMR = Electronic Medical Record

G = Gravida (number of pregnancies)

LGA = Local Government Area

LMIS = Logistic Management Information System

M&E = Monitoring and Evaluation

NHIS = National Health Insurance Scheme

NHMIS = National Health Management Information System

NIN= National Identification Number

P = Parity (number of successful births)

(*Strategic Framework*, 2015, p. 37-38, Appendix 1; The paragraphs have been numbered here for reference purposes)

This illustration focuses on the actions of two major participants—Fatima and Mary—told in the 3rd person. (Both participants are personas depicting the ideal users of the health system).

Fatima is the patient in this story. Nothing is said about Fatima's personal background by which the reader may understand who she is and the challenges she faces as a person trying to access healthcare from her place of residence within Nigeria. In fact, the only personal information provided about Fatima is the digital record she has at the hospital: "a 33 year old female, G4P2". All other information tells the reader who Fatima has in her life—children, a husband, sisters, a midwife with whom she has created a birthing plan—people relevant to the plot, but not quite relevant when it comes to accessing health services. This chain of relationship shows that Fatima has a network of supportive people around her, that she coordinates with her husband, discusses health care with her sisters, consults with a midwife, etc., yet it would have been more beneficial to observe how her network of people connect her to healthcare access.

Fatima's actions in this illustration can be divided into two phases: a pre-clinic [1,3] and an in-clinic phase. Pre-clinic, Fatima is shown as a thoughtful parent who has registered her family with the NHIS, enrolled her children in school, created a birthing

plan, set up SMS notifications to inform her about pregnancy and antenatal appointment reminders. In other words, Fatima had agency and control when it came to running her life. However, to set up the need for ICT intervention, Fatima's agency had to break down. Thus, she is portrayed as being ignorant during her previous pregnancies regardless of two successful outcomes. She forgets the Health Insurance card at home despite having a plan and being able to mobilize her support system to get her to the hospital. Her midwife will not attend to her during the birth of her child. And, more importantly, she has a complicated pregnancy, her baby is breech…(never mind that the breech should have been discovered before her due date, if the hospital had been set up to manage risky health conditions in the first place). Table 4.1 summarizes Fatima and Mary's actions by highlighting the verbal processes representing their roles in healthcare access.

Table 4.1 The verbal processes describing Fatima and Mary's actions as patient and health worker respectively.

Fatima	Mary
[1] …Fatima **registered** her children… …Fatima and her husband **were** also **enrolled** in the NHIS and they **were issued** NHIS cards…	[2] Mary **woke up early**. She **checked** her phone. She **scrolled** through her apps to **double check** the shift calendar. She had **received a request to swap shifts…** She **started getting ready**.
[3] …Fatima **was going about her day**. She **was expecting and due** at any time. She had **developed** a birthing plan…	[4] Mary **arrived** at work **on time**. She was **excited for the day**.

Fatima	Mary
She **decided** to sign up for weekly SMS… She **found** the messages and pictures informative…and would **often discuss**… She was especially **proud** that she **had not missed** a single appointment. She **sighed** as she **recalled** her previous experiences. …she would **make appointments**, but **not show up.** [5] Fatima **notified** her family… She then **directed** …to text the local clinic… …Fatima **proceeded** to the clinic. [7] When Fatima **arrived**…they had l**eft the NHIS card at home**… [8] Fatima **had mentioned a history of pregnancy complications**… (this is what Mary did not see)	She …**hurdled over** one …tablet going through cases. They **prioritized** the cases and she **got to work**. [6] *[Alert.]*Mary **checked** the clinic tablet. She **read** that a 33 year old female, G4P2, in labor was headed to the clinic [8] …Mary **observed** that the baby was… …Mary **decided to read** up on breech deliveries. She **browsed** the resources…and **began reading**. …Mary **decided to review** Fatima's charts again…[Fatima **had mentioned** a history of pregnancy complications… (this is what Mary did not see] …but Mary **did not see**…so she **checked** the … Mary **retrieved** Fatima's shared health record. …Mary **decided** to request a brief consult She **sent off** the request… …she **was on the phone** with… [9] Mary **checked** up on her (fatima) and **moved** her … Mary **felt confident** going in to the delivery and **provided** support to Fatima [10] *Fatima, G4P3, delivered a healthy baby boy*…Mary **typed** into the clinic computer…as she **smiled**

[The bracketed numbers correspond to paragraphs in the sample illustration where the sentences excerpted in this table were taken from.]

Enter Mary, the nurse/midwife/ who is portrayed as purposeful and efficient. Mary "woke up early…checked her phone [presumably for the daily schedule]…, double check[s] the shift calendar, arrives at work early and is excited about the day." Mary does not miss a beat. She is the ideal healthcare worker who knows where to look and what to do to help a patient. However, none of Mary's proactiveness and actions to provide Fatima with the help she needs to successfully deliver her baby would have been possible without a string of connected technologies beginning with the NIN number which was stored on Fatima's husband's phone which allowed Mary access Fatima's NHIS records. This situation sets Mary on an even lower level of agency compared to the technology. Thus, the technology which is the instrument becomes agentive in the process of healthcare administration to which the health worker must be accommodated through training. Figure 4.8 shows how the "healthworker" is objectified instrumentalized through association with "Registry" entries and syntactic subordination to "training" in support of health ICTs.

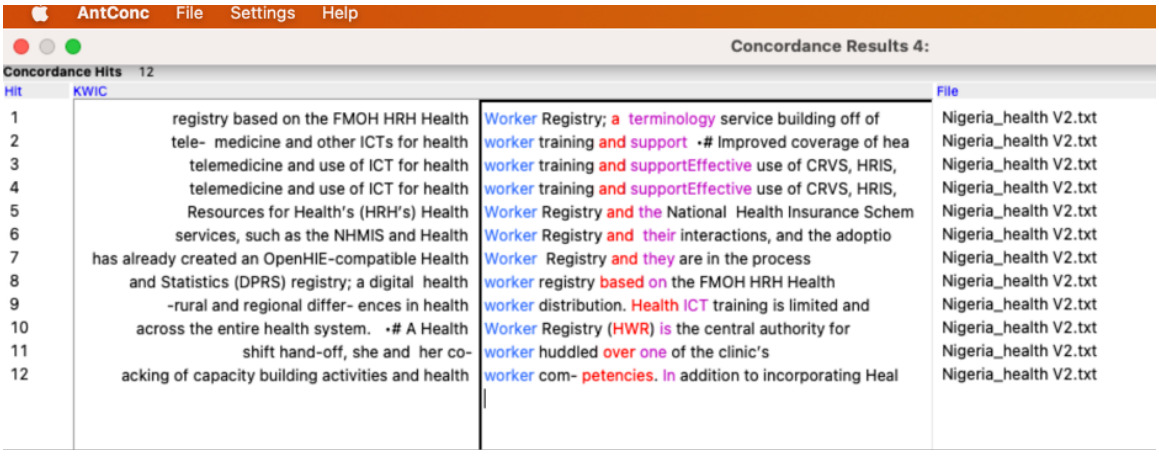


Figure 4-8 Concordance lines showing the frequency and use context of "workers" in the *Strategic Framework*

Moreover, in the scenario with Mary and Fatima, we are able to witness gaps in the flow of information which could potentially have impeded Mary's work, since she relied so much on the technology instead of listening to the patient. First, she was only notified that "a 33 year old female, G4P2" was in labor, without any contextual information about who this person is and how Mary might prepare to support her upon arrival. Second, Fatima's record was missing locally, so Mary could not have confirmed her information if the NIN number was unavailable. Third is the assumption that remote clinics can depend on digital consultation to achieve positive medical outcomes for patients (without detailing what human and infrastructural resources are available), including the presence of tablets (and the requisite electricity to recharge them and technologies connect them to networks of information). These gaps indicate the complexity involved dealing with the challenges of under-resourced, remote and uneconomically viable sections of society.

Building arguments for Health ICTs on presuppositions about available infrastructure fails to acknowledge complex impoverished or rural contexts, without regard for the lived experiences and embodiment of actual users of many patients and healthcare workers. It suggests that it is possible and responsible to design a healthcare system without the input of true end-users and ignores the many challenges to any simple adoption of well-intentioned technological innovations.

To understand why this final point is crucial, I propose situating a patient like Fatima (to avoid confusion we shall call her Amina) in Bidafujafa, a community in Gbako Local Government Area of Niger State where children learn under a tree, and where the only health facility has no toilet or fence and has only one health worker

(according to a 2:45-minute video documentary by Nigeria Health Watch, 2021). The nearest community with a somewhat functional clinic where help might come from is at least thirty minutes away by motorbike over a dirt road.

The choice of Bidafujafa is neither random nor accidental. The deplorable state of Primary Healthcare Centers (PHCs) has been featured in multiple media publications even as the call for the use of ICTs to support health care in remote, hard-to-reach places becomes popular (Onyeji, 2017; Muanya, et al., 2021; Nigeria Health Watch, 2021). These reports are accompanied by vivid images which are counter-narrative to the utopian vision of the *Strategic Framework*. A Nigeria-based non-governmental organization, Nigeria Health Watch (NHW), has been creating awareness about the state of primary healthcare centers across the country. Bidafujafa was featured in a YouTube video in November 2021. Although NHW's agenda has been to focus on creating awareness about access to healthcare to improve the rate of maternal and infant mortality in Nigeria, their videos bring perspective to the presuppositions about the contexts where Health ICTs were meant to deliver the dividends of universal healthcare. They help to unravel the misconception that remote areas are just remote and not necessarily in need of additional infrastructural investments to make things work.

For instance, in the video documentary, the narrator introduced the Bidafujafa health center as a chance-encounter while enroute to an assignment in a neighboring community. The health center is a single unit bungalow with its entrance darkened by the shade of a nearby tree. Several motorcycles are parked under the tree and people are seen taking shelter under the tree. There are no obvious external signs that this is a health facility, but the structural design and yellow and blue paint, which are similar to what is

used in government buildings across the country, clearly mark it out as a public building. By 00:19 seconds into the documentary, the viewer is introduced to the infrastructure available at the health center. The camera pans out to show a hand-pumped borehole unit with used car tires thrown around it to support the pumping lever. The borehole is being pumped by a woman with a baby strapped to her back, suggesting that the borehole serves the entire community, not just the health center. The narrator also noted the absence of basic amenities like electricity, a fence to secure the perimeters of the facility, and a toilet. The interior of the health center reveals broken and dust-covered furniture - indicators of the deplorable state of the facility. It is important to interrogate what kind of succor can be brought to the ailing in a place like the Bidafujafa health facility and to consider how such a location might integrate the use of ICTs for improving patient outcomes while generating usable data for national health planning. It is against this backdrop that I situate a persona, Amina, in Bidafujafa. Figure 4.9- 4.16 include screenshots from NHW's YouTube documentary on Bidafujafa Primary Healthcare Center. Figure 4.16 depicts the " primary school" where children in Bidafujafa community learn. The absence of a physical building or technologies that facilitate learning means that even at the earliest stages of institutional interaction, technology is not a part of the community's life. Children, who are the generation who will go on to use more communication technologies as they grow up, are unaware of the possibilities of technological exposure and may never develop the necessary transferable skills to become the now taken-for-granted "digital natives."

Figure 4-9 The front view of Bidafujafa primary health center

Figure 4-10 A view of the delivery bed at Bidafujafa PHC

Figure 4-11 The water pump at Bidafujafa PHC

Figure 4-12 The labor room at Bidafujafa PHC

Figure 4-13 The only health health worker at Bidafujafa PHC

Figure 4-14 The only access road in and out of Bidafujafa

Figure 4-15 Commercial activities take place right next to the PHC

Figure 4-16 Students learn under a tree at Bidafujafa Primary School

Amina in Bidafujafa is a persona just like the Fatima of the *Strategic Framework*. However, what makes the difference in this illustration is that I will situate Amina first as a member of an actual community (depicted in the video) with little to no public infrastructure and secondly as a user of the healthcare system. Being in a resource-constrained community can have several implications beyond healthcare on dwellers. There are challenges with employment, education, basic infrastructure like water and electricity, inadequate public transportation (if any), etc. As a member of Bidafujafa,

Amina will experience challenges with these economic and public infrastructural deficits regardless of her educational level or employment status. For instance, according to the narrator of the NHW documentary, the only health worker at the Bidafujafa PHC comes every morning from Bida (the nearest city of about 200,000 people, about 25 km away from Bidafujafa). The health worker, Danjuma Ekolo, describes his experience as a "problem" (NHW, 1:21 - 1:41). He noted that with no one else to run shifts, the health center is empty whenever he closes. Anyone needing urgent care after the close of business would have to be transported to Bida by a dirt road which is sometimes flooded and unmotorable.

There are multiple questions to be asked about the situation in Bidafujafa: what is the qualification of the health worker? How exactly can he help different patients who present themselves at the clinic, and what about those who have health problems outside of the limited hours when he is present? Why is the only health worker living so far away from the community where he works?

The general infrastructural condition in Bidafujafa is bad enough that the few public employees cannot invest into the community to make it economically viable, nor is the government of Nigeria or the local area doing anything to address this. There is also evidently little to no supervision to ensure the quality of service provided in such places. Thus, it might be farfetched to assume that an investment in ICT for such a PHC without piped-in water, electricity, personnel, etc. would effectively reduce mortality or promote better health outcomes for patients. Rather, within the conceptualization of PHCs as healthcare using available local resources, giving the only health worker a device to gather and share data might simply increase the duties of the health worker. This is not to

say that data communication through a networked ICT structure cannot influence planning and provision of infrastructure or that ICTs should merely be designed around available supportive infrastructure. We need to think about the telos or purpose for which such technology is being proposed. More importantly, we need to understand how local community members access healthcare services with their limited resources in order to understand what may be needed to build a working health care facility for them and/or improve existing infrastructure.

The conditions of the PHC and the school at Bidafujafa are emblematic of the infrastructural situation in Bidafujafa and many other communities across the country which lack a vibrant economy. Resources, both economic and human, tend to leave the community rather than flow towards it. This is a particularly disturbing situation because it appears that with the conceptualization of mHealth as the most feasible ICT for resource-constrained, less-populated and remote areas, it is clear that the greater urgent need is for basic infrastructure, rather than focusing on investment into ICT infrastructure that would need even more investment (cell-towers, reliable electricity, extensive training and funding, etc.) to even begin to be viable. That is why infrastructure needs to be considered from the bottom up, from the needs of the patient-users first, rather than simply top-down. This is not to say that communities like Bidafujafa should not have ICT-enhanced health care. Rather, it is that the primary function of a health facility is to meet the health needs of patients, whereas data generation is a secondary function which can materialize if the primary function is fulfilled.

As a resident of Bidafujafa, Amina is pregnant in a precarious situation where she would not have access to advanced health services, and she would also lack the means to

get care outside of her community due to other forms of infrastructural and human resource deficit. However, the current discourse of primary health care, in its focus on technology, ignores the economic limitations of a society that can be established by thinking from the lives of the people who live in that society and their healthcare needs from the bottom-up perspective. The focus on the presence of primary health care facilities as sites of new technological innovations therefore functions as an indicator of government presence which can be tapped into for data collection, rather than focusing on establishing better base-line availability of healthcare for residents. The recent introduction of the discourse of mHealth for data collection from such areas reframes the problem and further highlights why the discourse about health ICTs needs to be user-centered (Johnson, 1998) and address issues of precarity (Teston, 2016), and access (Banks, 2006; Seigel, 2014).

4.4 What is Discursive about Policy Problems?

Despite the positioning of ICTs as the singular factor that will enable delivering UHC in Nigeria (a feat that has eluded the country for several decades), it is notable that of the many health policy documents that were developed around the same time as the *Strategic Framework*, none of these documents mentions the total infrastructural framework. While the impacts of this lack of cross-referencing may not be immediately obvious, the lack of cross-referencing indicates that this policy is limited in its conception that the audience it is supposedly designed to address does not include wider representation within the relevant ministries and government departments. I note this as a problem because despite the WHO-ITU toolkit and the ROP and L&I recommendation that a governance structure be established, it appears that the structural and administrative

logics required to make the implementation of Health ICTs central at the micro- and macro-level were not articulated.

Also, in Nigeria policies are often not debated publicly. Media engagement is one of the primary ways by which the general public gets informed about new policies. Important policies such as one that should "deliver universal healthcare by 2020" would be expected to gain popularity in the press and be foregrounded by principal actors in the health sector. Yet, the *Strategic Framework* did not become a feature in media interviews by principal actors within the FMOH. In a media interview granted by the minister of health, Prof. Issac Femi Adewole, during whose tenure the *Strategic Framework*, L&I and PoP were created, he responded to a journalist's question about the status of residency training for newly graduated doctors. "It might sound selfish, but we can't all be specialists. We can't. Some will be farmers; some will be politicians. The man who sews my gown is a doctor. He makes the best gown. And some will be specialists, some will be GPs, some will be farmers." (Isaac Femi Adewole, 2018, https://www.bbc.com/pidgin/tori-45600654)

This response by the minister shows a major disconnect between the concerns of the minister and the issues that plague the ministry he oversees and the people the ministry claims its mission is to serve as stewards who deliver healthcare to all Nigerians. Given the great shortage of doctors in the nation, one would expect that the minister would address the measures that the ministry is taking to ensure that more doctors are getting trained and entering the industry, rather than implying that trained doctors might take up other professions and trades.

In a similar development the minister of labor and employment, Dr. Chris Ngige, who himself is a trained but non-practicing medical doctor, gave an interview in which he was asked to address critical issues such as the declining ratio of doctors-to-patients due to emigration. An excerpt from the interview is captured below:

> Interviewer: Aren't you concerned that we could be facing a shortage of hands in the medical field as we progress[9]:
>
> Minister: No, I'm not concerned at all. I'm not worried. [You're not!] We have surplus. If we have a surplus, we export. [...] I was taught biology and chemistry by Indian teachers in my secondary school days. They were surplus in their country. We have a surplus in the medical profession here. I can tell you this. It is my area, we have eggheads. [But we don't have enough doctors to man the rural areas.] who says? [you know there is not enough medical professionals, but you say we have surplus.] We have enough. We have more than enough. Quote me.
>
> Interviewer: So there is nothing wrong with all of these people coming to [no nothing wrong] come and [they go out. They sharpen their skills. They earn money and send them back home here. Yes, we have earnings from them. We have foreign exchange earnings, not from oil. The Indians were doing it. The Pakistanis, they taught me.]

[9] See the full interview with the minister for labor, Chris Ngige, here: Ngige, Faduyile Disagree On Brain Drain, Migration Of Nigerian Doctors – Channels Television

Interviewer: Are you abreast of what is currently happening in the medical sector? [How? No, I am. I am. I am] I'm trying to see if I can get an article now [you are…no, no, no, leave that] this was written a couple of weeks ago by a columnist, Segun Adeniyi.[]

Minister: Those guys go there. They are trained. They are better trained because of the facilities they have there. Eventually, I know some of them who have come back home with those facilities and opened centers here. I know of my doctor in America. He has a facility in Imo State now. He has about four facilities in Maryland where he is practicing and so you tell me that it is brain drain. Yes, he has gone there. In fact, he left in the 80s, yes. We were in medical school together. I know a couple of them and they are setting up centers back home here and in their centers they have CAT scan. They have MRI and other scans which even the government hospitals cannot maintain.

(Interruptions by either the interviewer or interviewee are captured in square brackets [] when either is speaking)

Ngige's comments in this interview also show the disconnect between the problems with a top-down approach to problem-identification and solution-proffering which proceeds from the position of stakeholders as experts or politicians. He fails to connect the problem of doctors leaving Nigeria to the challenges Nigerians face with accessing and providing healthcare. Instead, he discusses how doctors need to leave Nigeria so that they can send remittances back home—remittances which may not be directly invested into the healthcare sector. He also discusses the fact that some of the doctors who leave may

return to establish medical facilities in the future, disregarding the fact that the problem the interviewer has identified and wants him to discuss is an immediate one that could negatively impact the lives of the patients that doctors are leaving behind in the country.

Although my request to interview the minister under whose supervision *Strategic Framework* was created went unanswered, I sought to understand his engagement with the policy on other platforms such as press interviews and on social media. Critical discourse analyst Oliver Daddow[10], who has worked on foreign policy through discourse analysis, justifies the use of this methodology especially for situations where policy makers are inaccessible to researchers. I am currently in the United States and the minister is no longer in office, so it was not possible for me to interview him directly. However, I followed the conversation about eHealth on the professional social media platform, LinkedIn, and interviewed information technology (IT) professionals who either referenced their active participation as stakeholders in the policy-drafting process or are currently working within the eHealth industry in Nigeria. I have also attended different programs organized by private sector organizations where eHealth has been the focus. For instance, the conference *Human-centered Design: An Interactive Problem-solving Approach for Public Health Interventions* was organized by Nigeria Health Watch in July of 2021. It highlighted the fact that increasingly, Nigeria's health sector is expanding in its use of ICTs to support health care, marked by increasing dominance by the private health sector, even while Nigeria's health policies are failing to catch up with

[10] Oliver Daddow blogs about policy and interpretive methods. See this link for his argument about analyzing the positions of policy makers through their public discourse here: https://blogs.lse.ac.uk/politicsandpolicy/interpreting-foreign-policy-through-discourse-analysis/

the reality of the difficulties of providing even basic universal health care to its citizens across the country.

4.5 Conclusion

In this chapter I have considered how top-down recommendations for the design and implementation of policies can fail to consider the most relevant factors needed for policies to work for the contexts for which they were designed. By focusing on the call of critical discourse studies scholars (e.g., Norman Fairclough, 2015) to seek out the semiotic aspects of social wrong, I have explored a national policy document on the inclusion of ICTs within a nation's healthcare system to examine how it positions the "users" of the policy, ICTs, and the healthcare system. My analysis has shown that the language of policy, through its articulation (or absence thereof) of different positioning for the different categories of users (e.g., stakeholders, health workers, end users, citizens, and Nigerians), has relegated the users who are the most impacted (i.e., patients) by the intersection of policy, healthcare, and technology as the least knowledgeable and therefore unable to contribute to the design and implementation of healthcare for better outcomes.

In the next chapter, I shall discuss how users of the healthcare system can articulate themselves as knowers and social agents who, regardless of policy, are able to identify problems within the healthcare system and are able to design, implement and incorporate ICTs into an existing system. Then in chapter 6, I will discuss the theoretical and policy implications of the analysis done in this chapter and the next.

5 Navigating Access, digital divide, and the rhetoric of mHealth

In the previous chapters, I explored some of the discourses that have shaped the emergence of mHealth within the Nigerian context such as the Ebola crisis of 2014, and the need for maternal and child health (MCH) interventions to reduce maternal, newborn and infant mortality in the country. I also reviewed the development of Nigeria's National Health Information and Communication Technology Strategic Framework (*Strategic Framework*) and how the *Strategic Framework* is exclusionary in its discourse of sustainable and accessible healthcare for all. In this chapter, I explore how individual, private sector actors have used mHealth in health care delivery in low-to-lower-middle-income countries (LMICs) broadly and in Nigeria specifically. I focus on the rhetorical practices of LifeBank, a Nigeria-based company which provides ICT-enabled medical logistics.

Several studies see the opportunities and challenges in mHealth implementation (Folaranmi, 2014; Oh, et al., 2005); however, these opportunities and challenges are often viewed from an institutional or technological perspective while downplaying or ignoring humanistic concerns such as user-centered design in technological interfaces (Johnson, 1998), socio-economic disparities such as (gendered) digital divides, and access to digital infrastructure (Banks, 2006), barriers to critical access to technological systems (Seigel 2014), precarity (Puar, 2012; Teston, 2016; Johnson & Johnson 2020). Some of these issues will be taken up in this chapter due to their pertinence to the research context.

Robert Johnson (1998) explains user-centered technology as technology that focuses on "the *localized* situation in which the user resides" (p.129, emphasis in

original). Using the example of the of a computer user using the word processor to complete a task within an institution, Johnson clarifies that a user-centered view of technology considers "the *tasks and actions* the user will be performing as a result of the user's situation" in order to shift the focus of technological design from a system-centered approach, which focuses on the to a user-centered one. For example, a user-centered design will design the technology that a document writer will successfully use to produce a brochure for an organization rather than design a generic interface for writers.

In the following sections I will examine the discursive aspects of mHealth discourse and present an analysis of LifeBank, an mHealth service used in Nigeria. Using a combination of methodologies drawn from Multimodal Critical Discourse Analysis, user-centered theory of technical communication, and rhetorical theory, my analysis explores LifeBank's work as an example of an mHealth technology which I discuss in the humanistic scholarship that theorizes the relationship between embodiment, context, language, technology, and technological innovations.

5.1 LifeBank: mHealth as medical logistics for saving lives in Nigeria

LifeBank was originally founded in 2012 as an app belonging to a non-profit (The One Percent Project; see For One Percent: An Innovative Blood Bank in Nigeria - Nigeria Health Watch) bridging the gap between blood donors and receivers in Nigeria. The One Percent Project was a response to blood shortage in emergency cases in Nigeria. Temie Giwa-Tubosun believed this problem could be solved if one percent of the Nigerian population donated blood annually (see The One Percent Project « ktravula). By 2016, the company she founded was renamed "LifeBank" and the app for it was known

as the "One Donor App" (see One Donor App - Apps on Google Play). According to the company's website, LifeBank is a for-profit medical logistics company which is "in the business of saving lives using technology and data-driven innovations" (www.lifebank.com.ng, accessed Dec 2, 2019). Since the start of LifeBank as a company, the One Percent Project has become a non-profit arm of the company—Blood and Oxygen Access Trust or BOAT by LifeBank. BOAT is supported by freewill donors and corporate sponsorship (as advertised on the company's website[11]).

While LifeBank's app cannot entirely be subsumed under the label "mHealth" app in the sense of the literature reviewed above because the company includes multiple operations, it falls into the mHealth category because of the context in which it operates. Unlike typical mHealth apps which help individuals achieve personal tasks/goals, mHealth apps, like other apps in the Nigerian context, are often extensions of businesses (i.e., they primarily facilitate technological ease for businesses while the users' needs become secondary[12]). The company builds mobile phone apps that support the donation of blood to blood banks and the transportation of blood to hospitals for where patients are in need. Through its app, LifeBank operates an in-network style of connection for both donors and hospitals. So, rather than working towards simply creating and raising public awareness about voluntary blood donation and providing information on how to access

[11] I have created this name-change history of LifeBank by comparing references in news coverage, social media pages and tracking changes on the LifeBank's website using the Wayback Machine—an internet archive tool available at https://web.archive.org/.

[12] This view of apps as facilitating technological ease for businesses before users is one that is unpopular in the Western context where apps are often marketed as personalized or personalizable technologies. Apps in the Nigerian context bring the company to the user instead of the other way around, so there is no co-articulation of needs. This situation is evidenced by the lack of open communication channels between users and designers.

blood for patients in need, the company directs its audience to its medical logistics services. It advertises its app to donors, hospitals and patients as a way to connect to blood services in Nigeria. Thus, LifeBank's operations target multiple audiences from which it derives value or provides services, including sponsors, investors, blood donors, hospitals. I analyze LifeBank's rhetoric with these different audiences with a view to elucidate how the complex rhetorical situation, rhetorical ecologies determine and complicate the discourse of mHealth, particularly the use of rhetoric and its implications on the context.

My analysis is based on the pages taken from the website www.lifebankcares.com. Some parts of my analysis may reflect content from www.lifebank.ng[13], the version of the website that was available in the earlier stages of this research (section 5.5 discusses website changes and their implications more extensively). Due to the fact that LifeBank targets multiple audiences, including investors, blood donors, medical personnel, etc., on its website, it became imperative to get a broader understanding of how LifeBank positions itself to its target audience. Therefore, I also explored the social media pages associated with the company and its products, primarily the OneDonor App and @LifeBankCares on Twitter. By choosing to analyze Life Bank's digital platforms, I undertake the following:

1. I engage with one of the longest standing mHealth programs launched in Nigeria that has provided consistent service without breaks, unlike most other programs

[13] As of 6/2/2022, www.lifebank.ng and www.lifebankcares.com redirect to the same website. I have noted this as a challenge of doing web-based research because information on and about websites may change so frequently to reflect new updates or services or they may be static for a long time such that the information becomes obsolete or inaccurate.

that have either not gone beyond the pilot stage or whose services are based on contract renewal by funding agencies. (United Nations Foundation, 2014, has a list of these programs, but it is not a comprehensive list as it excludes many other programs started by individuals, but unsupported by corporate funding.)

2. I contribute to discourse analysis approaches that aim to theorize and understand computer-mediated discourses (Herring 2004, 2007) by examining more recent uses of computer-mediated communication that is not directly linked to human-to-human interaction but has a more human-to-technological-system focus with room for human-to-human interaction in line with the network logics (Asangansi, 2016) promoted through mHealth discourses.
3. I respond to calls by critical discourse analysts (Wodak & Meyer, 2016) and rhetoricians of health and medicine (www.medicalrhetoric.com) to follow power into the places that have not been discussed in the literature to find out how our scholarship can promote discourse practices that facilitate the agency of marginalized users (Agboka, 2013).

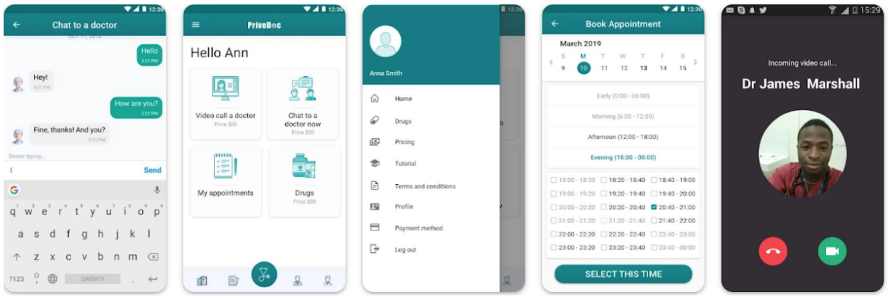
This analysis therefore constitutes a case study that looks at influences of western digital practices in a non-western context and how such practices may yield outcomes that limit users' agency thereby transgressing the initial promises made by mHealth advocates.

5.1.1 LifeBank: From mHealth to medical logistics

Amidst several mHealth technologies that I began this study with, LifeBank has continued to grow and expand beyond the pilot stage–seemingly defying a major challenge of scalability that many ICT-based health initiatives have encountered in LMIC contexts (Chib, 2013). LifeBank's expansion, as I noted previously, has not remained

strictly within the category where it originally began. From a simple app that connected blood donors to donation centers and patients to blood banks, the company now broadly refers to itself as a logistics company which connects hospitals to medical supplies. This narrative shift, I argue, is necessitated by the context in which the company operates. The context is marked by acute infrastructural and material resource constraints which sometimes makes it difficult for companies to rely on existing structures to build new business lines. In order to succeed, businesses have to rely on self-generated and supported power, water, transportation, etc. for their daily running. These infrastructural problems never go away completely. They present as much an impediment to mHealth technology startups as they present to their users. As such, when mHealth technologies are celebrated in LMICs as groundbreaking technology, they are celebrated not only because they are harnessing the potential of mobile phones, but also because they rely heavily on the promise to bypass the problem of insufficient or non-existing infrastructure to deliver benefits to users. Consider, for example, the description of a Nigerian telemedicine app PriveDoc[14] in Figure 5.1.

[14] PriveDoc is one of the telemedicine apps I downloaded and followed as part of the overview stage of this research project to understand how mHealth developed by local citizens and that were left out of the recognized projects captured in the eHealth Landscape and Inventory report responded to the needs of their local contexts.



About this app →

Prive Doc enables anyone in Nigeria to speak with a local, UK or USA doctor at the touch of a button. Prive Doc is Nigerias first National Digital Hospital, putting high quality yet affordable healthcare in the hands of everyone who needs it!

Gone are the days of getting stuck in traffic for hours, then waiting hours to see a doctor, only to be told to take a prescription and go home. PriveDoc puts the power in your hands. You choose when to see a doctor, and you choose where you want to be when you see them.

Updated on

Nov 30, 2021

Figure 5-1 Mobile health app PriveDoc advertises its services on Google Play Store. Source:https://play.google.com/store/apps/details?id=com.privedoc&hl=en&gl=US

In Figure 5.1, PriveDoc promises in its app description to provide "anyone in Nigeria" with the services of either local or foreign-based doctors "at the touch of a button" if only they can download the app and pay for the services. PriveDoc attempts to capture the frustrating circumstances under which healthcare is typically accessed by Nigerians by portraying what they assume to be the worst-case scenario

> Gone are the days of getting stuck in traffic for hours, then waiting to see a doctor, only to be told to take a prescription and go home. Prive Doc puts power in your hands. You choose when to see a doctor, and you choose where you want to see them.
>
> (PriveDoc, About this app)

The app makes these grand promises about overcoming the difficulties in healthcare access by "putting power in your [the patients'] hands" without considering that its users will come from diverse contexts where traffic or queues may not be the problem with access to health care. Challenges with access to healthcare may actually begin at the level of who gets to know about or download PriveDoc in the first place, a situation which Seigel (2014) refers to as material access. The challenges may further be extended to how much functional access an individual has once they download the app. Generally, ICT-based technologies like medical apps rely on an extensive use of linguistic (English language) and technical literacies that users in under-resourced contexts in LMICs may not necessarily possess in order to have functional access with medical apps. More importantly, the promise of PriveDoc will only hold if a patient's symptoms do not require a follow-up physical examination and/or laboratory tests, which are not always available locally. To further complicate access issues for the patient, PriveDoc does not provide any information about how patients might navigate challenges that may arise from using the app from users' immediate locations. According to Google Play store, the PriveDoc app has only had 1000+ downloads since it was published in 2018—a clear indicator that the app has not achieved any significant popularity or use even though mobile phone and internet subscription rates continue to grow in Nigeria. According to Wallis, et al. (2017) systemic factors related to regulatory, technological and user frameworks are often responsible for this lack of scalability. However, companies like LifeBank show that language and its rhetorical use is also a significant factor that needs to be considered in the discourse of mHealth technologies in LMIC contexts. (I will

explore how LifeBank uses rhetoric as a tool to promote scalability to its audiences in section 5.5.3).

5.1.2 LifeBank as computer-mediated communication

Unlike other early mHealth apps in Nigeria, LifeBank has enjoyed consistent public engagement both on its digital platform and in the news media due to its computer-mediated discourse. According to Herring (2007), computer-mediated discourses are “text-based human-human interaction mediated by networked computers and mobile telephony” (p.1). Although this definition offers a limited conceptualization of what contemporary computer-mediated discourse is, I would like to take from it the important basic concept of discourse created as a result of networked computers in order to understand the affordances or disadvantages of such mediated interaction as I explore LifeBank’s rhetoric. I analyze the affordances of digital health platforms by comparing how much text on the Lifebank platform has changed since I started gathering information for this research in 2019. I have saved a series of screenshots over time and compared them from time to time. Although the language used in the software industry and by website managers, e.g., “updates" suggests progress, it is clearly the case that updates may further render the work being done invisible and inaccessible to users. For example, in my comparative diachronic study of LifeBank’s use of affective data on their website, I observed that over a period of time, the figures for number of hospitals, number of products moved, and number of lives saved remained the same despite several changes to the website. Any unknowing visitor to the website would consider such affective data up to date at the time of their visit and would be unlikely to question such data in terms of the time period covered. If the figures have not been updated, does it

mean that LifeBank has not had any activities over a period of time, or does it mean that the figures have just not been updated for an unspecified period of time? Lupton (2016) makes the argument that apps and by extension websites are "socio-cultural artefacts"—i.e., "that apps are digital objects that are the products of human decision-making, underpinned by tacit assumptions, norms and discourses already circulating in the social and cultural contexts in which they are generated, marketed, and used (p.607). However, unlike normative artifacts which can be explored to reveal their history and role in the configuration of society, apps render the archives of what may be known about the history of a particular digital solution rather inaccessible to everyday users. For instance, I recall a recent unsuccessful attempt to log into one of the many apps that my different health care providers use. I wanted to review the information from that provider in order to discuss an aspect of my medical history more coherently. I was shocked to find out that the provider had changed IT companies and I now needed new log-in information to access my health data. The verification process for this to happen was not instant, so I ended up not having access to my health data despite having my mobile device with me at the point of care. The problem with this lack of accessibility is that the implications of the design choices made by web designers are lost to mHealth users, with serious implications for end users (see Johnson & Johnson, 2020; Selfe and Selfe, 2004). Johnson and Johnson (2020) suggest that digital infrastructure may further promote precarity rather than ameliorate it.

A recent article on LifeBank's Medium page, noted the continuity that Lifebank has enjoyed and provided a rationale for making extensive changes to the website. According to the article,

> While our old website achieve [sic] its aim of portraying us as a pan African business, it was talking to too many people at the same time; patients, hospitals, stakeholders… This did not reflect our focus as a company anymore. We had evolved into a business that was building infrastructure to solve the hardest problems encountered by healthcare facilities. It was important that our website reflected this laser focus on healthcare facilities across Africa.
>
> One of the reasons why the previous version of our website did not work was because we were trying to talk to too many people at the same time. This time, we are clear in our communication. We are speaking directly to the hospitals we serve, communicating how our technology and products are making their lives easier and improving the quality of healthcare they can provide.
>
> We have done a deep dive into our products and how they individually offer value to hospitals. Each product section contains FAQs that address frequent questions our sales and customer reps get asked. (LifeBank, https://lifebankcares.medium.com/how-we-built-it-breaking-down-our-website-redesign-4d737d173d3b)

While the excerpt above reflects intentionality and accountability on the part of the company, it is interesting to note that users are often unaware that a company's focus may be different from what is portrayed on their website. I, for one, had collected and stored data from this website thinking that it represented a good model for my research into mHealth in Nigeria. If I had not been actively researching and revisiting the website, I would not have noticed the changes or thought to track them over time to see what's different and what has remained the same. How does this opacity reflect on the actual

users of the website? To understand this, I referred to the changes that have taken place on the website over the last three years. I used the Wayback machine (see https://web.archive.org/web/*/lifebank.ng) to compare versions of the website from the time it first went live up until February 22, 2022. Comparing the different versions of the website allowed me to assess some of the changes made and to triangulate those changes with my observations. For instance, I observed that the website no longer contained a link to the web version of the blood donation app for users who didn't have smartphones. I had signed on as a potential blood donor with this web version in the early days of my research. This observation led me to check for the actual donor app on Google Play Store[15], but it was also no longer available under the name "LifeBank". I was eventually able to locate the new app (One Donor App) through one of LifeBank's social media handles.

[15] Google Play store is the mobile app store for smartphone users on the Android operating system. Smartphones with the Android are more common in LMICs because of their relative affordability and ability to support multiple SIM cards from different providers.

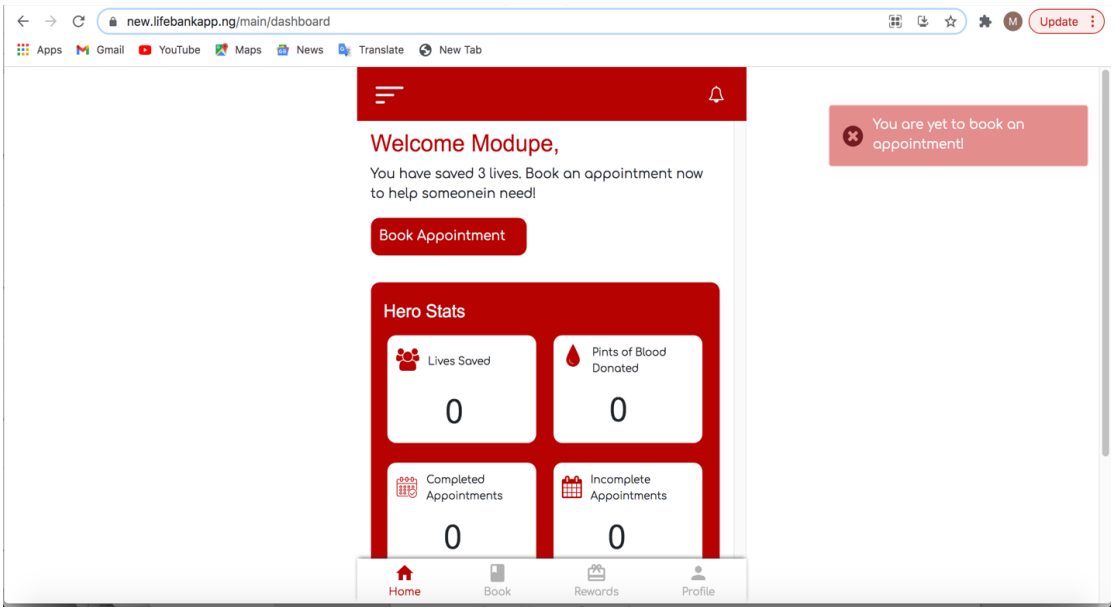


Figure 5-2 The desktop interface of LifeBank Blood donor app from March 2020

Doing this kind of analysis is relevant for questioning the difference between the genres, modes and media for producing technical documents. More like the traditional document, websites have layers of information and users may not have the functional access to navigate these pages to get the information that they require. For instance, websites use tabs and pages for navigation from the homepage. These tabs could lead to more layers of tabs, like an onion bulb. However, unlike an onion, in which the deeper you go the smaller the bulb gets and you can successfully get to the center to see where it all ends, tabs are quite different, leading users on to more and more information which is sometimes repetitive and sometimes confusing. Thus, I question how mobile apps and web pages can promote access for their users by examining Lifebank as a case study. When web pages appear to speak to multiple audiences or have an unclear core message, there is the possibility that it suffers from a lack of design strategy. This was partly the case with LifeBank. However, at the core of LifeBank's inability to communicate to an

identifiable target audience is the question of whether it is a health ICT company or a medical logistics company which uses ICTs to make the running of its processes easier.

5.2 Emotive Narratives and Financial Moves

The story of LifeBank is often told through its founder Temie Giwa-Tubosun[16]. Broadly, Giwa-Tubosun tells stories that can consistently fit into two distinct categories—emotive and tactical. The emotive stories recall either an encounter with a woman who suffered postpartum hemorrhage in rural Kano State, Nigeria and/or the story of the difficult birth of her (Giwa-Tubosun's) own child years after the Kano encounter. Giwa-Tubosun often combines forms of these stories into what has become the motivation for LifeBank (see The Nigerian entrepreneur who runs 'an Amazon for blood' | Health | Al Jazeera; Interview with Temie Giwa Tunbosun, Founder of One Percent Project - Innovation Village | Technology, Product Reviews, Business; Nigeria: The Vision That Drives LifeBank Founder Temie Giwa-Tubosun - Prosper Africa; and LifeBank Founder Temie Giwa-Tubosun Wins 2020 Global Citizen Prize for Business Leader). For example, in a report by CoCre, Giwa-Tubosun articulated her motivation this way

> After graduation I interned with an NGO in Northern Nigeria. During that trip I witnessed a breached birth in a village. There was no C-Section available, so the

[16] Temie Giwa-Tubosun is a Nigerian-American. She attended Osseo Senior High School, Minnesota. She has a bachelor's degree from Minnesota State University, Moorhead and a master's in from Middlebury Institute of International Studies at Monterey, California. Giwa-Tubosun has no medical training, but through her education, she has had access to internship and fellowship opportunities with health organizations like the WHO and Department for International Development. There is every possibility that judging by Giwa-Tubosun's experience outside Nigeria, she fails to distill the aspects of the Nigerian context that represent the under-resourced margins and this influences her rhetoric in significantly impactful ways. Healthcare is a right | Temie Giwa-Tubosun | TEDxEustonSalon

> baby died. I knew then that not only would I be coming home to Nigeria, but I'd be doing something in healthcare. I've been home for six years now. **I've chosen to work on the country's blood distribution problem. Every year tens of thousands of people die while waiting for blood. Meanwhile there are blood banks discarding unused inventory."** (Founder's story on CoCre, https://cocre.co/lifebank/; emphasis mine).

Or consider this other report published after her Global Citizen award in 2020

> Because there was already a huge gap, we were able to grow quickly in our first year. It was like we were solving a problem people didn't even know they had [...]. **I started LifeBank because I wanted a world where women no longer died from preventable causes like postpartum hemorrhage.** (Giwa-Tubosun, https://www.globalcitizen.org/en/content/global-citizen-business-leader-temie-giwa-tubosun/; emphasis mine. The quote has been slightly modified for coherence)

In these abridged versions of Giwa-Tubosun's motivation story is a discursive shift where she identifies the problem LifeBank addresses from a specific space—i.e., from the lives of women who are endangered because of precarious birthing conditions—but the argument for the solution never quite goes back to the place from where the problem was identified. Rather, we see Giwa-Tubosun moving quickly away from the specific to the general in a tactical move that positions LifeBank as being able to occupy a functional space within Nigeria's (Africa and perhaps global) larger healthcare system rather than within the limited maternal care space.

The tactical aspect of Giwa-Tubosun's communication relates to how she describes what LifeBank does. Giwa-Tubosun often elaborates on LifeBank's work by highlighting how the company uses ICTs and transportation technologies in its daily activities. Depending on her audience, she often provides affective data (e.g., figures of how many hospitals are in the company's network, how digital codes are used to secure transported blood and other products, and how the company uses mobile technologies like apps to promote constant engagement with the users of their services) to foreground LifeBank's impact. Figures similar to the ones in Figure 5.4 are often used in her interviews to support the claim that LifeBank's "business is saving lives."

Figure 5-3 Screenshot showing LifeBank's use of affective data on its website. Image taken from www.lifebank.ng on 10/24/2019

She expertly combines this tactical use of facts and figures with a rhetoric of "saving lives" with audiences including hospitals, financial and investors, across different platforms in a move to deemphasize the profit-making side of the company's operations while foregrounding a humanistic angle to the business. Taken individually without being

contextually placed within any particular location or medical situation, such as a birthing situation, such use of affective data has a persuasive effect which forecloses any questions about who and where the real beneficiaries of these life-saving achievements are. For instance, does the blood circulate within city centers where multiple supply options still exist or do they really go to rural communities or under-resourced communities where they are indeed the only possible options for patients in critical need? This is not to say that getting blood and other medical supplies to those who have access to multiple options to meet their needs should not be prioritized or that medical facilities in cities do not experience breaks in supply that could jeopardize the lives of patients in need of critical intervention. My argument here is that rhetoric which draws from under-resourced, marginal locations and people to support the better-resourced only promotes precarity rather than justice. Rather than being life-saving, it is life-destroying to the persons in rural and under-resourced locations who do not have access to simple infrastructure to support their health needs where they are situated and where they lack financial means to go elsewhere in search of healthcare.

Giwa-Tubosun's rhetoric is easily captured in the ambiguity embedded in one of the claims on the company's website: "Our business is saving lives":

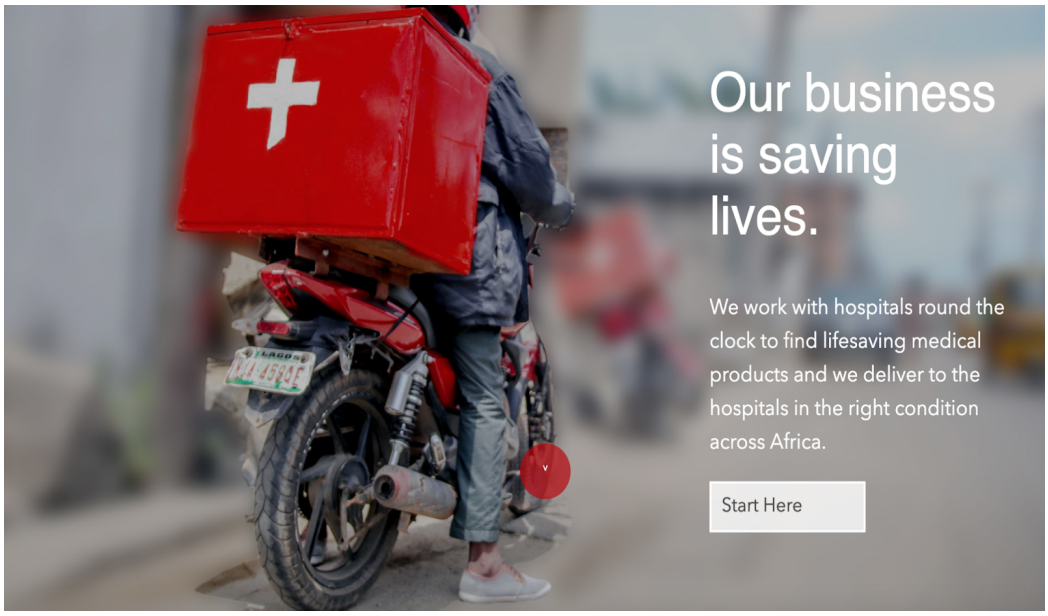


Figure 5-4 Screenshot showing a LifeBank dispatch rider with the text "Our business is saving lives" in bold print

Viewers are led to either of two conclusions: that LifeBank saves lives through its work or that LifeBank does medical work that is directly related to life-saving activities just like a doctor or a nurse. Going by Figure 5.4, we can only presuppose that a dispatch rider who backs the camera and has a dispatch box painted in red with a white cross (almost similar to that of the Red Cross symbol[17], except for the little chip off the right side of the tail and the inverse use of a white cross against a red background) is doing lifesaving work whether or not he is responding to an emergency. The dispatch rider's foot on the ground suggests he isn't in motion, but he is ready to go while the forms of

[17] According to the American Red Cross, the red cross emblem symbolizes neutrality and impartiality of medical assistance in conflict or disaster regions. However, because some associate the cross with a religious symbolism, the red crescent and the red crystal are alternative symbols. (For further explanation, see Red Cross Emblem Symbolizes Neutrality, Impartiality). Although LifeBank's colors and logo are obviously similar to that of the Red Cross organization, there is no evidence, yet, to suggest that LifeBank attaches any religious affiliations to its business branding in Nigeria.

other dispatch bikes appear in a blurry background. The inscriptions "**Our business is saving lives**" **and** "**We work with hospitals round the clock to find lifesaving medical products and we deliver to the hospitals in the right condition across Africa**" to the right of the image suggest that the LifeBank's activities are tied to the life-saving professions, but they do not in any way portray how the action of the dispatch rider is saving lives directly. Although the claim that LifeBank is "work[ing] with hospital round the clock to find life-saving products…" implies a busy, non-stop schedule to meet hospital needs, it still does not exclude the fact that it is the hospitals who have to contact LifeBank first, and it is only the hospitals within LifeBank's network who can do so.

Despite the flaws in LifeBank's rhetoric, its business model which combines the use of ICTs with effective transportation to source, secure and deliver medical supplies, especially blood, has been recognized as relevant for LMIC contexts with multiple challenges in healthcare delivery. For this work, Temie Giwa-Tubosun and LifeBank have received awards including the Africa Netpreneur Prize (2019) by Jack Ma Foundation where LifeBank won the grand prize of $250, 000 and Cartier Women's Initiative prize for 2020 where Life Bank also won $100, 000 amongst other awards. The company also depends on local and global investors to keep its business running (see for instance LifeBank - Funding, Financials, Valuation & Investors for a list of LifeBank's investors). Because of its ability to raise funds through awards and investments, LifeBank (represented by its founder) is often in the news as one of the successful technology startups in the Global South. Its increasing success and recognition both globally and locally have fueled the company's ability to expand to two other African countries (Ethiopia and Kenya) since inception. LifeBank's work continues to expand and enjoy

visibility by drawing on precarious rhetorics and affective data, but the places from which the stories have come continue to be left behind as more city hospitals join LifeBank's network and more data gets generated for "products moved" and "lives saved". As of November 23, 2021, Temie Giwa-Tubosun declared as part of her story for Prosper Africa's investors Deal Room:

"**My commitment was not specifically only for Nigerian women or for just African women**, as the problem that we're solving is not an African problem, it's a problem for the emerging markets" (Temie Giwa-Tubosun, Nigeria: The Vision That Drives Lifebank Founder Temie Giwa-Tubosun - allAfrica.com, Nov. 16, 2021; Nigeria: The Vision That Drives LifeBank Founder Temie Giwa-Tubosun - Prosper Africa, Nov. 23, 2021; emphasis mine).

With this comment, Giwa-Tubosun has discursively relegated to the background the positionalities that shot her and her work with LifeBank into the limelight to embrace not just the language of the investor as a strategic rhetorical shift from mHealth in an LMIC context to playing for global relevance.

5.3 Between "Superheroes" and "Amazon": Metaphors and Audiences in LifeBank's Communication

"At LifeBank, we believe we can be the heroes of our own story."

-Temie Giwa - Tubosun,

www.lifebankcares.com

In the previous section, I identified how LifeBank uses discursive shifts to resituate discourse emanating from one location into another to create a rhetorical space that argues for LifeBank's relevance in the context in which it operates. In this section, I

examine another such instance, but with a shift in focus to how LifeBank persuades its audiences to act in support of its mission.

A closer look at LifeBank's communicative model on its website reveals that the company's primary target audiences are investors, blood donors and hospitals. The website includes pages that address each audience's specific needs. For example, there are web pages where hospitals can watch a demo of LifeBank's services and then sign up, if they are interested. Blood donors can download an app to find locations where they can safely donate blood. Financial donors and investors are also provided with information on how to connect with the company either through BOAT, its non-profit, or through direct corporate contact (though this is not emphasized on the website). The two audience groups I focus on in this section are blood donors and investors.

With its donor audience, LifeBank adopts a rhetoric that celebrates blood donation as an act of heroism. Donors are invited to participate in lifesaving pursuits that will make them heroes. The epigraph that opens this section summarizes the approach that LifeBank's rhetoric takes with those who donate and deliver donated blood—that they are the heroes in their own stories. LifeBank subverts the idea of a hero (here, someone who gives an unpaid donation of blood) as undertaking a selfless (and private) act and reframes it as one requiring social recognition in order to be validated as a hero. From the moment an individual signs up for LifeBank's One Donor app, they become "heroes" who can celebrate their measurable achievements (See for example Figure 5.3, which includes blood donation information or "Hero Stats" which blood donors can post on their social media to inform others of their selfless acts), thereby changing the idea that heroic acts are not done for publicity or self-aggrandizement. Beyond the app,

LifeBank also uses the hero trope on its social media platforms to connect with intending donors. Using hashtags[18] such as "#blooddonor" and "#superhero," LifeBank associates voluntary blood donation with ease and joy. Advertisements show blood drives that take place during public holidays and which are connected to joyful celebrations such as Valentine's Day or Mothers' Day. Some advertisements also feature appeals to local audiences by attempting to connect with audiences through the use of the local languages as in Figure 5.5 below. Figure 5.5 is a post on LifeBank's Twitter page, @lifebankcares, which includes the following message:

> It's our first blood drive for Nigeria!
> **Ati lo ati de** and it's time to **be a hero** this Thursday!
> Venue: Isolo General Hospital, Isolo Lagos
> Time: 10am - 3pm
> Download, Register and book an appointment on the One Donor app>>lifebankapp.ng to attend!
> #lifebankapp (@lifebankecares; emphasis mine)

Summarily, the purpose of the post and the accompanying image is to inform the public of LifeBank's blood donation drive at a location in Lagos. However, the message in the post is not simply related to the audience, rather it deploys culturally relevant rhetorical appeals which directly target the local community by using a language that is only accessible to members of that community. Included in the message is a string of Yoruba words **"Ati lo ati de"** which literally translates to *we are back (from an errand or a journey).* **"Ati lo ati de"** bears no direct meaning relation to the rest of the information presented in this post but it serves the phatic purpose of acknowledging the predominant

[18] Hashtags are a digital discourse tracking tool. When a hashtag is used in a social media post or in a digital document, online searches using the keywords of the hashtag will return with results from multiple platforms using the same hashtag in a related sense.

sociocultural group which resides in the geographical location of the blood drive. Such phatic communication may serve as an informal way of breaking the ice and making the local people more open to welcoming the activities of supposed strangers in their community. It also promotes curiosity in the message and activities of the Lifebank, especially as it relates to being "a hero".

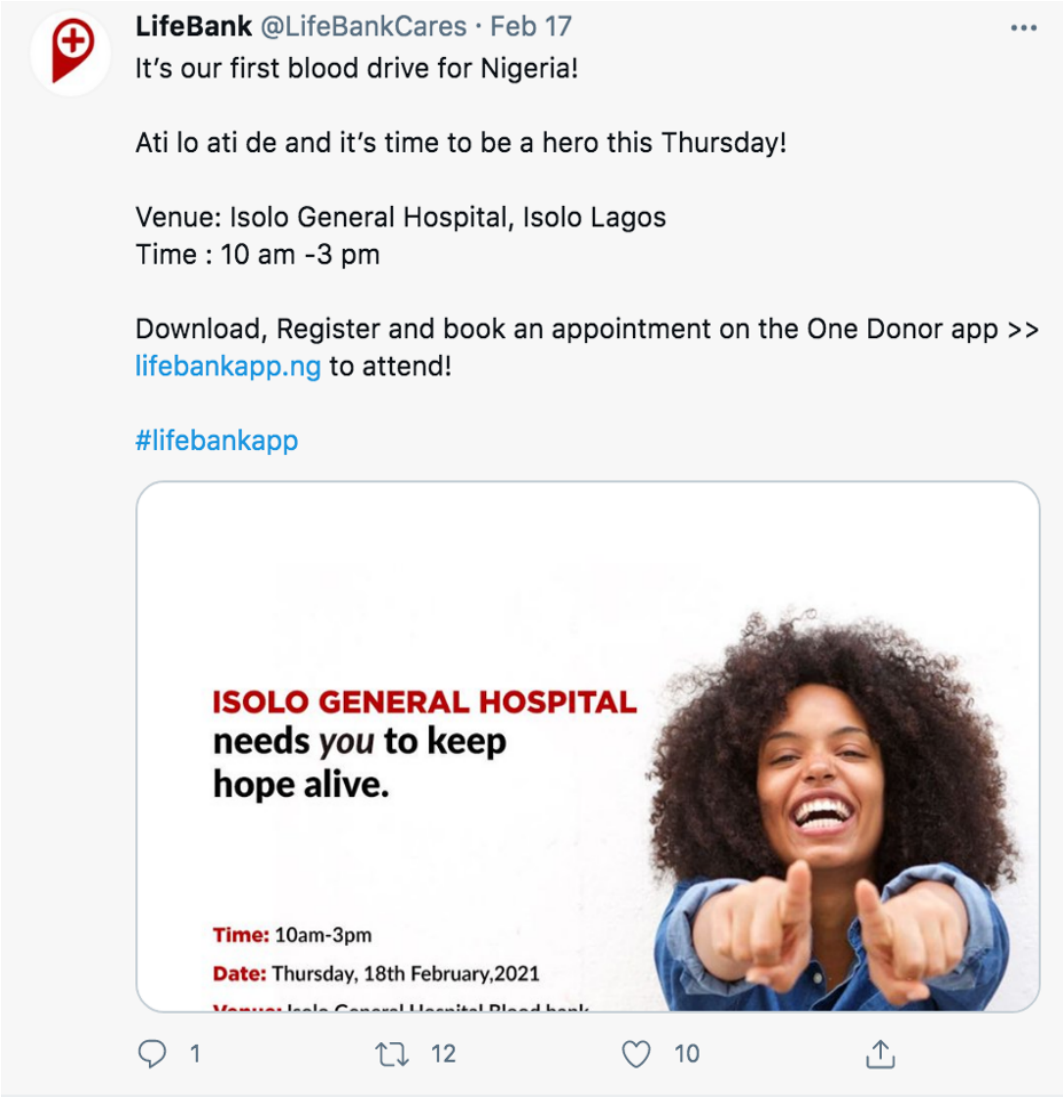


Figure 5-5 Screenshot of LifeBank advertisement of blood donation drive posted to Twitter @Lifebankcares

The post complements the message in an embedded digital flier[19] with an image of a woman with a bright smile who points her two index fingers at the viewer as though the message is unambiguously directed at the viewer. The text "Isolo general hospital needs *you* to keep hope alive" is written in bold red and black to the left side. Other information about date, time, and location are included in a smaller font size. The message in the flier "Isolo general hospital needs you to keep hope alive" complements the message of the post "Ati lo ati de and it's time to be a hero this Thursday" by providing information about what to do to "be a hero" and where all the hero action will be happening, thereby articulating heroes as people who are needed to keep hope alive through voluntary blood donation. Although we know, through historical reference and popular media, that acts of heroism usually involves sacrifices under unhappy circumstances, LifeBank consistently subverts this idea by circulating images (see Figure 5.7 below) of "happy blood donors" using hashtags such as "#blooddonation," "#superhero," or "#savinglives," making blood into an everyday practice for young, fit-looking, happy people, who have careers (see image to the left in Figure 5.6).

[19] I'm using the word flier here to represent a digital object version of what would typically be a printed copy of a small hand-held poster which is easily distributed from person-to-person.

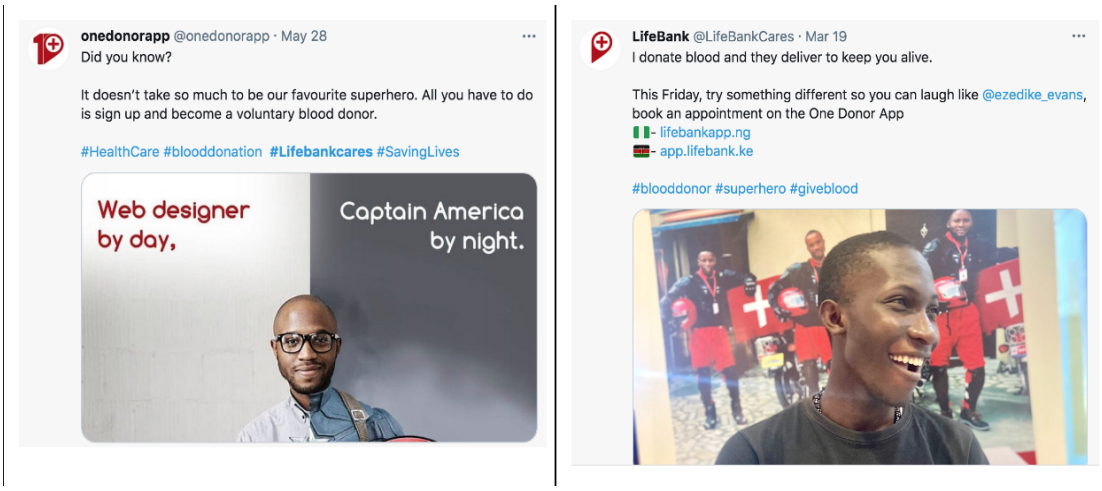


Figure5-6 LifeBank advertises blood donation app using the donor-as-superhero metaphor

What is not captured or highlighted in any of the images, so far, is evidence that blood drives and voluntary donation is happening in under-resourced urban or rural settings—the places where the infrastructure for blood transport and storage logistics may be completely unavailable, or that such blood drives supply remote areas where technologies supporting donation are often not available. In other words, who is excluded from being a happy #superhero and how far can the sacrifice of #superheroes go?

LifeBank's communication with blood donors using the hero trope happens within a rhetorical exigence informed by grim statistics surrounding blood availability in Nigeria. According to a Premium Times of Nigeria report in commemoration of Blood Donor Day on June 14, 2021, Nigeria needs an average of 1.8 million pints of blood annually to support the health of its roughly 200 million people. Yet only 500,000 pints of safe blood are available every year, leaving a shortfall of about 73.3 percent. Only about 25,000 blood units sourced exclusively from voluntary unpaid blood donors were screened, collected and distributed in 2019 and 2020. Only eight percent of Nigerians donate blood freely, with about 80 percent of donors participating in family replacement

donations to relatives in need (Adebowale & Onyeji, 2021). The problem of blood shortage is further compounded by social and religious taboos to giving and receiving blood, a lack of social awareness of or customs supporting the practice of blood donation, etc. The exigence of a blood shortage can only be addressed if people, especially young people, are encouraged through discourse to participate in voluntary blood donation. Hence, while there is indeed value to be found in LifeBank's use of the hero trope to encourage Nigerians to participate in voluntary blood donation, there are also drawbacks: the discourse and solution continues to deploy precarious rhetorics that efface the populations who are in dire need.

The persuasive impact of LifeBank's rhetorical discourse can also be assessed through the medium through which the discourse is taking place, for example, Twitter. Blood donors and recipients also tweet back at LifeBank to indicate associative agreement with their message. For example, tweets by members of the public using #blooddonor can be found on LifeBank's Twitter handle if individuals retweet LifeBank's posts using the same hashtag or by mentioning LifeBank in their own posts. This kind of exchange takes advantage of the affordances of computer-mediated discourse on social media to do the rhetorical work of expanding the discourse community emerging around blood donation. For example, the images in Figure 5.8 below show LifeBank's retweets of a blood donor's and a blood recipient's posts respectively. The image on the left, posted by @ekemma, is that of a man in formal attire with venipuncture equipment attached to one of his arms while he makes the peace sign with his other hand. Although this picture was posted on February 18, 2021 (the same date as the Isolo blood donation drive captured in Figure 5.6), there is no way to verify

that @ekemma's donation, which he says is being done to mark his birthday, took place at LifeBank's blood drive event or LifeBanks's operations. However, it clearly reflects LifeBank's rhetorical trope of #savinglives and being a #superhero on special occasions, as is noted in @ekemma's words "Today is my **birthday**. They said, [sic] I should do giveaway. I decided to donate my 15th pint of blood. Happy that this giveaway will **save a life** #BloodDonation" (@ekemma; emphasis mine).

Figure 5-7 Screenshot of LifeBank retweet of a blood donor's post on Twitter. Screenshot of LifeBank retweet of a blood recipient's post on Twitter post

On the right side of Figure 5.7 is LifeBank'e retweet of @oyesholz post in which she writes:

> I got #blood for **valentine's day** …8 pints at that! Best gifts ever … I'm eternally grateful to all #blooddonors. Thank you for **giving the gift of blood**. Happy

> Valentine's Day…It's @Haima_Health_ @LifeBankCares @LagosBTS to donate in Lagos #sicklecell #redcellexchange.
>
> (@oyesholz, https://twitter.com/oyesholz/status/1361620619582922755; emphasis mine)

Again, this post highlights Lifebank's rhetorical strategy of connecting voluntary acts of blood donation to gift-giving on special occasions. However, this post introduces two different phenomenological dimensions to the strategy—one, that there are recipients at the other end of the heroic act of voluntary blood donation; and two, that visually communicating acts of donating and receiving blood is persuasive enough to efface the relevant questions about who participates in heroic acts of saving lives, where and how they do it. While both dimensions involve thinking through the actual human body, in terms of who is healthy enough to donate or receive blood, the second dimension also draws attention to how people can then use their bodies to promote a message that can be relevant in any context. The image presented under @oyesholz showing her in a hospital robe, holding 2 bags of blood, humanizes the patient at the receiving end of blood donations and may even inspire a donor to keep giving. It can be implied that since the post was published, she's alive to tell her this happy story. Also, her reference to blood as "Best gifts ever" implies that the blood is free; however, this is not always the case, especially with LifeBank, which has retweeted @oyesholz's post for the purpose of building their own ethos. The subsequent parts of this section will focus on the disconnect between the implicatures in @oyesholz's message and LifeBank's message to its audience as it adopts another metaphor: that of LifeBank as "Amazon".

In a feature story by Chika Unigwe for with Aljazeera, Temie Giwa-Tubosun was quoted as saying:

> I think of us as the Amazon of healthcare except we work only with hospitals. We bring global standard procurements to African hospitals right on their platform. (Temie Giwa-Tubosun, The Nigerian entrepreneur who runs 'an Amazon for blood' | Health | Al Jazeera)

In this quote she compares LifeBank's work with that of Amazon (a United States-based digital marketplace which connects product sellers to buyers and facilitates the logistics of payment and delivery for both parties). This comparison is interesting because the logical appeal intended in the comparison reshapes LifeBank's altruistic rhetoric of saving lives in line with certain business ethics for which Amazon has been frequently criticized[20]. For the patient user of LifeBank's services (i.e., blood donors) whose life may be at risk and whose goal is to have the best health outcome possible, LifeBank does not guarantee critical access through its communication because it does not inform the patient about the ways they can navigate access to blood services if their hospital is not within LifeBank's network. Hence, from focusing on patients, the company has moved to focusing on hospitals where it has more direct control over the system it has created instead of making access to blood services more patient-facing.

5.4 Revisiting Materiality, Users and Stakeholders

[20] Here are some examples of negative criticisms of Amazon's ethics: A Hard-Hitting Investigative Report Into Amazon Shows That Workers' Needs Were Neglected In Favor Of Getting Goods Delivered Quickly; https://www.vox.com/the-highlight/22977660/amazon-warehouses-work-injuries-retail-labor

through LifeBank's Discourse

LifeBank's communication practices with each of its target audiences represents a dialectically productive case study for this dissertation because they foreground how some of the issues raised in chapter four are concretized in the Nigerian context. For one, just like the *Strategic Framework*, LifeBank takes its motivation from the risks to lives of pregnant women who are at the margins of Nigeria's healthcare system and at risk of dying due to failed or non-existent medical infrastructure. Whatever the motivation that gave impetus to LifeBank's founder, the current version of the company has designed and built an ICT-driven initiative which excludes such users whose health outcomes would be the most impacted by the success or failure of such an initiative, especially the poor mothers in the rural reaches of Nigeria, far beyond the reach of present-day LifeBanks's hospital-centered customer base. Following the goals of the *Strategic Framework*, LifeBank portrays itself as an example of a user-generated and designed solution in the healthcare system which claims to use knowledge derived from examining the challenges of the local context to provide innovative ideas to tackle such problems. For instance, consider the following excerpt from an interview with Giwa-Tubosun after being named a Global Citizen award recipient in 2021:

> During an internship with the UK's Department for International Development in Northeast Nigeria in 2003, Temie Giwa-Tubosun, who has been named the winner of the 2020 Global Citizen Prize for Business Leader, had a life-changing experience. She and her team had come across a young **pregnant woman in a village in Kano** who had been in labor from **bridge [sic] birth complications** for several days — she was bleeding heavily and **members of the community were**

just waiting for her to die. **A simple caesarean section and blood transfusion would have solved the problem, but the young woman and her family couldn't afford any medical care.**

Speaking to journalist and TV presenter Katie Couric during the 2020 Global Citizen Prize special, Giwa-Tubosun said: "I have great, big, giant audacious dreams for LifeBank. The problem we are solving is not only a Nigerian problem or an African problem, it's a problem that exists in developing countries — countries that have not figured out their infrastructure.

For me the work is to build a scalable, fast-growing business that can expand to all these locations around the globe where these problems still exist, saving lives and saving lives at scale," she continued. "That is the dream and we are willing to do the work to get there. (see https://www.globalcitizen.org/en/content/global-citizen-business-leader-temie-giwa-tubosun/)

The story here relates to a true encounter rather than the fictional example of "Fatima" of the *Strategic Framework*, discussed in Chapter Four. Yet, LifeBank's activities and the rhetoric of its founder seem only to value the contribution of the experiences of users at the margins as a design strategy to lure investors (or prizes?). The business model enacted over the last couple of years reflects that the focus remains on urban areas where the technologies designed and deployed are less likely to fail due to the possibility that there is sufficient infrastructure (e.g., hospitals, electricity, transportation possibilities in the immediate area) by which the products and processes of LifeBank might become available and useful. But the example of Amina in Bidafujafa points to a larger infrastructural deficit: it is not simply a matter of not having money, but of not having

simple access to a nearby hospital with sufficient medical, electrical, AND digital resources, accessible by locally available transportation, in the context of an immediate and pressing crisis of a complex birthing problem. Glossing over infrastructural deficit/failure as patients having no money suggests that the services are available for patients (implicitly, those who can pay for the privilege) when in fact there is neither infrastructure nor resources to make the services available when it counts—when a life is in danger.

This dialectical positioning presents an opportunity to continue to explore the impact of the exclusion of patient users from policy design and implementation by exploring how the practices that influence what becomes a problem are defined and who gets represented as knowers who can provide the solutions to such problems. Thus, in this chapter, I continue to explore the rhetorical construction of "stakeholders" and "users"—the representations of the actual patients who are the final recipients of this projected care. The very absence of particular mention of these end-users in LifeBank's communications underscores the precise problem: that failure to conceptualize and account for actual patients (especially in rural areas with poor infrastructure) both underlies and predicts failure to design the mHealth systems to work in these areas.

In "Stuff you can kick," Lisa Parks develops this idea that there is constant engagement between visible and invisible, tangible and intangible infrastructure that goes on in ways of which we are often unaware. Parks defines infrastructure as the material sites and objects that are organized to produce a larger, dispersed yet integrated system for distributing material of value, whether water, electrical currents, or audiovisual signals (Parks, 2015, p. 355)

There is no doubt that mobile ICTs can be used to support healthcare delivery. In fact, ICTs can be used to support almost any aspect of social life, especially where communication is involved. However, the (im)materiality of the software aspect of using these technologies creates a sense of invisibility.

An important claim in LifeBank's rhetoric is that its innovations are ICT-driven. The company frequently uses affective data such as the awards won by the company for the use of ICTs and it features digital counters to indicate the number of hospitals in LifeBank's network, the number of products it has moved, and the number of lives its processes have helped save as logical evidence for the use of ICTs. The digital counters are infrequently updated and even if they were, these types of figures depend on aspects of the company's use of technologies which are intangible, unverifiable by the public, and immaterial for capturing for an audience the reality of the company's operations. In an older iteration of the company's website homepage (presented in Figure 5.8), an outline of the map of Africa is presented with red circuit lines reminiscent of a computer chip's semiconductor connections (alluding to the IT aspect of LifeBank) and images of LifeBank's multimodal transport logistics vehicles superimposed over it. While the red circuit lines cover the entire map, the images of the vehicles only cover the country locations on the map where LifeBank operates: motorbikes in Nigeria, tricycles in Egypt, boats in Kenya and drones in Ethiopia. Basically, the logistical infrastructure that is deployed in the different locations are those supported by existing infrastructure in that country.

Figure 5-8 A screenshot of LifeBank's website homepage from 2021

In the media, it is common to see images of the material logistical technologies, such as the motorcycles for transporting blood being used to represent LifeBank's work. The founder is often posed beside the company's dispatch motorbikes as seen in Figure 5.4 below, to capture the face behind the company and its work. Sometimes, as in the image to the left, she is captured dressed in corporate attire which clearly suggests that she doesn't ride the motorbikes. At other times, as in the image on the right she is photographed spotting a casual look which may suggest that she could be the rider and not the business owner.

Figure 5-9 LifeBank Founder Temie Giwa-Tubosun poses beside company-branded dispatch motorbikes. Image source: LifeBank Helps Secure and Deliver Lifesaving Medical Products Across Africa – CoCre

While images such as the ones presented in 5.4 evoke *pathos* that could persuade audiences that Giwa-Tubosun's work with LifeBank is feasible because she has chosen an effective means of transportation for the context, they do not capture other details (such as speed, coverage, product safety, and product integrity) which is encoded in the ICT part of the business model. To foreground this aspect of LifeBank's work, different images of the LifeBank's delivery workers are captured in action showing how products are carried using the different transport modalities and using mobile phones as ICT support (see Figure 5.5). Yet it is difficult to capture exactly how the ICT works for the benefit of the audience. Thus, despite the persuasive work of evidential visual rhetoric, the aspects of the LifeBank's work which targets its investors depend heavily on arguments made through speech and text.

Figure 5-10 LifeBank dispatch riders combine transport and digital technologies to deliver products. (Image credit: LifeBank Helps Secure and Deliver Lifesaving Medical Products Across Africa – CoCre)

Without the affordances of visually representing how ICTs work for saving lives in LifeBank's work, the company continues to rely on *pathos* by drawing on motivational stories about the lives of poor women in rural communities who are dying from postpartum hemorrhaging. It also deploys logical appeals that rely on material infrastructure like motorbikes to create the story of a business that technology and financial investors can buy into with the expectation that their investment is at once profitable and saving lives in the hard-to-reach places when in fact such rhetorics promote precarity in those hard-to-reach places.

6 Making Space for Materiality in the discourse of Health ICTs

6.1 Introduction

From the historicizing of the discourse of healthcare in Nigeria, to the examination of current policies arguing for the mainstreaming of ICTs in Nigeria's health care sector, to the rhetorical analysis of an mHealth startup, this dissertation has presented how the discourses of different social actors can promote precarity even when such discourses appear to be legitimized by the institutional and social support they receive. Using material-discursive critique and precarity as analytic frameworks and critical discourse analysis and rhetorical analysis as methods, I have mapped out how rhetorical silencing can promote precarity through the backgrounding or outright exclusion of embodied and situated subjects in mHealth discourses. In this chapter, I present the implications of my analysis for policy analysis (section 6.2), critical discourse studies (section 6.3) and rhetoric of health and medicine (section 6.4). Section 6.5 offers some suggestions for a humanistic, user-centered approach to the discourse of health ICTs.

Through a material-discursive critique, I have advocated for centering human users in health and medical policy-making and its related technological design and use. I have argued that we need to simultaneously consider both the material realities of situated users and the discourses emanating from the processes associated with the design, implementation, and use of policies and technologies. This is particularly important for health care and health ICTs because they are closely associated with outcomes that impact real, embodied patients and not just the data through which technical systems code them. We need to think more about Fatima or Amina as persons

so that when we encounter a code like “33 year old female, G4P2, gravida 4, parity 2” (*Strategic Framework*, 2015), we can ask important questions about the conditions surrounding these patients and where they are situated, in order to get the technology and infrastructure needed to support them near enough to save their lives.

6.2 Implications for policy analysis

Daily, we pose or are confronted by the question: “Why wouldn’t the government just do this?” We often look to policies to understand government action and agendas regarding different social issues. However, as I have shown in Chapters Three and Four, what is identified as a problem which can be addressed through policy can often skew policy-making in favor of one group of people and to the detriment of another group. One way to avoid this is not to choose a neutral approach, as a policy focus on technology might suggest, but to ask how different groups of social actors have been active agents who have identified and metistically addressed social problems long before they become policy problems and to work to resolve such problems within their communities.

Rhetorical silencing is the phrase that I have used to describe what goes on when policy-makers choose not to include the important factors that necessarily link policy problems and solutions to the humans at the receiving end of policy design and implementation. Whether the discourse is about health or technology, it needs to center the human user in a way that the realities of their lives and the use to which they will deploy the technology helps them improve their lives rather than detract from it. More importantly, in LMIC contexts, I think from the rural reaches which complicate our understanding of the affordances of technologies because, as more technologies proliferate, the more they increase precarity in these locations. For instance, as more

smart phones become available and affordable, even if rural dwellers can afford them, the physical infrastructure (such as electricity and good quality cellular and internet connection) needed to keep them running are often not available. Also, without any local industries to take up and support the use of these devices (and create a local economic market for the technologies), governments and individuals investing in them can further negatively impact users who already struggle to have a means of income.

We must develop policies and technologies that work from the bottom-up, from the margins towards the center, to create systems that work for those whose geographical location, infrastructure, social, and political contexts have placed them in contexts where technologies have been historically unlikely to work. In that way governments can avoid initiatives that focus only the centers, to really reach those who exist at the margins and healthcare deserts, to make their lives, health and wellbeing count. We must recognize and acknowledge as legitimate the ways that all users might take up such technologies—including those distant from wealthier population centers, thereby reducing precarity across populations.

6.3 Implications for critical discourse studies

One of the major challenges I faced when I began this research, particularly in undertaking the analysis one in Chapter 4 where I focused on a health policy document, was that I imagined myself underprepared to analyze a technical document which was written for a field with which I was not familiar. However, as I began to read the *Strategic Framework* repeatedly, it became clear that the document had many dimensions to it: it spoke to international organizations about Nigeria's preparedness to incorporate ICTs in health care; it addressed the challenge of affordable care for Nigerians; and it

provided guidance for how implementing Health ICTs could be the key to providing affordable universal care for Nigerians. However, I couldn't dismiss the fact that the term "Nigerian" was used almost as a contextless referent. Which Nigerians? Where are they located? How are they going to use health ICTs? These were some of the important questions it seemed that this document was not designed to answer. However, by applying an interdisciplinary approach, whereby I tried to understand how policy-makers document policy, and what policy analysts focus on in their work, I found out that merely examining the document for what it says would not be sufficient to answer my questions. Therefore, I turned to seeking out what the policy does not say, working with the understanding that language is never politically neutral and that language shapes how we conceive the world around us as much as the world around us shapes our linguistic choices. In order to understand what was missing, I had to go through what was given, and this led me to use a corpus approach to my analysis. I coupled this approach with my understanding that within the context I was working, rhetorical silence is a norm. People in authority can hide behind rhetorical silence in order to avoid verbal commitment. There is also the fact that policies are often not publicly debated, so the public is often unaware of the policies undergirding the structure of their society. Throughout this work, I have combined this contextual knowledge with a keen eye to understanding the different dimensions to the discourse on mHealth. This approach led me to trace the historical, transnational, trans-institutional, and material locations of the discourse on mHealth and to identify how the gaps in the discourse can significantly impact precarious populations.

For critical discourse scholars with research interests crossing several disciplines, it is important to investigate more of the material realities in which the texts we study are located, so that we can fully understand how discourses impact those at the receiving ends of the actions, especially with political texts.

6.4 Implications for the rhetoric of health and medicine

In Chapter Five where I explored how an organization has capitalized on the trend of using ICTs in healthcare to promote a medical logistics business in Nigeria, I discussed how the CEO of the company used her experience as a woman who is sympathetic towards the challenges that women face in childbirth to create an origin story that has garnered her several awards—even though it turns out that the company is not (yet?) delivering the hoped-for benefits for the women who set her research and development in motion. The lives of such patients must matter to rhetoricians of health and medicine, as we turn our attention to the infrastructures of healthcare and how they promote precarity. It is my hope that exploring the many challenges that face people in LMICs will contribute greater understanding of how the complexity of under-resourced locations lead to and are affected by rhetorics of precarity.

There have been suggestions that rhetorical analysis could benefit from CDA and vice versa (see Huckin, 2002; Huckin, Andrus and Clary-Lemon, 2012). For example, Hawkin (2002) emphasized CDA's relevance to the study of rhetoric by accounting for the the gaps in discourses through a detailed analysis of the different factors which may contribute to rhetorical silences in texts including factors relating to genre, speech-act, presupposition, discreet and manipulative

6.5 Toward a humanistic approach to using ICTs in healthcare communication

In this dissertation, I have argued that the rhetorical practices of mHealth developers in Nigeria's mHealth startup space (and other mHealth developers around the world) contribute to precarity if they don't consider the material, social and technological conditions of the lives of the actual end-users of the system when they are making the case for technological innovation and problem-solving through ICTs, and when they overestimate the reach of the technologies available to mobile phone users. It is critical that top-down agencies like the UN recognize that, far from giving access to all within a nation, policies based on cell-phone accessibility may, in fact, reify and extend existing gaps between the urban/rich and the rural/poor.

Here, I present some suggestions for a more humanistic approach to communicating mHealth which can make the discourse of mHealth more accessible to the local audience, and which may bring more positive material impacts that will improve health outcomes for patients in LMICs and elsewhere.

As I have argued in this dissertation, one way to help make such healthcare more democratic is for users to be able to access more specific information about services connected with their technologies–for instance, to know the true reach and extent of such technologies, e.g., which hospitals are connected to companies such as LifeBank so that they can make decisions about which medical facilities to go to in the event of an emergency. Revealing such information may not support claims such as LifeBank being able to reach those at the "last mile," but at least it could give patients, primarily those who may be able to leave their under-resourced locations, the opportunity to access

services by health companies like LifeBank where they are available. Of course, that would rest on another point of clarification (and modification?) of such advertisements as LifeBank's "hero" rhetoric: to advertise more honestly the costs of using such services for patients accessing these "heroically" donated liters of blood.

Another suggestion is for IT corporations and donors to constantly participate in rhetorical listening to and revisiting the exigence for technological innovation. This process requires rhetors (i.e., advocates and developers of mHealth) to always return to the context or rhetorical situation which formed the basis for their social action to see what changes have been brought to that context.

The combination of these actions will be to create better health policies as well as a supporting rhetoric that is ethical and sustainable both to the audience and context. This will build an improved rhetoric of health and medicine situated within a deeper understanding of how precarity is developed and sustained, and how important it is to address discursively.

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Michigan Technological University

Humanities

July 25, 2022
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The excerpts to be reproduced are screenshots taken from your video and used to explain issues with materiality in health care. The screenshots are found on page 2 of this letter.

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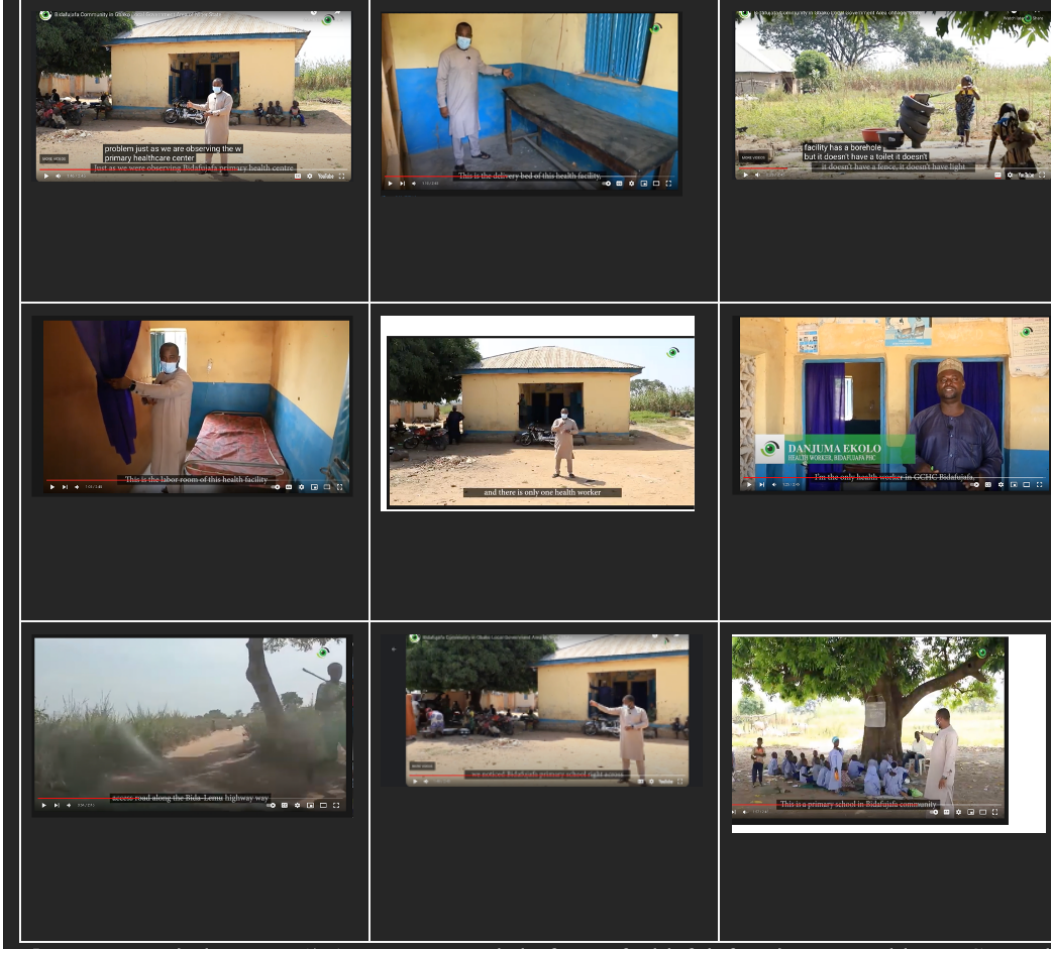
Bidafujafa PHC in pictures. Image source: Nigeria Health Watch, Nov. 23, 2021, Bidafujafa Community in Gbako Local Government Area of Niger State



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