

Insights and Recommendations

THE POTENTIAL OF DIGITAL PHARMACY FOR HEALTHCARE DELIVERY IN NIGERIA



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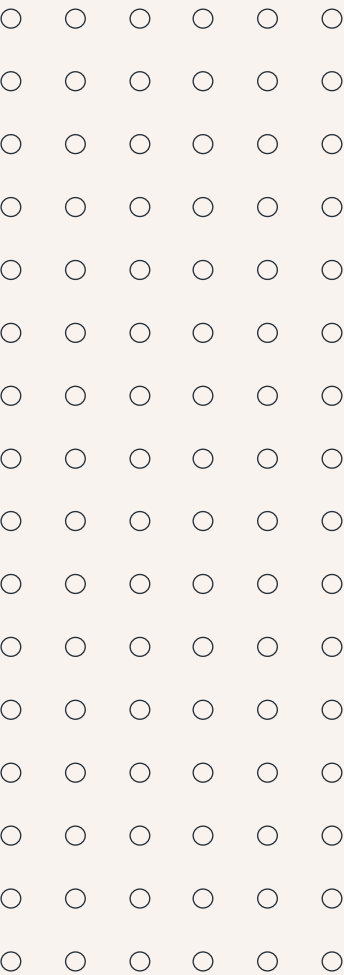
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INTRODUCTION

Preface

The ePharma4FP (ePharma for Family Planning) project represents a timely and transformative effort in Nigeria's journey toward Universal Health Coverage (UHC) and FP2030 goals. By harnessing digital innovation, the initiative advances equitable access to sexual and reproductive health (SRH) services, and empowers citizens to make informed choices with dignity, privacy, and agency.

Busara is proud to partner on ePharma4FP alongside the Society for Family Health (SFH), the Pharmaceutical Society of Nigeria Foundation (PSNF), and HealthPlus. As a behavioral science organization with significant experience in health system transformation, Busara brings not only technical expertise, but also the unique capability to design people-centered, evidence-based, and scalable solutions that meet people where they are.

We have led similar work across Africa, generating actionable insights to inform national strategies, shape donor priorities, and strengthen public-private delivery models. This Consideration Document intends to guide and support policymakers, funders, regulators, and implementers that are committed to equitable and inclusive digital health systems. We hope it will be received, engaged with, and applied just as meaningfully as past contributions.

In this project, we tested and optimized hybrid e-pharmacy models that leverage the trust people have in community pharmacies and the scale offered by digital platforms. Our aim was to design digital channels that foster inclusivity and did so by identifying behavioral drivers and segmenting users – especially women, youth, and digitally constrained populations – to develop archetypes and tools that support inclusion.

This work comes at a critical time when Nigeria's health system is facing acute challenges, high out-of-pocket costs, workforce shortages, and deep-rooted inequalities in SRH access. At the same time, digital platforms are rapidly changing how people seek care. ePharma4FP responds to this convergence by providing models for how technology, if thoughtfully designed, can expand access, build trust, and support continuity of care for those left behind, historically.

This document serves as both a roadmap and a call to action. It distills key behavioral insights, system recommendations, and strategic design principles from the ePharma4FP project. It is designed to inform Nigeria's growing e-pharmacy landscape, supporting stakeholders in building a safe, inclusive, and sustainable digital health system.

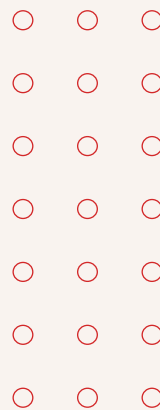
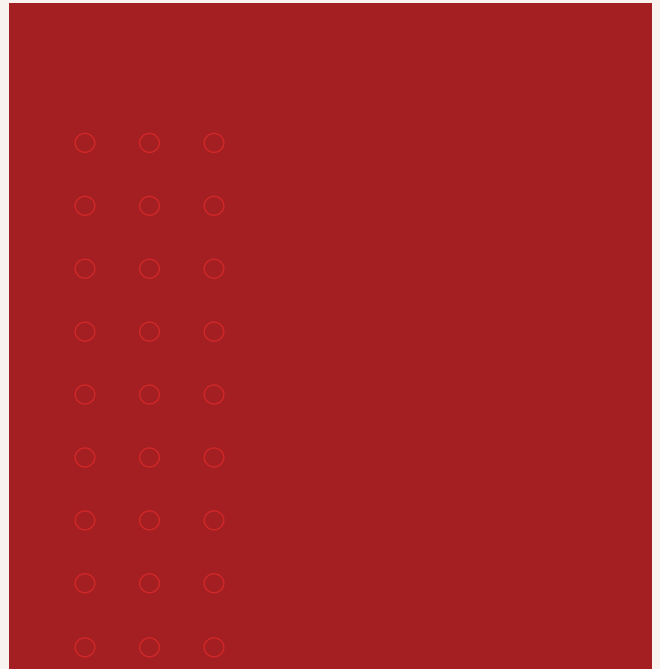
At its heart, this initiative tackles the problem of fragmented and inequitable access to quality family planning services, especially for young people and marginalized communities. As digital health evolves globally, frameworks that prioritize equity, safety, and trust are not optional, but essential.

We believe ePharma4FP demonstrates what is possible when behavioral insight, inclusive design, and cross-sector collaboration come together. The models explored here provide tangible pathways for strengthening public-private partnerships, unlocking health financing, and improving outcomes at scale.

As Nigeria charts its digital health future, we urge decision-makers to ensure that behavioral considerations are not an afterthought, but a core pillar in the design, delivery, and scaling of programs and policy. We will be watching, supporting, and celebrating the progress that emerges from this foundation, a future where every Nigerian can access the care they need, digitally, safely, and with dignity.

Francis Meyo

CEO, Busara Center



Foreword

The Society for Family Health (SFH) continues to serve as a strategic anchor in Nigeria's pursuit of universal health coverage. Our mandate transcends service delivery as we are shaping the architecture of a modern, resilient, and equitable health system. Working in close partnership with government leaders, corporate actors, development partners, and the communities we serve, SFH remains committed to advancing scalable solutions that improve access, strengthen accountability, and accelerate national health outcomes.

Our approach reflects a deliberate systems-level vision: one that integrates market-shaping, health system strengthening, and digital transformation into a coherent pathway for sustainable impact. Through total market strategies, we are helping Nigeria harmonize public and private sector contributions to the Essential Package of Health Services (EPHS), ensuring that quality care becomes the norm for every Nigerian, not the privilege of a few. Over four decades, our operational footprint across even the most underserved regions demonstrates our ability to deliver innovations at scale and to broker partnerships that drive lasting value.

This dissemination report emerges at a pivotal time as we conclude the e-Pharmacy for Family Planning (ePharma4FP) investment in Lagos State, a 3-year initiative supported by the Gates Foundation. This effort represents more than a pilot; it is a strategic proof-of-concept for how digital pharmacy models can unlock system efficiencies, close persistent access

gaps, and modernize the delivery of essential reproductive health services.

Although significant progress has been made in expanding family planning access, inequities in availability, proximity, confidentiality, and convenience persist. The ePharma4FP project was therefore designed to interrogate whether hybrid e-Pharmacy models can serve as a high-value complement to existing service delivery channels. Driven by implementation science, the investment generated robust behavioral insights, mapped user journeys, and identified the digital enablers necessary to increase voluntary uptake of family planning. Our segmentation of users, combined with tailored digital and in-person demand generation strategies, offers actionable intelligence for policymakers and funders seeking scalable, client-responsive solutions.

The evidence consolidated in this compendium is critical. It provides practical policy considerations, identifies market opportunities, and highlights investment pathways that can shape Nigeria's digital health ecosystem. It demonstrates that digital pharmacy models, when properly regulated, integrated, and incentivized, can become accelerators of equity, efficiency, and financial sustainability within the health system.

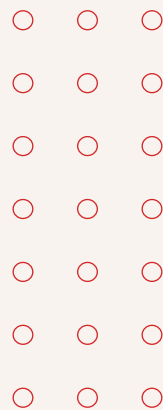
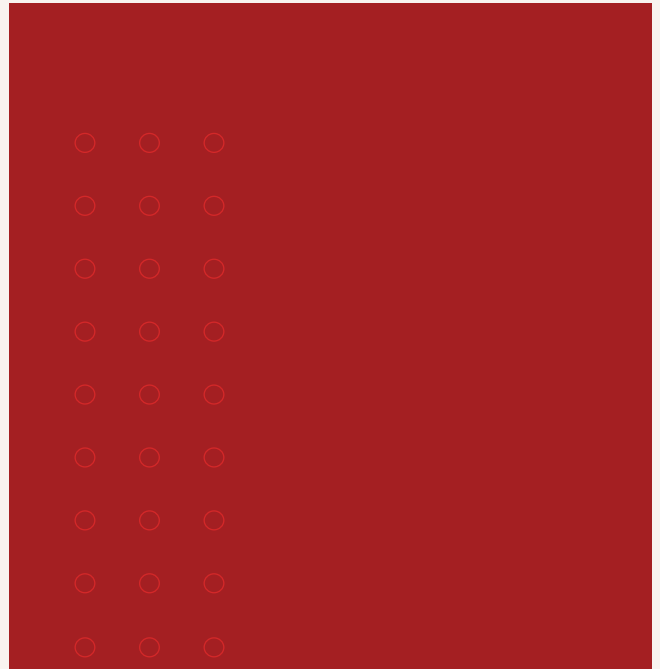
As we close this phase of the investment, I extend my deep appreciation to our partners and to the Gates Foundation for their strategic foresight. The insights from this project will inform

national digital health planning, support private sector integration, and guide future donor investments focused on scale, sustainability, and value for money.

SFH remains fully committed to working with policymakers, innovators, and development partners to translate these findings into national impact. Together, we can build the next generation of digital health solutions, solutions that are inclusive, evidence-driven, and positioned to transform the healthcare experience for every Nigerian.

Dr. Omokhudu Idogho

*Managing Director,
Society for Family Health*



Acknowledgements

This Compendium of Learnings and Insights is a product of the Society for Family Health e-Pharmacy for Family Planning (ePharma4FP) Project with investment funding from the Gates Foundation.

This robust document would not have been possible without the support of the following persons and institutions, which ePharma4FP Project would like to acknowledge: Director, Food and Drug at the Federal Ministry of Health & Social Welfare, Pharm Olubunmi Aribeara, Director, Pharmaceutical Services Division at the Federal Ministry of Health & Social Welfare, Pharm. Talatu Kazeem, Registrar, Pharmacy Council of Nigeria, Pharm Ibrahim Ahmed Babashehu, Gates Foundation Country Director for Nigeria, Dr. Uche Amaonwu, Gates Foundation Family Planning (FP) Program Officer, Emily Mangone, MERL Tech Initiative Founder, Linda Raftree, Gates Foundation, Finance Manager, FP Division, Serigne Diouf.

We extend our sincere gratitude to the Federal Ministry of Health & Social Welfare and the Pharmacy Council of Nigeria (PCN) for their pivotal policy work and commendable achievements. Their dedication has culminated in the finalization of both the Nigeria National Prescription and Dispensing Policy (NNPDP) and the National e-Pharmacy Policy documents. These foundational policies, significantly supported by our project, are anticipated to establish a robust enabling environment crucial for the advancement of digital pharmacy operations across Nigeria upon their official launch. Special thanks go to the Lagos State Ministry of Health, whose collaboration was instrumen-

tal in facilitating community entry, stakeholders' engagements, fieldwork and coordination. We also acknowledge the contribution of community-based organizations, health workers, and digital health actors who helped ensure smooth implementation of both qualitative and quantitative phases of the study.

We especially appreciate the strategic direction and support of the SFH Executive Management led by the Managing Director, Dr Omokhudu Idogho, for providing the enabling environment for this work.

We also acknowledge the technical contributions of all partners, Pharmaceutical Society of Nigeria Foundation (PSNF) under the leadership of Pharm Munir Elelu, Busara Center for Behavioral Economics under the leadership Mr Francis Meyo and Dr Mohammed Alhaji, HealthPlus Pharmacy Project team under the leadership of Dr Bolanle Fajemirokun, and the SFH state field team led by Pharm. Sebastine Abiroh whose expertise enriched this project and its materials at different stages.

Finally, I would like to thank all those who worked tirelessly with me in putting this together, including Babatunde Oyelana, Deputy Chief of Party of the project, Chinedu Okoye, MERL Lead for their immense technical contributions and support during the development of this compendium, as well as other consortium team members for their invaluable contributions.

Dr. Uchenna Okafor

Chief of Party, E-Pharma4FP
Society for Family Health

About this Report

This report consolidates the key insights, evidence, and practical considerations the ePharma4FP Project generated in three years focused on optimizing hybrid e-Pharmacy models for family planning and primary healthcare access in Nigeria. It synthesizes findings from behavioural research, market studies, equity pilots, platform evaluations, policy analysis, and business-case assessments conducted between 2023 and 2025. The document is intended to guide policymakers, regulators, private-sector innovators, development partners, and implementers seeking to strengthen Nigeria's digital pharmacy ecosystem. It provides a clear evidence base, highlights operational and regulatory implications, and outlines actionable recommendations to support the safe, equitable, and scalable integration of e-Pharmacy into the national health system.

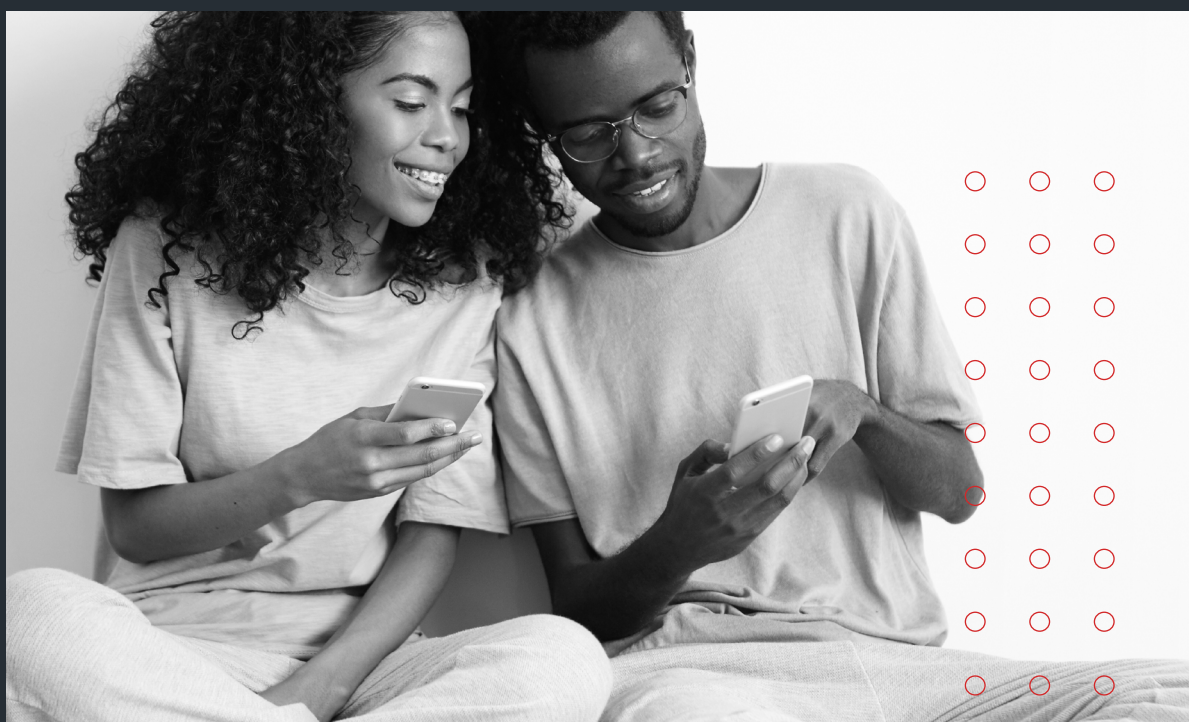


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Abbreviations and Acronyms

ARCON	Advertising Regulatory Council of Nigeria
CHE	Current Health Expenditure
CHMIS	Community Health Management Information System
CSOs	Civil Society Organizations
CTA	Call to Action
CRM	Customer Relationship Management
FCCPA	Federal Competition and Consumer Protection Act
FCCPC	Federal Competition and Consumer Protection Commission
FMoH&SW	Federal Ministry of Health and Social Welfare
FP	Family Planning
FP2030	Family Planning 2030 Global Partnership
FP	Family Planning Products
GA4	Google Analytics 4
GDP	Gross Domestic Product
IVR	Interactive Voice Response
NAFDAC	National Agency for Food and Drug Administration and Control
NCA	Nigerian Communications Act
NCC	Nigerian Communications Commission
NDP	National Drug Policy
NDPA	Nigeria Data Protection Act
NEPP	National Electronic Pharmacy Platform
NHIA	National Health Insurance Authority
NHLMIS	National Health Logistics Management Information System
NGOs	Non-Governmental Organizations
NITDA	National Information Technology Development Agency
NNPDP	Nigeria National Prescription and Dispensing Policy
NSCC	National Self-Care Coordination Network
OOP	Out-of-Pocket
PCN	Pharmacy Council of Nigeria
PHC	Primary Health Care
PMS	Patent Medicine Shops
RoI	Return on Investment
SDG	Sustainable Development Goal
SMOH	State Ministry of Health
SMOs	Social Marketing Organizations
UHC	Universal Health Coverage
USSD	Unstructured Supplementary Service Data

Definitions

Adolescent and Youth-Friendly Services

Health services designed to be accessible, non-judgmental, and confidential for young people.

Blended Finance

Financial strategy combining public, private, and donor funding to improve health access.

Data Protection and Privacy

Safeguarding personal and health-related information in compliance with national regulations.

Demand Generation

Strategies used to raise awareness and drive the adoption of e-Pharmacy services.

Digital Literacy

The ability to access, understand, and use digital platforms effectively.

E-Pharmacy / Electronic Pharmacy

The use of internet and digital technologies to deliver or enhance pharmaceutical and healthcare services.

Equity Model

Inclusive delivery approach using low-bandwidth channels (e.g., IVR, USSD) to reach underserved populations.

EPharma4FP Project

Initiative supported by the Gates Foundation to optimize hybrid e-Pharmacy models for family planning access in Nigeria.

Good Pharmacy Practice (GPP)

Regulatory standards guiding safe and ethical pharmacy operations, including e-dispensing.

Hybrid E-Pharmacy Model

Combination of digital and brick-and-mortar pharmacy channels for service delivery.

Self-Care in Family Planning

Evidence-based practices and tools that enable individuals to manage aspects of their reproductive health outside of formal health facilities. Examples include over-the-counter contraceptive pills, condoms, fertility tracking, and self-administered injectable contraceptives.

Executive Summary

Nigeria’s path to Universal Health Coverage (UHC) is constrained by high out-of-pocket expenditure (over 70%), limited public financing, and severe health-worker shortages as a result of health workers’ emigration. Community pharmacies already function as the country’s de facto primary-care touchpoint, yet coverage remains inadequate at about one pharmacist per 17,000 Nigerians, far below global standards. E-Pharmacies offer a scalable channel to close these gaps by expanding access to primary healthcare and family planning (FP) services through trusted, convenient, and discreet digital platforms.

The Gates Foundation-supported ePharma4FP Project, delivered by a Society for Family Health (SFH)–led consortium with Busara, HealthPlus Pharmacy, and the PSN Foundation, in partnership with the Federal Ministry of Health & Social Welfare, the Lagos State Ministry of Health, and the Pharmacy Council of Nigeria, designed, tested, and optimized hybrid e-Pharmacy models in Lagos State. Through mixed-methods behavioural, market, and systems research conducted between 2023 and 2025, the project generated clear evidence on feasibility, demand, equity, user trust, regulatory readiness, and commercial viability.

Key insights include:

A Market Readiness for e-Pharmacy for FP: Four behavioural segments emerged from a state-wide survey, each with distinct adoption pathways:



Ready Adopters (14%): These are digitally savvy, confident using on-line services, and motivated to manage their reproductive health. They have the access, skills, and intent to use e-Pharmacies immediately.



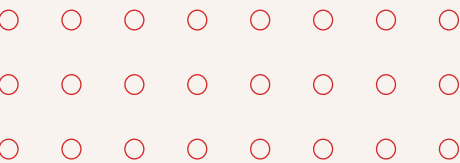
Able but Unmotivated (18%): They have smartphones, internet access, and financial capacity but low personal motivation for FP, as it is not a priority.



Willing but Constrained (20%): This group wants to use FP and are open to digital channels but face practical barriers such as limited income, unstable connectivity, and reduced autonomy in health decisions.



Unaware or Constrained (48%): This the largest segment, with low awareness of digital FP options and minimal exposure to digital health. Limited literacy, affordability challenges, and weak digital access restrict their ability to adopt e-Pharmacy services.



About one in three women of reproductive age are ready or willing to use digital FP channels. Segment-specific demand generation is essential: privacy- and convenience-focused messaging for ready users, and affordability, awareness, and support interventions for constrained groups.

B Digital Access and Equity: Smartphone ownership (80%) and daily internet use (64%) provide a strong baseline, but peri-urban and low-income users face connectivity and literacy barriers. Low-bandwidth IVR and USSD equity models proved highly feasible, achieving near-complete task completion and strong privacy trust. These channels should be scaled as core inclusion pathways, with multilingual interfaces and structured digital-literacy onboarding.

C User Experience Drivers: Privacy is the leading driver of e-Pharmacy uptake, followed by convenience and cost. Barriers remain: delivery fees, long wait times, inconsistent counselling, stigma, partner influence, and data-protection fears. Strengthening trust requires visible compliance with data-protection standards, discreet packaging, verified pharmacist credentials, faster response times, price transparency, and incentives that reduce delivery-related friction.

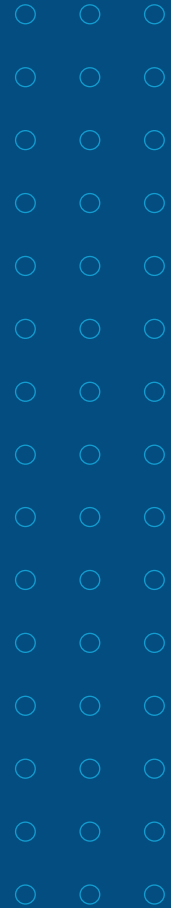
D Provider and Regulatory Landscape: E-Pharmacies face several operational and regulatory challenges including poor prescription-validation systems, unstable internet connectivity, trust barriers, low client awareness about e-Pharmacy

services, data privacy and security fears, absence of a National e-Pharmacy policy and a non comprehensive online pharmacy Gazette. The policy gaps limit effective regulation of the e-Pharmacy ecosystem. In bridging the identified policy gaps ePharma4FP, supported the country through the FMOH&SW and the PCN to develop the National e-Pharmacy Policy, the Nigeria National Prescription and Dispensing Policy, the e-Pharmacy guideline and new Electronic Pharmacy Regulations (2025). Sustained implementation through the National Electronic Pharmacy Platform (NEPP) development, integrated health insurance, standardized protocols, and provider capacity strengthening is critical for scale.

Evidence from the ePharma4FP Project shows that e-Pharmacy is an emerging and scalable channel for expanding equitable access to family planning and essential primary healthcare in Nigeria. Supportive national policies are taking shape, user readiness is clear across multiple segments, and inclusive digital models such as IVR and USSD have proven effective at reaching underserved populations. The conditions for scale now exist. Unlocking the full potential of e-Pharmacy will require coordinated action from government, regulators, private-sector innovators, development partners, and community actors. With sustained collaboration, Nigeria can consolidate its readiness in digital pharmaceutical services and deliver safer, more efficient, and more equitable reproductive-health access while advancing UHC, FP2030 commitments, and national digital health priorities.

Part I

Rationale, Context and Strategic Alignment



INTRODUCTION AND SCOPE

Leveraging e-Pharmacies for Nigeria’s UHC and FP2030 Goals

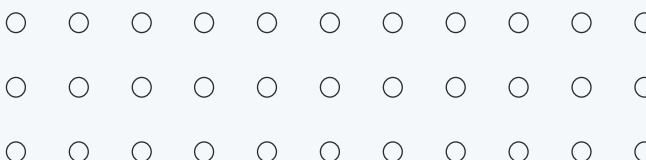
Nigeria faces persistent barriers to achieving Universal Health Coverage (UHC), with significant disparities in access to essential health services including persistent high out-of-pocket (OOP) health expenditures exceeding 70%. The healthcare worker shortage with approximately 1.8 skilled health workers per 1,000 people, well below the World Health Organization (WHO)’s recommended threshold of 4.5 per 1,000, leaves the system severely strained and unable to meet population health needs¹.

1.8



skilled health workers per 1,000 people

For most Nigerians, community pharmacies serve as the first point of contact for healthcare services and commodities. This established trust and accessibility position them uniquely within the healthcare ecosystem, making them critical infrastructure for expanding access to health care services². Community pharmacies are frequently used instead of hospitals due to long wait times at hospitals, and pharmacists provide medication and advice for common health problems³. Community pharmacies have become a cornerstone of Nigeria’s primary healthcare system; however, they face a significant shortage in coverage, with only one pharmacist available for every 17,000 Nigerians, far below the World Health Organization’s recommended ratio of at least three pharmacists per 10,000 population⁴.



1 Olatunji G, Aderinto N, Kokori E, Abraham IC. Nigeria’s new policy: solution for the health-care workforce crisis? *The Lancet*. 2024;404(10460):1303–1304.
2 Ekpenyong A, Udoh A, Kpokiri E, Bates I. An analysis of pharmacy workforce capacity in Nigeria. *Journal of Pharmaceutical Policy and Practice*. 2018;11:20. doi: 10.1186/s40545-018-0147-9.
3 MR Ihekoronye and KP Osemene, “Evaluation of the Participation of Community Pharmacists in Primary Healthcare Services in Nigeria: A Mixed-Method Survey,” *International Journal of Health Policy and Management* 11 (2022): 829–839, <https://doi.org/10.34172/ijhpm.2020.224>.
4 World Health Organization. National Health Workforce Accounts Data Portal. Geneva: World Health Organization, 2024. Available online at: <https://apps.who.int/nhwportal/> (accessed March 18, 2024).

As technology is reshaping how healthcare is accessed and delivered, electronic pharmacies (e-Pharmacies) are playing a pivotal role in this transformation. Digitizing and expanding traditional pharmacies has emerged as a scalable solution to bridge gaps in access and delivery of essential health services and commodities. Hence, leveraging e-Pharmacies is critical to expanding the reach and convenience of healthcare.

Leveraging e-Pharmacies will strengthen efforts towards achieving UHC commitments by:

I Enhancing the care delivery infrastructure while reducing strain on overstretched healthcare workers thus enabling more efficient resource management across the health system.

II Expanding access to essential primary healthcare services and commodities, including reproductive health products, to underserved populations, particularly in remote and rural areas.

III Advancing health equity and empowering women to improve their health outcomes.

Purpose and Target Audience

This consideration document has been developed to provide policymakers, potential implementers, and funders of e-Pharmacies with a clear understanding of the strategic, operational, and contextual factors relevant to the implementation of e-Pharmacy in Nigeria. The document outlines, in the following sections, the policy and regulatory considerations shaping e-Pharmacy in Nigeria and presents key demand- and supply-side findings from our studies. It concludes with market and financing insights, along with recommendations to support a robust and sustainable e-Pharmacy ecosystem.

The purpose is to highlight the opportunities, risks, and key enablers that must be considered in harnessing the potential of e-Pharmacy to improve health service delivery and advance progress toward universal health coverage.

This document primarily targets the Federal and State Ministries of Health, implementing partners, technical collaborators, and health-tech innovators engaged in advancing Nigeria's health sector priorities.



Strategic Alignment with Global and National Health Commitments

Box 1: Key Global and National Commitments Guiding ePharma4FP



Sustainable Development Goal (SDG) 3.7 – Ensure universal access to sexual and reproductive health-care services, including family planning, information, and education, by 2030.



Universal Health Coverage (UHC) – Guarantee access to essential health services without financial hardship, emphasizing quality, equity, and protection for vulnerable populations.



Family Planning 2030 (FP2030) – Expand voluntary, rights-based family planning choices and reduce unmet need, prioritizing women, youth, and underserved communities.



Nigeria Digital Health Policy (2021–2025) – Digitally transform health service delivery, strengthen governance and data interoperability, and ensure data protection and cybersecurity.



National Health Policy (2021) – Promote equitable, efficient, and sustainable access to quality health services for all Nigerians.

The ePharma4FP initiative is firmly aligned with global and national health priorities, which collectively aim to ensure universal access to equitable, quality, and sustainable health services. At the global level, it supports the 2030 Agenda for Sustainable Development, particularly Goal 3, which seeks to ensure healthy lives and promote well-being for all. Within this framework, Target 3.7 commits countries to achieving universal

access to sexual and reproductive health-care services, including family planning, information, and education. By enabling digital delivery of family-planning products and counselling, ePharma4FP directly contributes to this target while strengthening Nigeria's broader pursuit of Universal Health Coverage (UHC), ensuring individuals and communities receive essential care without financial hardship.

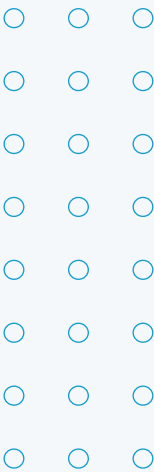
Aligned with UHC, Nigeria's National Health Policy (2021) and Health Sector Renewal Investment Plan (2023 - 2026) prioritize equitable access, innovation, and health-system resilience. ePharma4FP operationalizes these principles by expanding reproductive-health access through digital and community-based delivery models. This approach addresses persistent barriers such as cost, distance, and stigma, key determinants of inequity in family-planning uptake, while contributing to a sustainable, inclusive health system that leaves no one behind.

The initiative also supports Nigeria's commitments under the Family Planning 2030 (FP2030) partnership, which calls for expanding voluntary, rights-based FP options and reducing unmet need across diverse population groups. ePharma4FP reinforces FP2030's four pillars - choice, accessibility, quality, and accountability - by integrating digital platforms that make self-care and informed choice more attainable for women, youth, and underserved users. Through e-Pharmacy, e-prescriptions, and low-bandwidth channels such as IVR and USSD, the programme introduces new, user-centred pathways for delivering confidential and affordable FP services.

At the national level, ePharma4FP aligns closely with the Nigeria Digital Health Policy (2021–2025), which envisions “a digitally transformed health system that enables and delivers quality health services for all Nigerians.” The initiative advances this policy across four critical pillars:

- **Digital transformation of service delivery:** embedding e-Pharmacy, e-prescription, and data-driven decision-support tools;
- **Governance and interoperability:** linking private e-Pharmacy systems to national platforms such as eLMIS and DHIS2;
- **Data protection and cybersecurity:** ensuring compliance with the Nigeria Data Protection Act (2023) to safeguard user privacy; and
- **Capacity building and innovation:** strengthening the digital competencies of pharmacists, counsellors, and end users.

The ePharma4FP functions as both a strategic enabler and a practical accelerator of Nigeria's progress toward FP2030 goals, SDG 3.7, and UHC by integrating these commitments. It represents a potentially scalable model for harnessing digital innovation to deliver reproductive-health services efficiently, safely, and equitably, bridging the gap between global aspirations and local realities.



CURRENT MARKET LANDSCAPE

Digital Commerce and Financial Technology Penetration

The rapid growth of Nigeria's digital commerce and fintech sectors has further catalyzed a shift toward technology-enabled health access. In early 2025, 150 million cellular mobile connections (equivalent to 64% of the total population) were active in Nigeria⁵. As of Q1 2024, Lagos State recorded the highest number of active voice subscriptions in Nigeria, with 25.9 million, accounting for approximately 11.8% of the country's total mobile lines. It also led in internet subscriptions, with 18.8 million users, representing about 11.4% of the national total⁶.

150 ➞

million cellular mobile connections (equivalent to 64% of the total population) were active in Nigeria

This digital expansion is evident in the rapid growth of online commerce across sectors such as food services, fashion, and retail. The widespread adoption of digital payments is further driving consumer confidence in online transactions, secondary to strengthened banking infrastructures and guardrails. Naturally, this transformation is extending to health where e-Pharmacies, virtual consultation platforms, and virtual prescription management are increasingly linking clients to licensed providers and verified medicines.

UHC and PHC Services

Attainment of universal health coverage (UHC) requires optimal utilization of health services. Poor coverage and inequitable access to healthcare could hinder progress towards UHC. Attaining UHC is a priority for the global health agenda, particularly in developing countries, including Nigeria. The 2030 Agenda for Sustainable Development Goals (SDGs) has also included commitments by African Governments to expand access to health services to improve population health outcomes⁷.

5 DataReportal. Digital 2025: Nigeria. March 3 2025. Available at: <https://datareportal.com/reports/digital-2025-nigeria>.

6 National Bureau of Statistics, Telecoms Data: Active Voice and Internet per State, Porting and Tariff Information (Q1 2024), <https://www.nigerianstat.gov.ng/elibrary/read/1241528>.

7 Slaymaker E, Scott RH, Palmer MJ, Palla L, Marston M, Gonsalves L, et al. Trends in sexual activity and demand for and use of modern contraceptive methods in 74 countries: a retrospective analysis of nationally representative surveys. *Lancet Glob Health*. 2020;8(4):e567–79.

Nigeria's government-funded health expenditure accounts for only 0.9% of Gross Domestic Products (GDP), far below the 4-5% of GDP recommended for achieving UHC. Point-of-service or OOP household spending represents 71.7% of Current Health Expenditure (CHE) as of 2022, nearly double the global benchmark of 30-40%⁸.

While Primary Health Care (PHC) centers form the foundation of the national health system, their limited reach, workforce shortages, and inconsistent commodity availability have constrained effective service utilization, particularly for reproductive, maternal, and Family Planning (FP) needs.

Against this backdrop, Community Pharmacies and Patent Medicine Shops (PMS) have become critical first points of care for millions of Nigerians.

They bridge access gaps in both urban and peri-urban areas, providing counseling, self-care products, and family planning commodities outside more clinical facilities. Their widespread and trusted status within communities, position them as strategic assets for expanding PHC-linked services and accelerating UHC outcomes⁹.

Potential and Emergence of e-Pharmacy

E-Pharmacies are digital platforms that provide a wide range of pharmaceutical services, including counselling, and other essential primary health care. E-Pharmacies come with benefits such as convenience, privacy, and easy access to medication at often competitive prices, which make them more attractive than the traditional store pharmacy¹⁰. In addition, e-Pharmacies as other e-health technologies have the potential to tackle stigma linked with certain health care needs, including sexual and reproductive health¹¹.

Examples of existing e-Pharmacy actors in Nigeria

Nigeria's e-Pharmacy market is maturing, with several licensed operators driving innovation in supply chain management, medicine authentication, and last-mile delivery.

8 FMOH&SW (2024). Nigeria National Health Accounts 2022 - General Findings.

9 Okeibunor J, Smith A, Jolley E, et al. (2024). Potential role of proprietary patent medicine vendors in primary eye and ear care: A mixed methods study in northern Nigeria. PLoS One. 20(6):e0326132.

10 Chaturvedi A, Singh U, Kumar A. Online pharmacy: an e-strategy for medication. Int J Pharm Res 2011; 1: 146–158.

11 Fan M, Ukaegbu OC. Information literacy and intention to adopt e-pharmacy: a study based on trust and the theory of reasoned action. BMC Health Serv Res 2024; 24: 912.

Key actors include: HealthPlus Pharmacy, MedPlus Pharmacy, Alpha Pharmacy, Juli Pharmacy, Purelife Pharmacy, Asset Pharmacy, and eMedic Pharmacy.



Aggregators: DrugStoc, OneHealth, Pharmarun, and Famasi Africa.

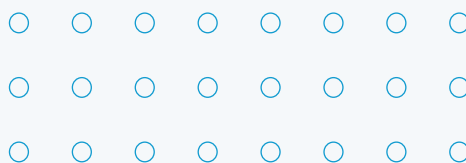


FP Demand, Unmet Need, and Current Delivery Channels

Unmet need for family planning remains high contributing to poor maternal and child health outcomes. Nigeria's modern contraceptive prevalence rate (mCPR) is 15% among married women and 38% among sexually active unmarried women¹².

E-Pharmacies are well-positioned to complement facility-based FP delivery by offering discreet access to self-care FP products and counselling through licensed professionals. This approach can improve continuity of care and reduce stigma associated with in-person consultations.

Yet, the integration of family planning products and services within e-Pharmacy platforms remains limited and largely unstructured, leaving a significant untapped opportunity to meet the UHC demands including essential primary health care services. Digitally active youths and women seeking discretion and convenience can benefit significantly from e-Pharmacy based FP services.



12 Federal Ministry of Health and Social Welfare (Nigeria), National Population Commission (Nigeria), & ICF. (2024). Nigeria Demographic and Health Survey 2023–24: Key Indicators Report. Abuja, Nigeria & Rockville, Maryland, USA: NPC & ICF.

Introducing the e-Pharmacy for Family Planning (ePharma4FP) Project

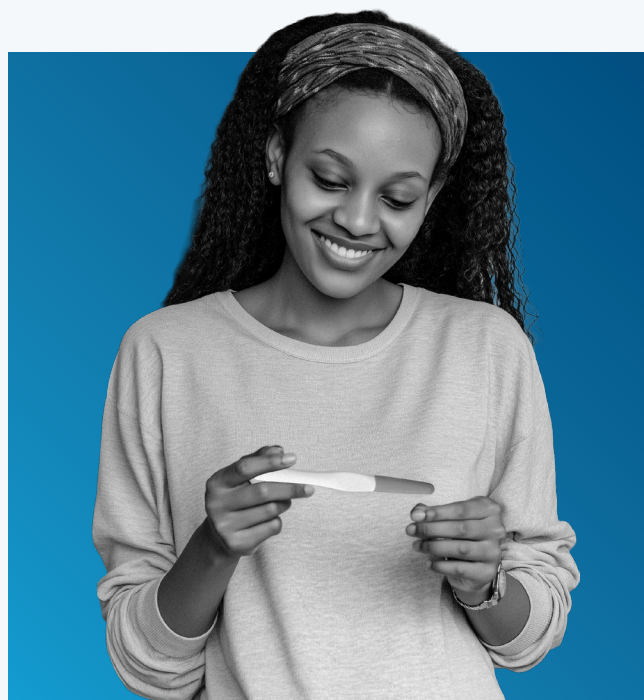
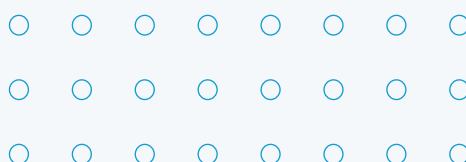
The project, a 3-year investment of the Gates Foundation, aimed to improve access to quality Family Planning (FP) products and services through the optimization of hybrid e-Pharmacy in Lagos State, Nigeria. The project focused on generating evidence on the feasibility, acceptability, and business case of optimizing hybrid e/pharmacy models to deliver FP information, products, and services in Lagos state.

It has three key outcomes:

- I Generate evidence of the effectiveness of hybrid e-Pharmacy channels in serving FP clients
- II Scalable and equitable business models for e-Pharmacy for FP
- III Build an enabling policy environment for the provision of FP through e-Pharmacy.

It leveraged HealthPlus Pharmacy, an emerging hybrid e-Pharmacy platform in Nigeria, to expand access to quality FP products and complementary FP information and counseling. HealthPlus is an integrated pharmacy chain with a strong online and physical presence across all 36 states in Nigeria.

The project conducted research and implementation activities in Lagos state to expand FP product and service offerings through the hybrid e-Pharmacy model. The project also assessed what was working well and what was not, improved the overall model for a seamless user experience, offered FP products and services to underserved populations, and strengthened e-Pharmacy policies and regulations for the provision of FP.



RESEARCH THAT GROUNDED OUR WORK

Situational Analysis and Landscape Study in three (3) African Countries

As part of the ePharma4FP Project, a situational analysis and landscape study was conducted to assess the e-Pharmacy policy environment in Nigeria and compared with those of other countries, including Ghana, Kenya, and Singapore. Ghana stood out from other countries studied with a more matured e-Pharmacy policy, and a national e-Pharmacy platform, which informed the project's decision to undertake a study tour to Ghana.

Key Findings

Effective implementation of electronic pharmacy systems in Nigeria requires deliberate stakeholder identification, mapping, and engagement to foster broad-based buy-in. Innovative initiatives such as the National Electronic Pharmacy Platform (NEPP) often encounter resistance, underscoring the need for strategic, patient, and purposeful approaches.

Adopting an incremental rollout can facilitate gradual acceptance, consistent with the Diffusion of Innovation theory, which emphasizes starting with early adopters to build evidence and momentum for wider uptake. In addition, a top-to-bottom engagement strategy is critical; for example, Ghana's experience demonstrated how high-level political directives, such as those from the Vice President, can catalyze regulatory alignment and compliance across agencies.

Equally important is sustained political commitment from key policymakers, complemented by enabling policies such as a national prescription and dispensing policy to reinforce the e-Pharmacy regulatory ecosystem.

Furthermore, a robust and functional health insurance system is essential to ensure equitable access to health services, including affordable medications, thereby enhancing the overall impact of e-Pharmacy integration.

The results from the situational analysis, in combination with the study tour findings, led to the project support of the country to develop its own e-Pharmacy policy and other policies, such as the Nigeria National Prescription and Dispensing Policy and the e-Pharmacy guidelines and regulations, to strengthen the e-Pharmacy policy environment.

Study on Nigeria's Evolving Digital Health and Family Planning Landscape

The insights and recommendations presented in this document are grounded in the findings from ePharma4FP programme, which combined qualitative, quantitative, and behavioural research across diverse user segments. These studies examined the lived experiences of clients, pharmacists,

and digital service providers, focusing on patterns of access, affordability, privacy, and technology use. The studies generated robust evidence on the behavioural drivers of family-planning uptake, the performance of existing e-Pharmacy platforms, and the equity gaps affecting youth, low-income, and less-connected populations. Summarising this evidence (Box 2) provides an empirical foundation for the policy and programmatic considerations that follow in this document, ensuring that each recommendation reflects tested realities within Nigeria's evolving digital-health and family-planning landscape.

Box 2: Evidence Highlights from Studies



User Segmentation and Market Potential – Distinct archetypes (youth, cost-sensitive urban poor, and rural low-connectivity groups) show varied readiness for e-Pharmacy. Youth demonstrate strong digital engagement but heightened privacy concerns.



Behavioural and Social Barriers – Stigma, partner dynamics, and fear of data exposure deter online FP uptake, especially among women and youth.



Affordability and Access – Delivery fees and perceived high prices limit conversion, reinforcing the need for transparent pricing and low-cost delivery models.



Technology and Platform Experience – Users value convenience but cite delays, uneven counselling quality, and poor payment integration as major pain points.



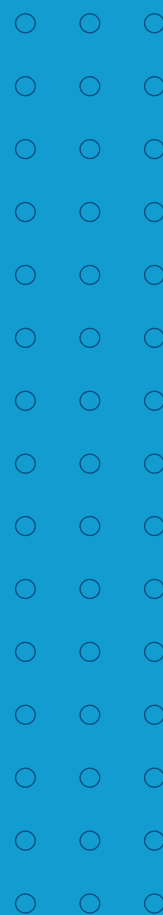
Equity and Inclusion – IVR and USSD pilots confirm that low-tech channels can effectively reach offline and underserved populations.



Provider Challenges and Scale-Up Needs – Pharmacists face digital-skills gaps and unclear e-prescription rules. Integrated policy guidance and investment in logistics, training, and standard protocols are critical for sustainable scale-up.

Part II

Policy and Regulatory Foundations



REGULATORY FRAMEWORKS FOR E-PHARMACY

Roles of the Federal Ministry of Health & Social Welfare (FMoH&SW), Pharmacy Council of Nigeria (PCN), and Other Supporting Agencies.

The table below highlights the roles and responsibilities of the various Regulatory agencies and bodies relevant to the coordination and regulation of e-Pharmacy operations in Nigeria.

Table 1: Roles and Responsibilities of Regulatory Agencies for e-Pharmacy operations in Nigeria

Responsible Entity	Roles and Responsibilities
Federal Ministry of Health and Social Welfare	Oversight, leadership, coordination, approval, and adoption of the e-Pharmacy policy and ecosystem.
Pharmacy Council of Nigeria	Practice regulation, quality control, licensing, supervision, inspection, and standard benchmarking for e-Pharmacy services. They regulate the complete pharmacy practice.
Other Supporting Agencies	
National Assembly	Legislation-enact laws.
Nigeria Data Protection Commission	Data privacy and protection guidelines registration.
Federal Competition and Consumer Protection Commission	Consumer/customer protection and safety.
National Information Technology Development Agency	Develop regulatory standards, guidelines, and policies for information technology in the country.
National Agency for Food and Drug Administration and Control	Regulates and controls the importation, exportation, manufacture, advertisement, and sale of food, medical, pharmaceuticals, cosmetics, medical devices, and other regulated products.
Nigerian Communications Commission	Create an enabling environment to facilitate the development of digital health infrastructure.
State Ministry of Health	Domestication, adoption, and adaptation of relevant policies.
Civil Society Organizations and Non-Governmental Organizations	Sensitization, advocacy, and awareness creation.

INSTITUTIONAL COORDINATION AND GOVERNANCE MECHANISMS

Institutional coordination for e-Pharmacy regulation in Nigeria currently occurs through collaborative engagements led by the Federal Ministry of Health and Social Welfare (FMoH&SW) in partnership with the Pharmacy Council of Nigeria (PCN) and other regulatory agencies such as NAFDAC, NHIA, NITDA, and the Nigerian Communications Commission (NCC) (see table 1). These interactions, mainly through interdepartmental consultations, technical working groups, and periodic joint reviews, support policy alignment, regulatory coherence, and the integration of digital dispensing practices within broader national health priorities.

While these mechanisms have strengthened communication and regulatory consistency, they remain largely informal and issue-specific. There is growing recognition of the need for a more structured, multi-sector coordination platform to streamline oversight, data governance, and stakeholder accountability across the e-Pharmacy ecosystem. The evolving vision for such a coordinated governance mechanism, and its alignment with the broader digital-

health architecture, is described in Part V: Institutional Coordination and Governance Mechanisms.

Key Laws and Regulations Guiding e-Pharmacy Operations in Nigeria

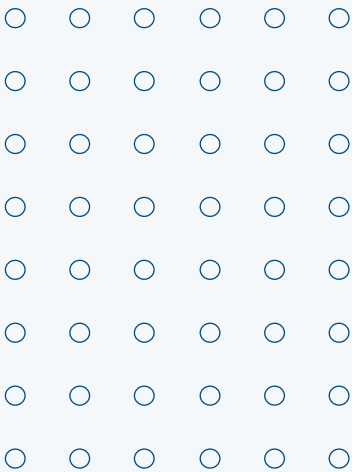
The Nigerian e-Pharmacy regulatory landscape was nascent and thus had very few laws that adequately cater to the needs of the e-Pharmacy ecosystem. Following the situational analysis and landscape study, the PCN online Pharmacy Gazette was the only e-Pharmacy-specific regulation, and its content was not comprehensive enough to capture some pertinent requirements for e-Pharmacy. The FMoH&SW and the PCN, with support from the epharma4FP project, developed some additional policies and guidelines to address the identified gaps.

The existing and emerging policies and guidelines are geared towards strengthening the effective regulation of the e-Pharmacy ecosystem, and govern the registration, licensure, advertisement, data protection and privacy, and provision of e-Pharmacy services. Some of these are;

- **National Health Act, No. 8 of 2014:**
As an overarching law, it gives provisions on patient rights, healthcare regulation, and professional conduct, particularly its framework for a national health system, which aims to regulate and set standards for health services, including e-Pharmacy.
- **Pharmacy Council of Nigeria (PCN) Establishment Act 2022:** The Act provides the legal framework for the PCN to regulate all aspects of pharmacy practice, including e-Pharmacy.
- **PCN Electronic Pharmacy Regulations, 2025:** This regulation recognised two categories of electronic pharmacy providers: electronic pharmaceutical services providers and electronic pharmacy aggregators. Irrespective of the category, in order to operate as an e-Pharmacy provider, all relevant regulatory requirements must be satisfied.
- **National Agency for Food and Drug Administration and Control (NAFDAC) Act, 2021 as amended:** This Act regulates e-Pharmacy by requiring registration of products, stipulating user-friendly online platforms, mandating policies against

dispensing based solely on online consultations, and setting guidelines for product labelling and advertising.

- **Nigeria Data Protection Act (NDPA), 2023:** This mandates e-Pharmacies to comply with data protection principles, including lawfulness, fairness, transparency, and security when processing sensitive health data.
- **ARCON Guidelines and CTA Adjustments:** The Advertising Regulatory Council of Nigeria (ARCON) placed restrictions on using direct calls-to-action (CTAs) in health-related social media posts. As a result, health-related posts with CTAs are flagged. Consistent flagging of the social media posts could lead to a ban/sanction on the social media account. In this case, a response could be to move CTAs into comment sections and reinforce them through direct social media story posts. This approach ensures compliance while continuing to guide audiences toward targeted services.



Other relevant laws are:

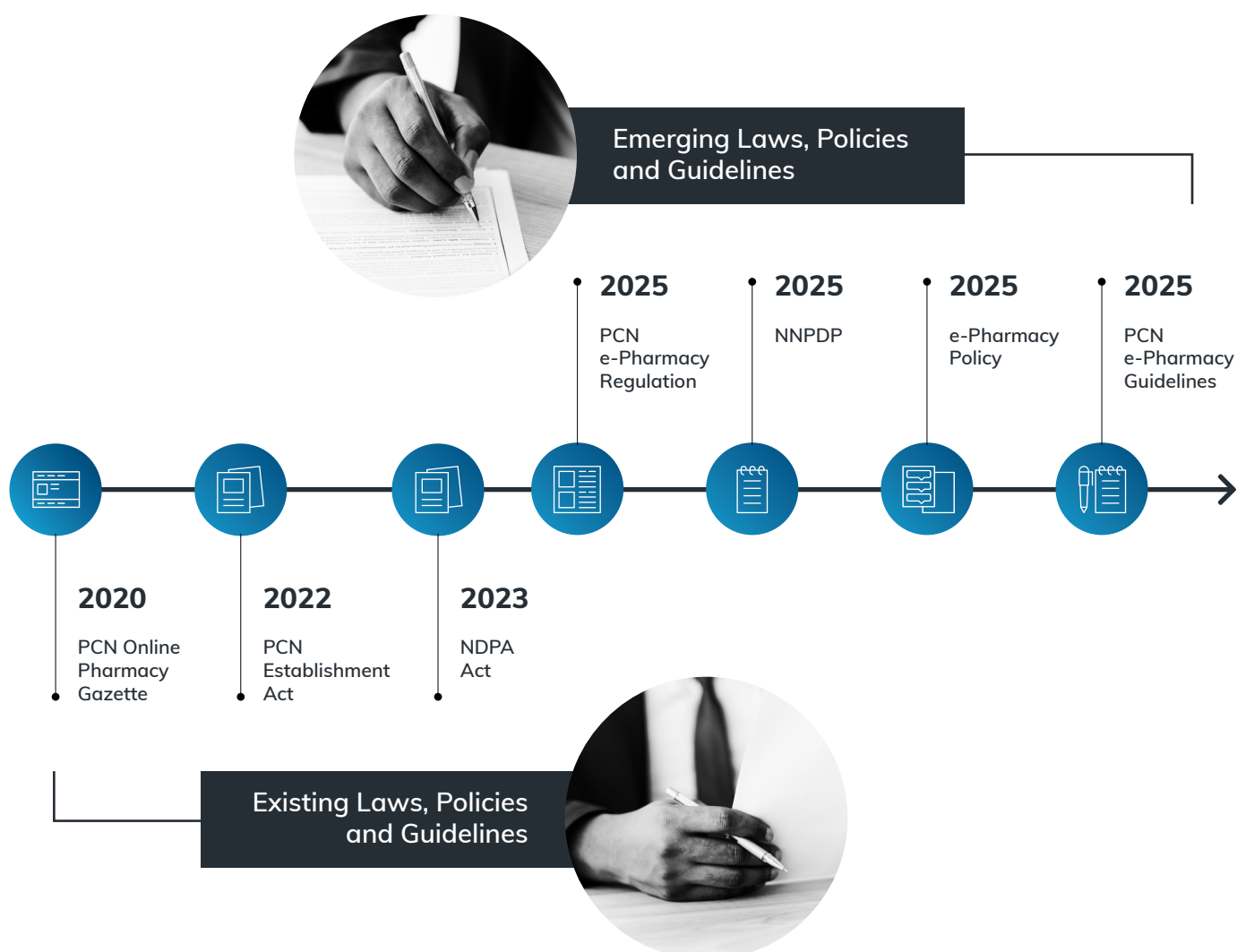
- Nigerian Communications Act (NCA) 2003
- Consumer Protection Framework by the Federal Competition and Consumer Protection Act (FCCPA), 2018
- National Digital Health Policy, 2021 – 2025
- National Information Technology and Development Act, 2007
- The National Task Shifting Task Sharing Policy 2022
- National Drug Policy (NDP), 2021

The emerging policies and guidelines to support e-Pharmacy regulation:

- The Nigeria National Prescription and Dispensing Policy (NNPDP)
- The National Electronic Pharmacy Policy
- The Electronic Pharmacy Guidelines

By aligning with these related laws, policies, and guidelines, the e-Pharmacy can effectively integrate into Nigeria's broader healthcare framework while adhering to global best practices.

Figure 1: e-Pharmacy Regulation Journey Map



GOOD PHARMACY PRACTICE FOR ELECTRONIC DISPENSING

All electronic pharmaceutical service providers are mandated to operate in line with Good Pharmacy Practices and other relevant regulations.

An electronic pharmaceutical service provider is required to have a process in place for verifying a client's identity before allowing them to purchase medications. This should include, but not be limited to, requesting a valid prescription, personal information verification (name, address, date of birth), national ID upload, and phone number verification to ensure the person is who they claim to be and is eligible to receive the medication.

However, controlled Medicines and Dangerous Drugs, as contained in the Dangerous Drugs Act D1, LFN, 2004, must not be sold online under any circumstances.

E-Pharmacies can advertise Over-the-Counter (OTC) medicines as approved by the National Agency for Food and Drug Administration and Control.

It is important to state that advertising of prescription-only medicines should not be displayed on the e-Pharmacy platform, as they are considered public advertising according to the NAFDAC Advertisement Regulation 2021¹³.

E-Pharmacy providers must have a feedback mechanism, report and monitor adverse drug reactions, a disclaimer, and restrict excessive orders of medicines.

To strengthen consumer protection, promote safe dispensing practices, and ensure public trust in digital health systems, electronic pharmacy platforms (e.g., website) should be user-friendly, transparent, and secure. In line with the e-Pharmacy guidelines, operators are required to ensure the following on their platforms¹⁴:

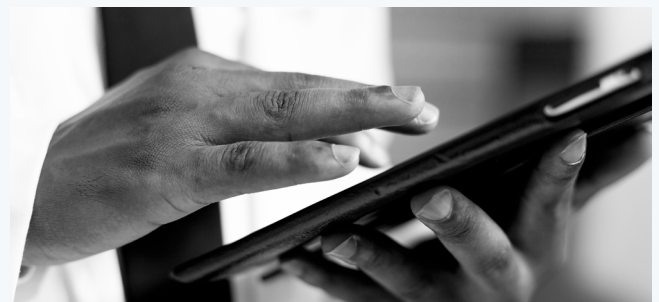


Image credit: DC Studio on Freepik

¹³ NAFDAC Advertisement Regulation 2021, https://www.nafdac.gov.ng/wp-content/uploads/Files/Resources/Regulations/REGULATIONS_2021/DRUG-AND-RELATED-PRODUCTS-ADVERTISEMENT-REGULATIONS-2021.pdf

¹⁴ Pharmaceutical Council of Nigeria Act (CAP P. LFN 2004) Online Pharmacy Regulations, 2020

**User Interaction and Support:**

Platforms should be interactive and easy to navigate, with clear mechanisms for users to access consultation and counselling services from licensed pharmacists or prescribers.

**Medication Information:**

Each platform should contain accurate, up-to-date information on medications, including indications, dosage, side effects, contraindications, and storage guidance.



Regulatory Identification: A unique emblem or digital certification provided by the relevant regulatory authority should be prominently displayed to confirm authenticity.



User Rights and Education: Users should be informed of their rights to seek clarification, consultation, and professional advice from authorised prescribers and pharmacists.

**Educational Support Materials:**

When dispensing family planning or self-administered medicines, platforms should provide relevant educational materials to guide safe and effective use.



Delivery Communication: There should be a reliable system for notifying users of any delays or challenges in delivering prescribed medications.

**Feedback and Safety Monitoring:**

Platforms should include a mechanism for users to report adverse drug reactions, medication errors, or quality concerns, supported by a structured recall process.

**Data Protection:**

Users should be guided on how to protect their personal and health-related data, with clear assurances of data confidentiality and compliance with privacy laws.

**Professional Access:**

Systems should allow users to contact licensed pharmacists or healthcare providers for timely inquiries and clarifications.

**Complaints and Feedback:**

A transparent channel for lodging complaints and providing feedback should be established to enhance accountability and service improvement.

**Prescription Safeguards:**

Appropriate mechanisms should be in place to detect and prevent requests for medicines that are clinically inappropriate or restricted.

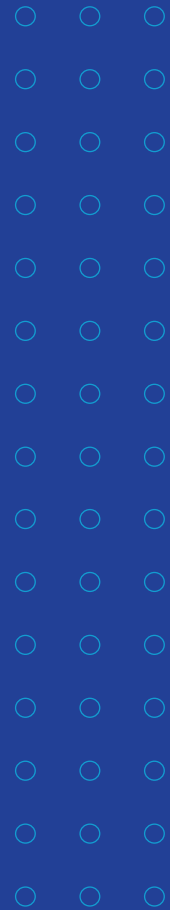


Secure Payments: Payment systems should be encrypted, traceable, and compliant with financial safety standards to protect users and ensure transaction integrity.

Part III

Demand-Side and Client Engagement

This section summarises insights from ePharma4FP mixed-methods research (2023 - 2024) on how users access and experience digital family-planning services. Centred on women of reproductive age and drawing from evidence on underserved populations, it highlights behavioural and contextual factors influencing uptake and guides strategies for equitable, youth-friendly, and trustworthy e-Pharmacy engagement.



UNDERSTANDING AND REACHING CLIENTS VIA E-PHARMACIES

Segmentation — Market Sizing for e-Pharmacy Overview

Market segmentation is an approach used to categorize a heterogeneous population into distinct, meaningful subgroups using their behavioral and demographic characteristics. Demographic indices such as age group, education, income, and behavioral characteristics like intention, preference, and actions are some of the indices used for segmentation.

Essentially, segmentation helps us to move from “one-size-fits-all” to precision public health strategies, enabling better alignment of interventions with the specific behaviors, motivations, and barriers within target groups. e-Pharmacies, and other digital health providers can use segmentation to:

- I Identify viable customer segments most likely to adopt e-Pharmacy or telemedicine services.
- II Inform location-specific marketing and service delivery strategies based on digital readiness and behavioral openness.
- III De-risk market entry and pivot strategies using data on user preferences, price sensitivity, and digital access barriers.

For example, segmentation can reveal the spread, size, and readiness of the digitally literate, contraception-seeking profiles to guide program managers and implementers for targeted service delivery, application interface design, and digital outreach campaigns.

When health services are designed based on actual behavioral and attitudinal profiles, they are more likely to be used consistently, and foster greater satisfaction and trust in digital

health systems. Ultimately, segmentation promotes data-driven inclusion, improves health equity, and accelerates digital transformation.

In this context, the project's segmentation study sought to understand and classify women of reproductive age in Lagos State by their readiness and willingness to access healthcare, particularly family planning, via digital channels.

By understanding who is ready (and who is not), segmentation allows relevant stakeholders to develop inclusive digital solutions for improved access and equity.

Integrating behavioral, sociodemographic, and economic data provides robust insights for:

- Estimating market size to understand adoption patterns for digital health platforms.
- Mapping demand clusters across geographic and socioeconomic spectra.
- Designing tailored, evidence-based interventions for improved engagement and adoption.
- Prioritizing investment and programming decisions for digital health innovations.

In Nigeria, the emerging e-Pharmacy landscape presents a promising but uneven opportunity across different user segments. Insights from segmentation studies in Lagos show four main behavioral personas showing distinct levels of awareness, motivation, and capacity to adopt digital FP services:



The Ready Adopter: She's a young, digitally savvy woman who regularly browses health information and is comfortable navigating online platforms. Already familiar with e-Pharmacies and confident in online shopping, she is motivated to take charge of her reproductive health but occasionally seeks reassurance when making decisions. With strong internet access, a smartphone in hand, and the financial means to afford care, she is well-positioned to embrace digital family planning solutions. This group is mostly aged 25–34, they make up 14% of the female population in Lagos. They are highly educated, and concentrated in urban centers like Shomolu, Lagos Island, and Ifako Ijaye.



Able but Unmotivated: She's financially stable, well-educated, and constantly connected, spending time online daily with a smartphone always within reach. Despite having the means and access to explore digital family planning services, she doesn't feel an urgent need. Family planning isn't a priority for her, and she rarely seeks out related information. While many in this group find FP affordable and have the tools to engage digitally, low perceived risk and minimal motivation keep them disengaged. Representing about 18% of the population, this group is largely based in areas like Alimosho, Surulere, and Agege.

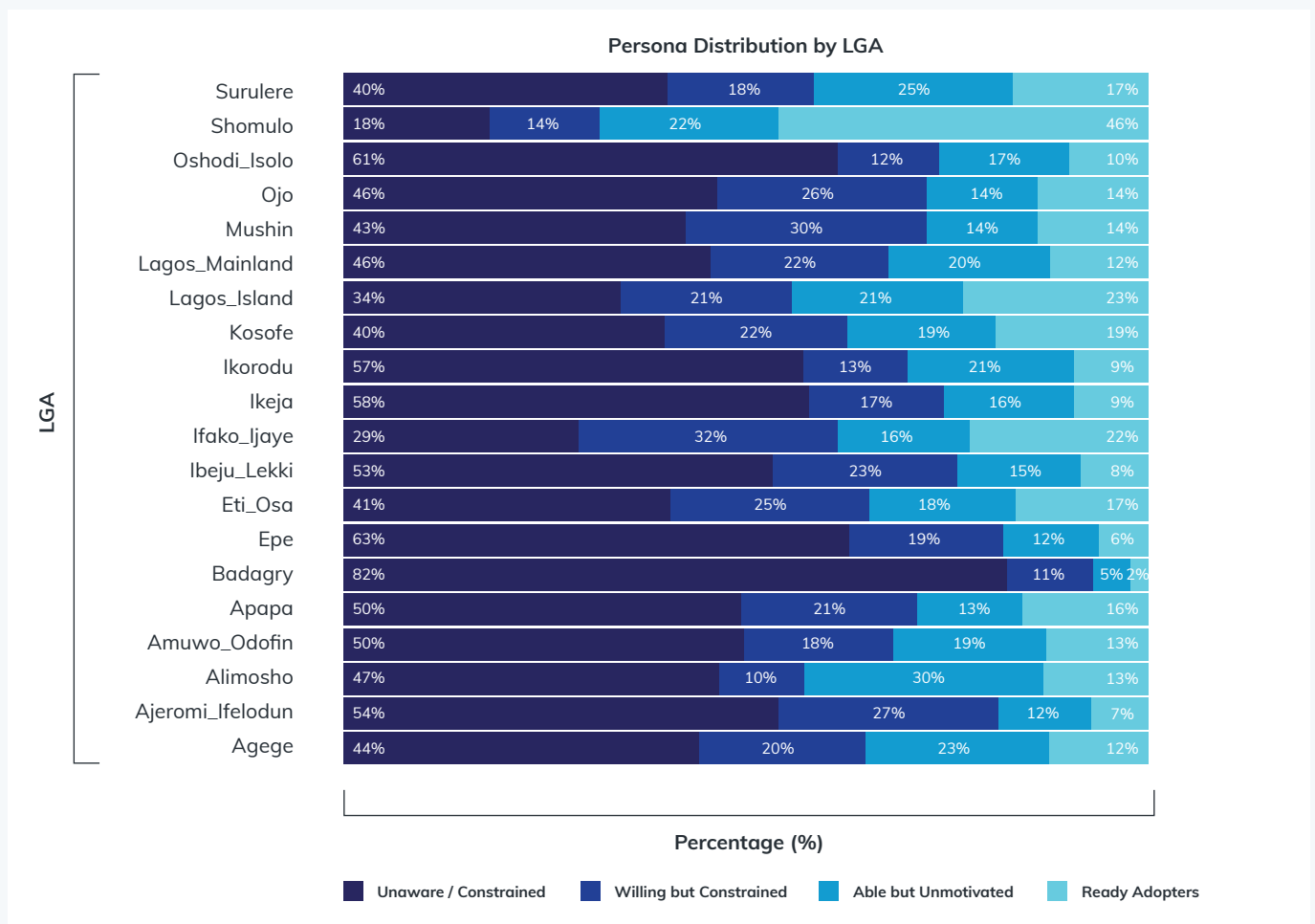


The Willing but Constrained: She strongly wants to avoid unintended pregnancy and is motivated to use family planning, yet financial limitations, inconsistent internet access, and limited decision-making power often hold her back. While curious and open to e-Pharmacy options, confusion about affordability and household pressures create barriers between her intentions and reality. This group, making up about 20% of the female population, tends to be younger, with modest income levels, variable digital access, and concentrated in areas like Ifako Ijaye, Mushin, and Ajeromi-Ifelodun in Lagos.



Unaware or Constrained: This group lives with limited resources and lower awareness of family planning and digital health options, making it difficult for them to see FP as relevant. Most have little exposure to e-Pharmacies or digital health services, and many express low intent to use FP. With modest income, less education, and limited digital access, family planning often feels out of reach. This largest segment, nearly half of the female population, is predominantly older, less educated, and concentrated in areas such as Badagry, Epe, and Oshodi Isolo.

Figure 2: Geographical Opportunities in Lagos, Nigeria



UNDERSTANDING KEY USER GROUPS AND ACCESS PATTERNS

Youth

Young people aged 18 to 24, show strong interest in using e-Pharmacies for family planning because they value privacy and convenience, though they are very price-sensitive. For them, discreet services, peer-driven digital campaigns, and simple ordering processes can boost use. In contrast, people of all ages in peri-urban or lower-income urban areas like Badagry and Epe are less familiar with e-Pharmacies and rely more on local chemists or clinics.

They represent the biggest opportunity for conversion, but affordability, trust, and guided onboarding are key barriers to address.

Low-Income Communities

Another sub-population of interest are individuals with lower socioeconomic indices characterized by their geographic location, access to health services, electricity, income, and educational attainment.

This group can be further divided into nuanced behavioral clusters such as Cost-Conscious, Conservative Traditionalists, Skeptic Adopters, Traditional Loyalists, and Gen-Z Digital Enthusiasts. Together, these segments reveal a diverse market where motivations differ: cost and value drive some users, while privacy, trust, and partner approval shape others.

In summary, the e-Pharmacy market for family planning in Nigeria is stratified but full of potential. Roughly one in three women are either ready or willing to use digital FP channels, while the remainder require tailored support to build awareness, trust, and capability.



Youth and digital-enthusiastic users are early adopters; peri-urban and cost-conscious women represent the growth frontier; and men remain an untapped segment for joint decision-making and FP support.

KEY ENABLERS AND BARRIERS TO UPTAKE OF E-PHARMACY FOR FAMILY PLANNING

Enablers

Several structural and behavioral factors make e-Pharmacies strong access points for essential healthcare. With solid digital infrastructure, growing user readiness, and shifting social norms, there is a strong base for inclusive and scalable e-Pharmacy platforms. Harnessing these opportunities could speed up adoption among ready users while closing access gaps in underserved groups.

1 Digital Infrastructure and Connectivity

There is strong digital access across population groups, providing a solid base for e-Pharmacy growth. About 80% of people own smartphones, and 64% use the internet daily, rising to 90% among more tech-savvy users. About 20% of the population can readily adopt e-Pharmacy due to their strong digital literacy, access, and immediate willingness to use it. Even among lower-income or less-informed groups, over 75% have smartphones, suggesting widespread digital access and connectivity.



90%



among more tech-savvy users of smartphones

2 Existing Willingness to Explore Digital Health Platforms

Currently the majority of people access health services from traditional channels. From our findings we see a clear latent demand for e-Pharmacy across segments, notably, 4 in 10 persons say they are 'very likely' to use e-Pharmacy for FP over physical pharmacies, signaling openness to digital channels. This willingness provides an opportunity for demand generation campaigns that frame e-Pharmacy as a solution to real, felt needs.

3 Value Propositions Driving Trust and Uptake

Several factors influence e-Pharmacy preference, with privacy, convenience, and cost emerging as the primary trust drivers. Privacy and discretion rank as the top motivator, among high ability and digitally connected individuals, addressing stigma and confidentiality concerns that might otherwise deter users from accessing care needs like FP through traditional channels where they may encounter judgment or exposure. Convenience and time-saving are particularly valued by high-income and informed individuals, reflecting lifestyle alignment for busy professionals who prioritize efficiency and avoid the time costs of physical pharmacy visits.

Quality assurance emerged as important for constrained and less-connected groups, indicating that trust-building through verified products, certified e-Pharmacy platforms, and adequate product information, might address hesitations among skeptical users. Delivery fee tolerance is similar across segments and although they are all willing to pay some amount, the average person is willing to pay between 1000–3500 NGN. Higher income levels are more tolerant to delivery costs across segments, while lower income groups demonstrate price sensitivity.

4 Awareness and Prior Exposure

Foundation-level awareness of digital health services that exists creates a baseline for scaling. Overall, about a quarter of the population in Lagos state are aware of digital health services and only 15% have general e-Pharmacy awareness. About 6% have ordered products online, demonstrating potential comfortability and prior positive experience with e-commerce that can transfer to e-Pharmacy contexts. This existing user base serves as a natural starting point for platform growth for e-Pharmacy marketing and conversion into active users.

15%

have general e-Pharmacy awareness

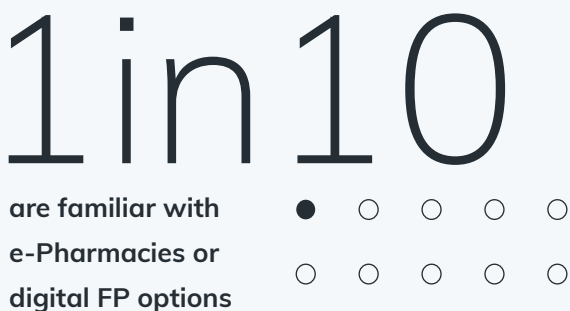


Barriers

Despite the growing potential of e-Pharmacy as a digital channel for expanding access to Family Planning (FP) services, several persistent behavioral and structural barriers continue to limit uptake. These barriers, rooted in stigma, partner dynamics, cost sensitivity, and digital literacy gaps, shape how users perceive, access, and sustain engagement with e-Pharmacy platforms. Addressing them is critical for achieving inclusive, equitable, and scalable digital FP service delivery in Nigeria.

1 Awareness

Awareness of digital health solutions remains limited among both Family Planning (FP) and non-FP users, hindering wider adoption of e-Pharmacy platforms. While nearly 1 in 4 people (24%) are aware of digital health services in general, only about one in seven know of e-Pharmacy services, and a mere 1 in 10 are familiar with e-Pharmacies or digital FP options. This low level of awareness highlights the need for comprehensive education and outreach efforts particularly through trusted healthcare providers and platforms to improve understanding and confidence in digital health channels.



2 Digital Literacy and Technology Gaps

Limited digital literacy remains one of the most pervasive barriers to e-Pharmacy use, particularly among underserved and older populations. While smartphone ownership is increasing, comfort with online navigation, digital payments, and chat-based consultations is still low. Users often struggle to locate FP products on platforms, differentiate between chatbots and real pharmacists, or interpret health information written in technical language. The equity model pilots demonstrated that low-tech alternatives such as IVR (Interactive Voice Response) and USSD platforms are effective in bridging these gaps by offering voice or text-based navigation that does not require data or advanced literacy. Scaling such inclusive digital pathways, combined with user onboarding support at community pharmacies and training for pharmacists in digital communication, could be key to enabling more people access e-Pharmacy.

3 Data Protection and Safety Concerns

Many respondents across the qualitative and quantitative studies conducted expressed concerns about digital traceability, and data leakages contributing to reluctance, even when the platform promises discretion and convenience. Skeptic adopters may hesitate to seek counselling or ask sensitive questions via chat, due to information breach concerns that affect adoption and continued usage of e-Pharmacy. These findings underscore the importance of protection-by-design features

such as displayed adherence to protection regulations, end-to-end encrypted counselling channels, and discreet packaging.

4 Cost and Affordability Constraints

Both perceived and actual costs, such as product prices, delivery fees, and unclear payment processes, remain major barriers for low-income and peri-urban users. While e-Pharmacy services attract clients who prioritize convenience, privacy, and time savings, cost-sensitive users often prefer physical pharmacies to avoid extra expenses like delivery charges. Ensuring transparent pricing, affordable delivery options, and flexible payment methods is essential to make e-Pharmacy services more accessible and equitable.

5 Partner Dynamics and Gender Power Relations within Digital FP Access

Intra-household decision-making remains a central influence on FP behavior. Many women, especially within married or cohabiting relationships, described limited autonomy in reproductive decision-making due to partner disapproval or control over household finances. Even where interest in FP was high, partner opposition or mistrust of digital services prevented women from completing e-Pharmacy transactions. To overcome these dynamics, digital FP platforms should include couple awareness campaigns, joint decision tools, and male-targeted FP education. These can help reposition e-Pharmacy as a family health service, strengthening both trust and shared accountability.

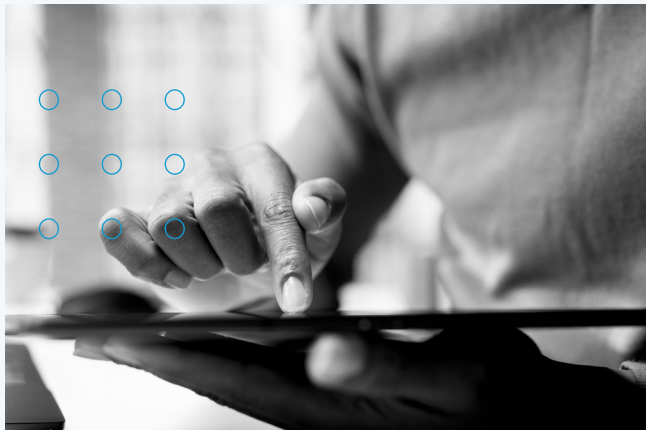
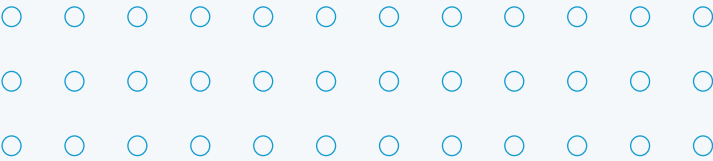


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EQUITY MODELS FOR LESS CONNECTED AND INFORMED COMMUNITIES

The e-Pharmacy equity models were designed to close the accessibility gap for women and communities who are digitally excluded or economically constrained. Insights from the segmentation study showed that nearly half of women of reproductive age in Lagos, grouped as constrained individuals, face significant barriers to using digital family planning (FP) services.

These barriers include low internet access, limited smartphone ownership, poor digital literacy, and low affordability awareness.

To address these challenges, the project developed and tested low-bandwidth models including Interactive Voice Response (IVR) and Unstructured Supplementary Service Data (USSD) as inclusive entry points for underserved users.

Both models were field-tested to assess usability, accessibility, and trust. The IVR channel, a voice-based system, allowed users to listen, navigate, and order FP products using simple prompts, making it particularly suitable for individuals with limited literacy or no internet access. The USSD channel, a text-based shortcode service, enabled users to browse FP options and place orders

without needing data connectivity, offering a familiar format for those who already use mobile banking or airtime services. Together, these platforms were designed to extend e-Pharmacy access beyond smartphone and broadband users, especially in peri-urban and rural communities.

Results from usability and field testing demonstrated high acceptance across both channels. Over 80% of users successfully found the FP information they needed, and completion rates reached 100% for IVR and 96% for USSD transactions. Users rated both models as easy to use, with USSD scoring higher on “very easy” navigation, while IVR users appreciated its guided, conversational interface. Privacy and discretion, which are important concerns for FP, were reported at exceptionally high confidence levels (96% across both models). Users also expressed strong willingness to reuse the platforms, indicating trust and satisfaction with the experience.

80% 

of users successfully found the FP information they needed

The quantitative study also showed that the models performed well in facilitating actual purchases: monthly pills were the most frequently bought product, followed by implants and injectables. Technical and process challenges such as intermittent network connectivity, occasional queue duplications, and payment verification delays were noted but did not significantly disrupt service completion. These findings confirm the viability of both IVR and USSD as scalable, equity-driven delivery channels for FP services in low-connectivity settings.

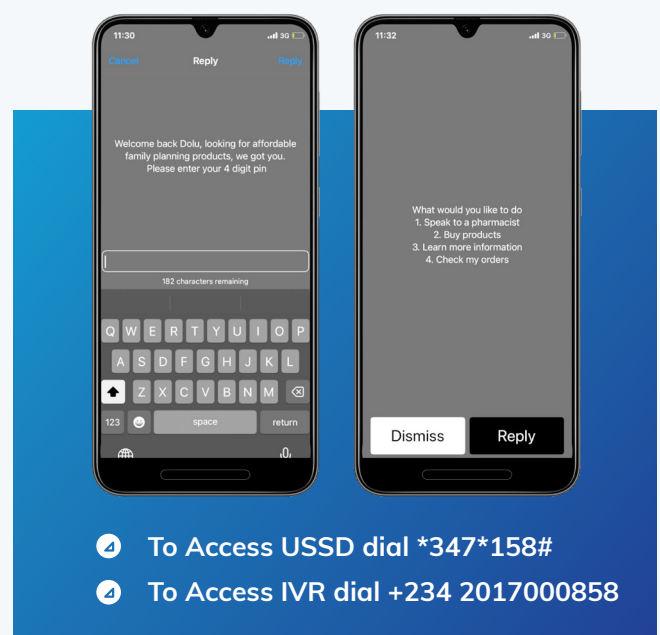
Overall, the equity models demonstrate that voice- and text-based e-Pharmacy solutions can meaningfully bridge the digital divide for underserved populations.

By enabling product access without the internet, supporting privacy, and simplifying navigation, IVR and USSD platforms extend digital inclusion to women who are typically left behind by app-based or web-based services.

As the next step, optimizing these systems for low-latency environments, and integrating end-to-end payment options within the platforms will strengthen their potential to reach millions of less connected users and advance equitable access to family planning across Nigeria.

Exploring the Viability of Equity Models Channels (USSD and IVR)

The viability of equity model channels such as USSD and IVR depend on user adoption, affordability, and ease of interaction. Initial engagement levels with 36 users indicate steady uptake across both males and females, with younger and middle-aged adults forming the core user group. Preliminary deployment showed the USSD platform may hold greater commercial promise due to higher uptake while the IVR model has shown slow uptake. This could be due to user preferences for visual, menu-based navigation or gaps in language personalization and awareness. These early results indicate moderate engagement and potential for scale through the USSD channel, particularly among younger women.



SAFEGUARDING AND YOUNG ADULT-FRIENDLY SERVICES (AGES 18–24)

Across the ePharma4FP research program, safeguarding and youth-friendly service delivery consistently emerged as critical to equitable digital access to Family Planning (FP) in Nigeria. Evidence from youth, and mixed-population studies shows that younger women, especially those aged 18–24, face unique risks of exclusion, stigma, and misinformation when attempting to access FP digitally.

Safeguarding within the e-Pharmacy and telemedicine ecosystem therefore extends beyond safe service delivery to include data protection, emotional wellbeing, informed choice, and confidentiality throughout the digital user journey.

A Safeguarding and Trust in Digital FP Platforms

Young users frequently described apprehension about sharing personal details online or being identified as FP seekers. Concerns ranged from data misuse and unverified online actors to fear of social judgment if family or peers discovered their FP transactions. The Behavioral Audit and Tech Enhancement Evaluation identified weak visibility of privacy assurances, limited display of professional credentials, and non-

standardized consent prompts during sign-up or consultation as key safeguarding gaps. Strengthening platform-level safeguards, such as explicit consent for data use, visible pharmacist verification, secure chat encryption, and discreet packaging, was found essential for building trust among adolescent and first-time users. In the less- connected and informed communities, privacy ranked as the top motivator for adopting digital FP services, demonstrating that robust safeguarding measures can directly drive uptake.

B Youth-Friendly Service Experience

Segmentation analysis revealed that digitally active youth, with smartphones and socially connected, represent a high-potential but vulnerable group. While 79% of younger respondents expressed willingness to use e-Pharmacy for FP, qualitative data show that judgmental attitudes, fear of being “found out,” and inadequate counselling discourage them from completing purchases.

79% 

of younger respondents expressed willingness to use e-Pharmacy for FP

Youth participants in the Lab-in-the-Field experiment favored platforms like WhatsApp and IVR because these felt conversational, and anonymous. Features such as language simplicity, voice guidance, relatable messaging, and empathetic tone were key elements of what participants described as “comfortable” or “friendly” experiences. Conversely, complex interfaces, medicalized language, and lack of guidance during payment or ordering were seen as intimidating.

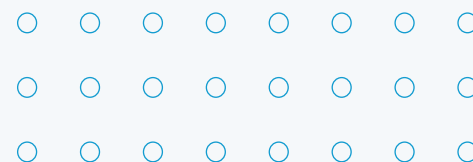
C Safe Counselling, Consent, and After-Use Support

Across studies, adolescents and first-time FP users expressed a strong need for safe, judgment-free counselling that includes information on side effects, reversibility, and protection against coercion^{15,16}. However, gaps were observed: e-pharmacist chat delays, inconsistent counselling quality, and the absence of age-appropriate follow-up. Equity model testing (IVR/USSD) demonstrated that voice-based systems can serve as safer entry points for youth and low-literacy users, offering private counselling without digital exposure. Post-purchase follow-up, through SMS or confidential call-backs, was identified as an effective safeguarding tool, allowing users to report adverse effects or clarify instructions without embarrassment.

D Policy and Programmatic Implications

Embedding safeguarding and youth-friendliness into digital FP ecosystems requires institutionalizing minimum standards: verifiable provider identity, secure data management, confidential packaging and delivery, clear consent protocols, and inclusive language across all user interfaces. Youths should be able to access information and services without fear, coercion, or discrimination. Integrating human support, through trained e-pharmacists, youth peer navigators, or helplines, can complement automated systems and ensure that ethical and emotional safety are maintained. Finally, designing digital platforms with a “do-no-harm” lens, anticipating privacy, psychological, and gender-based vulnerabilities, will ensure that e-Pharmacy innovations expand, rather than endanger, adolescent and youth reproductive autonomy.

Although this research did not include adolescents under 18, FP programs should ensure age-appropriate counselling and guardian-supported access for adolescents, except for emancipated/married minors.



15 Hoopes AJ, Gilmore K, Cady J, Akers AY, Ahrens KR. A Qualitative Study of Factors That Influence Contraceptive Choice among Adolescent School-Based Health Center Patients. *J Pediatr Adolesc Gynecol*. 2016 Jun;29(3):259-64. doi: 10.1016/j.jpag.2015.09.011. Epub 2015 Oct 23. PMID: 26477942; PMCID: PMC4934126.

16 Brittain AW, Loyola Briceno AC, Pazol K, Zapata LB, Decker E, Rollison JM, Malcolm NM, Romero LM, Koumans EH. Youth-Friendly Family Planning Services for Young People: A Systematic Review Update. *Am J Prev Med*. 2018 Nov;55(5):725-735. doi: 10.1016/j.amepre.2018.06.010. PMID: 30342635; PMCID: PMC6707512.

DIGITAL MARKETING AND SERVICE EXPERIENCE

Demand Generation Strategies

Demand generation refers to strategic communication and engagement efforts designed to increase awareness, interest, trust, and acceptance of a product or service. It focuses on educating audiences, shaping perceptions, and motivating positive action, ultimately encouraging people to seek information, engage, or make use of available services. Digital Strategies used to build visibility, engagement, and drive conversions are;



Social Media Campaigns: This primary multi-platform approach uses social media channels in a variety of formats, including educational infographics, carousel posts, reels, short-form videos, and live sessions to simplify information, encourage interaction, and foster trust to empower individuals to make informed decisions.



Influencer Marketing: This approach involves using credible and relatable voices to shape perception, build trust, and foster engagement. It

relies on people who already have the attention of specific audiences to deliver messages in ways that feel authentic, personal, and impactful. Both macro and micro influencers can be used to ensure a balance of authenticity and reach.



Macro influencer collaboration:

The ePharma4FP project partnered with macro influencers to increase awareness and uptake of family planning products. The collaboration involved engaging trusted influencers whose posts were published across social media platforms, including TikTok, X (Twitter), Facebook, and LinkedIn, to ensure broader visibility and engagement. With macro influencers, reach and engagements are typically high, however these may not necessarily translate to high direct sales conversions. Micro influencers whose audiences are more niche and engagement-driven can be leveraged to further sustain the interest and momentum generated from the macro influencer activity.



Blog Posts and Email Newsletters:

These channels complement each other in keeping the audience informed and engaged beyond social

media. The blog features useful stories, health tips, and product insights tailored to young adults, particularly women seeking credible and relatable health information, while the email newsletters deliver these updates directly to subscribers each week.



Trained Field Agents: These agents act as influencers or information carriers within a community that play a key role in product uptake by raising awareness and driving adoption through direct interactions like word of mouth. They can be early adopters sharing their positive experiences, mobilizing clients for product uptake thereby building trust and facilitating a deeper understanding of the product.

Demand generation should be designed to stay fully compliant with the National advertising regulations and guidelines. Effective demand generation would require a multi-channel approach that accommodates change in line with regulatory requirements.

Ensuring compliance with the National advertising laws (NAFDAC, ARCON) for Over-the-Counter medicines (OTCs), family planning, and other POMs is central to demand generation for an e-Pharmacy. Several regulatory guidelines pose constraints to e-Pharmacy advertising activities, especially for sensitive health needs like family planning, which requires adaptation and strategic shifts.

Content Compliance and Creative Approach

On social media, direct images of sensitive and prescription-only products, such as modern contraceptive products, are not permitted. Hence, while crafting content, these have to be avoided and excluded from infographics or videos. Sharing information creatively through captions and story links keeps content compliant and engaging.

Advertising Platform Restrictions and Strategy Adaptation

Certain advertising platforms, such as Google Ads, have strict keyword policies that pose significant challenges around sensitive health topics. For health needs like family planning, keywords like “birth control”, “contraceptives”, and “implant” trigger restrictions. Continued flagging of these keywords could lead to a ban from the advertising platform and would require a rigorous account re-verification process, which could last several months, severely limiting the ability to run campaigns successfully on the platform.

“birth control”

“contraceptives”

“implant”

Keywords like these trigger restrictions

Alternatively, Meta Ads provide flexible advertising without strict keyword limitation. On Meta, several objectives can be applied depending on the communication goals:

- **Traffic:** Used to direct users to the FP landing page and measure interest.
- **Engagement:** Encourages interactions with content (likes, comments, shares), supporting broader awareness and public discussion.
- **Messages:** Enables direct contact through WhatsApp, Messenger, or Instagram Direct, allowing users to make enquiries or request assistance.

Meta Ads also provided integrated access to Facebook, Instagram and WhatsApp, supporting broader audience reach while maintaining compliance with platform policies. This approach can contribute to more consistent visibility and improved overall campaign performance.

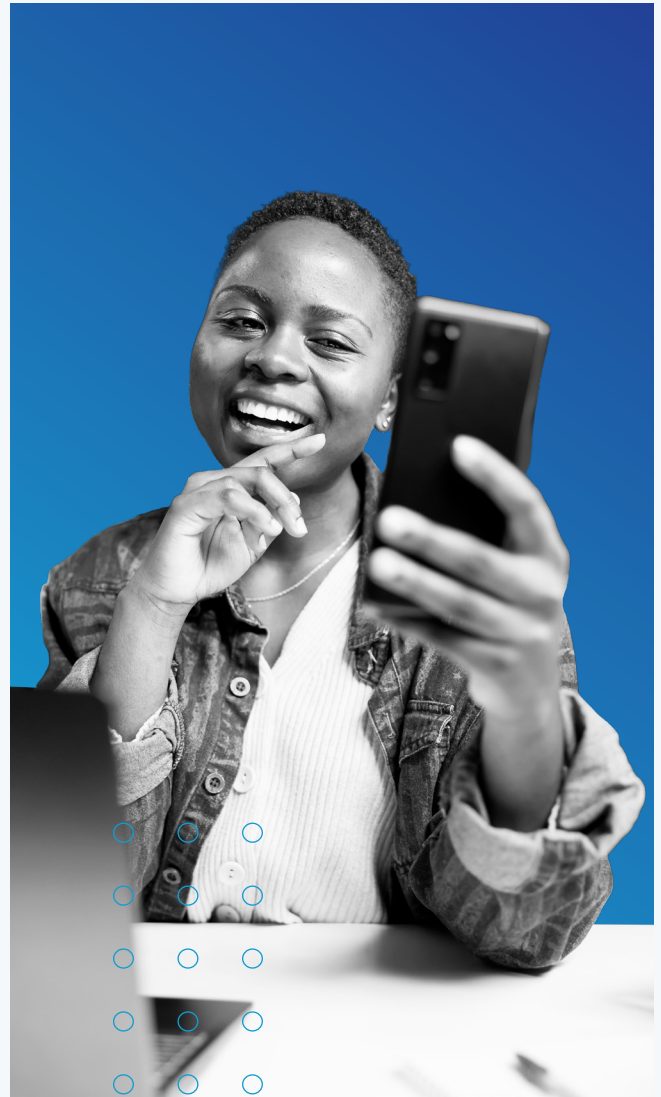


Image credit: DCStudio on Freepik

USER EXPERIENCE AND CLIENT SUPPORT: PRIVACY, COUNSELLING, AND POST-SALES SUPPORT

Ideal User Journey on an e-Pharmacy

The e-Pharmacy platform has the potential to deliver a seamless and trusted experience for clients, primarily combining personalised pharmacist-led support and digital convenience. The platform should efficiently facilitate product discovery, prescription validation, multi-channel payment, and delivery services while integrating teleconsultation services for adequate support.

A seamless client experience is anchored around four core pillars:

- **Platform Navigation:** ensuring a frictionless journey from discovery to checkout.
- **Balanced Counselling and Integrated Support:** enabling informed and guided product use through pharmacist-assisted decision-making.

- **Privacy, Confidentiality and Trust:** providing clients with confidential guidance on sensitive products and services without stigma and ensuring discreet communication and packaging.
- **Post-Sales Care and Continuous Improvement:** building loyalty through follow-ups, providing feedback channels, responsive issue resolution, and continuous service enhancements based on feedback.

Together, these elements transform digital health delivery into trust-based relationships, improving product uptake, client satisfaction, and overall service credibility.

The epharma4FP project tested several technical enhancements on the e-Pharmacy platform towards optimizing client/user experience. These enhancements were assessed to evaluate their impacts. The results revealed significant increase in traffic, engagement, growth in customer base, and high satisfaction rating of the platform and alternative support features.

Figure 3: Ideal User Journey on an e-Pharmacy



Part IV

Supply-Side
Architecture



PROVIDER CHALLENGES AND CAPACITY-STRENGTHENING NEEDS

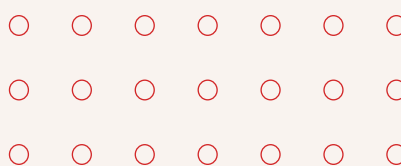
Electronic pharmacy (e-Pharmacy) is emerging as a transformative innovation in pharmaceutical service delivery, offering broader access and convenience through digital platforms. However, the full potential of e-Pharmacy in Nigeria remains largely untapped and underutilized.

The current operational landscape, characterized by largely unregulated market conditions, impacts client trust and confidence while constraining acceptance and growth particularly among existing and potential market players (Stakeholders). This situation presents both a challenge and an opportunity for policymakers, regulatory authorities, and relevant stakeholders to create an enabling environment and establish supportive conditions for the practice of e-Pharmacy practice.

The challenges confronting e-Pharmacy providers represent both barriers and learning opportunities.

Addressing them strategically can provide a roadmap for new market players to operate ethically and efficiently, thereby expanding access to quality primary health services and medicines.

The e-Pharmacy ecosystem for family planning in Nigeria is fraught with several provider-side constraints: that affect effective service delivery and user experience. Foremost issues include inadequate prescription upload and validation, long wait time, and unstable network connectivity. Users frequently encounter delays before being connected to an e-pharmacist (long wait time), unclear distinction between human and automated responses, and generic or unsatisfactory responses to queries. These challenges reflect broader systemic limitations in human resources and technological capacity. In addition, the presence of multiple, poorly integrated support channels created confusion and service drop-offs, with some partner platforms non-functional at the time of the assessment. These problems together underscore the broader operational barriers faced by providers, including system fragmentation, insufficient staffing, and lack of streamlined communication channels.



To strengthen the delivery of comprehensive, user-centered family planning services via e-Pharmacy platforms, several strategic enhancements are recommended. First, integrating seamless referral mechanisms to licensed healthcare providers can enable users to easily obtain digital prescriptions for products requiring them, such as implants. Providing clear, accessible information on product use, side effects, and benefits empowers users to make informed decisions. Displaying the qualifications and verified identities of e-pharmacists can build trust and enhance the perceived professionalism of services. Additionally, robust data systems and user feedback loops should be implemented to monitor satisfaction and continuously improve service quality.

Strengthening delivery infrastructure and offering real-time tracking features will further support timely access to essential family planning products. Collectively, these measures can elevate the effectiveness, trust, and reach of e-Pharmacy platforms in advancing equitable access to family planning. Strengthening provider competence and institutional readiness creates the foundation for reliable distribution systems, as effective service delivery begins with well-trained and digitally equipped pharmacists supported by a clear operational framework.



Image credit: Freepik.com

LOGISTICS AND LAST-MILE DELIVERY (INCLUDING DISCREET PACKAGING)

The success of e-Pharmacy in Nigeria depends on building a secure, efficient, and compliant supply-side ecosystem that balances technological innovation with regulatory oversight and user trust.

Designing an effective supply-side architecture requires aligning digital innovation with traditional supply-chain principles while adapting to Nigeria's infrastructural realities such as inconsistent power supply, poor road networks, and regulatory enforcement. These contextual challenges influence the timeliness, reliability and discretion of product delivery - key factors in shaping user confidence and sustained uptake.

To ensure efficiency, automated inventory management systems are preferable to manual management systems and should be integrated to track stock levels, prevent expiries, and flag suspicious procurement patterns.

Strengthening logistics and distribution infrastructure, including partnerships with third party logistics companies, can reduce the operational burden on e-Pharmacy

providers and make last-mile delivery easier and more cost-effective. Digital integration between e-Pharmacy platforms and logistics partners will further enable route optimization, customer updates and transparent tracking.

Innovative models such as in-store pick-up options and product bundling are novel ways to reduce logistics cost. Maintaining temperature control during transit, secure handover mechanisms through proof of delivery, such as digital signatures or QR-based confirmation to maintain the chain of custody, as well as discreet packaging for sensitive products are recommended.

Packaging drugs discreetly before delivery is critical, particularly for sensitive products. It protects client privacy, enhances trust, and encourages continued uptake of reproductive health products, especially in conservative communities where stigma or embarrassment may discourage open purchase.

TECHNOLOGY INFRASTRUCTURE AND OPERATIONS FOR ELECTRONIC SERVICE DELIVERY

Platform requirements (catalogue management, e-prescriptions, payment integration)

E-Pharmacy platforms rely on integrated digital ecosystems that merge health service delivery with e-commerce functionality. The platform combines pharmaceutical service delivery with customer-centric digital experiences, offering discreet, informed, and accessible healthcare support. Various technology architectures could be adopted, such as Custom-built platforms or e-commerce content management systems like Shopify, WooCommerce, or Magento. Though costs vary across these systems, the

focus remains on building a secure, scalable, and user-friendly platform that integrates pharmaceutical expertise with customer-centric experiences.

Core Functional Components of the e-Pharmacy Platform



Catalogue Management: Catalogue management forms the operational backbone of any e-commerce or e-Pharmacy platform. These platforms can be designed to easily manage accurate product categorization and real-time stock visibility. Regular synchronization with in-store inventory guarantees that customers always view available products across all categories.



Pharmacy Services and Support:

This service layer ensures continuous interaction throughout the client journey, from product inquiry to post-sales follow-up. The e-Pharmacy platform can incorporate a third-party e-consultation (chat, voice, video, e.t.c.) service, to provide real-time pharmacist interaction, personalized counselling, and AI-assisted self-service during off-peak hours.



Prescription Services: Providing a prescription management service is a crucial regulatory requirement for prescription-only medications including FP products. An e-Pharmacy system should be designed to incorporate prescription uploads and validation systems.



Payment and Delivery: Secure and flexible payment processing is critical for e-Pharmacy success. The e-Pharmacy platform should support multiple secure payment channels, including payment gateways and manual bank transfers, providing payment options to customers. Fulfilment and logistics should be coordinated through partnerships with the e-Pharmacy's fulfillment team and reliable courier services, offering order tracking and appropriate packaging for all products.

While Software-as-a-Service (SaaS) applications for e-commerce content management provide robust infrastructure, recurring costs for premium features and the need for third-party app developers present operational challenges. Nevertheless, key opportunities exist in leveraging a proven, scalable platform that can evolve gradually as demand increases, ensuring both sustainability and continuous improvement.

Together, these innovations reflect a strong commitment to equitable digital transformation in healthcare. By combining the convenience of e-commerce with inclusive communication tools, the e-Pharmacy model not only scales access but also demonstrates how technology can bridge critical health service gaps, increasing health access for individuals who are often underserved by traditional health systems.



CUSTOMER SUPPORT AND ORDER MANAGEMENT

Customer support and order management are integral to ensuring the reliability and sustainability of e-Pharmacy platforms. These processes directly influence how efficiently clients access and use the services, as well as their likelihood to re-order, which is an important signal of sustainability.

Properly managing these processes is therefore essential to delivering optimal services.

Multiple channels can be used to deliver personalized support, including a customer engagement platform and WhatsApp. This allows users to choose the platform most convenient to them.

Effective support systems should be responsive, accessible and private.

To manage and improve service delivery, an incident form/ CRM is needed to log customer queries and complaints. This will ensure timely resolution and allow the team to identify recurring issues and implement preventive improvements.

The order management workflow should be designed to be intuitive and user-friendly, enhancing the overall client experience. The digital workflow should follow a clear and familiar sequence. This enables clients, especially repeat clients, to complete transactions independently without requiring additional support.



KEY PERFORMANCE INDICATORS ANALYTICS

Effective analytics systems are key to the success of any e-Pharmacy. They provide visibility across inventory, sales, customer engagement, and service delivery, enabling data-driven decisions that enhance both operational efficiency and user satisfaction. Integration of platform native dashboards with third-party tools, such as Google Analytics, Looker Studio, or Mixpanel, allows e-Pharmacies to track performance, monitor sales, web performance and customer engagement.

Typical analytics dashboards capture:

- **Sales Performance:** Monthly and product-level trends across various products and product categories.
- **Website Traffic and Acquisition:** Insights from tools like GA4 and Looker Studio highlight key traffic sources (organic, referral, paid, or campaign-driven), supporting attribution modeling and targeted remarketing.
- **Customer Engagement:** Platform analytics monitor cart abandonment, repeat purchases, and session behaviour to identify drop-off points and retention opportunities.
- **Operational Monitoring:** Built-in analytics support order fulfillment tracking, logistics performance, and conversion funnel analysis.

While this approach provides a strong starting foundation, data fragmentation remains a common challenge. Performance metrics often reside in separate systems like e-commerce content management in-built dashboards, analytics dashboards, and e-consultation tools, requiring manual reconciliation. These result in delayed reporting and limit the ability to act on real-time insights. Differences in how tools define or calculate KPIs can also cause inconsistencies in trend analysis.

A potential solution is integrating a behavioural analytics layer such as Mixpanel or Amplitude, which serves as the central data tracking dashboard. Integration with data from other tools like e-Pharmacy sales, orders, stock and customer and website traffic data, to enable proper data segmentation. This approach supports:

1. Automated, real-time synchronization across sales, consultation, and engagement data.
2. More granular analysis of product uptake and user retention by demographic or behavior.
3. Stronger alignment between business KPIs and public health impact metrics.

By evolving toward an integrated analytics architecture, e-Pharmacies can move beyond basic sales tracking to develop a high-level data reporting framework that connects operational performance with patient outcomes and overall access to quality family planning services.

Part V

Enabling
Environment
and
Financing



ECOSYSTEM AND PARTNERSHIPS

Coordination with Government FP programs and integrating policies

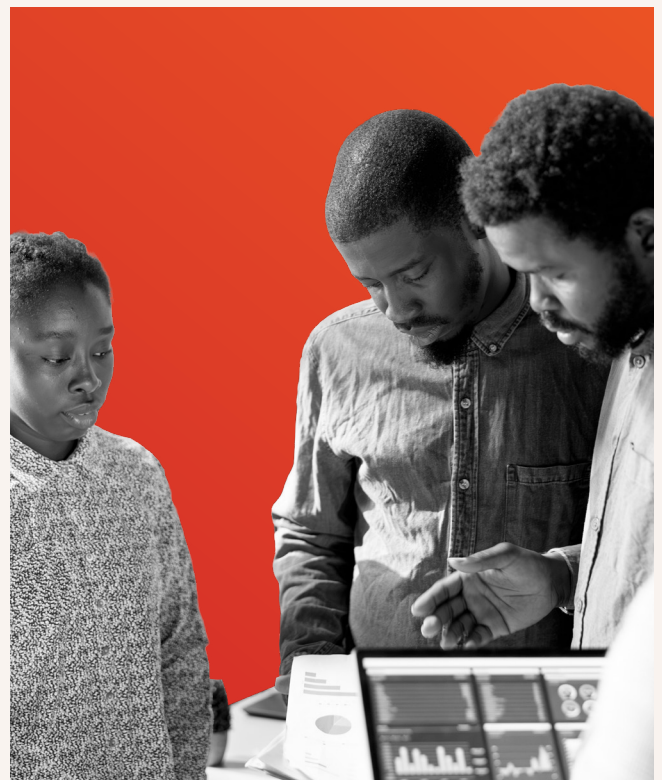
The Federal Ministry of Health and Social Welfare is the coordinating and policy-making body for all health programs in Nigeria, and the Pharmacy Council of Nigeria, a parastatal of the FMOH&SW, is the main regulator of all aspects of pharmacy practice. For the e-Pharmacy ecosystem to thrive in Nigeria, there is a need to work closely with these government agencies and be integrated with other health programs.

Infusing digital technology and innovations into the operation of the existing programs can enhance health outcomes, and increase access to healthcare services in the country.

The ePharma4FP project worked with the FMOH&SW & PCN, the coordinating government stakeholders, to integrate the ePharma4FP into the Family Planning network and other public health programs through its membership and participation at the National Self-Care Coordination Network (NSCC) meetings, the Task Shifting Task Sharing

Policy review meetings in the States, the reproductive health technical working group meetings and the Reproductive Health Policy development process.

It is expected that the data generated from the e-Pharmacy services in the long term will be integrated into the Community Health Management Information System (CHMIS) component of the National Health Logistics Management Information System (NHLMIS) to harmonize the data and contribution of the services coming from electronic channels into the healthcare system of the nation. This will help in critical decision making and improve the health indices in the country.



Roles of fintechs, social marketing organizations, logistics firms, and development partners



Fintechs: Innovations by fintechs can continuously improve seamless digital payment solutions for digital health platforms.



Social Marketing Organizations (SMOs): E-Pharmacies can partner with social marketing organizations like Society for Family Health (SFH), MSI Reproductive Choices, Population Services International (PSI), DKT International, Jhpiego, to drive demand creation and health education, helping integrate health products and services into e-Pharmacies through behavior change communication.



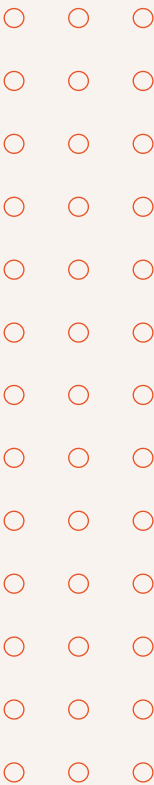
Logistics Firms: Logistics firms can help maintain and expand access to health products through e-Pharmacy platforms by ensuring timely delivery of health products, especially in underserved and hard-to-reach areas.



Development partners: Development partners can provide strategic guidance, financing, accountability mechanism and other support to e-Pharmacies to scale digital health access. In the same instance, organizations focused on health can partner with e-Pharmacies to expand access and reach via digital platforms.



Role of private sector in complementing government efforts: Private platforms like HealthPlus ePharmacy expand access to FP products beyond public health facilities. They fill supply gaps, innovate with tech-driven solutions, offer convenience and discretion to users, and support national FP goals through scalable, and sustainable models.



E-PHARMACY BUSINESS AND FINANCING MODELS

To stay competitive and affordable, e-Pharmacies should apply a fair pricing system set to cover costs and still remain within customers' reach. This strategy ensures that everyone, especially low-income users, can access quality health products without affecting overall business profit.

Pricing Approaches

Affordability of health products play a critical role in both public health and social development initiatives. Efforts directed towards e-Pharmacies can significantly contribute to the well-being of mothers, children, and overall societal progress. The number of digital channels for the distribution of health commodities in Nigeria have grown significantly in recent years with several digital methods used for financing for both the supply and demand side.

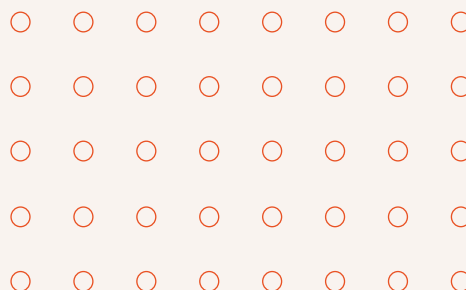
Therefore, there is the need for e-Pharmacies to implement a pricing strategy that makes healthcare products affordable to clients.

The business case study conducted by the project revealed that on the overall, cost-based pricing¹⁷ is the predominant approach for setting prices for contraceptive products in both urban and semi-urban areas, indicating a focus Return on Investment (RoI) and stability in pricing. Eighty-two percent (82%) of outlets surveyed use this approach as it is considered a standard and transparent method of determining prices. The study also revealed that **competitive**¹⁸ and **demand-based**¹⁹ pricing strategies are less commonly employed, suggesting a relatively stable market for family planning products.

82%



of outlets surveyed use this approach



17 Cost-based pricing: Setting the selling price by adding a markup to the cost of acquiring or producing the product. The price reflects expenses plus a desired profit margin, making it transparent and easy to justify.

18 Competitive-based pricing: Determining the price based on what rivals charge for similar products. The firm aligns its price with market competitors, either matching, undercutting, or slightly exceeding them.

19 Demand-based pricing: Adjusting the price according to how much customers are willing to pay at different times. Prices rise when demand is high and fall when demand is low, reflecting perceived value rather than cost.

Blended finance and Health Insurance

The business case report also featured a financial assessment that explored the feasibility and viability of using an e-Pharmacy channel for delivering family planning products and services using HealthPlus’s historical sales and financial data. It compared the costs and revenues of online and brick-and-mortar contraceptive sales while also modelling how key

improvements and adaptations might impact the value proposition²⁰.

The result of the finding was general price variability across the brick and mortar facilities. For instance, some products cost higher in brick and mortar pharmacies, while costing lower on e-Pharmacies and vice versa.

From the analysis, the project proposed six metrics critical to making a decision for investment in hybrid e-Pharmacy, namely; market trend, financial feasibility, operational feasibility, social impact, regulatory compliance, and long-term potential.

Figure 4: Decision Matrix Investment in Hybrid Family e-Pharmacy

Decision Matrix for Investment in Hybrid Family Planning e-Pharmacy			
Decision Factors	Weights	Rating	Weighted Score
Market Need	5	4	20
Financial Feasibility (Profitability)	4	4	16
Operational Feasibility	3.5	3	10.5
Social Impact	3	4	12
Regulatory Compliance	5	3.5	17.5
Long Term Potential	5	4	20
Total	22.5	22.5	

20 Note: To reduce subjectivity in the decision matrix, the project team and a consultant engaged in rigorous discussions to ensure objectivity and justification of each decision factor. Weights were assigned to each factor based on its level of importance and relevance to the investment decision, using a 1–5 scale (with 5 being most important). The weighted score is calculated as the product of the weight and rating, reflects the relative importance of each factor in the decision to invest in e-Pharmacies.

Figure: The decision matrix for investment in a hybrid family planning e-Pharmacy presents six key decision factors, market need, financial feasibility, operational feasibility, social impact, regulatory compliance, and long-term potential. Each factor was assigned a weight (on a scale of 1–5) based on its importance and rated accordingly to determine a weighted score. The highest weighted scores were observed for market need and long-term potential (20 each), indicating their strong influence on the investment decision, followed by regulatory compliance (17.5). Overall, the total weight and rating were 25.5 and 22.5, respectively, reflecting a favorable assessment for investment feasibility.

E-Pharmacy Business and Financing Models

The successful establishment of a viable hybrid e-Pharmacy model in the Nigerian market requires a combination of the cost-based, demand-based, and competitive-based pricing approaches, that maximize both market share and client affordability.

Investment decisions should be driven by market need and long-term potential, but the venture's feasibility hinges on regulators quickly resolving the current regulatory gaps,

which represent the significant risk factor and must be addressed to unlock potential blended finance pathways.

Blended finance models (xxx) are essential for making the e-Pharmacy model both financially viable for investors and equitable access for a large spectrum of clients. In Nigeria, this equity can be strengthened through integration with the National Health Insurance Authority and other private providers, thereby creating a pathway for sustainable, domestic financing that has the potential to drastically reduce out-of-pocket expenditures and dependence on donor fundings²¹.

Ultimately, a blended finance approach combining commercial investment with social impact capital allows the e-Pharmacy to cover operational costs, and chart a course towards viability and sustainability.



Image credit: DCStudio on Freepik

²¹ Blended finance in the e-pharmacy context refers to the strategic combination of commercial investment (equity, debt, or venture capital) with concessional or impact-oriented capital (grants, social-impact loans, or guarantees). The goal is to de-risk the venture for private investors while ensuring that the model remains affordable and accessible to a broad client base, especially when tied to public health schemes like the National Health Insurance Authority. This approach ensures that operational costs are covered, outreach is expanded, and financial sustainability is ultimately achieved without relying solely on donor funding.

Part VI

Consider- ations and Recommend- ations



POLICY AND REGULATION

Key recommendations for creating a sustainable and effective e-Pharmacy ecosystem in Nigeria are as follows:

- 1 Enable an agile and anticipatory regulatory system:** The rapid growth in digitalized healthcare services requires a more anticipatory policy and regulatory environment. Promoting innovation while ensuring client safety and regulatory compliance should be prioritized in the delivery of e-Pharmacy services; thus, continuously strengthening the regulatory capacity of PCN in all aspects and ramifications.
- 2 Co-create the e-Pharmacy ecosystem through stakeholder collaboration:** The e-Pharmacy ecosystem is a complex web of stakeholders, including patients, healthcare providers, technology companies, regulators, pharmaceutical manufacturers, and others. A concerted effort is therefore needed to facilitate compliance in the e-Pharmacy ecosystem in Nigeria. Participatory and enhanced collaboration between key actors is crucial for increased efficiency, improved patient satisfaction, and better health outcomes. The partnership of PCN with other relevant stakeholders to develop and improve a clear roadmap is very pertinent for strengthening the regulatory landscape for e-Pharmacy.
- 3 Create and promote a sustainable feedback system:** Continuous improvements in the quality of healthcare services are a vital component for achieving Universal Health Coverage (UHC). A sustainable feedback system for e-Pharmacy services in Nigeria will provide valuable insights into areas for improvement and ensure patient and stakeholder satisfaction. PCN needs to mandate all e-Pharmacy service providers to develop a reliable feedback system for effective two-way communication between the providers and clients for seamless reporting and redress of challenges that may arise from service provision. This would build clients' trust, increase the likelihood of more clients adopting the use of e-Pharmacy services for their health care needs, and improve access to and reach of healthcare services.
- 4 Continuous update and review of relevant laws, guidelines, and policies:** Some existing health and digital health policies in Nigeria are outdated, with e-Pharmacy and other digital healthcare innovations barely mentioned or referenced. As new e-Pharmacy policies emerge, existing health and related frameworks should be reviewed and updated to include comprehensive e-Pharmacy sections to ensure coherence, alignment, and effective regulation by all relevant agencies.

5 Integration of Health Insurance Services into the National Electronic Pharmacy Platform (NEPP): Reducing out-of-pocket spending will increase access to healthcare services, including those delivered through e-Pharmacies. Therefore, the government (PCN) should ensure that health insurance services under the NHIA are integrated into the NEPP.

6 Build Integration in the e-Pharmacy Ecosystem: An integrated e-Pharmacy in Nigeria would enhance trust and streamline prescription validation and dispensing. Introducing a National Trusted Supplier Engagement Certificate on e-Pharmacy platforms, would strengthen consumer confidence in the quality of products and services, while linking e-Pharmacies with national health delivery and supply systems would ensure seamless and reliable service delivery.



SUPPLIERS AND PROVIDERS

1 Consumer trust campaigns: To strengthen awareness, engagement, and conversions, a multi-channel and compliant marketing strategy is recommended. This includes adopting a combined influencer approach that leverages macro influencers for broad awareness and micro influencers for sustained engagement and product uptake, supported by unified messaging and measurable CTAs. Considering the stringent keyword and content restrictions on platforms such as Google Ads, Meta platforms are alternative options that offer flexibility and compliance for campaign execution. Content should avoid direct images of prescription-only products, using creative storytelling, captions, and educational visuals instead. Additionally, consistent blog posts and email newsletters should be used to share relatable health stories, insights, and tips, particularly for young women, and include clear CTAs that guide readers to trusted resources and services.

2 Online consultation, prescription fulfillment / order management: Customer support and order management are fundamental pillars of effective health delivery systems, shaping the overall client experience and influencing trust in services. Regularly reviewing customer support workflows enables e-Pharmacies to refine their processes and improve overall outcomes. Simplifying data collection during counseling helps create a seamless e-consultation experience and reduces customer drop-offs. Since technical language can pose barriers for clients, adopting a warmer, more relatable tone fosters better rapport, openness, and engagement. Furthermore, integrating e-Pharmacy into the broader health service delivery framework provides a clear pathway for digital solutions to complement traditional healthcare and expand access.

3 Embedded monitoring and evaluation: A comprehensive monitoring and evaluation system should combine analytics, user feedback, and operational data to track performance and enhance user experience. Using Google Tag Manager and Mixpanel to monitor key interactions, complemented by surveys and CRM insights, ensures data-driven improvements reflect real satisfaction. A unified dashboard integrating all data sources will streamline performance tracking and decision-making.

DEMAND SIDE

1 Awareness and Information Access: Building awareness requires a multi-channel communication strategy that reaches users through diverse touchpoints. Educational materials should be designed with accessibility in mind, relying heavily on visual and audio-based content rather than text-heavy formats to accommodate varying literacy levels. Health products should have comprehensive and clear information about them on the platform, including details on available products, appropriate usage and dosage, common side effects, and the benefits of using the platform. Creating a streamlined list of frequently asked questions (FAQs) addresses common user concerns, while myth-busting materials debunk local misconceptions about family planning with credible, validated information.

2 Trust and Credibility Building: Establishing trust in the platform requires leveraging trusted sources of health information as key messengers. Healthcare providers and in-store pharmacists should be positioned as primary information sources about the e-Pharmacy platform with particular consideration for using female healthcare providers for family planning services. *Building credibility also involves showcasing the professional profiles of e-pharmacists, highlighting their training and responsibilities on the platform.* User testimonials and stories should be featured to demonstrate social proof of the platform's value. Visible opportunities for user feedback further enhance transparency and credibility.

3 Onboarding and User Support: Effective onboarding requires dedicated support systems to guide new users through the platform. In-store pharmacists and dedicated onboarding teams should be trained to provide hands-on assistance with registration and order placement. This support should be structured through comprehensive guides that enable consistent, quality assistance across all touchpoints. Educational materials for onboarding should include easy-to-understand video, audio, and paper guides that rely heavily on visual information to describe the registration process and platform features. These materials should be available in multiple languages, including Pidgin English and local languages like Yoruba, to ensure accessibility.

- 4 Framing of Platform Benefits and Convenience:** Communications should emphasize the personal benefits that differentiate the platform from traditional options. Key messaging should highlight convenience of use, time savings, ease of access, and confidentiality, particularly important for family planning products where privacy is valued. The platform's ability to provide discreet access to products and services should be positioned as a significant advantage.
- 5 Engagement and Re-engagement Strategies:** Maintaining user engagement requires consistent, multi-channel communication that keeps the platform top-of-mind. Using email and WhatsApp for regular messaging, ensuring repeated exposure to information about services, products, and benefits. Periodic spotlighting of family planning product recommendations increases awareness and encourages consideration among users who may primarily access the platform for non-FP products. Product observability should be improved through recommendations both in-store and on digital platforms, making family planning methods more visible and normalized.
- 6 Incentivization and Value Proposition:** Financial incentives can drive both initial adoption and repeat usage of e-Pharmacy. Offering savings incentives such as discounts, loyalty rewards, referral vouchers can encourage repeat usage while providing tangible cost savings. A critical consideration is ensuring that family planning product and service prices on the e-Pharmacy are equal to or less than brick-and-mortar pharmacies. With price equalization or reduction, the privacy and convenience offered by the digital platform become stronger motivating factors for uptake.
- 7 Technology Accessibility:** Ensuring broad accessibility requires offering multiple technology levels to accommodate users with varying digital literacy and access. Low-tech alternatives including interactive voice response (IVR) and USSD services cater to users with limited tech literacy. They serve as accessible entry points for information and services without requiring smartphone access or data plans, providing e-Pharmacy services that can serve the entire spectrum of potential users regardless of their technological capabilities or constraints.





Insights and Recommendations

THE POTENTIAL OF DIGITAL PHARMACY FOR HEALTHCARE DELIVERY IN NIGERIA