



WORLD BANK AFRICAN CENTRE OF EXCELLENCE IN REPRODUCTIVE HEALTH INNOVATION (CERHI), UNIVERSITY OF BENIN, NIGERIA

BUSINESS PLAN

**Commercialization of a model Smart Phone device for increasing
women's access to skilled emergency obstetrics care**

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Executive summary

For years, research has identified that difficulty with transportation is one of the major barriers to accessing emergency care when women experience complications of pregnancy. This Business Plan (BP) describes in a stepwise manner the registration and commercialization of a new device named “text4life” aimed at enabling women to obtain transport service to access emergency treatment in health facilities when they experience pregnancy complications. The objective of this BP is to describe the Text4Life technology, its strengths and advantages in promoting universal coverage of maternal health interventions, the proposed methods of commercialization, and the nature of the partnership that led to its development.

The Text4life app is a product conceptualized by the Women’s Health and Action Research Centre (WHARC), a leading non-governmental organization in Nigeria, working in collaboration with the Center of Excellence in Reproductive Health Innovation (CERHI) at the University of Benin. Berth Technology is the technical partner that developed the app after receiving instructions from WHARC and CERHI, but without any intellectual property ownership. A multidisciplinary team consisting of experts from WHARC and CERHI (IPPO officers, ICT, entrepreneurship, Ob/Gyn practitioners, legal officers, and marketing agents) was established to plan the commercialization and marketing of the app.

The BP contains a description of the originating scientific principles behind the device, evidence of the proof of concept and effectiveness, and the details of its strategic advantages over similar devices.

The BP also described the milestones that have been achieved in commercializing the plan. These include 1) disclosure of the invention; 2) assessment of its commercial viability by the Intellectual Property and Technology Transfer Office (IPPTO) of the University of Benin; 3) intellectual property protection; 4) product licensing, and 5) the establishment of the Safe Life Ltd with Nigeria’s Corporate Affairs Commission as a limited liability company to market the device on a sustainable commercial basis.

The BP also outlines the marketing approaches to various stakeholders, the size of the potential market, and the exact aspects of the device to be commercialized through annual product licensing. The funding requirements, supporting legal documents, the license and patent requests currently being reviewed by the National Office for Technology Acquisition and Promotion (NOTAP) are attached to this BP.

We believe that the text4life app is novel and has the potential for solving the national challenge of limited access to emergency obstetric services, which is one of the root causes of the high rate of maternal mortality in Nigeria

Details of the product

Introduction

The Centre of Excellence in Reproductive Health Innovation (CERHI) at the University of Benin is one of the twenty-two African Centers of Excellence established in 2014 by the World Bank in selected West and Central African universities. The core mandate of the Centre is to build a cohort of researchers in Africa to develop homegrown solutions to the myriad of reproductive health and population problems in the West and Central African region.

The mission of the Centre is to implement high-quality training and applied research for reproductive health professionals needed to build a human resource for reducing the region's high burden of fertility, unsafe abortion, maternal mortality, and HIV/AIDS.

The Centre aims at building capacity in reproductive health through postgraduate training and research in the areas of Reproductive health, Public health, Nursing, and Health Economics. In order to strengthen the knowledge of established health professionals, the Centre also provides short course in relevant reproductive health and population studies domains.

Apart from training, one of the key mandates of CERHI is research and innovation in the field of sexual and reproductive health and rights. To date, CERHI has conducted research and innovations in diverse fields, published over 500 research articles in international journals, many of which are now ready for commercialization. As CERHI matches towards more national and regional pre-eminence, it is critical and important that it focusses on the commercialization of its research outcomes to enable the center make greater contributions to national and regional development.

It is within this context that this Business Plan (BP) is being developed for commercializing a research product, text4life, which CERHI developed in collaboration with its research and industry partners as will be explained later. This BP focuses on the commercialization of the "Text4life", an innovative device that helps pregnant women to obtain rapid transportation to health facilities when they experience complications.

The objective of this BP is to describe the Text4Life technology, its strengths and advantages in promoting universal coverage of maternal health interventions, the proposed methods of commercialization, and the nature of the partnership that led to its development.

Novelty of Text4Life .

The Text4life app (<https://twitter.com/UNFPANigeria/status/1396736084046925824/photo/1>) is novel in several ways. While several apps currently exist for promoting information and increasing the knowledge of women about reproductive health, only a few exist for linking women to services. The apps currently used for management of patients in Nigeria are listed on Table 1. These applications are designed to diagnose and attempt to remotely treat patients or provide information to them about the available treatment options. They do not specifically aim to bring women to services in difficult situations, and are add-ons to the health care delivery system rather than being supportive of the system. Their sustained availability for easing women's access to health facilities is therefore doubtful

By contrast, Text4Life is action based, developed to effect real-time response from facilitators to their patients, rather than attempting remote solutions. It is also the first and only USSD application that is usable in rural communities as a result of its simplicity and its linkage to community facilitators and care-givers. It is accessible to all users regardless of their locations.

Table 1: List of some existing apps for addressing health issues at different levels.

Sn	App	Links	Information
1	Tremendoc	https://tremendoc.com/	<p>A limited liability company app that connects patients with doctors who offer real time services. Services cover family medicine.</p> <p>Office is in Lagos</p>
2	CribMD	https://cribmd.com/	<p>An indigenous telemedicine app for general health consultation</p> <p>Patients can interact with doctors and health care providers through chat, audio call, or video conference and get instant feedback and prescriptions on the go with your mobile phone.</p> <p>It addresses family medicine complaints</p> <p>Appointment is booked at a fee before any consultation</p> <p>Adopts the approach of doctor home visits, so patients do not need to bother about transportation to health facility</p> <p>Office is in Lagos Nigeria</p>

3	Reliance HMO	https://www.reliancehmo.com/	<p>The focus of this software system is to reduce the financial burden on patients by developing a platform for health insurance</p> <p>Different plans are available for patients insurance payment plans</p> <p>Office is in Lagos</p>
4	DRO Health	https://drohealth.com/	An app that provides all round general health care services.
5	Eight Medicals	https://www.eightmedical.com/	An emergency ambulance service app – usable only in places where private or publicly funded ambulances are available.
6	HELP (Health Emergency Linkage Portal)	https://businessday.ng/health/article/help-launches-mobile-app-to-accelerate-access-to-emergency-healthcare/	Healthcare logistics company mobile uber-like app developed to provide swift access to emergency care to Nigerians. Mainly usable in high-brow urban communities.

Table 1 shows that the Text4life app is unique in its approach to solving the problem of reducing infant and maternal mortality. The 3-way communication system which alerts the pre-registered taxi driver to pick the patient immediately and pre-inform the health personnel that will attend to the woman enables the hospital staff to adequately prepare before the patient arrives and to deliver emergency services needed to care for the pregnant woman.

There is no known indigenous app to the best of our knowledge that offers such real time service. Ambulances are not generally available in Nigeria. Even when they are, they are difficult to maintain for immediate use when needed. By contrast, our use of taxi drivers who own the vehicles means that they would be responsible for the maintenance of the vehicles and at a cheap cost, they can be made available for use by women in emergency pregnancy crisis. The fact that the app

targets only pregnant women makes it very useful to address the challenge of difficulty in transportation that often leads to maternal mortality.

No existing app has applied such in-depth knowledge as we have incorporated text4life app which specifically addresses the challenges that pregnant women in rural areas face that account for maternal mortality such as pregnancy and labour complications and transportation logistics.

This software will contribute immensely to the realization of the sustainable development goals of Nigeria on reduction of maternal mortality Goal 3 which targets reduction of the global maternal mortality ratio to less than 70 per 100,000 live births by 2030

Most of the best emergency medicine Apps for 2022 do not directly involve patient participation and inclusiveness like in text4life.

As an additional advantage, this software uses USSD messaging system so is not internet dependent. This makes it very unique and different from the existing apps (Table 1).

Many of the existing apps are designed to be used with internet – meaning that unless women have access to the internet, they will not be able to use such devices. According to a Global System for Mobile Communications (GSMA) survey, rural-urban divide in mobile internet use in Nigeria has dropped steadily, from 53% in 2018 to 39% in 2020 and approximately 61% of Nigerians in rural areas are unconnected, compared to 40% in urban areas. The use of mobile phones, which today are widely available to 80% of Nigerian citizens, makes this device extremely novel, ensuring that it is available to the most hard-to-reach and marginalized communities across the country.

Additionally, the text4life app is presently the only available app of its kind that pre-informs health facilities of an emergency before the case actually arrives in the facility. This enables the PHC to prepare before the client arrives, which makes for increased effectiveness in the provision of care. This method is actually more effective than Ambulance services that have been used in the past to bring women to emergency services. Given the complicated alliances and high costs that need to be put in place to run an ambulance service on a sustainable basis, the text4life, is a model that has proven to be simple, cost-effective, and easily mastered by all stakeholders. It also enables a sustained involvement of all stakeholders at both the community and health center levels to be involved in providing and understanding the context of maternal health care provision.

Finally, the health information component of the device is also novel. To our knowledge, the text4life is the only locally available method for providing information to women on pregnancy risks and that reminds them to visit health facilities for antenatal and delivery care. This aspect is particularly relevant in a country like Nigeria where women often do not return for care after they have first registered in health facilities for skilled delivery care.

The involvement of the Wards Development Committee (WDC) members in coordinating and supervising the intervention ensured the widespread awareness and local acceptance of the app, and will likely galvanize and sustain its use over time.

Justification for the device

Following years of research, major findings revealed that one of the causes of the high rate of maternal mortality especially in rural communities in Nigeria is the difficulty in transportation experienced by women when they seek maternity care. The Federal Ministry of Health and all major health policy agencies in Nigeria have identified increased access to skilled obstetric care, especially by rural women, as critical to reducing the high rate of maternal mortality in the country.

Primary Health Centers (PHCs) are the first level of care in the national health system for women seeking maternity care. Other levels of care include secondary care, consisting of General Hospitals, and tertiary health care composed of teaching hospitals. Since PHCs are the only existing health facilities in rural areas, it is important and critical that provisions are made to ensure that pregnant women have easy access to PHCs, where they could be managed or referred to higher levels of care as necessary.

Given the poverty and infrastructural deficits in rural communities, women have often cited the difficulty in transportation as reason for non-use of PHCs for maternity care. Consequently, overcoming transport difficulties in getting women to arrive in health facilities for emergency obstetric care has been a major challenge in rural Nigeria. To address this challenge, several interventions have included the public provision of ground transportation (bicycle, Keke Napep, motor cycle, oxcart, ambulance, etc.), vouchers/subsidies for transportation, loans/pooled funds for transportation, etc. However, these interventions have proven not to be effective and sustainable in dealing with the problem. This is especially for women that experience complications at night in difficult and hard-to-reach locations when the methods of transportation tend not to be accessible. To date, there has been no mechanism designed to ensure that available means of transportation are easily accessible to women on a 24-hour basis when they experience pregnancy complications.

It was within this context that CERHI in collaboration with the Women's Health and Action Research Centre (WHARC) designed a new device applicable in mobile phones whereby pregnant women requiring transportation to PHCs for treatment of complications can reach out to pre-registered private taxi owners at any time to immediately transport them to health facilities.

In 2017, the Women's Health and Action Research Centre (WHARC) began a series of formative, interventions, and implementation research in collaboration with CERHI with funding from the West African Health Organization (WAHO), and the Federal Ministry of Health of Nigeria (FMoH) that were aimed at identifying innovations and new evidence for increasing women's access to skilled pregnancy care in rural Nigeria. WHARC is a non-profit and non-governmental organization established in 1993, headquartered in Benin City, Nigeria, and registered with the Corporate Affairs Commission of Nigeria with the mission to promote the health and social well-being of women through research, advocacy, and service delivery (see <https://wharc-online.org>).

The Centre publishes the *African Journal of Reproductive Health (AJRH)*, now regarded as the leading journal in sexual and reproductive health coming from sub-Saharan Africa (see <https://ajrh.info>). Formative research identified difficulty with transportation as a barrier to the use of existing primary health care centers (PHCs) by pregnant women, given that many of the PHCs were located far away from where the women lived. Pregnant women were also identified as lacking immediate access to health providers when they experience complications of pregnancy requiring emergency treatment. Through multiple qualitative research, it became evident that women resorted to untested traditional methods of pregnancy care because of the lack of transportation when complications occurred.

Through a community participatory intervention study design, the project implemented interventions in two Local Government Areas in Edo State, organized committed public transport owners, and developed a USSD messaging system (text4life) to facilitate communication between patients, transport owners, and their health care providers. With the device, women requiring

emergency transportation to PHCs for maternity care would text a code from their mobile phones to a central server. The server would in turn provide the location of the woman to a pre-registered transport owner, and inform the nearest PHC. With this 3-way communication system, the transport owner will immediately go to the home of the woman and transport her to the PHC that had been pre-informed to receive the woman.

This device has been tested for effectiveness in four communities in two Local Government Areas of Edo State. The results showed that over 18 months, 56 women out of 1,620 registered women (3.5%) texted the server requesting emergency transportation. Of this number, 51 were successfully transported to primary health care facilities; 46 were successfully treated in the primary care facilities; and five women were referred to higher-level care facilities. No maternal deaths occurred during the period, while four perinatal deaths were recorded. The perinatal deaths were not related to difficulties in transportation.

With this evidence provided as proof of concept, the UNFPA has adopted the model for self-reporting by women of pregnancy complications, COVID-19, family planning requests, gender based violence, and unwanted pregnancy in 10 states (33 Local Government Areas) of Nigeria. The project, which is ongoing, began in June 2021, and has to date, documented the reporting of these events by over 3600 women across the ten Nigerian States.

Given its large-scale effectiveness, we believe that this internet independent technology is now in a stage to be commercialized to provide lifesaving services for vulnerable individuals in urban and rural settings, not only in Nigeria but also across similar contexts across the world.

Design

WHARC working in partnership with CERHI developed the concept for text4life based on their initial research and then invited Berth Technologies to develop the SMS application software. Thus, WHARC and CERHI provided the scientific idea behind the software while Berth Technologies provided the technical expertise. Thus, WHARC and CERHI own the intellectual property, while Berth Technologies will remain as the technical consultants and marketer of the app.

The application was developed to run on a desktop computer linked to a modem with a Subscriber Identity Module (SIM) card and short code number.

The SIM card is reverse billing enabled, to allow end-users to send SMS without incurring charges. Text4Life is a health service software that provides end users access to health care from the comfort of their mobile phones. Text4Life was developed to enable users report their health care needs to facilitators for immediate intervention. Specifically, for pregnant women in rural and hard-to-reach communities to call for transportation to Primary Health Centres when they experience pregnancy complications or they need to attend antenatal or delivery care. Triggered by the end user, a signal is sent to the Text4Life server which the system then translates to an SMS notification for further action.

The software consists of the user interface (any USSD enabled feature or mobile phone) to receive input from the user as well as the backend interface through which the facilitators may access the settings and obtain analytical information.

From the user's mobile phone, the software service collects necessary information to interact with the web server and complete the information circulation. The trigger received via the USSD channel is stored in the web database and simultaneously shared via SMS to the health care facilitators who take prompt action to respond to the report.

The facilitators are able to access previous reports and details of the received triggers through a desktop application that connects to the connected database. The system provides the data from each trigger so they can be harvested for analysis.

Implementation

In the context in which the text4life was first tested in four communities in Edo State, it was designed to be managed by members of Wards Development Committees (WDCs). WDCs are committees recommended by the National Primary Health Care Development Agency (NPHCDA) of Nigeria and the Federal Ministry of Health to act as a liaison between community members and PHCs ensuring better management and use of the health facilities by the local population. The chair and members of the Committee are chosen by leaders in the various communities in order to ensure full community acceptance and ownership

The study that led to the identification of the need for the text4life was facilitated by WDC members in the 20 communities. As soon as the text4life app was set up, permission and consent were obtained from the two Local Government Councils to set up the initiative. Subsequently, Nurses and Midwives working in the four PHCs in the project communities were briefed and trained on all aspects of the project. All PHCs in the communities were subsequently registered to receive pregnant women and were also trained on ways to provide emergency treatments. Subsequently, members of the WDCs nominated by the local leaders were trained by WHARC and CERHI project staff working in collaboration with staff in the PHCs. Members of the WDC are permanent members of the community who are not expected to leave the community at any time. The WDCs were trained not only to understand basic maternal health issues and the importance of improved access to skilled pregnancy care to women, they were also trained on ways to use the Text4life platform effectively.

The committee members identified existing taxi drivers in the communities, briefed them about the initiative and sought their consent to enlist in the project. Among the taxi drivers consenting to provide services under the initiative, they were further trained on the methods and rationale for the project by the WDC members and the PHC staff. The terms of payment to the taxi drivers were worked out, which consisted of monthly payments made by the WDCs on verification of the actual number of transportation of women that the transport owners made.

The cost of emergency transportation was then included in the package of community health insurance that was set up by the WDC members for pregnant women to remove financial barriers as reason for non-utilization of PHCs. Under the health insurance scheme, pregnant women paid the sum of Naira 4000.0 (about USD\$10.0) for the entire duration of antenatal care, delivery care, and emergency transportation. The resulting funds also included donations from local community members, the total proceeds of which were banked and managed by the WDC members.

The project was well advertised throughout the 20 project communities, and pregnant women were requested to register both for the health insurance and for emergency transportation.

All pregnant women in the local project communities were contacted by the WDC members and invited to register in the platform, after a fully informed explanation of the purpose of the project. Only those who agreed to participate in the project and the health insurance scheme were eventually registered in the platform. On registration, the text4life app was installed in the woman

or her partner's telephone. They were taught to send a code to the server when they need emergency transportation to PHCs for care.

For normal pregnancies, the WDC members were taught to use the Text4life to send automated reminders to registered pregnant women at specific dates for their next antenatal visit and their due dates of delivery.

In case of emergencies such as danger signs in pregnancy, the woman will use the Text4life system to trigger an emergency alert-system. A message is generated and sent simultaneously to the WDC requesting for transportation and to the head of the PHC for immediate intervention. An automated feedback from the health facility will be sent to the woman advising on immediate actions while waiting for the transporter. The SMS will include the danger sign, the name of the village and telephone number of the woman.

The picture below (Fig 1) demonstrates the implementation workflow of the the Text4life system for delivering the mobile Health Alert System.

The model is robust and scalable for enterprise implementation and future expansion requirements.

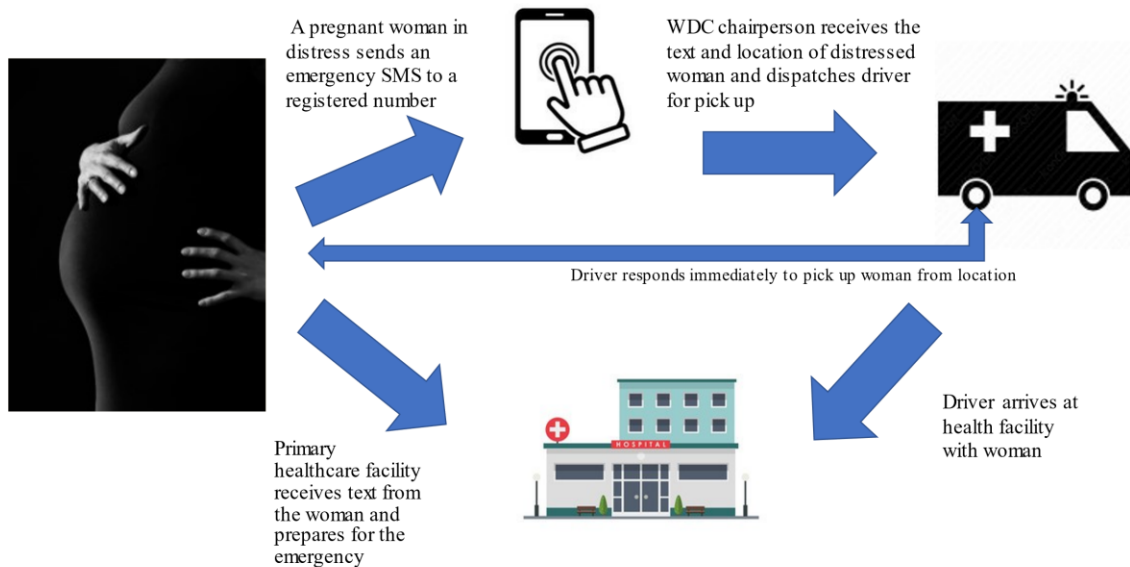


Fig 1: Diagrammatic representation of the workings of the text4life app

Description of the commercialization plan (selling, license, company) .

The commercialization of the text4life device has gone through several developmental stages, including research that proves the effectiveness of the concept, the systematic disclosure of the invention, an assessment of its commercial viability by the Intellectual Property and Technology

Transfer Office (IPPTO) of the University of Benin, intellectual property protection, and product licensing.

These critical steps are described below.

- 1) *Research* – WHARC in partnership with CERHI conducted this phase with formative research that documented the need for such a device, followed by intervention research that provided evidence of the effectiveness of the device in bringing women to services in 20 communities in Edo State. Furthermore, the app is currently being used by the UNFPA Nigeria office for the self-reporting of cases of gender-based violence, pregnancy complications, and COVID-19 in women in 10 states and 33 Local Government Areas in Nigeria with high level effectiveness.
- 2) *Invention disclosure* – this has also been done for text4life. The disclosure has included the publishing of four formative research findings in international journals and the submission of the proof of concept paper for review for publication in an international journal. We are aware that publishing findings in relation to this device would expose it to experimentation by other researchers, making it difficult or nearly impossible to patent it at a later stage. However, we needed to provide scientific evidence to prove its effectiveness by conducting interventional and translational research. We conjectured that publication in international journals will be the only means that we could prove its scientific validity and proof of the initial concept. However, while patent may not now be justifiable, we have developed other methods such as developing a non-disclosure Memorandum of Understanding with all participating stakeholders (copy attached), and licensing to protect the app. We have also formally registered the device with Nigeria’s NOTAP (National Office for Technology Acquisition and Promotion). A copy of our submission to NOTAP is attached as Figure 3.
- 3) **Assessment** – Preliminary assessment of the Text4Life USSD software carried out by the Intellectual Property Technology Transfer Office (IPTTO) of the University of Benin showed that the device has potentials for commercialization. The report concluded that the product has satisfied the critical Criteria of commercialization which include a) novelty - the invention must be new, and b) Inventive Step (non – obviousness). It is replicable with high potentials for industrial application. These criteria were assessed to have been achieved for the text4life app by the University of Benin IPPTO. *A copy of the assessment report is attached as Appendix 1 to this Business Plan.*
- 4) **Protection** – An intellectual property protection of the technology was established by filing a patent request with the Nigerian IPTTO office. The IPTTO of the University of Benin guided this process in line with the extant PATENT AND DESIGN DECREE No. 60 of 1970. The filled applications included *a cover letter* seeking for Patent application, and submitted through the Office of Director General, to the National Office for Technology Acquisition and Promotion (NOTAP). The copies of the completed application and the letter to NOTAP are attached here as appendix 2. We decided to apply for patent despite the publication of papers about the app because we have evidence that no other group of researchers are currently working on the device in the country. Additionally, NOTAP has a procedure for identifying if applications for patent of the same device had been made, which would preclude their acceptance of such a request for patent. In the absence of such a prior registration at the NOTAP office, we were confident that we could proceed with the patent registration. However, recent assessment report from NOTAP, through the Technology Acquisition and Research Coordination (TARC) Department, as conveyed to us by IPTTO, UNIBEN, described the intellectual property (IP) as a computer programme

belonging to Software Category. The report further stated that the software can only enjoy copyright protection under the Nigerian Intellectual Property Rights (IPR) jurisdiction, but cannot be patented. We have therefore, applied for copyright protection for the invention (copy of the application is attached herewith).

- 5) **Licensing** - CERHI and WHARC will commercialize this app service and its applications by providing a licensing agreement for subscribers. A collaborative agreement between WHARC and CERHI on joint commercialization of this device has been discussed and signed, a copy of which is attached herewith as Appendix 3. The subscribers will pay an annual subscription for the service. Upon subscription, a desktop application will be installed on the client's (health facilitator)'s computer and end users will be able to access the service through a USSD channel. This license subscription, backed by a service level agreement (SLA) will permit the licensee to use the copy right protected technology for an agreed period of time, while CERHI and WHARC retain joint ownership.

Marketing and Commercialization approach

Marketing company: Safe Life Incorporated – in order to provide a strong foothold for Text4Life technology and indeed other technologies emanating from the research output of CERHI; *safe Life Incorporated* (a mobile phone health information and research company) is being established to handle the commercialization of Text4Life. *safe Life Incorporated* will be a hub to nurture and implement the commercialization of the research output. This company will provide a framework for 1) assessing the factors that impact the commercial success of research products, 2) evaluating the commercial opportunities of products, 3) developing marketing strategies, 4) identifying potential industry partners, and 5) safeguarding researchers' interests.

Text4Life USSD service will run a B2B and B2G model, providing its solution to health facilitators on a subscription basis. The target end users of the Text4Life service are male and females of different age groups (particularly ages 16-64; 100% of this age group possess a mobile phone, according to this study: [Digital 2022: Nigeria — DataReportal – Global Digital Insights](#)). Health facilities, Government, Non-governmental agencies and other relief centres providing healthcare services are the potential market for the Text4Life service. Nigeria currently operates a three-tier healthcare system – primary, secondary, tertiary levels of care. Since health is on the concurrent legislative list in Nigeria, primary health centres are administered by the 774 Local Government Councils, the secondary care centres (General and Cottage Hospitals), by the 36 States of the country, and Teaching Hospitals by the Federal Government.

Our aim is to target all levels of the health care system in Nigeria for scaling the use of the device. With the currently available 45,000 healthcare facilities at all levels and in all States of the country, it is clearly evident that there is a large market for the device.

Since the challenge of health care access also pervades the West African and other regions of Africa, we will market the device to other African countries as well thereby increasing the scope and widespread use of the app.

Other available target market for text4life include the following:

- *Private sector organisations* with interest in universal coverage of maternal health, including profit organisations acting as intermediaries to health providing institutions

- *Private health care facilities* – Nigeria presently has about 2,600 private health facilities. The app will be marketed to these facilities to help the intake of patients for emergency maternity health services.
- *Non-Governmental Organisations* - Various health related governmental and non-governmental organisations within and outside Nigeria can further leverage the features of Text4Life for both practical and analytical purposes.

The Text4Life service has been developed to be scalable and globally available. In order to maximise its market potential, its features are also customisable to meet specific industry needs. Berth Technologies as a partner of WHARC and CERHI will manage the installation of the Text4Life desktop application and its USSD channel implementation for clients' end users. The signed MOU enables Berth Technology to work with the centre to implement the service for the license subscribers.

The Text4Life software service will be available for potential subscribers to contact WHARC and CERHI in their websites.

Marketing Text4Life

We have developed a clear approach to market Text4Life via the following channels. However, this sale methodology will be finalized by staff of Safe Life company.

1. Direct Sale:

Through this channel, WHARC and CERHI will use marketing professionals to communicate directly with potential clients. Organisations that already partner with WHARC and CERHI will be contacted and provided with details of the benefits of Text4Life app for increased access to health services, and the method of subscription. Marketing/Sale Agents will be appointed in both Centres to keep records of names and addresses of potential clients, to contact them, and to introduce the app to them. Regular visits to these clients by the sale agents will also be encouraged.

2. Catalogue Direct:

Text4Life service will be presented via a digital catalogue available on its worldwide website. Potential subscribers will be able to visit the website and learn more about the service and how to subscribe for it.

3. Digital Marketing:

We will use various digital platforms to promote the Text4Life service. These include website search engine optimization (SEO), search engine marketing (SEM), content marketing via popular blogs, and third party websites. We will also carry out Email marketing using a list of identified potential subscribers, and social media marketing on a network such as LinkedIn, Facebook, and Instagram. In particular, WHARC, CERHI, and their partners/affiliates/associates will host information of the app in their websites and social media handles.

4. Events:

WHARC and CERHI will use health related events across the country, such as workshops, seminars, and conferences to introduce the Text4Life service to potential subscribers. They will

then have the opportunity to ask questions about Text4Life, understand its value, and proceed to subscribe for the service. We will develop factsheets, media, and policy briefs about the App, and share with all stakeholders, including the mass media. This will help the process of public understanding, acceptance, and uptake of the app.

5. Indirect Marketing:

Aggregators of healthcare solutions will be able to resell the Text4Life service subscription through their own marketing channels, this will give further visibility to the service.

WHARC and CERHI are currently working with its partners to chart the course of these marketing channels and provide quick and desirable answers to user enquiries.

Potential market

The end users of the Text4Life service spans across the whole spectrum of the healthcare system. The ability of this technology to penetrate the rural areas exemplifies its ability to serve the most vulnerable healthcare seekers, making it an important tool for healthcare facilitators to provide access to healthcare. The Centre has a network of government partners, PHC providers, and NGOs, who are to be reached through direct marketing of the service.

The Federal Ministry of Health, WAHO, and UNFPA have already shown the way to the market for this product by their interest and support for the test of concept that have been implemented for the product introduction. Indeed, both WAHO and the UNFPA are currently promoting the use of the device for their work in health facilities throughout the country. We are also currently in discussion with the Federal Ministry of Health to scale up its use in the country through the National Council on Health. Thus, we are convinced that various sectors and agencies in health care and indeed, throughout the West African region will be interested in purchasing and using the device.

Being Centres that focus on reproductive health, both CERHI and its partner, WHARC will work closely with hospitals providing essential maternal and child health services. CERHI and WHARC will introduce Text4Life as an integral part of their offerings, educating potential subscribers on the importance and values of the service.

According to the Nigeria Health Facility Registry (NHFR), there are 39,914 operational hospitals and clinics inclusive of private and public hospitals across the primary, secondary and tertiary tiers.

With an estimated population of 234 million Nigerians, the country has an average of 17 health facilities to every 100,000 Nigerian. According to a report in the "[Nigerian health care system: Need for integrating adequate medical intelligence and surveillance systems - PMC \(nih.gov\)](#)", 55% of the Nigerian population live in the rural area, amounting to about 16,500 end users (a target from the potential 30,000 mapped out users). However, those living in sub-urban and impoverished locations in urban settings would also be eligible to use the device for emergency transportation, which will further increase the number of eligible enrollees in the App,

From these sources, we envisage the following:

- Revenue in Nigeria’s Digital Health market is projected to reach US\$582.20m in 2022 with an expected annual growth rate (CAGR 2022-2026) of 16.49%, resulting in a projected market volume of US\$1,072.00m by 2026.
- The average revenue per user (ARPU) is expected to amount to US\$13.42.
- In global comparison, most revenue will be generated in China (US\$49,750.00m in 2022).
- The market's largest segment will be Digital Fitness & Well-Being with a total revenue value of US\$377.60m in 2022

Competitive Advantage

Although digital health is not a new concept in Nigeria, Text4Life has an advantage in real-time health reporting and intervention via USSD because of its interactive and health informative capability.

Amidst several health software, Text4Life’s ability to deliver value without a need for internet to the end users remains a truly important feature that helps it stand out. Coupled with advantages such as real-time monitoring for impact, analysis and end user feedback options.

To the end user, Text4Life provides quick access to health services from the comfort of a mobile phone. Accessibility being one of the greatest challenges to quality health in the nation. The licensee (organization subscribing to Text4Life service) receives firsthand information about the condition of the client (in most cases, patient) to be brought in. They are also able to analyze the received and processed distress calls from the end users. This will account for proper documentation and monitoring of the traffic of activities on the software.

Text4Life also has an advantage of reduced cost for its users, the organization is able to cut cost by implementing novel technology for easy access to its services without needing to procure new devices or other hardware for its functionality. This offers a two-way advantage, applying to both the organization and the service end user. The end user can access Text4Life service freely on their mobile phones, without the need for an upgrade or any software installation. This cuts the cost of accessing the value offering of the software.

Text4Life users do not need special technical knowhow to operate the software. Reports are submitted through mobile phones which they are already familiar with, the prompts on the USSD are self-explanatory and require no special characters or inputs to proceed.

Description of the management team

Management team and advisors

The commercialization of Text4life will be managed by Safe Life Incorporated.

Safe Life Incorporated (SFI).

Safe Life Incorporated (SFI) is being established as a limited liability company to market the text4life app, to maintain and widely disseminate its use, and to conduct market research to expand

the potentials for use to address all related problems experienced by pregnant women and their care-givers. This will help galvanize improved maternal and child health delivery in Nigeria, improve access to maternal and reproductive health to women, and reduce maternal and child mortality in Nigeria. The registration of Safe Life Incorporated (SLI) is being coordinated by a Professor at the Faculty of Law at the University of Benin. It has started with a name search with the Corporate Affairs Commission (CAC), the organization that registers new companies in Nigeria. With the name search showing that no such company is currently registered in Nigeria, the organizational profile including the names of the Managing Director and the Board of Directors will be submitted for incorporation by the CAC.

Mission, vision, and core values of Safe Life Incorporated (SLI)

Mission

To inspire healthier communities by connecting women and children with information necessary to access quality maternal and child health care in real time.

Vision

Our vision is to create everyday healthy life for families, women and children.

Values of SLI

Empathy

Humility and compassion

Transparency and honesty

Specific Objectives of SLI

- Market Text4life to identifiable stakeholders in Nigeria and the West African region
- Identify and implement ways to improve on the technology of text4life, making it the most active app that communicate with women and family on their health care needs related to maternal and child health care
- Conduct research to identify the remaining challenges that prevent women from obtaining prompt and early maternal and child health care, and develop e-solutions to address them
- Partner with governments, development partners, and communities to address the challenge of limited access to maternal and child health care using e-solutions.

Management Team for SLI

1. Chief Executive Officer (CEO) – a researcher with business expertise
2. Chief Research Officer
3. Research business manager

4. Research Officers
5. Marketing officers

Safe Life Incorporated Board of Directors/Shareholders

1. Vice Chancellor's Representative
2. CERHI Representative
3. WHARC Representative
4. Berth Technologies Representative
5. UNFPA – representing development partners
6. Federal Ministry of Health of Nigeria
7. West African Health Organization (WAHO)
8. Two top ICT researchers with business expertise

More details about the partnership

The Text4life was conceived by WHARC in partnership with CERHI during their co-design and implementation of a research aimed at increasing women's access to skilled pregnancy care in rural Nigeria. WHARC is one of the industry partners of CERHI. The development of the text4life is proof of the effectiveness of the Triple model in which universities research become impactful when there is a partnership between University researchers, policy makers, and the government. The International Development Research Centre (IDRC) funded the project for WHARC and its partners under a grant called IMCHA (Implementing Maternal and Child Health in Africa), while the West African Health Organization (WAHO) functioned as the knowledge transfer organization under the project. Later, WAHO funded the aspect of the project for testing the effectiveness of the text4life through the Federal Ministry of Health (FMoH). However, IDRC, WAHO, and the FMoH have no intellectual property rights to the text4life since they merely funded the project without direct ownership of the idea.

The fact that the Federal Ministry of Health and WAHO were involved in the development of the model provides further evidence of the effectiveness of the triple model that CERHI has used over time to field its research efforts.

As soon as WHARC and CERHI identified the need for an App for women to use to bring them to emergency transport services to reach a PHC, they contacted the CEO of Berth Technologies, Mr. Joy Adeniran on strong recommendation. On detailed discussion and explanation of what was needed, Mr. Adeniran agreed that his company would work on developing the app.

Berth Technologies

(See <https://www.google.com/search?q=berth+technology+limited&tbm>) was established in 2020 with the mission to use cutting-edge solutions in information technology to address developmental concerns. They work in the fields of software development, web development, digital strategy, and other spheres using diverse approaches including research analysis, brainstorming and ideation, testing, and development.

Berth Technologies subsequently developed the app, established the server in WHARC, and have participated with WHARC and CERHI in implementing the app in all the communities in which it has been fielded until this date.

Thus, the implementation of this text4life model will be a tripartite agreement between WHARC, Berth Technologies, CERHI, and the University of Benin. An MoU spelling out the details about each party’s role in commercialization, distribution of royalties, and methods of operation is being developed as part of this Business Plan.

The role of the University of Benin. The University of Benin through CERHI will work as a major partner in the commercialization process. They will function as partners through a representative of the VC’s office in the Board of the SLI company.

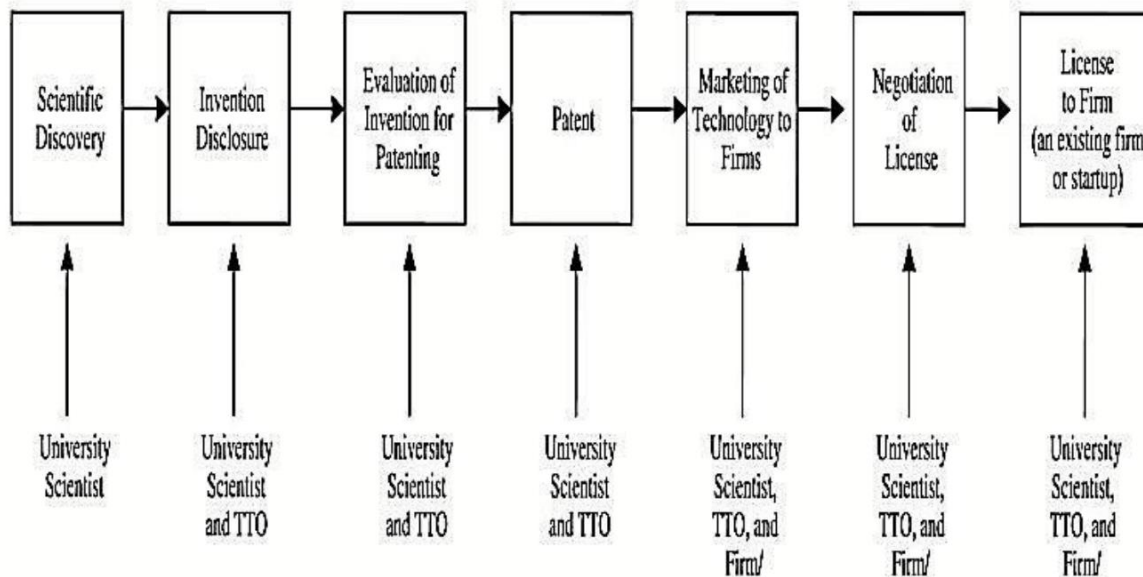


Figure 2: How technology is transferred from a university to a firm or entrepreneur

Financial forecasts

Cost for the initial activities

1. National Communication Commission Short code registration - \$5,000
2. National Communication Commission Short code annual renewal - \$2,000
3. Annual SMS Purchase - \$500
4. Maintenance of cloud servers - \$4,000
5. Salaries/personnel costs - \$5,000
6. Device/Terminal Maintenance - \$1,000
7. Copy right Registration - \$2,000
8. Establishment of SLI – Registration with the CAC, creation of office space, office equipment and furniture, initial salaries and running costs - \$30,000.0

TOTAL - \$49,500

The cost implication indicated above are the funding required to set up and maintain the software service annually. There are also one-off costs, such as the copy right registration which costs \$2,000 and NCC registration cost of \$5,000. This estimates that \$12,500 will be required to maintain the software. However, for the licensee would only pay for the function system unit, annual license fee could be charged at about \$15,000-\$20,000 per subscriber.

The license fee is a form of royalty payable to the Centre which permits subscribers to use the proprietary technology for a contracted period of time. This model is most applicable as the licensing fee can be revised at the expiration of one period, on the basis of economic changes and operational modifications. At the end of every subscription period, the service becomes unavailable to the subscriber until a new license fee is paid to extend usage. It is also one of the commonest revenue models employed by software licensing companies.

Funding requirements

The funding requirements identified above will be met by the shareholders' funds especially from WHARC, CERHI, Berth Technologies, and others.

The majority of contributions to the shareholding funds will enable the determination of the initial management structure and the sharing of the resulting profit.

Conclusion

There can be no doubt that the text4life app is an important intervention for addressing the challenge of limited access of pregnant women to maternal and child health care especially in rural communities in Nigeria and other African countries. Its commercialization will help build sustainable resources for widespread availability of the app to benefit a larger group of women over time.

Appendices such as legal documents, permits, copy right, and licenses

- 1) Nondisclosure of invention agreement by immediate stakeholders and committee members
- 2) Submission of the invention to the National Office for Technology Acquisition and Promotion (NOTAP)
- 3) Assessment of the invention by the IPPTO, University of Benin
- 4) Report from NOTAP on the application for patent
- 5) Submission by the IPPTO, University of Benin to NOTAP for copyright protection
- 6) Details of the registration of Safe Life Incorporated
- 7) Memorandum of Understanding between WHARC, CERHI, and Berth Technologies on SLI and the text4life app commercialization