**CHAPTER ONE**

**INTRODUCTION**

* 1. **Preamble**

Trust is a subjective assessment of another’s influence in terms of the extent of one’s perception about the quality and significance of another’s impact over one’s outcomes in a given situation, such that one’s expectation of, openness to, and inclination toward such influence provide a sense of control over the potential outcomes of the situation. Trust and reputation both have a social value. When someone is trustworthy, that person may be expected to perform in a beneficial or at least not in a suspicious way that assure others, with high probability, good collaborations with him. On the contrary, when someone appears not to be trustworthy, others refrain from collaborating since there is a lower level of probability that these collaborations will be successful. (Gambetta, 2007)

Trust is a particular level of the subjective probability with which an agent assesses that another agent or group of agents will perform a particular action, both before he can monitor such action (or independently or his capacity ever to be able to monitor it) and in a context in which it affects his own action. In [information security](https://en.wikipedia.org/wiki/Information_security), computational trust is the generation of trusted authorities or user trust through [cryptography](https://en.wikipedia.org/wiki/Cryptography). In centralized systems, security is typically based on the authenticated identity of external parties. Rigid authentication mechanisms, such as [Public Key Infrastructures](https://en.wikipedia.org/wiki/Public_Key_Infrastructure) (PKIs) or [Kerberos](https://en.wikipedia.org/wiki/Kerberos_(protocol)) *(*Weise, 2001*) have* allowed this model to be extended to [distributed systems](https://en.wikipedia.org/wiki/Distributed_systems) within a few closely collaborating domains or within a single administrative domain. During recent years, computer science has moved from centralized systems to distributed computing. This evolution has several implications for security models, policies and mechanisms needed to protect users’ information and resources in an increasingly interconnected computing infrastructure.

A trust-based decision in a specific domain is a multi-stage process. The first step of this process consists in identifying and selecting the proper input data, that is, the trust evidence. In general, these are domain-specific and are derived from an analysis conducted over the [application](https://en.wikipedia.org/wiki/Application_software) involved. In the next step, a trust computation is performed on the evidence to produce trust values that means the estimation of the trustworthiness of entities in that particular domain. The selection of evidence and the subsequent trust computation are informed by a notion of trust defined in the trust model. Finally, the trust decision is taken by considering the computed values and exogenous factors, like disposition or [risk assessments](https://en.wikipedia.org/wiki/IT_risk_management#Risk_assessment).

The healthcare industry is a dynamic, ever-changing environment. Changes in communication technology are driving innovations in how care is provided and consumed. The evolution of communication technology, is shaping the landscape of health care delivery creating opportunities in efficiencies and consumer health benefits by “supporting shared decision-making between patients and providers, providing personalized consumer self-management tools and resources, building support network” for providers and consumers, and delivering accessible health information that is targeted or tailored to consumers. This has exposed cyber-health community to security issues which conventional programming tactic might not be able to solved hook-line and sinker. Cyber health community is an online based coming together of healthcare providers and customers, a health based online forum or social media platform like a chat platform are examples of cyber health community. This has made the introduction of trust management system to cyber health community a major area of information technology that must be ventured into.

* 1. **Statement of the Problem**

Developing economies like Nigeria are seeking to employ information technology to improve the ways of life of people, including the health sector. The inflow of social media technology influence in the early 2000s is changing the way health care delivery is being accessed in Nigeria. Cyber health community is a landmark implementation of social media technology in the domain of healthcare delivery. It involves bringing the healthcare providers (doctors) close to the health care consumer (patients) within the same online community for easy access. It can be a simple social media (whatsapp, Twitter etc) group chat or a complex system but easy to use secure online forum. Cyber health community in Nigeria can be better, the state of cyber-health care community needs to improve massively in the sense that health information of the healthcare consumers needs to be secure and remain private. One of the major shortcomings of cyber based services is privacy and security. Hence, the need for patient health care secure and privacy enhanced platform adopt the use of electronic trust management system for better security and safeguarding of patient health information. If confidential information end up in the hands of a person that should not be privy to the information, the consequences can be overwhelmingly dangerous. This also makes the process to become more safe, organized, efficient, easy, fast and convenient for both patients, and the key players in the field of healthcare delivery.

**1.3 Aim and Objectives**

The aim of this project is to design and implement a trust management system in a cyber-health community for guaranteed privacy and confidentiality. The specific objectives of the study are to:

1. Critically appraise/Study the existing cyber health platforms
2. Design a friendly user oriented cyber health chat community system for android OS enabled devices
3. To develop the designed android based system.
4. Incorporate trust management features that shall ensure the confidentiality, integrity, privacy and availability of the system implemented.
5. Test the implemented system in a simple real-life environment to know if it actually met the specified requirements (use cases).

**1.4 Significance of Study**

Apart from a desire to improve healthcare management, the major motivation for this work comes from a desire to see an actualization of the Millennium Development Goals (MDG’s). The Millennium Development Goals (MDGs) are eight international development goals that all 192 United Nations member states (comprising countries from both the developed and developing regions of the world) and at least 23 international organizations have agreed to achieve by the year 2015. They include; eradicating extreme poverty and hunger, achieving universal primary education, promoting gender equality and empowering women, reducing child mortality, improving maternal health, combating HIV/AIDS, malaria, and other diseases, ensuring environmental sustainability and developing a global partnership for development.

Of all the eight goals, three of them are related to health. Thus, anything that will impact effectiveness and security in healthcare delivery would go a long way to assist in the achievement of the MDG’s. Making patient-doctor interaction possible on social media platform and keeping it secure and intact will be a big plus for the healthcare system in Nigeria. The fact that doctors have to rely on patients’ medical information to make proper diagnoses is key, if these information are modified in any way, no matter how small it may be, there may be the possibility of an incorrect diagnosis, if it becomes severe enough, it may further lead to other medical problems and death.

**1.5 Scope of Study**

This final year project work is limited to the development of a cyber-health chat community system that will enhance better security and safeguarding of patient-doctor relationship. This project work is limited to online community (chat) network application programme on android operating system. This means that the developed software would only run on android enabled devices. Also, only text messages will be supported by the chat functionality of the chat software.

**1.6 Project Methodology**

The system will be developed using the following tools: (JAVA) Programming language on Android Studio, the Ionic framework, Net bean IDE, eclipse, SQL database workbench, SQLite, and database browser for SQLite. Waterfall software development methodology to be used for software development. The system has a bi-level structure comprising of the following:

1. Front end level: will be handled using Object oriented programming (Java)/Android programming.
2. Database level: The use of SQLite database to reveal stored information and grant access to all files.

**1.7 Organization of the Project Write-up**

The remaining part of this final year project work is sectioned into five chapters as described below:

• Chapter Two: Here, necessary past literatures on related works to be succinctly reviewed. This is in order to perfectly comprehend the full details of cyber health platform as well as the technologies behind mobile application development and trust management when it comes to means of enhancing security and privacy in an online platform.

• Chapter Three: This chapter describes the procedure and methodology followed in the design and development of the android based mobile application software. Entity relational diagrams, activity diagrams, flowchart and analysis of the mobile app design and development phase and tools used succinctly written in this chapter. The relationships between the programming tools used were explained. It shows how the research and software development aspects of the project was approached by revealing the details about the methodologies that were used.

• Chapter four: In chapter four, the result of the implementation in chapter three was presented. The tools used in the design and development of the finished android mobile application software displayed. How the system works explained and it presents the findings and results as well as the functionalities of the software system developed. Images of the working mobile app were captured and shown in this chapter.

• Chapter Five: This is the chapter where a brief summary of the whole project work was given as well as conclusions drawn and recommendations given.