The e-banking systems in Nigeria is witnessing a large number of users, thereby encouraging the cashless economy policy proposed by the Central Bank of Nigeria (CBN). Hence, these systems need to be highly secured and reliable. This is because any compromise by this system can breach the customer's trust in using such systems for making transactions thereby discouraging the cashless policy agenda. Based on this the CBN is proposing the use of fingerprint biometric as a means of identification of any bank customer in Nigeria. However, since most fingerprint biometric systems can accept and grant access to artificial fingerprint, it is therefore clear that only fingerprint will not be suitable in securing banking system. Thus, the primary research objective of this paper is to propose a multifactor biometric model that would assist in creating a highly secured banking application in Nigeria using human physiological features. Based on the verification carried out on the model presented in this paper, it can therefore be sanctify to providing highly secured banking system in Nigeria if fully implemented.


**Index Terms**

Computer Science

Security

**Keywords**

E-banking system, Security, Biometric, Fingerprint