

ABSTRACT

There has been a sharp increase in fraud activities in various organizations in Kenya such as banks and stock brokerage firms. This has been happening mostly due to poor authentication of clients. Most of these organizations rely on identification documents like the national identification cards, written signatures, passwords and secret codes as means of authentication. Physical identification documents can be lost, stolen or misplaced. Passwords and secret codes can also be forgotten or revealed unintentionally.

This research sought a more reliable and a secure alternative means of authenticating clients by use of biometrics. The research explored and analyzed various biometric features that can be used for authentication including fingerprint, finger vein, hand geometry, retina, iris, face, DNA, among others.

The analysis of the various biometric features explored indicated that a combination of fingerprint and finger vein biometrics is more reliable, secure, and easily applicable. A multimodal biometric authentication conceptual model was developed. The model assisted in developing a multimodal authentication prototype that uses fingerprint and password. The proposed authentication prototype was to use fingerprint and finger vein biometrics but could not be developed due to lack of a finger vein scanner in the local market.

Areas that could be prone to attacks in the developed prototype were identified and various measures like data encryption were put in place to avoid the attacks.