Mobile commerce has become an emerging technology due to day by day increasing user of smart phones. Security is a major concern for M-commerce users while accessing applications invoking mobile payments, mobile based transactions. So in this mobile emerging world, secured user and service provider authentication are very important factors to be considered in M-commerce. The existing system which has been used for Mobile purchasing/payment services in handheld devices is not implemented and analyzed the techniques in an efficient way. That is, the existing system is not secure for M-payments applications. Many Mobile commerce applications mostly utilized the password registration and OTP techniques in M-commerce system for user authentication which is more vulnerable in payment modes.

To develop an ideal, reliable and functional M-commerce system, this work proposed secure, efficient and accurate M-commerce architecture for M-commerce applications. For secure system, user and service authentication sides was mainly focused to implement better techniques in those areas. In the user authentication, a fingerprint based biometric methodology was adopted. Various methods like orientation maps, Minutiae maps, Core point detection and Gabor features were used for feature extraction. An efficient fingerprint feature extraction method by fusion of Minutiae Maps (MM) and orientation maps (OM) was developed. For encryption and decryption of data, SAS, RSA and RC4 cryptographic algorithms were used. So the better and faster feature extraction and cryptographic technique was identified and presented by analysing the various techniques in terms of accuracy and performance.
In the server authentication side, an improved PIN distribution technique was implemented. In which, the user PIN was converted into a unique sequence using a sequence table developed in this work. After that, the divided, unique sequenced PIN parts along with user IP address, time stamps, user ID were encrypted using various encryption algorithms (RC4, DES, 3DES, AES). The better result was obtained with RC4 double encryption model in PIN distribution technique. The analysis of performance and secrecy values were carried out with various combinations of authentic systems by using Shannon theory. Considering the performance and secrecy, the best authentication system was identified as the one with Biometric for user and PIN distribution in server side (Hybrid 2). Based on the implementation and analysis of the techniques, it was found out that the proposed M-commerce architecture has the complete secure and efficient solution for accessing M-commerce applications.