


## Chapter 9

# Artificial Intelligence– Based Billing System: Fingerprint Mechanism

**Kathirvel A.**

 <https://orcid.org/0000-0002-5347-9110>  
*Karunya Institute of Technology and Sciences,  
India*

**Sabarinathan C.**

*SRM Institute of Science and Technology, India*

**Saravanan N.**

*M. N. M. Jain Engineering College, India*

**Ramesh S.**

*Acharya Institute of Technology, India*

**Meera S.**

*Agni College of Technology, India*

**Karnavel K.**

*Anand Institute of Higher Technology, India*

**Sudha D.**

*Mother Theresa Woman's University, India*

## ABSTRACT

*In our daily lives, we conduct billions of payment transactions, yet each payment method requires the transport of a substance. It is typical for users to have a variety of payment materials on hand, such as cash, credit cards, and even mobile phones. Meanwhile, these goods are easily stolen or misplaced. People suffer enormous trauma as a result of these incidents. This chapter details a biometric payment application created to introduce the concept of hardware less payments. It allows users to pay anytime and anywhere by registering their finger without any hardware. This involves registering user information once, and then all subsequent transactions are confirmed and processed by the user's fingerprint, with the application managing the entire process. This solution creates a new payment option and eliminates the risk of shipping valuables abroad. For the company, this application enables an efficient and secure payment system.*

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## **INTRODUCTION TO PAYMENT TRANSACTIONS**

Since the early 16th century, payment transactions have been a part of our lives. It progressed from the barter system, in which products were exchanged in exchange for goods or services, to the modern form of transactions, which includes cash, credit/debit cards, e-wallets, and other methods. The barter system was used for a while until it was discovered that it was inaccurate owing to discrepancies in the value estimation of the items or services exchanged.

Later, coins composed of costly materials such as gold and silver were used in a more standard manner. This approach was convenient since it provided a uniform value for all goods and services, and it was adopted by practically every King or ruler in the world. Currency bills and coins were introduced with the development of governments and the growth of civilisation. Currency bills are still in use today. Many financial institutions, such as banks, have introduced the public to various paper and card-based payment operations. The internet, e-commerce, e-payment, mobile banking, and payment have all grown in popularity as a result of technological advancements and digitisation. All of these transactions have one thing in common: they all require a material to complete the payment.

To identify their payment account, users must carry cash, credit/debit cards, or e-wallets in the form of mobile phones. The transaction must then be authenticated using an OTP, PIN, or password to ensure that it is genuine. The transaction is complete once the server-side verification is completed, and the amount is deducted from the payer. To credit the amount back to the payee, this process must be repeated involving the bank and the payment gateway. People who carry valuables such as wallets are also concerned about keeping them safe and not misplacing them. With technological advancements, this process might be simplified while also being more secure.

The chapter proposes a revolutionary form of material-free payment that simplifies the payment process. Customers are not need to carry cash, debit/credit cards, or mobile phones in order to make a payment. It allows customers to go shopping without worrying about their possessions being in their possession or being protected.

This research established a secure fingerprint-based system that uniquely identifies each user. Yankov et al. (2020) discuss in his paper, it helps to identify the person and functions as a security gateway for the system because fingerprints cannot be the same for more than one person. It uses backend methods for minutiae extraction and minutiae comparison to analyse fingerprints, as outlined in the algorithm portion of this work.

After completing a one-time registration, the app allows the user to enrol their fingerprint to initiate a transaction and pay to any seller. The literature review section of this paper will include a brief discussion of a few alternative payment mechanisms in comparison to the suggested system.

## **LITERATURE REVIEW**

For generations, the desire for possessions has been a part of our existence. People in a society demanded something in return for products. It was known as the Barter system, in which products were swapped for other goods. It was eventually determined that the value and quantity of products differed from one another. It resulted in the creation of currency. Currency notes, cheques, demand draughts, and a few more paper-based transactions were common payment methods a decade ago. Due to their simplicity,

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