



## **“CYBER SECURITY”**

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### **ABSTRACT**

Bank Credit card frauds are on the increase and are becoming smarter with the passage of your time. Usually, the deceitful transactions are conducted by stealing the MasterCard. Once the loss of the cardboard isn't detected by the cardholder, a large loss is often round-faced by the MasterCard Company. a really very little quantity of knowledge is needed by the wrongdoer for conducting any deceitful group action in on-line transactions. For getting product and services on-line, the net or phone devices are used. In some cases, the pattern during which transactions are done by the user is that the solely approach through which it's doable to grasp that the cardboard is purloined. A fraud detection methodology must be applied to scale back the speed of triple-crown MasterCard frauds. This analysis work relies on the prediction of deceitful MasterCard transactions. During this paper, varied techniques for the MasterCard fraud detection are reviewed in terms of sure parameters.

### **KEYWORDS**

Cybersecurity, Information Security, Penetration Testing, ISO 27001, Ethical Hacking, Network Security, Security Information and Event Management (SIEM) and Vulnerability Management.

## INTRODUCTION

### 1.1 Predictive Analysis

A common misconception is that predictive analytics and machine learning are the same thing. This is not the case. (Where the two do overlap, however, is predictive modelling – but more on that later.)

At its core, predictive analytics encompasses a variety of statistical techniques (including machine learning, predictive modelling and data mining) and uses statistics (both historical and current) to estimate, or ‘predict’, future outcomes. These outcomes might be behaviours a customer is likely to exhibit or possible changes in the market, for example. Predictive analytics help us to understand possible future occurrences by analysing the past.

Machine learning, on the other hand, is a subfield of computer science that, as per Arthur Samuel’s definition from 1959, gives ‘computers the ability to learn without being explicitly programmed’. Machine learning evolved from the study of pattern recognition and explores the notion that algorithms can learn from and make predictions on data. And, as they begin to become more ‘intelligent’, these algorithms can overcome program instructions to make highly accurate, data-driven decisions.

### RELATED WORK

The significance of money and credit need no exaggeration. Application of Technology has transformed very lifestyle of the people and the entire world is dependent on it. In service sectors like banking, education, health, retailing, etc. technology has become the main player. Integration of banking services with the technology has given rise for new ‘technology-driven’ services, apart from enhancing overall efficiency of the banking industry in serving customers. Credit card facility of banks combines technology with the flow of credit and serves the needs of customers.<sup>1</sup>

As civilization progressed, the support systems in the society got transformed with improved techniques and technology. Banking is one of such support systems. Today, the technology has transformed banking system from traditional, manual system to modern technology-driven industry. In this transformation, the role played by credit card is very significant.<sup>2</sup>

India is one of the fastest growing economies in Asia; however, credit card use remains limited.<sup>3</sup> The credit card market in India had witnessed a steady growth in the late 1980s and early 1990s, but currently stands stagnant. Indian banks such as State Bank Group, Citi Bank, Axis Bank, Bank of Baroda, Corporation Bank and HDFC offer credit card services to their customers.<sup>4</sup>

## LITERATURE REVIEW

**Kuldeep Randhawa et al. [10]** proposed a technique using machine learning to detect credit card fraud detection. Initially, standard models were used after that hybrid models came into picture which made use of AdaBoost and majority voting methods. Publically available data set had been used to evaluate the model efficiency and another data set used from the financial institution and analyzed the fraud. Then the noise was added to the data sample through which the robustness of the algorithms could be measured. The experiments were conducted on the basis of the theoretical results which show that the majority of voting methods achieve good accuracy rates in order to detect the fraud in the credit cards. For further evaluation of the hybrid models noise of about 10% and 30% has been added to the sample data. Several voting methods have achieved a good score of 0.942 for 30% added noise. Thus, it was concluded that the voting method showed much stable performance in the presence of noise.

## FRAUD FRAMEWORK

There are many ways in which fraudsters execute a credit card fraud. As technology changes, so do the technology of fraudsters, and thus the way in which they go about carrying out fraudulent activities. Frauds can be broadly classified into three categories, i.e., traditional card related frauds, merchant related frauds and Internet frauds. The different types of methods for committing credit card frauds are described below. (Tej Paul Bhatla, 2003)

### Authentication

There are three basic methods for determining whether your credit card will pay for what you're charging: (<http://money.howstuffworks.com/credit-card4.htm>)

- Merchants with few transactions each month do voice authentication using a touch-tone phone.
- Electronic data capture (EDC) magstripe-cardswipe terminals are becoming more common. Before checking out all should have to swipe their card in the terminal.
- Virtual terminals on the Internet

After the customer or the cashier swipes the credit card through a reader, the EDC software at the point-of-sale (POS) terminal dials a stored telephone number (using a modem) to call an acquirer. An acquirer is an organization that collects credit- authentication requests from merchants and provides the merchants with a payment guarantee.

When the acquirer company gets the credit-card authentication request, it checks the transaction for validity and the record on the magstripe for:

- MerchantID
- Valid cardnumber
- Expirationdate
- Credit-cardlimit
- Cardusage

In this system, the cardholder enters a personal identification number (PIN) using a keypad. The PIN is not on the card. That is encrypted in the card's database. (For example when we get cash from an ATM, that machine encrypts the PIN and sends it to the database to see if there is a match.) The PIN can be either in the bank's computers in an encrypted form or encrypted on the card itself. This type of cryptography where the transformation is used is called one-way. This means that it's easy to compute a cipher given the bank's key and the customer's PIN, but not computationally feasible to obtain the plain-text PIN from the cipher, even if the key is known. This was designed to protect the cardholder from being impersonated by someone who has access to the bank's computer files.

### **Theoretical framework**

For further research we have adopted a Four-Factor theoretical framework based up on which we proceed our work. The theoretical framework for this master thesis would be underpinned by the theory put forward by Chris Brenton, (2003), according to whom in his Article of "Mastering Network Security" he uses the theory of Daniel Buttafogo and Larry Drexler, Who says that "Detection is considered in two perspectives, from the Point-Of-Sale (POS) and the Internet"

## **OBJECTIVE OF THE STUDY**

- To study the demographic factors influencing the use of credit card in the districts of Hyderabad-Karnataka Region.
- To study the attributes influencing the use of credit cards in the districts of Hyderabad-Karnataka Region.
- To study the purpose and pattern of use of credit card in the districts of Hyderabad-Karnataka Region.
- To ascertain findings from the study and suggest measures to improve credit card system.

## **SCOPE OF THE STUDY**

The researcher has covered all the six districts of Hyderabad-Karnataka Region to study the usage pattern of credit card holders. The study covers all the banks, which have issued credit cards to the respondents covered under the study. All types of credit cards are covered. Sample size of 400 respondents has been taken and survey was conducted in the years 2013 and 2014. The present study focuses on the usage pattern of credit

card holders. The study is designed to gain better understanding of the factors influencing the use of credit card and satisfaction level of the existing credit card holders. The study also covers the extent of utilization of creditcards.

## RESEARCH METHDOLOGY

### Sources of data

Both primary and secondary sources of data are used for the study. Primary data was collected by administrating the structured questionnaire to respondents in the Hyderabad-Karnataka Region. Secondary data was collected from books, magazines, Government publications and related articles.

### Sampling

The study is undertaken in all the six districts of Hyderabad-Karnataka Region viz, Bidar, Kalaburagi, Yadgir, Raichur, Bellary and Koppal. As the total number of card holders in the study area is not clear, convenience sampling technique was used. Sample size of 400 respondents has been taken. The district-wise breakup of the sample respondents is as under:

#### ➤ Hypotheses

H<sub>1</sub>: Membership duration and age factor of card holders are independent.

H<sub>2</sub>: Occupation and usage of credit card are independent.

H<sub>3</sub>: Income and usage of credit card are independent.

H<sub>4</sub>: Credit card limit and monthly spending of cardholders are independent.

H<sub>5</sub>: Cash back offer and monthly spending of cardholders are independent.

H<sub>6</sub>: Occupation and purpose of cardholders are independent.

H<sub>7</sub>: The co-efficient of correlation between usage of credit card limit and expenditure per month is not significant.

H<sub>8</sub>: The co-efficient of correlation between Income and Expenditure per month is not significant.

H<sub>9</sub>: The co-efficient of correlation between usage and purchase pattern is not significant.

H<sub>10</sub>: The co-efficient of correlation between average percent of cash back and expenditure per month is not significant.

H<sub>11</sub>: At least 75% of the respondents use credit card for shopping purpose.

H<sub>12</sub>: At least 75% of the respondents have Visa credit card.

## CONCLUSION

The fraud transaction detection is the major issue of prediction due to frequent and large number of transactions. The fraud transaction prediction has the two phases which are feature extraction and classification. In the first phase, the feature extraction technique is applied and in the second phase classification is applied for the fraud transaction detection. In this paper, various techniques for the credit card fraud detection are reviewed in terms of certain parameters

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