

Chapter 4

Secure Framework for E-Commerce Applications in Cloud Environment

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ABSTRACT

There has been a massive increase in the use of the internet for shopping and payment. The ease and availability of the internet has accelerated the growth of online applications. E-commerce applications handle many sensitive pieces of data like financial or personal data, which are used for critical tasks like banking, socializing, shopping, and tax filling. Online financial service and shopping sites are an attractive target for fraudsters because money transactions are done through these sites. Credit card fraud, identity theft, and account hijack are key concerns for these organizations. These frauds cause financial loss and hurt the reputation of e-commerce sites. The use of the cloud platform has made these sites more productive, but at the same time, it has opened them to a variety of threats. This chapter describes a framework for credit card and identity fraud detection using big data analytics and machine learning techniques to make e-commerce sites more secure and efficient.

INTRODUCTION

With extensive use of internet number of fraudulent activities is also increasing. Fraud is defined as well considered, concealed, time evolving and well organized crime (Vlasselaer et al., 2015). Above definition clearly state that fraudster do well planning to commit crime, always try to hide its activities behind valid ones and updates its methodology with time. With ease and ubiquitous use of online e-commerce sites business opportunities are increasing but there is rise in various types of online frauds that can cause harm to the organization. Usage of various technologies for maintaining online e-commerce applications makes them prone to attacks and frauds. Fraud involves significant financial risks which may threaten

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profitability and an image of an organization. Fraud benefitted the fraudster at the cost of victims. The Main driving force behind fraud is pressure, opportunity and rationalization. Incidence like credit card fraud, insurance fraud, identity fraud, social security fraud, money laundering etc is increasing day by day. Fraud control is necessary requirement for today's competitive business world. To check systems for any fraudster incidence, every transactions, data sources and internal control are tested against specified system parameters and rules. Fraudsters are applying new technologies like big data, cloud, mobile computing, machine learning to increase the magnitude and severity of frauds. So now organizations are investing more on new techniques to save guard against variety of frauds. To reduce the fraud losses, solution are such developed that are less time consuming, faster learning, adaptable and maintainable. Fraud detection and prevention are two methods for reducing financial losses. Fraud detection is process of detecting malicious activity or behavior using various pattern recognition and statistical techniques. Fraud prevention is process by which fraud are proactively avoided. Some of pre-fraud prevention practices are manual card inspection, payment authentication codes and internet protocols for secure information exchange. Fraud prevention technique applied for any business depends on organizational practices, legislative framework, technologies and government policies.

Business Intelligence (BI) is now used by an organization to tackle security problem. BI solutions are efficient in taking important decision regarding governance and security of business. BI is basically combination of data integration, storage and extraction to gain knowledge for efficiently operating and securing business. The aim of business intelligence will be helpful in taking appropriate sequence of actions at right time. Business Intelligence include Business Analytics which is the methods to gain useful information from historical data for describing fact, forecasting growth and risk.

E-commerce online transaction includes following line of control online merchants, customers, issuing and acquiring banks. Multi layered approach must be applied for securing businesses which include business intelligence, fraud detection and prevention layer. Techniques like encryption, tokenization, advanced multi authentication system, identity verification and device fingerprinting technology can combine to make system more secure. Monitoring the frequency and velocity of critical transaction, detecting financial fraud by analyzing user behavioral profile with the help of analytics tools is the best approach that an organization can apply to safe its online trade. Now businesses are adopting cloud for storage and computation. It is used as an attractive medium for organization to store huge data and apply various available analytics services. Cloud base BI tools provides scalable, efficient, on demand cost effective platform for securing online business.

Main objective behind this chapter is the study of different approaches of securing business against different fraud. Data mining, Machine Learning, Data Analytics and Business Intelligence techniques for fraud management is described here. A secure multilayered framework for e-commerce application is also covered here. Various data analysis tools and their usage is also explained in this chapter. It also covers details of service oriented architecture and cloud computing service model which is providing scalable and efficient platform for analyzing data to take appropriate action and hence enhances the overall security of e-commerce application against financial fraud with minimum time and cost.

E-COMMERCE FRAUD

Fraud is any wrong doing with the motive of obtaining any financial or personal gain. Higher the flow of money in the e-commerce market, incidence of online fraud is also increasing. Fraud can spread through

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