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REALTIME FRAUD DETECTION IN THE BANKING SECTOR USING DATA MINING TECHNIQUES/ALGORITHM

S. N. John
Department of Electrical and Information Engineering
Covenant University,
Ota, Ogun State. Nigeria.
samuel.john@covenantuniversity.edu.ng

Okokpujie Kennedy O.
Department of Electrical and Information Engineering
Covenant University,
Ota, Ogun State. Nigeria.
kennedy.okokpujie@covenantuniversity.edu.ng

F. Olajide
Department of Computer and Information Sciences
Covenant University,
Ota, Ogun State. Nigeria.
funminiyi.olajide@cu.edu.ng

Chinyere Grace Kennedy
Department of Computer Science and Engineering,
Ewha Womans University,
Seoul, South Korea.
gkennedy@ewhain.net

C. Anele
Department of Information Technology
National Open University of Nigeria.
Victoria Island, Lagos, Nigeria
ahneyle0007@gmail.com

Abstract—**The banking sector is a very important sector in our present day generation where almost every human has to deal with the bank either physically or online. In dealing with the banks, the customers and the banks face the chances of been trapped by fraudsters. Examples of fraud include insurance fraud, credit card fraud, accounting fraud, etc. Detection of fraudulent activity is thus critical to control these costs. This paper hereby addresses bank fraud detection via the use of data-mining techniques; association, clustering, forecasting, and classification to analyze the customer data in order to identify the patterns that can lead to frauds. Upon identification of the patterns, adding a higher level of verification/authentication to banking processes can be added**
Keywords: **Data mining techniques, banking sector, fraud, and authentication.**

 Key words: Data Mining, Authentication, Real Time Fraud, Banking Sector.

I. INTRODUCTION

According to The American Heritage dictionary, second college edition, fraud is defined as a deception deliberately practiced in order to secure unfair unlawful gain. Fraud detection is the recognition of symptoms of fraud where no prior suspicion or tendency to fraud exists. Examples include insurance fraud, credit card fraud and accounting fraud.
Data from the Nigeria Inter-Bank Settlement System (NIBSS) has revealed that fraudulent transactions in the banking sector at its peak [1]. Fraud has evolved from being committed by casual fraudsters to being committed by organized crime and fraud rings that use sophisticated methods to take over control of accounts and commit fraud. Some 6.8 million Americans were victimized by card fraud in 2007, according to Javelin research [2].Such fraud on existing accounts accounted for more than $3 billion in losses in 2007. The Nilson Report estimates the cost to the industry to be $4.84 billion. [3] Javelin estimates the losses at more than six times that amount – some $30.6 billion in 2007. [2] Of course, fraud is not a domestic product as it's everywhere. For instance, card fraud losses cost UK economy GBP 423 million in 2006. Credit card fraud accounts for the biggest cut of the $600 million that airlines lose each year globally.

Card losses top ZAR 50 million a year in South Africa (US$6.3 million), according to the South African Card Fraud Forum. The good news is that the numbers tend to be slightly down from previous years, especially in the US. But the bad news on the other hand happens to be that hackers, identity thieves and money launderers are fighting back by focusing on different channels and keeps coming up with new types of attacks that traditional fraud management strategies were not designed to address.

A. Data Mining Model

The descriptive model points out the patterns or relationship in data and goes ahead to explore the properties of the data examined. Figure 1 shows the data mining models and tasks.
B. Data Mining Tasks

The use of result from data mining goes a long way to determine the data mining task to be performed. Data mining tasks are categorized as follows [4].

1. Exploratory Data Analysis: it is as simple as the name implies. Data is explored without any clear idea of what is being looked for.
2. Descriptive Modeling: It describes all the data involved and models the relationship between every single variable.
3. Predictive Modeling: This model permits the value of one variable to be predicted from the known value of other variables.