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STOCK EXCHANGE MARKET PREDICTION

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ABSTRACT

Stock exchanges have major impact on economy condition of any country as well as on the global economy. Stock activities estimating is a high demand for stock customers. This stock estimating is a challenging issue. Hence, we must a need to develop application that is capable to exactly predict directions of stock price movement. Our paper suggest a data mining technique to model relationship between company stock with other companies stocks. It is conventional that selected rules can be of a help to guess future stock market prices movements with significant level of accuracy.

Keyword: Data-mining, Inter-transaction, Apriori algorithm, association rule mining, stock exchange..

1. INTRODUCTION

The purpose of this paper is to estimate and evaluate companies movement of stock price in the stock exchange market with the help of implementing the association rule mining algorithm to selects rules of relationship between movements of company stock prices from time to time.

The paper also examines and evaluates several factors that affect the number of rules generated. Throughout conducted experiment, it is expected to have more number of rules generated as by being able to accomplish such a task more conditions between movements of company stock process file.

Stock market prediction

Stock market or equity market is a public organism for the buying and selling of company stock and by product at an agreed price. Stock exchange is a imaginary kind, composed of network of computers where stockholders are made electronically via traders. The purpose of stock exchange is to facilitate the exchange of securities between buyers and sellers, thus providing a market place. The exchange provide real time trading information on securities, facilitating price discovery. The stock market is one of the most important sources for companies to raise money. This allows businesses to be publically traded, or raise additional financial capital for expansion by selling shares of ownership of the company in public market.

To bias preis and his colleagues Helen Susannah Mout and H.Eugene Stanley introduced a method to identify online precursors for stock market moves, using trading strategies based on search volume data provided by Google Trends.
Data mining has appeal to a big contract of attention in the information technology industries and in society[1]. Wide opportunity of large amounts of information and the forthcoming need for running such a data into useful information and knowledge. Marketing researches, fraud detection, investor detention, manufacture control and science exploration.

Data mining potential application:

1) Data analysis and decision support
2) Risk analysis and management
3) Fraud detection and detection of unusual patterns
4) Text mining and web mining
5) Stream data mining
6) Bio-informatics and bio-data analysis

2. IMPLEMENTATION OF PROPOSED TECHNIQUE

Stock price prediction in this research is performed by implementing a data mining approach named the association rule mining algorithm. The association rule mining algorithm is data mining technique that has been widely used to find the relationship between items from a number of transaction records. In this study we uses the probably best known algorithm that means the Apriori algorithm. There are two steps in this algorithm:

1) Find out all itemsets that have minimum support
2) Use frequent itemsets to generate rule

The Apriori Algorithm:

Ck: Candidate itemsets of size k

Lk: frequent itemsets of size k

L1={frequent items};

For(k=1;Lk!=Null;k++) do begin

Ck+1=candidates generated from Lk;

For each transaction 't' in database do

Increment the count of all candidates in

Ck+1 that are contained in t.

Lk+1=candidates in Ck+1 with minimum support

End

Return UkLk;

THE APRIORI ALGORITHM-EXAMPLE:

Association rule mining algorithm has lack of predicting general pattern of inter-transaction records especially when being used to analyze real-time data such as movement of company stock prices in a stock exchange market.

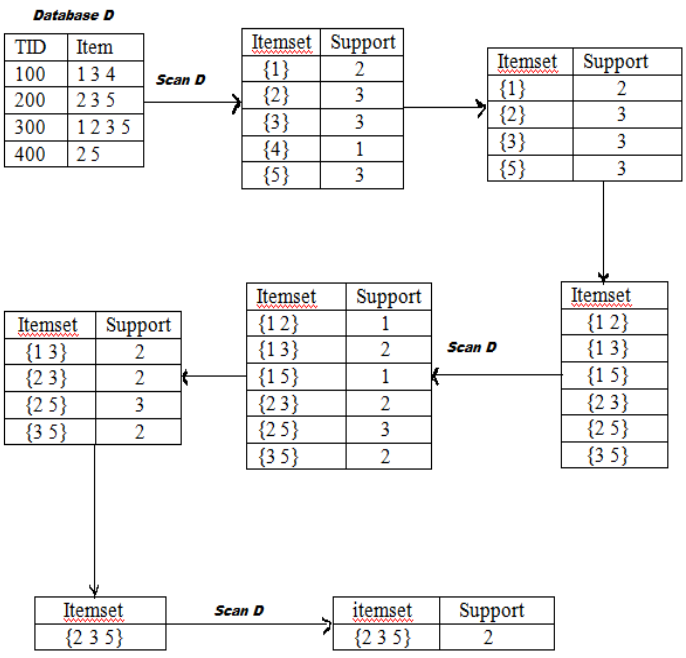

Figure.1: Apriori Algorithm example

Therefore, this paper uses the concept of inter-transaction rule mining to accomplish such task. The data mining technique in this study is divided into 3 steps:

Data Collection Process:

Row data of company stock prices is collected from yahoo finance.

Table1: SGRO DATA Example

Date	Open	High	Low	Close	Volume	Adj. close
17/mar/14	3389.45	3389.45	3389.45	3389.45	0.0	3389.45
14/mar/14	3357.5	3401.5	3341.35	3389.45	72100.0	3389.45
13/mar/14	3430.2	3449.0	3340.0	3357.5	466200.0	3375.7
12/mar/14	3680.2	3698.4	3651.9	3670.9	20800.0	3672.75
11/mar/14	3667.0	3706.2	3630.0	3672.75	35500.0	3672.75

The data is obtained in a tabular form with DATE, OPEN, HIGH, LOW, CLOSE, VOLUME as an attribute.

Data Preprocessing

It is used to convert the raw stock data obtained from yahoo finance into association rule friendly data set so the item sets produced can be mined with association rule mining algorithm[2].

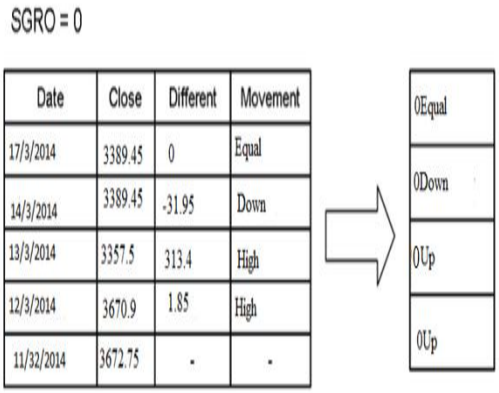

Figure.2: Illustration of SGRO stock data encoding process.

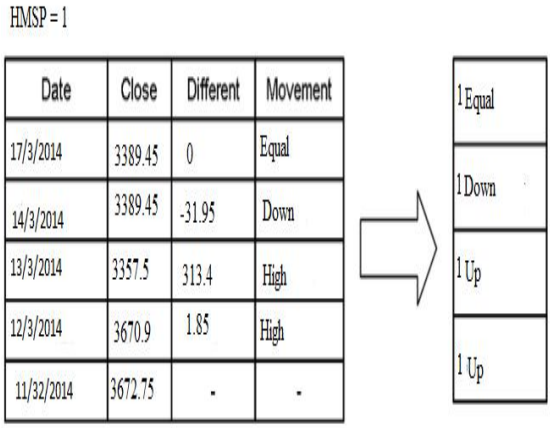

Figure.3: Illustration of HMPS stock data encoding process

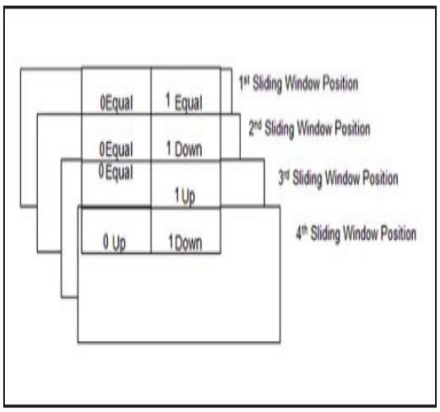

Figure.4: Illustration of sliding window process to generate extended data set from
new data set

Generating the Rules

To modified version of the original rule generation method commonly used in other association rule mining algorithm.

3. EXPERIMENTAL STUDY

In this experiment, 5 different categories of stock market, as given below, are used to test the accuracy of proposed applications[3]:

The 1st category is "same company and different sector (related)", example is the same company run in the banking industry and IT industry.

The 2nd category is "different company and same sector (related)", example is the both company run on the banking industry.

The 3rd category is "different company and different sector (related)", example is a company 1 run on the banking industry and company 2 run on the IT industry.

The 4th category is "different company and different sector (not related)", example is a company 1 run on the banking industry and company 2 run on the technology-based industry.

The 5th category is "same company and different sector (not related)", example is the same company run in the technology-based industry and IT industry.

4. CONCLUSION AND FUTURE WORK

Results of conducted experiments indicate that predictive patterns generated using the proposed method can help to predict stock prices movements on the next day. However it was also found that these rules can only be applied when the left side have a patterns occur. Therefore it is still become a challenge to be able to apply all extracted rules at any given time to predict the upcoming stock, price with high accuracy. Stock market have much more roles in the finances, this may includes raising capital for companies, mobilizing savings for investment, promoting company growth, profit sharing, corporate governance, creating investment chances for small stockholder, government capital-increasing for advanced projects.

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