

A RELIABLE METHOD FOR PREDICTING STOCK MARKET USING IMPROVED ASSOCIATION RULE MINING

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Abstract: Stock market analysis 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 among 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, Improved Association Rule Mining algorithm, Improved Association Rule Mining, stock market analysis

I. INTRODUCTION

The purpose of this paper is to estimate and evaluate companies movement of stock price in the stock market analysis market with the help of implementing the Improved Association Rule Mining algorithm to selects rules of relationship among 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 among 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 market analysis is an imaginary kind, composed of network of computers where stockholders are made electronically via traders. The purpose of stock market analysis is to facilitate the market analysis of securities among buyers and sellers, thus providing a market place. The market analysis 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 enables businesses to be publically traded, or raise supplementary financial investment for expansion by selling shares of ownership of the business in public market.

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. For stock market forecasting, there are two well-known analysis

methods, which are technical analysis and fundamental analysis. Technical analysis accompanied with a variety of forecasting techniques such as chart analysis, cycle analysis and computerized technical trading system [7]. For example, Lo et al. [8] used nonparametric kernel regression to identify 10 dissimilar technical patterns, and then provided indicators that technical analysis may contain. Specifically, they mentioned that even technical analysis is not necessary to generate excess trading profits, it does raise the possibility that adding value to the investment process.

Data mining potential application:

- Data analysis and decision support
- Risk analysis and management
- Fraud detection and detection of unusual patterns
- Text mining and web mining
- Stream data mining
- Bio-informatics and bio-data analysis

The prediction of the stock market is a fascinating subject. It changes the lives of investors on a daily basis based on the decisions they make whether to buy or sell shares. The stock market is most important resource for companies to raise money. This allows businesses to be publicly traded by selling shares of ownership of the company in a public market. Examination demonstrates that the cost of shares and different resources is a critical piece of the progress of financial action and can impact social mind-set. Indeed, the stock exchange is regularly viewed as the essential sign for nation's monetary quality and improvement. Driving offer costs has a tendency to be connected with expanded business venture and the other way around. Along these lines, national banks have a tendency to watch the control and conduct of the stock exchange.

Trades similarly go about as a clearing house for every exchange

importance that they gather and convey the shares and guarantee installment to the dealer of security. This wipes out the danger to an individual purchaser or merchant that the counter party could default on the exchange.

The smooth working of all these exercises encourages financial development, lower expenses; advance the creation of merchandise and administrations and occupation. Thus the monetary framework adds to expanded prosperity. Stock exchange Price expectation utilizing information mining is a stand out amongst the most interesting issues to be researched and it is one of the essential issues of securities exchange inquire about over the previous decade. In any case, deciding the best time to purchase, offer or hold a stock stays exceptionally troublesome on the grounds that there are loads of components that may impact stocks costs like basic, Technical files, obscure factors. Information mining system like Association tenet mining (ARM) concentrates on discovering most successive thing sets and relating affiliation rules.

Section based rule mining system by taking simply chronicled datasets as data is proposed. In any case, this calculation produces a greatly vast number of affiliation standards, regularly in hundreds or even thousands. Further, the affiliation standards are once in a while huge. It is about inconceivable for the end clients to see effortlessly. Subsequently, the clients need to utilize an attempt and -lapse way to get suitable number of standard.

II. IMPLEMENTATION OF PROPOSED TECHNIQUE

In data mining, association rules are produced in view of solid relations and regularities existing among the variables in extensive exchanges. These association rules go for extricating connections, frequent patterns and associations among the item sets in exchanges. Association rules are connected for use in different zones, for example, media transmission, hazard administration and so forth. One such territory where the association rules are vital is the stock market. In stock marketing, picking the right stock relies on upon the genuine stock quality and the capacity to pick the stock is urgent as it impacts the profit of investors. Stock price prediction in this research is performed by implementing a data mining approach named the Improved Association Rule Mining algorithm. Overview Association rule mining is the process of discovering knowledge about relationship between items or events [1, 2, 3], which ideally can be applied to estimate upcoming states of a dynamic system, e.g. movement of stock prices in a stock exchange market. The word "movement" in this study means the direction of a stock price, i.e. up, down, or stable (unchanged). An example of a rule that can be generated from traditional association rule mining is given below: R1: When the prices of IBM and SUN go up, at 80 percent of probability the price of Microsoft goes up on the same day. In the given example extracted rule might be of help for investors to discover relationship between movements of company stock prices, however its role in stock price prediction is limited. Conversely, market participants, in

particular traders, demanded a more detail form of expression or rule as follows: R2: When the prices of IBM and SUN go up, Microsoft's will most likely (80 percent of probability) go up the next day. With such kind of a rule, it would be possible for investors or stock traders to predict the stock price movements on the next day. The process of extracting such rules from a set of transaction or inter-transaction data set is known as the association rule-mining process. One basic technique used in the association rule-mining algorithm is the apriori algorithm. The principle of apriori algorithm is to reduce the number of candidates with pruning techniques, reduce the number of comparisons, so it is not needed to match every candidate against every transaction and anti-monotone [4, 5]. The main purpose of this study is to forecast and analyze company stock price movements in the INDIA Stock Exchange market (IDX) by implementing the association rule-mining algorithm to extract rules of relationship between movements of company stock prices from time to time. In addition, the study also examines and evaluates several factors that affect the number of rules generated. The Improved Association Rule Mining algorithm is data mining technique that has been widely used to find the relationship among items from a number of transaction records. In this study we use the probably best known algorithm that means the Improved Association Rule Mining algorithm. There are two steps in this algorithm:

- Find out all itemsets that have minimum support
- Use frequent itemsets to generate rule.

The Improved Association Rule Mining Algorithm:

Ck: Candidate itemsets of size k
Lk: frequent itemsets of size k

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

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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;
```

MODULE DESCRIPTION:

As stated in previous points stock prediction in this proposed system can be performed using (Fragment based mining) and further on applying genetic algorithm to provide the rules with maximum fitness. Different methods which are already available and used for the purpose of the finding of prediction rules causes failure in the prediction when it comes to real time implementation or as the data increases Therefore this paper proposes a system which will be using fragment based mining

Generating the Rules

To modified version of the original rule generation method commonly used in other Improved Association Rule Mining algorithm.

IV. 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.

V. CONCLUSION

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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