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Improve Decision Support System in an Uncertain Situation by Custom-made Framework for Data Mining Technique

Computer Science

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ABSTRACT

Decision Support System (DSS) is equivalent synonym as management information systems (MIS). Most of imported data are being used in solutions like data mining (DM). Decision supporting systems include also decisions made upon individual data from external sources, management feeling, and various other data sources not included in business intelligence. Successfully supporting managerial decision-making is critically dependent upon the availability of integrated, high quality information organized and presented in a timely and easily understood manner. Data mining have emerged to meet this need. They serve as an integrated repository for internal and external data-intelligence critical to understanding and evaluating the business within its environmental context. With the addition of models, analytic tools, and user interfaces, they have the potential to provide actionable information that supports effective problem and opportunity identification, critical decision-making, and strategy formulation, implementation, and evaluation. The proposed system will support top level management to make a good decision in any time under any uncertain environment.

INTRODUCTION

Decision Support System (DSS) is equivalent synonym as management information systems (MIS). Most of imported data are being used in solutions like data mining (DM). Decision supporting systems include also decisions made upon individual data from external sources, management feeling, and various other data sources not included in business intelligence. Successfully supporting managerial decision-making is critically dependent upon the availability of integrated, high quality information organized and presented in a timely and easily understood manner. Data mining have emerged to meet this need. They serve as an integrated repository for internal and external data-intelligence critical to understanding and evaluating the business within its environmental context. With the addition of models, analytic tools, and user interfaces, they have the potential to provide actionable information that supports effective problem and opportunity identification, critical decision-making, and strategy formulation, implementation, and evaluation. The proposed system will support top level management to make a good decision in any time under any uncertain environment [4]. This study aim to investigate the adoption process of decision making under uncertain situations or highly risk environments effecting in decision of investing stoke cash of bank. This applied for two types of usage investment – direct or indirect - or credit and any sector of investment will be highly or moderate or low risk. And select which one of this sectors risk 'rejected' or unrisk 'accepted' all that under uncertain environments such as; political, economical, marketing, operational, internal policies and natural crises, all that using the contribution of this study enhancing k-mean algorithm to improve the results and comparing results between original algorithm and enhanced algorithm.

DATA MINING TECHNIQUES (DM)

There are several processes for applying DM:

1. Definition of the business objective and expected operational environment.
2. Data selection is required to identify meaningful sample of data.
3. Data transformation that involves data representation in an appropriate format for mining algorithm.
4. Selection and implementation of data mining algorithm depends on the mining objective.
5. Analysis of the discovered outcomes is needed to formulate business outcomes.
6. Representing valuable business outcomes.

Data mining consists of five major elements; to extract, to transform, and to load transaction data onto the data warehouse system, to store and manage the data in a multidimensional database system, to provide data access to business analysts and information technology professionals, Analyze the data by application software, and finally to present the data in a useful format, such as graph or a table.

DM techniques usually fall into two categories, predictive or descriptive. Predictive DM uses historical data to infer something about future events. Predictive mining tasks use data to build a model to make predictions on unseen future events. Descriptive DM aims to find patterns in the data that provide some information about internal hidden relationships Descriptive mining tasks characterize the general properties of the data and represent it in a meaningful way. Figure1 shows the classification of DM techniques.

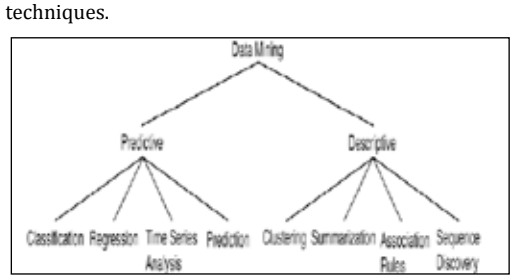

Fig 1: DM Techniques [5]

Clustering is "the process of organizing objects into groups whose members are alike in some way" [7]. A cluster is therefore a collection of objects which are "similar" among them and are "dissimilar" to the objects belonging to another cluster. So, it deals with finding the internal structure in a collection of data. As shown in figure 2.

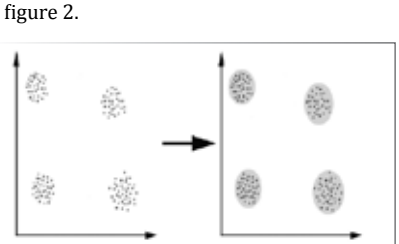

Fig 2: Simple graphical for clustering data [7]

[8] Define that "Clustering involves identifying a finite set of categories or segments 'clusters' to describe the data according to a certain metric". [9] Define that "Clustering enables to find specific discriminative factors or attributes for the studied be very similar to other members in its cluster and very dissimilar to other clusters. When a new data is introduced, it is classified into the most similar cluster". Several researchers classified clustering algorithms differently.

THE PROPOSED 'IDMS'

Investment Data Mining System 'IDMS' aims to build a data mining system for investment in the banking sector. IDMS consists of several components; data gathering, preparing data to discover knowledge, data pre-processing, using data mining techniques in sequences steps start with classification data, clustering data especially using K-mean algorithm and enhanced K-mean algorithm to set which best result and then set and run association rules to solve problem, post processing and finally get result and visualize result to create best decision to take a good decision for investment under uncertain situations.

CONCLUSIONS

This paper represents a contribution of applying DM and DSS for banking sector especially in investment which has been rarely addressed before. IDMS is a new proposed system which is simple, straightforward with low computation needs. The proposed pre-processing component is an aggregation of several known steps. The post processing component is an optional one that eases the interpretation of the investment results. The banking is planning a set of actions in accordance of IDMS outcomes for decision making in investment sector. The investment department in the banking is starting to analyze the approached investment sector, to introduce a good decision under uncertain situation.

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