Business intelligence with data mining

Business

Business Intelligence with Data Mining Abstract Banking andfinanceinstitutions are growing very fast in thisglobalizationera. Mergers, acquisitions, globalization have made these institutions bigger. No doubt, the data also grow real huge and more varied. Big data storage such as data warehouse and data marts are provided to give a solution on big data storage. On the other sides, those data are needed to be analyzed. Business intelligence finally comes in as a solution in analyzing those huge data. Business intelligence especially with data mining can create a solution in further decision making.

With various tools and techniques, data mining has been proven in many aspects of business. Hidden informations that stored inside either data warehouse or data marts can be gained easily. In example, those hidden informations are market and economy trens, competitor trends, competitive price, good products and services and also can provide better customer relationship management. There is still one benefit in business intelligence with data mining that this paper will focus on, i. e. risk management and frauds and losses prevention. One of product from banking and finance institutions is credit loans.

It is really a high risk business, but with business intelligence with data mining especially classification and clustering techniques, it can be maintained and implemented safely and of course with low risks, minimized frauds and losses and increased profits and revenues. Keywords : Banking and Finance, Business Intelligence, Data Mining, Risk Management, Credit Loans Introduction Banking and Finance institutions are growing rapidly

nowadays. For one institution, there are more than one offices or branches in one country or even in different country.

Globalization, mergers, acquisitions, competitions, market changes are some of the reasons behind why are they growing fast. As those banking and finance institutions grow, so do the data. In this case, banking and finance institutions probably have much more data than other institutions. Every single customer or people has one or more accounts in one institution or more. The challenge is how to maintain those data easily, how to make good decision among those data, how to create good product for customers and how to retain good customers that can bring much more profits and increase revenues.

For those that can not maintain data and make a decision for further movement without analyze the data before will find it hard to be success or even lose in competition with other banking and finance institutions. Some of key success factors in banking and finance institutions, such as : 1. Customer satisfaction Good customer management and good product are the key to satisfy customer. If the institution could manage the customer well and offer good product that can produce benefit to both sides then it will guarantee customer will be very satisfied. 2. CustomerloyaltyThere is no guarantee that satisfied customers will be loyal.

Strategies and tactics are needed to retain those customers. 3. Increased profit & revenue Similar with business institutions, gaining profit and increase revenue are the most important thing. 4. Minimal risk With many customers, banking and finance institutions need to analyze the risks that probably could happen. Not all of customers are good customer. Fraud or

loss might happen. 5. Readiness for new markets to increase customer Markets are changing rapidly. Winning the competition means winning the customer. Offered products are the key here such as higher interest, free admin cost etc. 6. Efficiency of operations

Since banking and finance institutions have several branches and many customers, the challenge is to make operations in daily transactions become efficient. Problems in Banking and Finance Institutions Similar with other institutions in business, banking and finance institutions also have some of problems in their business. Below are some of those problems : 1. Separated data instance Data are separated through branches all over the place. The banking and finance institution will find it hard to collect and analyze the data. This will also impact in decision making because decision should be made after analyzing all of the data. . High risk Banking and finance institutions have many customers and not all of those customers are good customer. Need to find out whether the customer is realible or not. 3. How to detect fraud and prevent loss Frauds and losses might happen in banking and finance institutions. Fraud in credit loans will cause loss to the institution. 4. How to create good customer relationship To compete in the market and winning customer, banking and finance institutions need to create good customer relationship to satisfy customers and make them loyal. 5. How to create good product

Product is one the aspect that customers consider. Create a good product and can compete with others product will impact in customer winning. 6. How to find the hidden information inside those data to ease the decision making Huge data are needed to be analyzed and there are some hidden

informations in those data that could affect the decision maker in making the decision. If the decision made is crucial one, it could lead to future success. Business Intelligence Business Intelligence can be defined as an ability of an enterprise to comprehend and use information in order to increase the performance.

Business intelligence has several activities, procedures and applications. Some of those that mostly used are : Data Warehousing, Data Marts, OLAP Tools, tools for Extract Transform and Load (ETL), Information Portals, Data Mining, Business Modelling, etc (Katarina Curko, 2007). Business Intelligence can also defined as the process of gathering high-quality and meaningful information about the subject matter being researched that will help the individual(s) analyzing the information, draw conclusions or make assumptions (Muhammad Nadeem, 2004). In this paper, we shall focus more in data mining.

Data mining works with data warehouse and data marts for data storage and extract transform and load (ETL) tools. Some of advantages by using business intelligence with data mining: 1. Gain profit and revenue for enterprise With business intelligence, the enterprise can gain the data access easily and integrated inside data warehouse & data marts. So the enterprise can service customers better and quicker which will impact in profit and revenue increment. 2. Decision making With data mining in business intelligence, the enterprise can gain the hidden informations in those huge data and can make quick and easy decisions. . Expand the market segment With the ease of decision making, the enterprise can make decision in markets such as price, discount, etc which will impact in winning

the market competition. Data Mining Data mining refers to computer-aided pattern discovery of previously unknown interrelationships and recurrences across seemingly unrelated attributes in order to predict actions, behaviours and outcomes. Data mining, in fact, helps to identify patterns and relationships in the data (Bhasin, 2006). Some of goal examples in using Data mining: 1.

Forecasting market price With data mining, enterprise can predict the market price and decide on the best price to compete the price in market. 2. Cross-selling and up-selling analysis Data mining can be used to analyze market based on products. It means enterprise can make cross-selling or up-selling to their products to optimize or increase the sales. 3. Profiling customers Data mining can be used to segment customers depends on the category. For example we categorize customers by their profit or revenue. 4. Manage customer retention

Not only enterprises data, data mining can be used to manage customer data which will impact in better customer relationship management. [pic] Figure 1. Overview of Business Intelligence with Data Mining Source of data that we shall process come from various sources such as customer data, market data, transaction data, product data, service data etc. As mentioned above, those huge and heterogeneous data will be stored in data warehouse and data marts. Before entering either data warehouse and data marts, those data will be extracted, cleaned up and sometimes transformed into different types of data.

Then it will load the results into data warehouse and data marts. In this data warehouse and data marts, the data will be stored. Once the user want to

analyze the data using data mining, the system will gather the data stored in data warehouse and data marts. With some of slicing and dicing techniques, data mining process the required data and resulting in enterprise reports. With these reports, management of enterprise then decides what to do next. Data Mining Techniques According to (Larissa T. Moss, 2003), data mining itself has many models and various methods in analyzing data.

When to use one of these models or methods depend on the requirements. Below are some of those models or methods : • Associations Discovery Is used to identify the behaviour of specific events or processes. Associations discovery links occurrences within a single event. Example of use in discovering when a person buys a toothbrush then may also buy a toothpaste or a person buys a cigarette may also buy the lighter. • Sequential Pattern Discovery Is similar to associations discovery except that a sequential pattern discovery links events over time and determines how items relate to each ther over time. Example of use in predicting a person who buys a couple sets of computer may also buy a switch or router within three months. • Classification Is the most common data mining technique. Classification looks at the behaviour and attributes of predetermined groups. Data mining tool can classify to new data by examining the existing data that has been classified before. Example of use in classifying characteristics of customers. • Clustering Is used to find different groupings within the data.

Clustering is similar to classification except that no groups have yet been defined at the outset of running the data mining tool. Clustering divides items into groups based on the similarities the data mining tool finds. Clustering is used for problems such as detecting manufacturing defects or

finding affinity groups for credit cards. • Forecasting Is used to forecasting market or forecasting products in manufacturing enterprise. Comes in two types: regression analysis (predict future based on whole past trends) and time sequence discovery (predict future based on time-dependent data values).

Business Intelligence in Banking and Finance Banking and finance in this paper, is the institution that require to adapt in globalization, flexible in market, keep growing, create innovations to gain more customers that will increase profit and revenue. The challenging questions is how to achieve those requirements. Those institutions also do risk management to handle frauds and losses. With high profit and revenue, it will be useless if the institution can not handle possible risks, in this case frauds and losses are the most possible risks. They need customers but after customers increased so do the risks.

So the possible way is to manage those risks. The same question as above, how to make the risk management easily and cover up all the risks. With business intelligence, all of those things can be achieved. Banking and finance institutions can depend on business intelligence in many aspects. Efficiency of analyzing the data, detection of frauds and losses, risk management, customer management and product management are some of these aspects. Striving for success, banking and finance institutions always trying to create new innovation either in products or services.

Mergers and acquisitions have inevitable made those institutions have really huge and heterogeneous data. Impossible to maintain those data without new technologies (Katarina Curko, 2007). Using Data Mining as Solution in

Credit Loans for Banking and Finance As mentioned above, this paper will focus more on data mining in business intelligence. After discussing the benefit of business intelligence in banking and finance institutions, at last we go to the last important question, how to extract the hidden informations from those huge and heterogeneous data.

In this section, we shall focus more on how to predict frauds, losses and risks that might happen in credit loans. Being able to predict risks, frauds and losses are the main concern these days in banking and finance institutions. Credit loans nowadays have been growing rapidly. Almost every single shop or business center allows payment with credit card, but we shall focus more on credit loans such as loan for business, vehicle etc. Credit loans have been the most interesting product for banking and finance institutions. Many customers are looking for credit availability to help them financially.

With the credit interests, the banking and finance institutions gain profits. Quite interesting business when they can offer credit and gain the profit from the credit interests, but the most important question is how to guarantee that the customer is a good one or at least make sure the customer will pay back including the credit interests so those institutions will not get frauds and losses. We can say to prevent frauds and losses is a kind of risk management. Risk management really is a crucial step to do especially in banking and finance institutions.

Risk management in banking and finance institutions itself covers many aspects such as liquidity risk, operational risk and concentration risk. Today, integrated measurement of different kinds of risk (market and credit risk) is moving into focus. These all are based on models representing single

financial instruments or risk factors, their behaviour, and their interaction with overall market (Dass, 2006). We shall focus more on credit risk. Credit risk assessment is key component in the process of commercial lending (Dass, 2006). The institution hasmoneyto lend but to decide which customer or borrower is not an easy matter.

We shall learn more about the customer or borrower, find their background, their market transaction, their current income, and in more extreme way is learning their current life. To make those tasks possible, we can use classification or clustering in data mining technique. These data mining tools can provide a grouping of customer or borrower. Let’s say there are three groups of customer or borrower that we want to manage. First, high valued customers, middle valued customers and low valued customers. Before put customers into those groupings, there are many things to consider and analyze.

Different institutions use different kinds of classification and analysis. But in general, things to consider and analyze are customer background, customer history transaction, customer credit history, customer account at another banking or finance institution, customer income. Those are from credit customer or borrower perspective. They also consider and analyze market and economy trends to calculate and manage the possible profit gained before make a decision to lend or give the credit. [pic] Figure 2. Overview of Data Mining Process (Classification & Clustering) in Credit Loans

With these data mining tools, the analyst from those institutions can easily decide to approve the credit or not. Logically, analyst or management inside institutions will decide to lend or approve the credit requested by customers

in high valued customer then it goes down until low valued customer. But not all decisions are correct, many aspects can cause wrong decision such as incomplete data or unconsistent data of customers, market & economy trends changing, or other aspects. But these tools surely help a lot to do risk management in credit loans which will impact in minimized rauds and losses and increased profits and revenues. Conclusion Banking and finance institutions have so many products and services offered to customers. One of those are credit loans. Credits that offered to customers or borrowers are not directly approved if one of the customer or borrower makes a request of credit. Many aspects to consider and analyze. With business intelligence especially with data mining including data warehouse and data marts, those important aspects are collected, stored and analyzed. Specifically we use a couple of data mining technique i. e. classification and clustering.

The purpose is to group the customer or borrower into groups that are easily to read and analyzed by institution analyst or management to ultimately decide to approve the requested credit or not. In this paper we suggest three groupings of customers or borrowers such as high valued customer, middle valued customer and low valued customer. Analyst or management also analyze the market and economy trends beside customer aspects. In the end, these business intelligence and data mining tools are used to ease in decision making to make the best decision for whole enterprise. References Journals: [1] Dass, R. (2006).

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