

Decision Support Systems in the Banking Industry

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Abstract. Explores the applying of data mining (DM) and decision support systems (DSS) in the banking industry. Data mining is seen as a method that is used to store data. But the decision support system is a tool that helps to develop and generate decisions based on mined data. In this regard, it is necessary and relevant to implement a combined technology of data mining and decision support systems. This is required not only for economic efficiency, but also because it is more useful to support the daily business in terms of speed, availability of customer data, distribution of information and support of decision-making. DM and DSS is a complex combined tool that requires a high level of accuracy and professionalism. The implementation of combined DM and DDS technology is cost-effective for supporting daily business operations.

Keywords: data mining, decision support system, banking industry, database, credit scoring.

Introduction

The applying of DM and DSS is becoming more common. Many banks are moving from instinctive management decisions to data mining and using it to make decisions for business growth, not only because of the poor results they often get from instinctive decisions, but also because they need to process increasing amounts of data every day.

Data mining can be seen as a method that is used for a data warehouse where daily bank data is received for use and new data is stored once, while a decision support system is a tool that helps develop and generate decisions based on mined data. These include the following features: large amounts of data are stored in all bank branches and branches throughout the coverage, and are accessed simultaneously.

Heterogeneous execution environments consisting of different hardware, network connections, operating systems, data formats, and data stores. Extremely heterogeneous nature that depends on a large number of data variables. Most banks and financial institutions are adopting combined DM and DSS technology not only for cost efficiency, but also because it is more useful for supporting day-to-day business in terms of speed, availability of customer business data, information dissemination and decision support.

Combined data mining and decision support system technology

Information sharing is important to any organization. Combined DM and DSS technology are the primary tool an organization uses to make proactive decisions on the various products offered to its customers as well as customer retention. It is a

very good collaborative tool that provides employees with a convenient way to make informed decisions in a timely manner. The use of DM and DSS is gradually expanding worldwide and eliminates the use of instinctive and predictive analysis by senior bank management in every department for their products and customers.

DM and DSS support the direct transfer of data from different sections within retail banking to analyze and make customer account decisions, as well as to gain marketing knowledge about the customer. It also provides a simple, fast, accurate and computerized business intelligence system. DM and DSS is a complex combined tool that requires a high level of accuracy and professionalism. The risk comes from inaccurate data, lack of data updates, and instinctive decisions made by senior management for branch managers with banks. This can cost a bank a fortune, ranging from reputational damage, legal penalties, loss of customer confidence and huge financial losses, to mention just a few.

Several problems have been identified related to the misuse and administration of daily generated data, but these problems vary depending on which systematic approach the bank uses. The following problems were identified as problems in providing an effective DSS for banking as a tool:

1. Lack of performance optimization.
2. Lack of competition with other sectors.
3. Lack of informed decisions.
4. Reduced profitability.
5. Regulatory requirements.

It is difficult to accurately make informed or relatively good decisions because of the complexity and daily increase in data in banks.

Data mining

Data mining is one of the most evolutionary achievement these days. It is the discovery process of meaningful new correlations by extracting and analyzing trends and patterns in large amounts of data stored in databases or repositories, using pattern recognition techniques as well as mathematical and statistical methods. DM is the process of finding trends and patterns in data by sorting through large amounts of data and discovering new information.

It has been observed that the problem today is not that not enough data and information is coming in. In fact, we are inundated with data in most areas. Rather, the problem is that there are not enough trained personnel who are willing and able to convert all this data into knowledge. The continued strong growth of data mining and knowledge discovery has been driven by a fortunate confluence of various factors, such as: the explosive growth of data collection, the storage of data in data warehouses, and the availability of enhanced data access from the web. However, data mining is not meant to replace knowledge. Rather, it is supposed to be a tool to help quantify relative influences and reveal their relationships, as well as provide insights into knowledge and decision-making. Successful data analysis depends on two key factors: developing an accurate formulation of the problem to be solved and applying the right data sets from a huge database.

The banking industry is constantly realizing the importance of information about its customers. This industry is highly information-intensive and applies IT for a high quality of service and to gain a competitive advantage. Banks accumulate a significant amount of data over time, which affects the success of data mining development. By using data mining to analyze patterns and trends, bank executives can more accurately predict how customers will respond to interest rate adjustments, which customers are likely to accept new product offerings, and which customers will be at higher risk of loan defaults, and how to do it. relationship with each client is more profitable.

Data mining is also used to manage risk in banking. Bank management should know if their customers are trustworthy. If there is insufficient information about customers, securing new customers with credit cards, loan approvals, developing existing lines of credit can be risky for many banks. Data mining can be used to reduce risk for banks that make credit cards. This is done by identifying customers who are likely to default on their accounts.

Credit scoring is the most important tool for risk management in financial transactions. Lenders focus on Credit Scoring because it is very valuable to lenders in the banking industry when making lending decisions. Examples of stories of both a good and a bad loan applicant can be used to develop a profile of a good and bad new loan applicant.

Data mining plays a role in determining the credit behavior of individual borrowers with installment

loans, mortgages and credit card loans by applying the following characteristics: credit history, length of employment and residence. A score is calculated that allows the lender to evaluate the customer and understand whether the person is a suitable candidate for a loan or if there is a significant risk of defaulting on the proper obligations.

Data mining is commonly used in the banking and financial markets. In banking, data mining has been widely used to predict credit fraud, assess risk, analyze trends and profitability, and help direct marketing campaigns. In financial markets, neural networks have been used to predict stock prices in options trading, in bond rating, in portfolio management, in commodity price forecasting, in mergers and acquisitions, and in predicting financial disasters. The widespread use of data mining in banks has not gone unnoticed. Bank Systems and Technology highlighted data mining as the most important application in financial services.

Decision Support System

A Decision Support System (DSS) is an interactive computerized system that enables decision makers to apply data and models to solve unstructured problems. The term DSS can be used as a general term to describe any computerized system that supports making of decisions in an organization where different departments, such as marketing, finance, and accounting, have different expert systems.

DSS is an area of information systems focused on supporting and improving senior management decisions. Today's computerized capabilities that can facilitate decision support in a variety of ways include the following:

1. Fast communication: the computer allows the decision maker to quickly perform many calculations and make timely decisions on issues.
2. Improved communication and collaboration: nowadays, great number of decisions are made by certain groups whose members may be in different places. Groups can easily collaborate and communicate by using web-based tools.
3. Managing giant data warehouses: large data warehouses require special methods to compute, organize, and analyze data.

Another approach is to track and document the process used so that decision makers can easily review what has already been learned and done. An even newer approach used to support these decisions is to create an environment specifically designed to give decision makers an environment that suits their business needs. The key to supporting unstructured decisions is to understand the role that personal experience or knowledge plays in decision making and to take into account individual approaches.

The DSS methodology recognizes the need for data to solve problems. These data sets can come from sources including the Internet. Every problem to be solved and every opportunity or strategy to be analyzed requires some data. Data is the first

component of the DSS structure.

The decision support system in the banking industry consists of mathematical and analytical models and they are the basic component of a model-oriented DSS. Each model-driven DSS consists of a specific set of objectives, and as such we need and apply different models. The selection of appropriate models is a key design issue. In addition, the software used in the creation of certain models manages the right data and user interface.

In a model-driven DSS, the values of key variables or parameters are changed, often multiple times, to reflect potential changes in supply, production, economics, sales, marketing, costs, or other environmental and internal factors. The information from the model is then analyzed and evaluated by the decision maker. Knowledge-based DSS use specialized models to process rules or define relationships in data.

A component of the DSS architecture and network design belongs to how hardware is organized, how software and data are distributed in the system, and how system components are integrated and interconnected. to date, the main question is whether

DSS should be accessible by using a web browser on the company intranet, as well as be accessible on the Internet.

Conclusion

The relationship between data mining and decision support systems is important because they both complement each other's work, they are a separate technology, but they benefit each other. Data mining can be used to create patterns and help discover knowledge in a data warehouse, but not for decision making because it only outputs data for machine learning, which is used in a decision support system.

Data mining can not only improve decision making by finding relationships and patterns from the vast data collected by organizations, but also reduce information overload.

Thus, the implementation of combined DM and DDS technology is cost-effective for supporting daily business operations in terms of speed, availability of customer business data, information dissemination and decision support.

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Банк саласындағы шешімдерді қолдау жүйелері

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Аңдатпа. Банктік қызметте деректерді іздеу және шешімдерді қолдау жүйелерін пайдалану қарастырылады. Деректерді өндіру, деректерді сақтау үшін қолданылатын әдіс ретінде қарастырылады. Бірақ шешім қабылдауды қолдау жүйесі – бұл алынған деректер негізінде шешім қабылдауға және жобалауға көмектесетін құрал. Осыған байланысты деректерді іздеу және шешімдерді қолдау жүйелері үшін интеграцияланған технологияларды енгізу қажет және өзекті болып табылады. Бұл тек үнемділік үшін ғана емес, сонымен қатар күнделікті бизнесіңізді қолдау жылдамдық, тұтынушы деректеріне қол жеткізу, ақпаратты тарату және шешімдерді қолдау тұрғысынан тиімдірек болғандықтан қажет. Деректерді табу және шешімдерді қолдау – жоғары дәлдік пен кәсібилікті талап ететін күрделі, біріктірілген құрал. Деректерді кешенді өңдеу және СППР-технологиясын енгізу күнделікті бизнес-операцияларын қолдау үшін үнемді.

Кілт сөздер: деректерді өндіру, шешімдерді қолдау жүйесі, банк саласы, мәліметтер базасы, несиелік скоринг.

Системы поддержки принятия решений в банковской отрасли

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Аннотация. Обсуждается использование интеллектуального анализа данных и поддержки принятия решений (СППР) в банковской сфере. Интеллектуальный анализ данных рассматривается как метод, используемый для хранения данных. Но система поддержки принятия решений – это инструмент, который помогает вам разрабатывать и принимать решения на основе полученных данных. В связи с этим необходимо и актуально внедрение интегрированных технологий интеллектуального анализа данных и систем поддержки принятия решений. Это необходимо не только для экономической эффективности, но и потому, что поддерживать повседневный бизнес выгоднее с точки зрения скорости, доступа к данным клиентов, распространения информации и поддержки решений. Интеллектуальный анализ данных и поддержка принятия решений – это сложный интегрированный инструмент, требующий высокой точности и профессионализма. Интеллектуальный анализ данных и внедрение технологии СППР экономически эффективны для поддержки повседневных бизнес-операций.

Ключевые слова: интеллектуальный анализ данных, система поддержки принятия решений, банковская отрасль, база данных, кредитный скоринг.

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