BUSINESS INTELLIGENCE

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Abstract: For the purposes of this paper, the term business intelligence is the basic technology infrastructure that allows businesses subjects managing information, thereby achieving greater efficiency in operations. The first part deals with the concept of business intelligence solution; the second part explains briefly the need for the introduction of business intelligence, while the third deals with the project approach of the introduction of business intelligence system. Fourth part highlights the users of this system.

Keywords: Business Intelligence - BI, the introduction of BI, BI users

1. INTRODUCTION

In order for a company to be successful today, it is necessary adequate managing company. Dinamic development of intelectual and telecommunication technology move temporal and geographical borders [9]. For the proper management the right business decisions are also necessary, and for the correct business decisions, the right information is necessary. Possession of timely and relevant information, as well as their rational use is the basis for success in business. Today's environment imposes on companies a high degree of adaptability, integration and coordination in order to achieve high efficiency. In this context, we are going to talk about business intelligence as well as the realization of a need for additional, undiscovered knowledge and abilities. The goal of each company is to attract new customers to its products and to keep the old ones. With increasing purchasing power and globalization, market competition is becoming sharper. For a company is essential to survive in the market, i.e. to be faster and better than the competition. The most important thing is to make the right decision at the right time. The right decision can be made only when all relevant information are known. As sooner as company comes to this information, it will be more competitive in the market.

2. BI - TERM, SOLUTION

There are several definitions of BI (Business Intelligence - BI). According to definition by Moss I Atrea, BI is architecture and a collection of integrated business applications, applications for decision-making support and databases that allow business systems easy

access to the data [1]. According to Kalakota and Robinson, Business Intelligence is a set of new applications designed to be able to organize and structure data on business transactions in a way that allows an analysis useful to support decision making and operational activities of the company. [2]

BI is a part of the information system that was primarily developed to enable performance management of the organization and put the total information resources of the organization to function of making the high quality decisions, in order to achieve the established goals of the organization.

BI solution includes four main factors: [3]

- Decision Support System - DSS,
- Data Warehouse - DW, Data Mart
- On-Line Analytical Processing – OLAP
- Data mining

BI systems provide multi-dimensional analysis, on-line analytical processing and data mining, which employees use to find significant trends hidden in large data collections. It is possible to "drill" through the data going to detailed information such as sales by the dimension of time, the geographical dimension, by products and customers and the like. It is possible to anticipate graphical models, perform "*what-if*" analysis, to anticipate scenarios, etc.

DSS appeared more like an upgrade of management information systems. DSS can be defined as interactive computer information systems of helping and supporting of what have been structured, semi-structured, and unstructured decision-making. DSS is set of procedures for processing and interpretation of data that support the manager in decision-making based on the model. It is a key aspect of improving the ability of decision makers, leaving the computer to do what it does the best - quantitative analysis. DSS provides access to quantity models and special databases.

DW is a unique, integrated repository of data based on the infrastructure development of software applications in organizations. Purpose of DW is re-integration of data in order to achieve their uniqueness. DW is a means of transforming masses of raw data into useful information. DW contains user-oriented, integrated sets of consistent data, easily available and subject to analysis and manipulation. Data Mart is a logical subset of the DW. DW makes the union of all data marts. DW contains a detailed set of data; and data marts contain summarized data that meets specific needs of users.

OLAP is an activity of inquiry and presentation of numeric and text data from the DW. OLAP technology is based on a multidimensional data cube, which allows analysts to interactively manipulate large amounts of data and to examine data from different perspectives.

Data mining can be defined as finding regularities in data. *Data mining* is an automated analytical process designed for effective and efficient exploration of large collections of data to uncover valuable, hidden information. Data mining use algorithms to revealed significant hidden information in large data sets, and interpreting this information provide better understanding and better decision making.

People make decisions based on the information contained in the data. Large amounts of data are not subject to efficient and effective analysis of the traditional ad hoc methods and statistical procedures. It is therefore necessary to use the methods, techniques and tools of discovering hidden and difficult to find information. Using data mining methods leads to necessary information and facts, which complements the use of query, multidimensional analysis and visualization. This provides better understanding and interpretation of data and their context, content, significance and meaning [3].

3. THE NEED TO INTRODUCE BI

Gone are the days when companies could manage by analyzing the monthly reports. Environment is no longer static. Offer of products and services is huge, the competition also. Today, companies must to design and implement applications, and allow users easy and fast access to information. Today, companies must manage complex environments. They have a need for proactive behavior, and improving communication with partners, customers, and the public. BI concept provides the organization the opportunity to observe the fundamental problem, so it can promptly address the causes rather than to solve the consequences. This concept allows a typical company to:

- analyze the behavior of customers and suppliers,
- determine who the key customers and suppliers are, and how much they cost,
- analyze where and with which customers business results are generated,
- effectively negotiate with customers and suppliers,
- analyze management efficiency,
- monitor and track individual market segments,
- easily anticipate future trends

There are a number of the questions that can be answered using the BI system:

- What products consumers will likely buy? This is a very important issue for retailers because of the strong competition, especially in the present on-line sales.
- Detection of fraud. Companies receive thousands of applications and requests for compensation. It is impossible to check each case. What claims are true and which relate to fraud? BI can identify those related to a fraud.
- Risk management. Whether bank should to grant credit to the client? BI can be used to calculate the level of risk and facilitate the work of a bank manager.
- Segmentation of consumers. Who are my customers? It helps in understanding the different profiles of consumers and take appropriate marketing actions.
- Which banner should be displayed to certain consumers? Web site and portal owners adapt to their site to every customer, all thanks to BI.
- Sales Forecast. How much of certain types of products will I sell next year? What will be the case with inventory in the next month?

One must not forget the great importance of BI for e-business. E-business is dealing with a lot of information (data) from which it is necessary to get the pattern, find what is the most important and that is why we need BI, which has unlimited application possibilities, including sales and marketing, customer service support, knowledge base development, detecting fraud in any area, etc.

4. INTRODUCTION OF THE BI SYSTEM

If the company decided to adopt the BI concept, then it is necessary to opt for one of the alternative strategies of introducing this system in the company. Always keep in mind that unlike the transactional data processing systems, BI systems have never been built up to the end. Continuous development is understood, in accordance with the requirements of the company and changes of the environment. There are several possibilities for integration of the BI system in the company:

- By integration of analytic and operative applications using *enterprise* portal, so data could be accessed by internal and external customers;
- Fitting of analytical methods for operational applications in the process of application development;
- Introducing Web service that will dynamically integrate analytical methods with internal one or operating partner applications to support shared decision making

In addition, there are several possible strategies for introduction of BI in the company. One option is that the system would be introduced into one organizational unit in which the results will be obvious. Another approach is to introduce BI system where least resistance is expected, or conversely, to perform the introduction of BI systems where the resistance is the greatest. At the beginning of the introduction it is necessary to determine what will be measured and monitored in the company, how will information be disseminated, who will be responsible for the introduction of the BI and the like. Installation of BI is a big job and requires an adjusted approach.

The first task in developing the project relates to the definition of the main aims and objectives to be achieved by the introduction of BI systems. It is necessary to define specific issues to be addressed. It is necessary to define the basic requirements of users, such as speed and simplicity, the ability to use various sources of data, the possibility of complex analysis, etc. Like all other IT projects, the introduction of BI project requires significant financial resources and is burdened with the risk of cost recovery. The introduction of BI is a complicated and difficult task to perform. It requires great political support within the company. Given its complexity, it is difficult to perform it until the very end, and in practice a large proportion of these projects fail. The BI system consists of hardware, software and people. The introduction of the new system involves changes in all areas. Practice shows that the main cause of deterioration is not about technology but also has a political connotation. There are several types of employees in every company. There is a group that does not accept changes due to various reasons. In the second group are those who readily and quickly accept changes and see the opportunity in them. The third group, the largest and most frequent, is made of those who are waiting to see what happens. It is clear the leaders of changes coming from the other groups. It is important to know that employees go along with the example of management, and success often depends on the introduction of the managers themselves. It was found that the degree of interest of the manager for the introduction of the project is in correlation with the degree of IT literacy of managers and personal IT experience [4].

In order for introducing the system to be effective, we need a clear vision of what can be achieved. After defining the project goals and ways of working and talking with prospective users of BI systems, (to get a profile of the company), follows defining of the business requirements and building of data models. Data model is used to determine the analytical capabilities of the system. Modeling is a very important part of the project. It is useful to know that processes are modeling, not a database.

Before starting the actual implementation, it would be good to evaluate the feasibility of the project. In the process of implementation, the recommendation is to begin with the implementation of simple and modest theme. After that, it is necessary to educate future users. Only after the successful implementation of the first topic, it is advisable to start with the implementation of the following topics.

Unlike transactional systems, the main feature of BI systems is the ability to adapt to changes and environmental conditions. BI systems are among the learning systems, which mean that collection of new data from external sources and their combination with the accumulated experience of the system, manufacturing process leads to new, higher quality

information. The effectiveness of BI systems grow with the number of iterative processing, in which the system accumulates experience, which then is used in further processing.

Each company should introduce a BI system, taking into account their specific characteristics, and taking into account the specific conditions and specific requirements. BI systems are much more demanding and dynamic than traditional information systems, which makes it difficult to find solution that would be equally applicable in all operating conditions of different companies.

5. USERS OF BI SYSTEM

According to some surveys, 72% of companies estimate that half of the collected and preserved information was never used while decisions making. All information of a company is generally inconsistent and inaccessible, scattered across a multitude of different systems. Even 54% of business users cannot find the required information, 43% are not sure whether the information they receive is accurate, while 77% say that poor decision taken solely because of the lack of information. According to Gartner Group, a typical company is able to analyze only 10% of the collected data. It was noted that information arrived late in 70% of cases and that the data mostly point to the consequences, and rarely causes. The biggest obstacle to approach the analysis of the remaining 90% is not information technology but a lack of appetite - despite the obvious need, management just does not have a permanent and high demand for information. There are two important reasons for the lack of appetite when it comes to business intelligence. The first is the fact that people too much rely on intuition, and the other is ignoring the fact that date are just data (no matter how many there are), but applied knowledge is power. [5]

Companies that apply BI system in their business system make better decisions and create competitive advantage, compared to those not using the BI system. Many medium and large size companies incorporated BI systems to manage vital processes - procurement of raw materials, quality assurance of products and services, sales tracking and more. The BI system would apply at the level of individual organizational units. However, progressive companies are working on standardization of the BI system company-wide in order to exploit the advantages this system offers. The system now is successfully applied in many business areas, particularly in banking, retail store chains, logistics activities, insurance companies, and the pharmaceutical industry. Installation of BI system in different areas of public administration will make life easier for everyone. Simplifying the administration will contribute reducing costs and improving the quality of life. Development of BI tools will allow all managers and staff spend little of their time analyzing the data by themselves instead of a large number of analysts that spend their full-time analyzing the data. They will be able to access their own data, make reports and perform analysis, and to get information whenever they need it.

6. RESUME

BI is a part of the information system primarily developed to enable performance management of the company and put the total information resources in the function of decision-making. The reasons for the introduction of BI are numerous. BI provides a unique view of the entire company, provides a proactive way of conducting business, preparing the company for any situation. BI produces knowledge that is the basis for decision-making.

Applying BI concepts and tools allows companies to access the vast amount of complex data. In predicting the BI development, two directions are emphasized: business intelligent solutions and responds in real time and the increasing democratization of BI systems. It is expected that more and more companies are going to implement this concept in the future, due to the increasing availability of price and simplicity of tools.

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