

JUSTIFICATION AND SPECIFICITY OF APPLICATION OF BUSINESS INTELLIGENCE

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Abstract: The subject of this work is studious expertise on possible aspects of the use of business intelligence in small and medium-sized enterprises in the Republic of Serbia, using the latest relevant professional literature and research content and conducting research in concrete business systems in Serbia. In the theoretical part of the work, the concepts of business intelligence, business intelligence systems, specifics of application in the Republic of Serbia, and the justification of business intelligence introduction projects will be explained. This work aims to answer the questions: what are the needs and analytical capabilities of small and medium-sized enterprises in Serbia, and what are the critical success factors for the efficient and effective deployment and use of business intelligence methods, techniques, and tools in enterprises in Serbia? For the work, an analysis of the application of one of the techniques of business intelligence - knowledge discovery in data in a specific company was done. In the final part of the work, the research results will be evolved, the results will be discussed and the conclusion based on them will be made.

Keywords: business intelligence, IT projects, intelligent systems

1 INTRODUCTION

Business intelligence enables insight into the company's key business data for decision-making. The importance of knowing the concept of BI for the creation of new knowledge and the application of sophisticated tools developed by IT for this purpose is of increasing importance today [6]. The main characteristic of today's SME business is the continuous generation and "flooding" of companies with large amounts of data and information of internal and external origin [8]. However, the application of the BI concept allows SMEs to use only the information that they need at a certain time for making business decisions, and which is presented in a way that suits them best [7]. At the same time, if the concept is applied in the right way, the amount of data and information that employees in SMEs are exposed to is reduced while simultaneously increasing the quality of that information [15]. Therefore, the main intention of the BI concept is to generate the highest quality information needed by business systems for making the right business decisions [20]. The main use of business intelligence is to help different departments and managers, top executives and other operational workers make better decisions based on data instead of assumptions and corporate inertia[3]. This gives power to those systems that apply it, to create positive changes in their environment. The fundamental feature of BI is that it comes from operational data, is proactive, and is oriented towards providing information intended for individuals[11].

2 BUSINESS INTELLIGENT SYSTEMS

Business intelligence systems enable SMEs to access, analyze and share information, which helps them monitor, understand and manage operations and ultimately leads to better business results [4]. BIS are a set of tools designed for reporting, analyzing and presenting data. Enterprises and business systems have seen the importance of BIS in creating a competitive advantage for enterprises [11]. In every branch of business, countless transactions take place through BIS companies during the day. According to Turban & Rainer, every transaction is an operational event that generates some data that is worthy to be recorded and stored in a database [25]. Also Turban & Rainer, state that functional BISs have three types of reports they can generate. These are routine reports, "ad-hoc" (on request) reports and special reports [25]. The structure of the BIS is shown in the following figure (Figure 1):

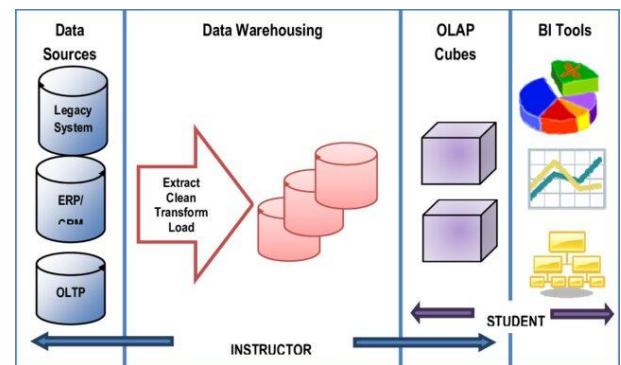


Figure 1: Structure of a business intelligence system[21]

The purpose of BI is to help monitor and analyze a huge amount of business data in SMEs for business decision-making purposes[20]. According to Lonnqvist & Pirttimaki, in this sense, BI solves the problems that SME managers have always struggled with, it helps in analyzing the complex business environment to bring the best possible solution[14]. The eminent author Biera points out that, in addition, SMEs see the purpose of investing in BI in the transformation of the environment in the company, because BIS enables a proactive attitude towards data [1].

3 SPECIFICITY OF THE SITUATION IN THE REPUBLIC OF SERBIA

Unfortunately, preliminary research in Serbia on a sample of 23 companies from the list of the 50 most powerful shows that only 9% have institutionalized BI in business systems and that it is used in various business processes, from sales, marketing, financial and human resources departments, system procurement and supply chains [3]. Research points to the negative practice of companies in Serbia that they do not practice good business relations with competing companies, which was also pointed out by foreign partners who implemented education programs in over 420 SMEs in Serbia, where on average each of those companies increased profits, employment and revenues by a minimum of ten percent. One of the key shortcomings of Serbian companies, which foreign consultants warn about, is the fact that only the entrepreneur knows the plan, and the long-term strategy, but also what has been achieved. SME owner. Although SME owners often

complain about the business environment, it can be said that business environments are similar to the rest of the world, except for the analyzed companies in Kosovo and Metohija, and that out of five SMEs, one is profitable and the other four are not operating properly. Also in companies in Serbia, it is noticeable that since the vision of the company is known only by the owner of the company, so most of the employed workers are waiting to be told what to do, i.e. to give them a task. There is no personal initiative, which is admittedly a direct consequence of the fact that they are not included in the vision of the company.

4 JUSTIFICATION OF INTRODUCING BUSINESS INTELLIGENCE

Business intelligence helps companies and managers in almost every industry and at different levels. In his research, the well-known author Joros states that the primary source of business information for SMEs is very broad and includes: manufacturers, customers, business associations, government officials, radio and television, libraries, newspapers, magazines, government publications, trade and professional and electronic sources. [12]. With the successful implementation of business intelligence tools and techniques and their use in companies, problems in data processing can be overcome, because their use provides ways for parallel collection of data on the production and activities of the company from various, relevant, sources and the integration of that data into a larger whole, most often to data warehouses. By adopting the concept of BI and managing business information, the company can also use the remaining data collected from numerous sources, turning them into quality information using the BI system [26]. The introduction of BIS in a company implies the choice of a specific strategy, and as a rule, it represents a large separate job that requires a project approach[22].

Certain authors such as Lonkvist & Pirrtimaki in their research emphasized the importance of measuring BI, stating two basic purposes of measurement [14]. However, De Bruin, Freeze, Kulkarni, & Rosemann believe that maturity models were developed to support an organization in identifying ways to reduce costs, improve quality, shorten time-to-market, and other business objectives reasons [2]. The eminent author Schiff states that factors influencing the choice of BIS suppliers, in addition to offering suitable solutions with which the company has experience, are: expertise, reputation or reputation, quality and reliability of services [20]. The basic intention of BIS development is reflected in achieving an optimal solution within a certain time frame, knowing that over time the existing system will need to be upgraded for it to continuously meet the needs that led to its introduction[10]. The three most important factors that make managers decide to use BIS are: improving business planning, monitoring key business indicators, and reporting to top management [27]. Research indicates that for SMEs from various economic activities, there are recommendations and the most common practices for using BIS. However, regardless of this, there are certain common characteristics, typical of successful BIS projects. In the initial phase of BIS establishment, it is necessary to transfer the separate initiative or request for BIS to other business functions or departments in the SME. It is very important to avoid the demotivation of employees in SMEs during the BIS introduction project because there is fear and uncertainty about possible organizational changes and changes

in the performance of daily business activities. The following figure (Figure 2) presents what BI represents in practice.



Figure 2. What business intelligence represents in practice[9]

5 RESEARCH RESULTS IN COMPANIES

The research results indicate that 72% of companies estimate that half of the information that is expensive and time-consuming to collect and store, will never be used when making decisions. The global business intelligence market size is valued at USD 29.42 billion in 2023 and is projected to grow from USD 31.98 billion in 2024 to USD 63.76 billion by 2032, exhibiting a CAGR of 9.0% during forecasts. The US business intelligence market is projected to grow significantly and reach an estimated value of \$12,821.9 million by 2032, owing to new technologies and rapid developments in automation, digitization, innovations, and advancements, along with collaboration and partnerships, by key players in the country. However, banking, retail insurance, and financial services are still at the top in the use of the mentioned systems, which is not surprising given the longer experience of using those systems [17]. According to the author of Atra, the success of a company is never the result of chance, and success will come if the company makes better and more reliable decisions faster, simplifies operations (streamline operations), shortens the time of the new product development cycle, maximizes the value of its production, anticipates new opportunities, and implements better and more focused marketing while improving relations with buyers and suppliers [5]. The solution in the form of a BI concept enables decision-makers to independently, without the help of IT specialists, perform data analysis and use the results of the analysis in the decision-making process. Business intelligence users monitor data in the form of Dashboards, i.e. dashboards that contain different types of reports to visually display complex information, making it easy to understand and more accessible. One of the analyzed companies "Lipovica" hired a special team to discover knowledge in data (eng. Data Mining) which will analyze the content of the data warehouse, to find some patterns, hidden connections, and rules for predicting future behavior, all to improve business. Their job is to make sense of all this data so managers can make better plans and make better decisions. It was through the discovery of knowledge in the data that only 15% of buyers, new or used cars, return to "Lipovica" to buy winter tires when the time comes. When the managers found out about this information, they used it in the best possible way and gave a 10% discount on winter tires that car buyers could use until the end of the year. It is an incredible fact that the percentage of sales of winter tires among car

buyers has increased from 15% to as much as 75% (Figure 3). This and many more data obtained through the application of Data Mining significantly increased the company's profit and improved the business decision-making process in the company "Lipovica".

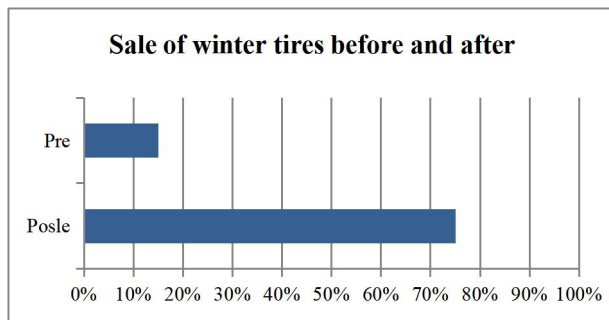


Figure 3. Sale of winter tires before and after in the company "Simonida"

6 DISCUSSION

On a global scale, the two biggest sellers of BI tools, for a full year, were the companies SAP and IBM. As organizations seek advanced tools to make data-driven decisions, the business intelligence (BI) market is growing worldwide. According to available data, companies will spend \$59.7 billion globally on BI software in the next 12 months. Approximately 70% of that spending is associated with 587,000 companies with confirmed detections. Companies with revenue levels of \$5 billion and above account for more than half (54%) of the total business intelligence market size. However, only about 5,800 customers fall into this income bracket. More than one-quarter (27%) of Business Intelligence software spending—a level worth \$15.8 billion—came from 361,000 companies with revenues between \$50 million and \$1 billion. All these data unequivocally indicate the relevance and justification of investing in BIS. According to the authors Lonqvist & Pirittimäki, it can be observed in the literature that the most common purpose of the evaluation is to show that investments in BIS in SMEs pay off, that is, to confirm that the benefits of these investments exceed the costs [14]. Research indicates that the concept of BI provides the opportunity for SMEs to use timely and high-quality information and provides a better insight into the company's position in the competition. Different analyses, views, and insights are needed by different departments and management levels. In his works, the author Wu points out that users can best assess whether the introduction of BIS has influenced faster and better decision-making [29].

7 CONCLUSION

Benefits of using BI tools include improved understanding of consumer needs and wants and attitudes toward them, product profitability, and impact on business strategy and performance. Based on all of the above, the following benefits of using business intelligence can be distinguished: it monitors the company's performance in real-time, defines the most important KPIs for performance evaluation, identifies the needs and behavior of customers, then enables faster and more accurate decision-making, reduces costs and increases the profitability and efficiency of the company. In addition, BI tools allow modeling the effects of changes in the market, competitor reactions, and regulations. As a result of the use of BI tools, there is a more efficient use of human capital and technology, as well as a better position for the competitive development of

new and potentially innovative products. SMEs should be careful when starting the introduction of BIS and should not rush through certain steps during the introduction [28]. The success of the implementation of SPO depends on its acceptability by users as well as its proper use [26]. In this direction, the well-known author Sauter identified the key factors in the process of implementing a decision support system [19]. It should be pointed out that the value of information for decision-makers depends entirely on the moment in which it is available. The solution in the form of a BI concept enables decision-makers to independently, without the help of IT specialists, perform data analysis and use the results of the analysis in the decision-making process. Analyzed data helps to identify new business opportunities, reduce costs, or identify inefficient processes that need to be changed. The results of studious research indicate that the biggest contribution to the efficiency of the company is a quick insight into a large amount of data and shortening the time of accessing information. Analyzing reports from PIS provides the opportunity to develop the form, effectiveness, and efficiency of business operations with the possibility of timely influencing and intervening in the business processes of SMEs and improving operations.

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