

Business Intelligence impact on corporate performance in Slovak enterprises – a case study

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Abstract: The issue of the use of advanced information and communication technologies is a current topic. In every industry and economic fields it is to use these tools as much as possible. Currently, there is a number of other modular solutions that are tied to enterprise information systems and are designed for decision-making. Business Intelligence is one of them. Its main role is to facilitate the implementation of the decisions. Information is converted into reports and relevant facts that are often the source for decision making at the highest management positions. It is therefore necessary to examine the impact of the implementation and use on the overall performance of the company. Increase overall corporate performance should be the main objective of the implementation of Business Intelligence solutions. Paper is based on several studies and surveys that have been conducted abroad. Based on these studies, similar study in the Slovak enterprises was carried out. The main aim of the paper is to analyze the impact of the implementation of Business Intelligence solutions on the overall performance of the company.

Key words: Business Intelligence, Overall corporate performance, Slovak enterprises.

1. Introduction

In any fully functioning enterprise there is a very large amount of data. Business environment brings of a view, when users typically use data stored in databases to produce information that can help them make important business decisions (Iliashenko, O. Y. & Shirokova, S. V. 2014). This is the main reason why many companies are investing in the most modern information and communication technologies. Information is very important, but it is not true that any information has value. Economic value has only relevant information. The reason this is so is simple. Every manager can make a good decision only on the basis of relevant information. The right decisions are those that are effective for the company. Efficient management at all levels with greatly improves efficiency of any enterprise (Iliashenko, O. Y. & Shirokova, S. V. 2014). Corporate performance management is a difficult process. As well as to make the right decisions, which directly affect the overall performance of the company. Currently, there are a number of technologies that try to automate these processes and systematize them too. Performance management aims at the systematic generation and control of an organization's performance (Melchert, F., Winter, R. & Klesse, M. 2014). The evaluation of firm performance is an important task for a firm since it is associated with corporate strategy, operating performance, and managerial compensation. The top priority of a firm in constructing its firm performance system is to establish an objective evaluative indicator for performance outcome (Wang, Y. G. et al. 2013). Business Intelligence is a support tool for decision-making. Several studies confirm the impact of the implementation and proper use of this tool to increase overall business performance.

2. Problem Formulation

The current business environment is complex. The complexity of the organization's environment creates opportunities and threats. Companies must respond to these threats quickly and flexibly. Controlled systems for decision support improve response capability organizations. Most commonly used information systems (IS) are not able to properly and quickly assess large amounts of data stored in various databases across the enterprise (for example, payroll information, financial data, data relating to customers, suppliers etc). That is the reason why cannot fully meet the current information needs of managers (corporate decision-makers). They often fail in order to share information with each other, get information late, inaccurate or even wrong. For this reason, they are

often not able to make use of strategically relevant information and receive correct and timely decision. The solution to this problem is a technology called Business Intelligence.

Technologies and systems designed to improve business operations and business decisions gradually, under different names, introduce a use for over 30 years. To meet the current needs of organizations they are continually being developed, using new ways and supplemented by innovative and modern software tools and methods. The idea of BI is thus not so brand new, although an analyst at Gartner Group, Howard J. Dresner, first used this designation in 1989.

3. Theoretical Background

3.1 Corporate Performance Management

Today's trend Performance Management aims at the systematic generation and control of an organization's performance. From a pure management perspective, a performance management system includes of the four main activities (Spangenberg, H. 1994): performance planning, performance measurement, taking action to control performance and performance rewarding.

Eckerson argues that BPM combines the strategy of the organization to its implementation that improves (Eckerson, W. 2010):

- communication - BPM provides an effective mechanism for senior management to interpret and clarify strategies and expectations of managers and employees at all levels of the organization, through the planning model and performance metrics linked to business objectives,
- cooperation - BPM supports two-way exchange of information and intentions horizontal direction - between departments or groups at one level of the organization, and vertical - between all levels within the organization,
- control - BPM continually provides up to date information about the market situation and the state of operational processes, thus enabling employees to continually adjust plans in a timely manner to correct or improve operational activities,
- coordination - BPM improves coordination between business resp. business units of the company.

To monitor business performance and set objectives, it is necessary to define key performance indicators (KPI). This is the most important performance indicators that reflect the organization's strategic objectives and measure performance achieved in relation to these objectives. Methods for identifying and selecting suitable KPIs are examined in studies of Eckerson (Eckerson, W. 2010).

In order to express the novelty of the approach, the sign "corporate performance management" (CPM) was coined by sometimes designated as business performance management (Geishecker, L.). Used as an umbrella term for "methodologies, metrics, processes and systems that monitor and manage the performance of an enterprise" CPM comprises four major characteristics: process orientation, methodology support, process orientation and IT support. IT support means, that CPM is supported by a set of software tools for integrating and analyzing performance-relevant data, for supporting decision making and for facilitating the communication of decisions (Melchert, F., Winter, R. & Klesse, M. 2014).

3.2 Business Intelligence

Business Intelligence (BI) has two basic different meanings related to the use of the term intelligence. The first, less frequently, is the human intelligence capacity applied in business activities. Intelligence of Business is a new field of the investigation of the application of human cognitive faculties and artificial intelligence technologies to the management and decision support in different business problems.

The second relates to the intelligence as information valued for its currency and relevance. It is expert information, knowledge and technologies efficient in the management of organizational and individual business. Therefore, in this sense, Business Intelligence is a broad category of applications and technologies for gathering, providing access to, and analyzing data for the purpose of helping enterprise users make better business decisions. The term implies having a comprehensive knowledge of all of the factors that affect the business. It is imperative that firms have depth knowledge about factors such as the customers, competitors, business partners, economic environment, and internal operations to make effective and good quality business decisions. Business Intelligence enables firms to make these kinds of decisions (Ranjan, J. 2009).

The issue of Business Intelligence is a highly current topic. Business Intelligence is a support tool for decision-making. It must be made at based on the amount information (Pour, J. 2005). These systems automate and systematize work with data (Dugas, J. & Stankovic, L. 2012). Based on BI outputs can take managerial decisions in every sector of the economy (Krsak, B. & Tobisova, A. 2012). These tools are often used in many financial institutions, institutions providing services, but also in industrial enterprises (Pour, J. 2006). Business Intelligence systems, which are designed to improve decision-making in enterprises, became an important part of management in recent years (Johansson, B. & Sudzina, F. 2008). BI system presents a complex task, technology and applications of information systems that strongly support analytical and planning activities of enterprises and organizations (Pour, J. & Slansky, D. 2004). They are built on the principle of multidimensionality by which we understood the opportunity to look at the reality from several possible perspectives. According to Gartner Group survey, BI is implemented in nearly 80% of companies in the U.S. and 50% of companies in Europe. These relatively high percentages of BI extensions are mainly based on their effects on business success and the company's performance.

3.3 Relationship between Business Intelligence and Corporate Performance Management

If Implementation and use of BI solutions brings to the firm a number of benefits – there are positive economic and non-economic benefits or effects that businesses should gain if they successfully manage the BI implementation of solutions. Some benefits are quantitatively and objectively measurable, but many are qualitative and cannot be expressed by exact numbers (Carnicky, S. et al. 2011). It is important to monitor overall corporate performance. BI is a crucial element of Business Performance Management. If BI is an effective tool, the question is as follows: Has BI a positive effect on overall corporate performance? Or how does the business performance management system look like? Is there any correlation with the use of BI?

According to Turban (2011), the Business Performance Management (BPM) is an integrated set of processes, metrics, methods and applications designed to control financial and operational performance of the company. BPM helps to change the strategy and objectives of the plan, monitor corporate performance in relation to this plan, analysing the differences between planned and achieved results and, depending on the results of these analyses, assesses and adjusts the objectives and activities of the organization (Turban, E. et al. 2011). BPM is based on the methodology of Balanced Scorecard, which by linking the objectives set and the results actually recorded a framework for the definition, implementation and management of corporate strategy. BPM forms a closed loop that links strategy to execution to optimize the overall performance of the organization (Fig. 1).

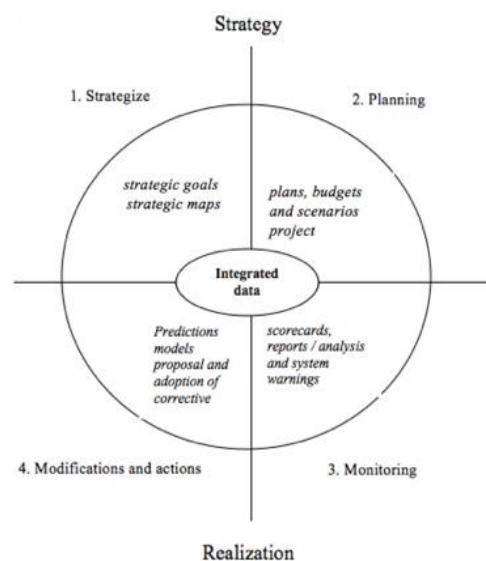


Fig. 1: Business Performance Management Process (source: Turban, E. et al. 2011)

To link actions and activities of the organization with its strategy, objectives, plans and analysis systems can be very difficult for the organization. BPM Standards Group is a group of leading organizations in the successful implementation and use of corporate performance management

systems. Companies like Hyperion, IBM, SAP, and TDWI and others together created that group. The group defines BPM as a framework for scheduling, organizing, automating and analysing business processes, indicators, processes and systems in order to manage organizational performance.

Howson (2008) considers the increase of overall corporate performance as the most significant effect resulting from the use of BI. The extent, to which BI contributes to enhance the performance of the organization, would be, according her opinion, a priority measure of the success of these solutions in practice. This argument relies on the results of research conducted in 2006 on a sample of 513 companies. Based on the responses of participating respondents, she could graphically illustrate the extent, to which BI was affecting the performance of surveyed companies. On figure 2, the y-axis shows the number of respondents expressed in %, x-axis degree of influence to change the BI performance as perceived by addressed participants. In addition to increasing business performance author presents other major benefits that emerged from the survey (Fig. 3).

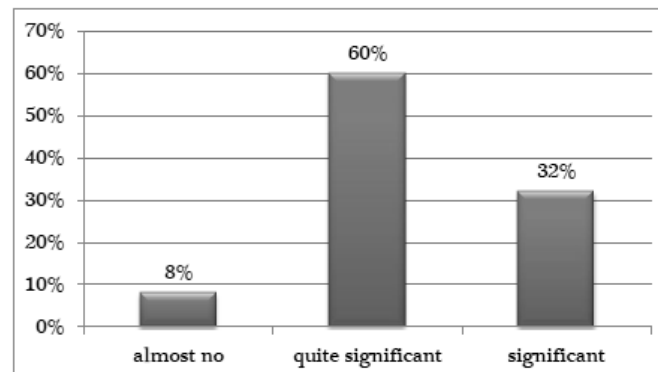


Fig. 2: Impact of BI to change the overall performance of the organization
(source: Howson, C. 2008)

Specifically, it is relating to the following benefits associated with application of BI:

- Cost savings
- Increase in the number of active users
- Return on investment (ROI)
- Simplified user perception
- Support of key shareholders
- Better access to data
- Increasing of business performance

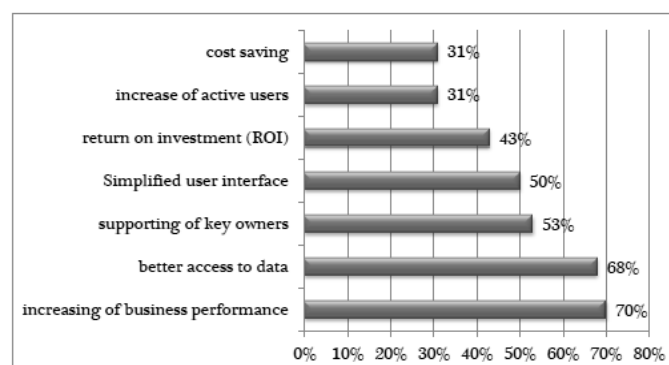


Fig. 3: The benefits associated with application of BI (source: Howson, C. 2008)

Turban et al. (2008) perceive the ability of BI systems as their most significant effect for the company to be able in the case of need to provide accurate information rapidly, including looking at the overall performance of the company and its individual components in real time. Such information is, according to them the need for all kinds of decisions for strategic planning and even the survival of the company (Hashim, F., et al. 2010).

Corporate Performance Management is a general category usually provides a container for several pieces to plug into so that the aggregate tells a story. For example, a balanced scorecard that displays port lets for financial metrics combined with say organizational learning and growth metrics (Ranjan, J. 2009).

By combining the different IS support facilities for process modeling, application integration and business intelligence, it becomes possible to dynamically reflect changes on the business process level to the IS level and vice versa. We can see on figure 4 the relations between the support technologies, the depicted trends and the concept of corporate performance management. Afterwards, the technological enablers leading to the trends are explained and the aspects necessary to establish an integrated IT-enabled corporate performance management solution are illustrated by an example from the telecommunications sector (Melchert, F., Winter, R. & Klesse, M. 2014).

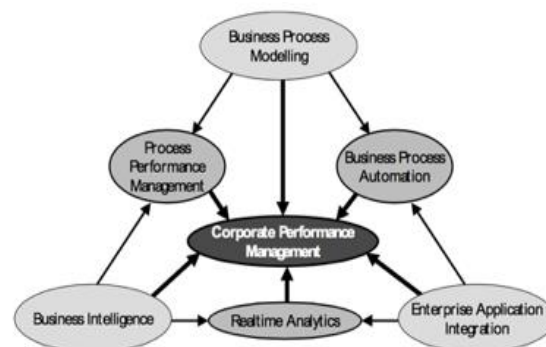


Fig. 4: Converging technologies for Corporate Performance Management
(source: Melchert, F., Winter, R. & Klesse, M. 2014)

4. Methodologies and Research Sample

The obtained data were processed primarily analysed using Microsoft Office Excel 2007 using a statistical system IBM SPSS Statistics. Effective layout of the data obtained in order to gain concise and transparent information about the statistical series is an essential condition for further analysis. When processing the data obtained in this study, graphical presentation of data sets - frequency charts, graphical tools (especially columns and pie charts) were used.

4.1 Data obtaining

The questionnaire survey featured data collection using the online questionnaire. Link to the online questionnaire was together with an explanatory covering letter sent to respondents in electronic form. The questionnaire titled was created as a system of targeted questions designed for managers, professional IT workers and ordinary (non-technological) business users of BI solutions in selected companies in Slovakia. In order to verify the questionnaire, mainly to test the formulation of clarity of individual items, it was a sample of 20 business projects, realized within pre-research.

4.2 Research sample

Available set of business subjects that meet the selection criteria was created through direct addressing by software companies - providers of BI solutions in Slovakia. Based on this group of companies, it was subsequently randomized defined research sample. Choice of subjects in the survey sample was not limited by other criteria such as industry or occupation of the enterprise, region or company size etc. It can be concluded that the fundamental requirement of ensuring representativeness, the survey sample was complied with.

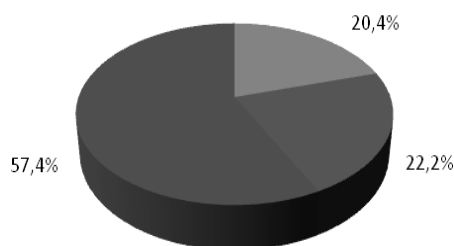


Fig. 5: Characteristics of the survey sample by size of enterprise (source: authors)

Main characteristics of research subjects in terms of the size of the company we can see down. Participated in the survey and a questionnaire completed by 11 small businesses, what constitutes 20.4% of the survey sample, 12 medium-sized companies, what constitutes 22.2% of the survey sample and 31 large enterprises, representing 57.4% of the sample (Fig. 5).

5. Results in Slovak Enterprises

The sample consists of 54 business entities of different sizes with a diverse nature in Slovakia, with economic activities in which BI solutions are currently implemented and used in support of decision-making processes.

The rate of overall success of the introduction and use of BI in the management of surveyed enterprises is presented on figure 6. Up to 66.7% of companies said their BI solution as relatively successful, 22.2% of enterprises considered it to be very successful and in 11.1% cases the solution assessed as rather unsuccessful. The overall success of BI projects is considered individually in companies. The expected achievement of the business from the implementation and use of BI solutions depends on company's aims and values (the specific final effects - benefits).

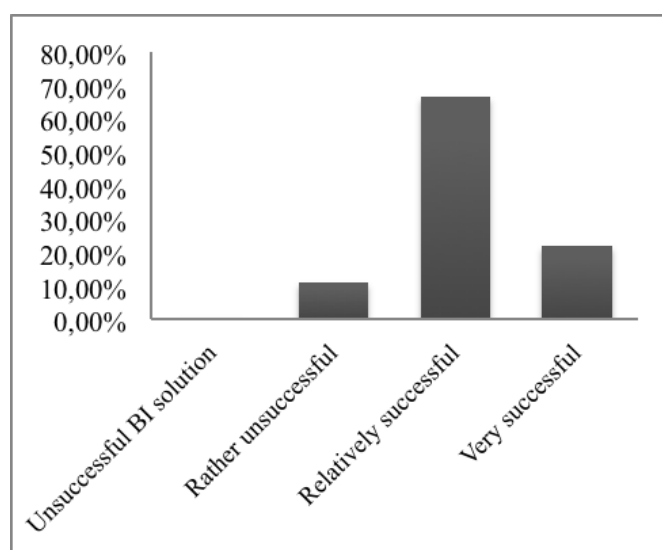


Fig. 6: The rate of overall success of the introduction and use of BI in Slovak enterprises (source: authors)

Results of the research are directed to the formulation of one of the conclusions, that enterprises of different sizes operating in different sectors today through successful implementation and use of technology and BI tools achieve significant positive effects - benefits.

The most significant benefits associated with the use of BI are usually considered increasing the overall performance and competitiveness of businesses. For this reason, it was subsequently examined the extent to which the BI contributes to increasing overall corporate performance (Fig. 7) or competitiveness (Fig. 8) enterprises in Slovakia.

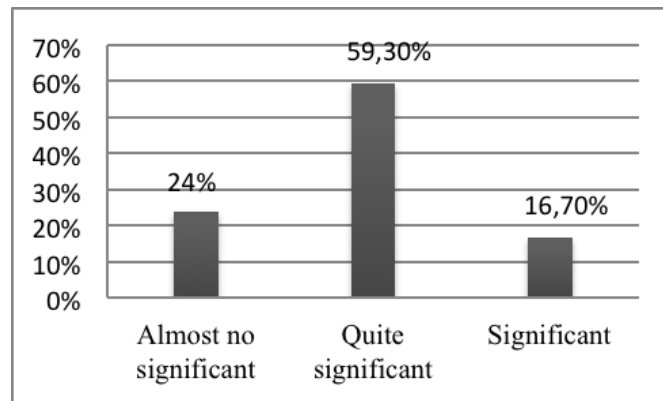


Fig. 7: Business Intelligence impact on the overall performance of companies in Slovakia
(source: authors)

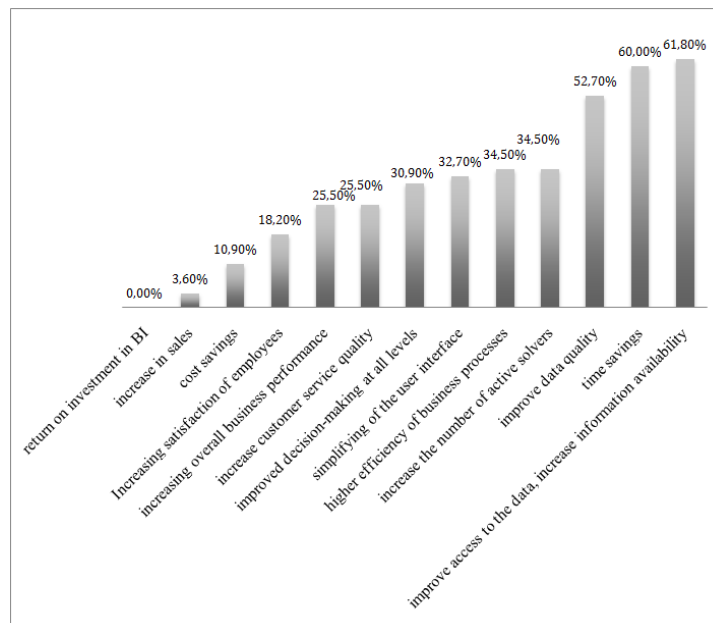


Fig. 8 Business Intelligence impact on the competitiveness of companies in Slovakia
(source: authors)

Of realized survey revealed the fact to which attention must be drawn. Despite the declared and undeniable benefits associated with BI - many businesses during the life of BI projects encounter certain challenges that are an obstacle to the successful use of these solutions. The real benefits achieved often do not correspond to their businesses and target set for BI.

In accordance with main objectives of this article has analyses the impact of the implementation and use of BI on the overall corporate performance and also activities that support overall corporate performance. On the next figure (Fig. 9), you can see all the benefits brought about by the successful implementation of BI in Slovak enterprises. Rough highlighted the growth of the overall corporate performance and other factors, which aim to increase business performance directly or indirectly.

That means: increase in sales, higher efficiency of business processes, increasing satisfaction of employees and so on.

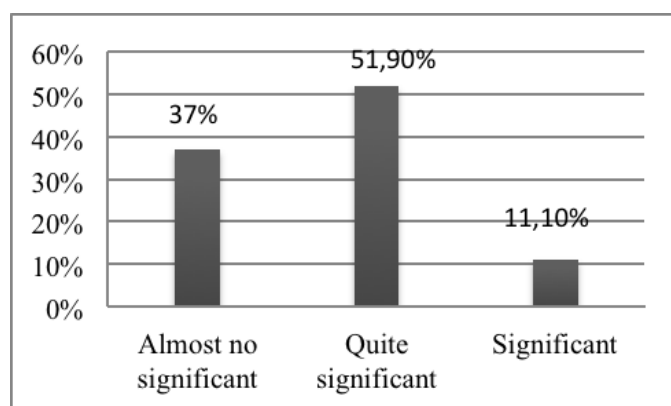


Fig. 9: Benefits associated with the use of Business Intelligence recorded in the Slovak enterprises (source: authors)

The results confirm that the effect of the use of BI in changing the overall corporate performance and competitiveness of businesses is really important.

Properly implemented and effectively used enterprise BI solution brings indisputable advantages. This statement can be justified by the other major findings and results of the research. Some of the benefits of BI are quantitatively and objectively measurable, but others are qualitative. They are often intangible and very difficult to measure, or to achieve them there in the long term, it is therefore quite difficult to express them in the form of specific numbers - for example, traditional BI evaluate the success of the project based on the value of the indicator ROI - return on investment in BI technology.

Realized survey further revealed the fact to which it should be noted, despite the declared and undeniable benefits associated with BI - many businesses during the life of BI projects encounter certain challenges that are an obstacle to the successful use of such solutions - achieved real benefits often do not correspond to their businesses and the objectives set for BI.

When compared to foreign studies and the situation in the Slovak companies are as follows. Most companies confirmed an increase in overall corporate performance following the implementation of BI. It is a roughly equal number of enterprises in relative terms. Companies abroad, however, indicate a greater extent and significant contribution of BI to overall business performance. Conversely, Slovak enterprises at a rate of 24% reported that the implementation of BI has little impact on the overall business performance.

6. Conclusion

In terms of management theory can be regarded as benefits of creating an overview of theoretical and practical knowledge of domestic and mainly foreign authors the implementation and use of Business Intelligence in supporting decision-making processes, with an emphasis on impact on overall corporate performance.

Given the wide possibilities of using Business Intelligence solutions in the area of analytical and planning activities of enterprises and given the significant positive effects associated with their use (quantitative and qualitative benefits), maybe in the next years continue to expect increasing range of implementation and use of BI solutions in corporate governance in Slovakia, especially in small and medium-sized enterprises.

International experience and the results of its own survey shows that businesses of all sizes operating in different sectors are able through proper implementation and use BI to achieve significant positive effects - benefits. If the BI solution implemented correctly and effectively used, then the company is able not only to make better use of market opportunities, but also in time to identify potential operational problems, making it competitive strength and its effective functioning. In particular, the impact of the use of BI to improve the overall performance and competitiveness of businesses, the study demonstrated as significant. Despite the undeniable benefits associated with BI, it is necessary to point out the other reality resulting from the recent survey - many businesses during the project meets certain challenges that are an obstacle to the successful use of BI solutions.

For the most significant recent trends in application possibilities of technology and Business Intelligence can be considered:

- consolidation of the market for BI tools, maturity and stability instruments,
- measurement and management support corporate performance through the integration of BI and Business Performance Management tools.

Monitoring and management of organizational performance through tools BPM is one of the leading trends in the field of BI. BPM process is usually based on the methodology of Balanced Scorecard, which enables organizations to track the performance of a number of mutually integrated aspects. Use BI has great potential. Even on the basis of the study it is obvious that BI has a positive effect on business performance and competitiveness.

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