

Determinants of Business Intelligence Introduction in Facilities in Slovakia

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Abstract

The essence of management lies in decision-making process. Without being timely and well informed, business executives and decision-makers will lack in effectiveness. Business Intelligence (BI) systems provide timely and accurate information necessary for running a business and discovering new market opportunities. Several studies have demonstrated the positive impact of BI to a business performance and competitiveness. However, BI solutions play a significant role in many industries today – including telecommunications, financial services, manufacturing, healthcare, transportation etc. – not all off the facilities are finally successful in their deployment efforts. This paper discusses the issue of a successful BI introduction and presents results of own survey realized on the sample of Slovak facilities in which these solutions are implemented and used. The main objective of the paper is to verify the positive effects associated with BI, to highlight the most frequent BI problems and obstacles and to identify factors critical to overall BI project success in Slovak practice.

Key Words: Business Intelligence, Deployment, Benefits, Problems, Success Factors

1. BACKGROUND

There is not a clear yardstick for successful Business Intelligence (BI) solution. One deployment deemed a success may be viewed a failure by another organization, and vice versa. Success is measured mainly by end user perception. However, properly implemented and efficiently used BI bring many indisputable benefits to facilities. There are plenty of studies, realized all around the world, that describe mostly the benefits of BI. Some of these BI benefits are quantitatively and objectively measurable, but others are of a qualitative nature. They are often intangible and very difficult to be measured, in some case they are achieved in the long term, it is therefore rather difficult to express them in the form of a specific number, e.g., the traditional BI project success rate on the basis of the ROI value of BI investment returns.

But not all of facilities are finally successful in their efforts to implement and use the solution properly. In practice, a variety of technological and organizational problems impeding facilities to achieve success with their own BI project can appear. During the design process, phase of implementation or use of BI, businesses can run into many complications that will need to be resolved. However, the most common problems and obstacles associated with BI deployment can be easier overcome by recognition of several aspects determining BI success – BI success factors.

2. MATERIALS AND METHODS

2.1 Formulation of the Problem

Through the study of multiple publications, papers, studies and surveys made by respected foreign authors and experts for the area of BI, we have identified 23 key factors which can be considered critical to a successful BI implementation and use in Slovak economic conditions. Organizations should use the lessons learned from past BI efforts, address critical success factors and get the best practices or guidelines to ensure success of their own BI projects.

For our survey needs, selected factors were divided into two main categories:

- A. Personnel and organizational factors (human resources, processes).
- B. Technological factors (technology, data).

A research problem has been specified as the analysis of relationships and connections between selected BI success factors and overall success level of BI implementation and use in the management of enterprises in Slovakia.

The problem can be also formulated in the form of central examination questions:

- What kind of relationship (positive or negative correlation) exists between selected BI success factors and overall success level of BI implementation and use in the management of enterprises in Slovakia?
- Does the relationship exist at a statistically significant level?

A dependent variable and 23 independent variables have been defined. The dependent variable is the overall (final) success rate of BI implementation and use in facilities in Slovakia. Independent variables are particular success factors of BI (Figure 1).

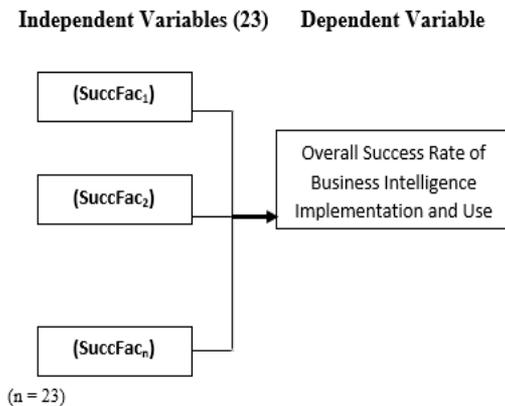


Figure 1 Dependent and Independent Variables
Source: own

The dependent variable and independent variables were interval only. In the case of dependent variable, an interval scale was used with the assessment: failed (1) – rather unsuccessful (2) – relatively successful (3) – and very successful (4) implementation and use of BI solution. The answer key in the case of independent variables consisted of an interval of five-point Likert-type scale in the range: no (1) – rather weak (2) – average (3) – quite strong (4) – substantial (5) importance of a particular factor for overall success of BI project.

Based on the nature of the research problem and examination questions, appropriate statistical methods that can detect and analyse relationships between variables of our interest were chosen and applied – correlation and regression analysis. The objective of correlation and regression analysis is a description of the statistical properties of the relationship between two variables.

Correlation analysis was used to examine relationship between each of BI success factors (independent variables) and overall success level of BI deployment (dependent variable). To express the degree of correlation dependence between variables in the correlation matrix, the Pearson correlation coefficient was used. By using a two-sided t – test within T – distribution, tests of statistical significance of correlation coefficients were performed. Only success factors with statistically highly significance relationships with dependent variable (with a value of $p < 0,01$) were selected and further examined by means of regression analysis. Model composed of ten success factors was confirmed as statistically significant and is presented in more detail in section 3 of the paper.

2.2 Research Sample

The survey was realized via online questionnaire and was attended by 54 subjects of various sizes and assorted types of economic activities (including industrial, financial, health-care facilities etc.) carried out in Slovakia in which Business Intelligence (BI) solutions are currently implemented and used to support decision-making process.

Research sample classified by the size of the facility (%):

Large:	57,4
Medium-sized:	22,2
Small:	20,4

Research sample classified by the industry (%):

Industrial production:	33,3
Information and communication	14,8
Finance and insurance	9,3
Accommodation and food services	7,4
Wholesale and retail trade	7,4
Health care and social assistance	3,7
Transport and storage	3,7
Others	20,4

Facilities of all sizes and from different industries were asked to participate in the survey and involved in when they accepted our request. Most of the qualified respondents comprises non-technological BI users (38.9 %), “hybrid” BI users, i.e. business persons with certain technological knowledge and skills (35.2 %), then corporate IT specialists (22.2 %), and others (3.7 %).

3. RESULTS AND DISCUSSION

3.1 Business Intelligence Benefits and Problems

Table 1 shows the most commonly reported benefits associated with using BI in our practice. According to the respondents involved, the most significant benefits associated with using BI are: improved access to enterprise data and increased information availability (61.8 %), time savings (60 %), improved data quality (52.7 %), more efficient processes and an increase in the number of active users (34.5 %), simplifying the user interface (32.7 %), improving decision-making at all levels of management (30.9 %) and others.

As stated before, for executives, it is often difficult to calculate concrete ROI figure resulting from these benefits. Therefore, so many executives do not insist on a rigorous cost-justification for BI projects.

Table 1 Business Intelligence Benefits

Positive effects – Benefits of BI	Share of respondents in (%)
Improving data access, increasing the availability of information	61.8
Time savings	60.0
Improving data quality	52.7
Streamlining business processes	34.5
Increasing the number of active users of the solution	34.5
Simplified user interface	32.7
Improving decision-making at all levels of management	30.9
Increasing overall business performance	25.5
Increasing customer service quality	25.5
Increasing employee satisfaction	18.2
Cost savings	10.9
Revenue growth	3.6
Return on investment in BI technology (ROI)	0.0

Source: own

Despite the declared benefits of BI the findings of the survey indicate one important fact: many facilities face problems during the lifetime of the BI project. The most serious issues associated with BI that businesses typically encounter include:

- The value, the importance of implementation, the requirements or the objectives of the BI solution for the enterprise are not defined clearly and comprehensively, the target effects and expectations of the BI project are not realistic, the way they are measured or evaluated.
- There is no obvious link between the BI strategy and the overall corporate strategy.

- Problematic quality of source data.
- Various source systems are not integrated within the enterprise.
- Users' doubts about the choice of BI tools, the use of incorrect BI tools, BI tools that are too complicated, users prefer other tools or methods.
- The absence of a business sponsor or rather a leader in BI activities.
- No support or insufficient involvement of the company's executives in the BI project, top management does not recognize the need to implement and use BI as an urgent one, fears fundamental change and responsibility.
- BI project will not be developed without the specific skills and previous experience of BI staff.
- Low level of acquisition of BI features and tools by users, mistrust of users.
- Users' unwillingness to participate in the BI project, corporate culture reluctant. Or more precisely, unable to accept changes in the management style of the organization.

The above mentioned BI issues directly point out to specific aspects – success determinants, so called key Business Intelligence Success Factors – that need to prioritize attention so that business executives, analysts, and other staff are able to use BI solutions correctly and efficiently in their day-to-day work.

3.2 Key Business Intelligence Success Factors

Based on our survey results, business managers and decision makers are recommended to concentrate primarily on ten key success factors to minimize Business Intelligence (BI) project risks and to avoid problems and obstacles to BI implementation and use. BI projects that succeed are most often the result of an appropriate combination of three elements – people, processes, and technology. The top factors critical to BI success in management of facilities in Slovakia are depicted on Figure 2.

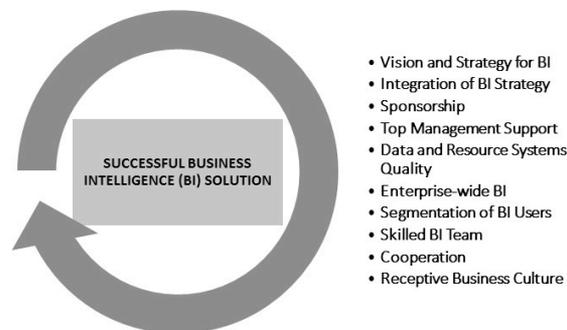


Figure 2 Key Business Intelligence Success Factors

Source: own

Vision and Strategy for Business Intelligence (BI) are the essential things. BI requirements and goals establishment, BI development determination, together with project risk assessment need to be considered in the BI strategy. Organization has to define the metrics that need to be measured, align them to corporate priorities, and understand who the users and their information needs are. Even though,

enterprise-wide **Executive Support** is the key to the success of any BI effort, the project requires also a special commitment of one designated leader – **Sponsor**. Respect, influence, decision-making authority, credibility, determination, enthusiasm, commitment to the project, also willingness and readiness to invest in BI at regular intervals – these are characteristics inevitable for potential sponsor assuming responsibility for the result of the project. Sustainable **Data Quality** and accessibility are considered the most important technological criteria for BI project success. Without relevant and high quality data, business managers are not able to make right decisions in an informed manner – they do not have reliable overview of internal situation, or current situation on the market. Instead of decision making based on facts and accurate analysis, they are forced to decide depending on “good feeling” and intuition. The value of BI solution is the higher, the greater the scope of its use in the enterprise. In other words, the importance of BI increases with the number of active users and the number of various business areas it covers. **Enterprise-wide BI** solution integrates and use multiple business data from various types of sources, and serve as a source, which is available throughout the organization. Different **Types of Users** require different range of tools – therefore, the support of active use of available BI tools should be preceded by analysis of individual types of users and selection of the tools and functionality that would best meet specific needs and requirements of appropriate user group. Successful **BI Team** should be multidisciplinary – composed of both, IT professionals and common (non-technological) business users. The main aim is to create successful business – IT **Partnership** by ensuring communication and information sharing. Accessible **Business Culture** that is open to changes, building awareness and trust in the technology, together with support of fact-based decision-making also play a central role on the road to BI project success.

4. CONCLUSIONS

Business Intelligence (BI) solutions are becoming one of the uppermost priorities for many organizations of today as they provide significant value by improving effectiveness of a managerial decision-making process. The overall success of BI projects in practice cannot be only evaluated by the company's ability to create and implement a BI solution in due time and within the allocated budget. BI project success depends on the particular positive effects that brings to the facility – some of them are quantitative and thus objectively measurable, but some are qualitative and can be hardly expressed by exact numbers. BI typically delivers more non-economic benefits than the economic ones.

Many facilities face certain problems anytime during the lifetime of their BI project. After all, there are some aspects indicating whether the project will succeed or not. The focus research point was to identify success factors which can be considered critical to BI deployment and use in practice of facilities in Slovakia because of their significant impact on overall BI project successfulness. Identification and understanding of key BI success factors enable organization to overcome the most frequent problems and obstacles, and to get advantages and benefits expected from the technology in this way.

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