Business Intelligence - The Standard Tool of a Modern Company

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BUSINESS INTELLIGENCE - THE STANDARD TOOL OF A MODERN COMPANY

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Corporate strategy, e-commerce, decision-making processes, Business Intelligence (BI).

Abstract
The present state of world economy is largely affected by economic crisis. Managers look for new ways and procedures which can start an economic growth. To support this, companies need much better systems providing the managers adequate and sufficient information. This type of information, which is usually multidimensional, can be provided by the Business Intelligence (BI) technologies. The paper briefly presents the benefits of BI technologies and shows the possibilities of BI in support of decision-making processes, e-commerce systems and corporate strategy development.

Introduction

Current economic crisis brought the companies many problems. The biggest problems have companies with no or law monetary reserves and companies having an unfit defined corporate strategy and internal and external processes. Especially these companies are forced to change the entrepreneurial conduct and have to look for new entrepreneurial income opportunities and adapt internal environment. In this context, the main goal should be the redefinition of corporate strategy and re-engineering of processes. The principle of re-engineering of processes is the replacement of non-effective processes with new ones. It is well known that in the top companies, re-engineering is a never ending process. Re-engineering of processes should be done on the basis of corporate strategy. Corporate strategy is a pattern of decisions in a company that determines and reveals its objectives, purposes, or goals, produces the principal policies and plans for achieving those goals and defines the range of business the company is to pursue, the kind of economic and human organization it is or intends to be, and the nature of economic and noneconomic contribution it intends to make to its shareholders, employees, customers, and communities. (FOSS; ANDREWS, 1998) The big importance for the company´s economic growth has decision-making and planning processes. The new term, very often used recently in connection with planning processes, is Integrated Business Planning (IBP). IBP is a term applies to a longstanding corporate objective, to plan, coordinate and improve the accuracy of the disparate strands of forward-looking activities across a corporation in order to foster internal alignment and enhance agility. The goal of IPB is to increase return on investment and improve its strategic position. (KHORSHEED, 2010)
To be a successful company, a planning process should be initiated for making day-to-day decisions and ultimately deciding which direction the company should go. (WHITNAH, 2005) The definition or redefinition of corporate strategy, re-engineering of processes, decision-making processes, planning and generally control and management processes, all of it are based on reliable information and verifiable data. In support of that, companies can use modern information systems with so called Business Intelligence (BI) tools or special BI

systems. This article is oriented, above all, to the modern companies making use of e-business and especially e-commerce business activities.

Corporate strategy and modern company

Strategy is the direction and scope of an organization over the long-term: which achieves advantage for the organization through its configuration of resources within a challenging environment, to meet the needs of markets and to fulfil stakeholder expectations. (JOHNSON; SCHOLES, 2006) Corporate strategy has to be developed pursuant to company´s focus and structure. Common company may be modeled as a company focused to manufacture and business. (Figure 1) Generally, there are many companies only focused to business activities.

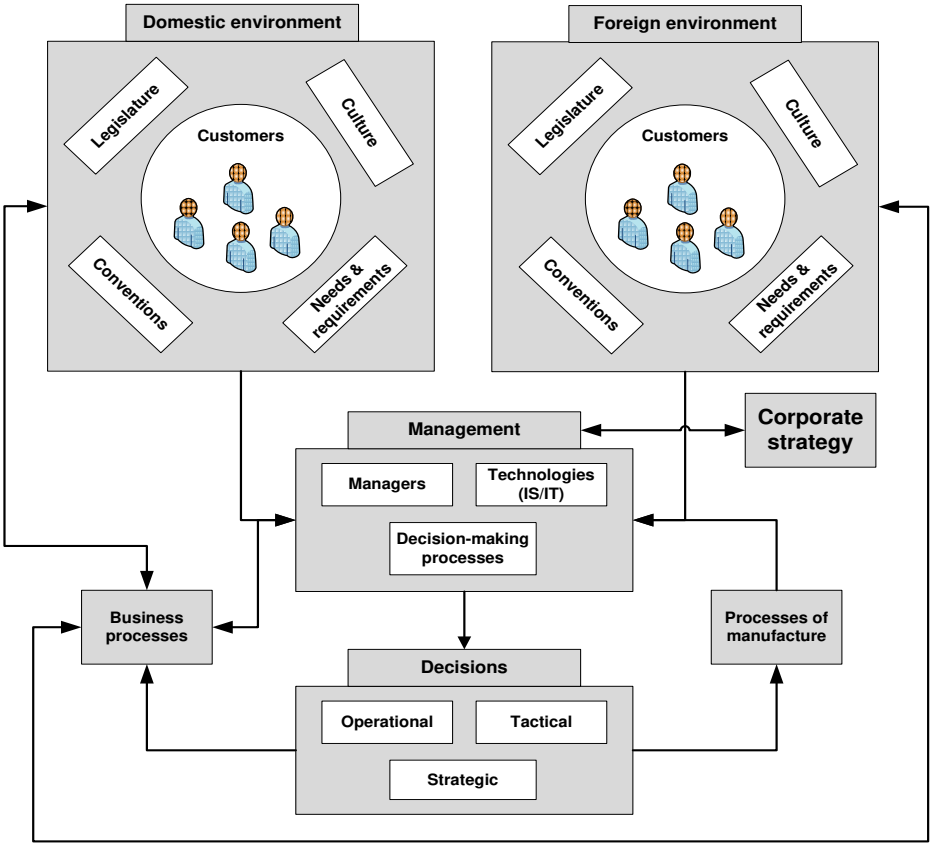

Figure 1 – Model of common company.
Source: own

As above, corporate strategy should be fundamental document of every company. Corporate strategy should contain the environment analysis, values, expectations and objectives, resource analysis, generation of options, evaluation of options, selection of strategy, resource planning, organization structure, return on investment (ROI), people and systems, risk management, system security, planning of business activities focus on a single driving force such as products offered, market needs, technology, production capability, method of sale, methods of distribution, and so on. Corporate Strategy of modern company should present the latest methodologies for developing and implementing strategies that work. Individual parts may be under consideration and analyzed in successive steps or in parallel, with regards to contexture.

Recent companies know that information technologies and information systems (IS/IT) are indispensable for the all internal and external business and productive activities. Very often

the term modern company can be heard. The term "modern company" is illustrated, for example, in (WOLF, 2006). Generally, a modern company is regarded as company having carefully formulated corporate strategy, information system architecture (CRM, ERP), decision-making processes and all management system (SCM (Supply Chain Management), FRM (Financial Resource Management), HRM (Human Resource Management), MRP (Manufacturing Resource Planning) and CPM (Composite Product Mapping), and so on). Modern company can quickly adapt oneself to the external environment and customers needs and requirements. In the modern company, economic growth depends on the usage of recent information technologies.

E-commerce systems

More frequently than ever, companies use e-commerce systems in support of their business activities. E-commerce system may be one of the ways that can help to restart economic growth. Modern companies think of e-business and e-commerce systems as standard tools in support of prosperity. E-commerce refers to business activities like selling and purchasing of products and services carried out over electronic systems like the Internet and computer networks. (BORA, 2009) The Internet changed the way how customers, suppliers, and companies interact to conduct business, communication, and collaboration. The Internet is creating huge opportunities to expand existing businesses, and enabling the creation of completely new businesses unthinkable without the business and technology advances fostered by the onset of the Internet age. (BROWN, 1999) E-commerce brings benefits to organizations using this with their business partners, benefits to consumers and benefits to society. (RICHARDSON, 2009) E-commerce provides customers with a platform to search product information through global markets with a wider range of choices, which makes comparison and evaluation easier and more efficient. E-commerce systems, when designed and implemented correctly, can generate drastic reductions in administrative, sales and marketing overheads. In this respect, e-commerce strategy has to be integral part of a corporate strategy.

E-commerce systems became a standard business tool for every type of organizations. In connection with the current state of world economy, online shopping growth can be expected in coming months and years. It results from basic characters of e-commerce. E-commerce provides the sellers and customers a great number of possibilities and advantages. The most important advantages are reduced costs and easy enter on the home and foreign markets. Especially enter on the foreign markets can expressively extend customer base as well as financial gain. Research results show that 60 % of attempts to buy products in foreign internet shops are failure. Reason is that businessmen for various reasons do not offer the goods into the some countries, do not know foreign market (customer needs and requirements, business environment, conventions, etc.) and there are some problems related to payments systems. In many cases, problems with the cross-border online shopping are caused by the using of unfit or wrong adapted e-commerce system. In support of the cross-border online selling are required systems which can make possible the processing of a higher volume of data and to define requirements to output data. In terms of e-commerce systems, efficient decision-making processes are supported by the usage of multidimensional data.

Decision-making processes

The fundamental structure of decision making processes in common company is shown in Figure 1. Decision making processes need combination of skills, creativity, recognition of the problems, and lucidity of judgment, determination, and effective implementation in operational plans. Generally, decision making process has five stages: (HARRISON, 1998)

- problem determination (definition of objectives),
- collection of information (identification of alternatives),
- choosing of optimal decision,
- implementation of a decision,
- evaluation of decision.

To adopt a right decision, managers have to get correct information in right time. In connection with e-commerce and especially cross-border online selling, source system of data set is extended. With a view to minimization of failure during the domestic and especially cross-border online selling, it is necessary to allow for many factors. Besides typically economic indicators, source information of management systems have to be for example legislature, culture, conventions etc. Decision making processes are also proceed on the side of customers. The customers´ decision-making process is the process they go through when they decide to purchase something. (OLSEN, 2003) Research suggests that customers go through a five-stage decision-making process in any purchase:

- need recognition and problem awareness,
- information search,
- evaluation of alternatives,
- purchase decision,
- post-purchase evaluation.

Managers´ decisions should lead to make the customers´ decision-making process easier. All decision making processes have to be targeted to the customers and their needs and requirements. Customers´ needs and requirements are usually different in a number of countries. This fact is always a cause of unsuccessfully cross-border online selling transactions. Only the way leading to reduce the number of unsuccessfully cross-border online selling transactions is an optimal management system making use of all necessary source information. To obtain an efficient decision-making, there are used mathematical models of allocation processes (BUCKI, 2008). This article does not deal with it.
Supranational character of e-commerce systems evokes the need to process an extensive set of information and urges the managers to look for the new methods that lead to maintenance and improvement of position in domestic and especially foreign markets. This is possible only with the aid of modern information technologies. Current trend is oriented to development and usage of systems with BI tools.

Business intelligence solution

Business Intelligence (BI) is a general term for applications, platforms, tools and technologies that support the process of exploring data, relationships exiting within data and trends. BI provides timely and accurate information to better understand an organization and to make more informed, real-time decisions. An effective, integrated BI solution can improve business performance by driving better decision-making across organization. The advantages enjoyed by market leaders and made possible by business intelligence include the high responsiveness of the company to the needs of its customers, recognition of customer needs, ability to act on market changes, optimization of operations, cost-effectiveness, quality analysis as the basis for future projections and the best possible utilization of resources. (SRC, 2009) In the market, there are many BI solutions with rapid ongoing development. Current BI solutions usually provide real time monitoring of metrics, viewing of graphical representation of data, predicting of performance results, drilling down to performance at different levels, responsive decision making and improved program execution.

BI solutions and its tools have a cardinal importance for the data acquisition and processing. Data are processed in company IS containing hardware base and software applications and components with BI tools. (Figure 2)

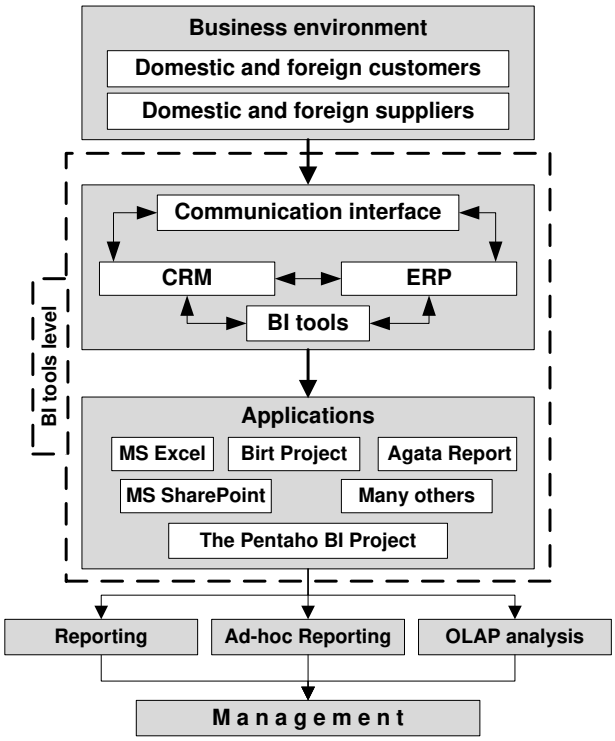

Figure 2 - Process of Data Acquisition via Common Model of BI Solution.
Source: own

Output data provide the managers information support of decision-making processes and help the managers to develop or change corporate strategy. The first type of the reporting is ad-hoc reporting. It is used to indicate something that is done at the time without planning ahead of time. An Ad Hoc report is one that is created when someone asks for it, not at a specific point. (WIKIANSWERS, 2009) Ad hoc reports can be generated at any time to quickly gather data from information system. An ad hoc report is created by sending a request or query for specific information. The query results show the most current information in the format specified by manager.

The next type of reporting is a standard reporting which can be static or dynamic. Static reports are run immediately upon request, and then stored with the data in the Completed Reports module. Static SQL reports are run asynchronously, allowing you to continue using Commerce Server Business Desk to perform other tasks while static reports are running. Dynamic reports are created at runtime. Each time a dynamic report is run, it gathers the most recent data in the Data Warehouse. Only the report definition, which remains the same over time, is stored. (MSDN, 2009)

The third main output from IS with BI tools can be OLAP (Online analytical processing). OLAP is an approach to quickly answer multi-dimensional analytical queries. OLAP is a part of the broader category of business intelligence, which also encompasses relational reporting and data mining. (PAREEK, 2007) Some problems and methods of data mining are obtained, for example, in (DRÁŽDILOVÁ, 2010) In the term of data access and presentation, OLAP has two basic variants. The first is so-called MOLAP (Multidimensional Online Analytical Processing). With the aid of MOLAP a cube is aggregated from the relational data source (data warehouse). The next variant of OLAP is ROLAP (Relational Online Analytical

Processing). ROLAP provides OLAP functionality by using relational databases and stores the cube structure in a multidimensional database. (Larson, 2008) Most commercial OLAP tools now use a so-called Hybrid OLAP (HOLAP) approach, which allows the model designer to decide which portion of the data will be stored in MOLAP and which portion in ROLAP. (WIKIPEDIA, 2009)
The multidimensional data model is composed of logical cubes, measures, dimensions, hierarchies, levels, and attributes. (ORACLE DATABASE, 2004) (PAREDES, 2009)

- Cube
  - Measures - In a cube, a measure is a set of values that are based on a column in the cube's fact table and are usually numeric. Some common measures are sales, cost, expenditures, and production count.
  - Dimensions - A dimension can define multiple dimension elements for different levels of summation. For example accounts dimension elements can be region, territory, account, sales dimension elements can be time, customer, product, and channel, etc.
    - Dimension attributes - An attribute provides additional information about the data. A dimension attribute is a column in a dimension table. Each attribute describes a level of summary within a dimension hierarchy. Attributes for the time dimension table can be time code, order date, month code, month, quarter code, quarter, year etc, for the product dimension color, flavor, size, etc.
    - Levels - At least one level is required for each dimension. Levels are used to indicate a position within a hierarchy. For example, in a Time dimension, you could have levels for Year, Quarter, Month, and Week. Each level represents a position in the hierarchy.
    - Hierarchies - A hierarchy is the set of members in a dimension and their positions relative to one another. For a dimension created from a data mining model, the hierarchy represents the node structure of the mining model. For example, in a Geography dimension defined with the levels Continent, Country, and City, in that order, the member Europe appears in the top level of the hierarchy, the member France appears in the middle level, and the member Paris appears in the bottom level. France is more specific than Europe, and Paris is more specific than France. (MSDN, 2009)

Multidimensional data allows managers to design, create, and manage multidimensional structures that contain detailed and aggregated data from multiple data sources, such as relational databases, in a single unified logical model supported by built-in calculations. (MSDN, 2010) As in all kinds of business, on-line selling can be characterized by quite a few of indicators. Major indicator is a sales analysis. The sales analysis is a determination of the extent to which a sales force has met its sales objectives within the specified timeframe. (BUSINESSDICTIONARY, 2010) Sales analysis provide the managers information about the most profitable customers, which products are purchased, the profit generated by each product, which divisions of business are selling, which sales people are performing, market trends and geographic buying patterns, sales forecasting, and so on.
With the aid of Business Intelligence tools, managers can get many types of analysis depending on actual needs. Significant effects bring analysis by dimensions. Dimensions can be related to customers, dealers, goods etc. Managers usually need sales analysis, purchase analysis, price analysis and so on. All shown analysis should be developed as an analysis by dimensions. Dimensions may be, for example, time (period), location, region (customer region), customer type (small, middle, large company), dealer, etc. In analyses, quantitative indicators are the number of sold products, profit, average margin, return of investments and

so on. In every case, managers have to know the type of information which they require to obtain.
Various levels of analysis, from summary reporting to statistical trending, are required by executives, store managers, product managers, marketing analysts, as well as external suppliers who provide materials or finished goods.
BI solutions become a standard part of companies´ information systems and remain in advanced development. Research results show that by 2010, 20 % of organizations will have an industry-specific analytic application delivered via software as a service as a standard component of their business intelligence portfolio. By 2012, business units will control at least 40 % of the total budget for business intelligence and one-third of analytic applications applied to business processes will be delivered through coarse-grained application mashups. (GARTNER, 2009)
Software market includes great numbers of ERP and special BI software products. BI tools are more often contained in ERP systems. As example can be shown the Microsoft Dynamics NAV, Helios Orange, Interprise Solution, Microsoft Business Intelligence, Money S5, Oracle Business Intelligence, Orsoft, T4U, SAS, MicroStrategy, and quite number of the other.
It is always necessary to analyze all needs and goals which should be achieved. A big attention has to be oriented to return on investments. BI systems and ERP systems with BI tools are necessary at the present time and in case of cross-border e-commerce systems they are able to provide the managers a very good foundation for their decision-making.
Advantages and benefits of business intelligence in support of modern companies can be summarized as:

- Business intelligence gives any firm the specific view of corporate data that is required for progress (quickly access sales, product and organizational data in any database).
- In sales and marketing, business intelligence offers new tools for understanding customers' needs and responding to market opportunities
- By providing financial planners with immediate access to real-time data, Business Intelligence builds new value into all financial operations including budgeting & forecasting.
- Business intelligence supports decision-making with automatic alerts and automatically refreshed data.
- Business intelligence provides performance monitoring for accelerated action and decision making.
- Business intelligence makes companies possible to receive and process data from cross-border business activities (above all from cross-border online shopping).
- Business intelligence can bring to companies competitive advantage.

Conclusion

The present state of world economy urges managers to look for new methods, which can help to start the economic growth. To achieve this goal, managers use standard as well as new procedures. All has to be targeted the customers and their needs. More frequently than ever, modern companies use e-commerce systems in support of their business activities. E-commerce systems are one of the way, how to obtain economic growth. In this respect, managers need in support of decision-making processes much more information. Regarding the current state of Word economy, e-commerce provides relatively easy possibilities to enter on the home and especially foreign markets. The e-commerce market in Europe is flourishing with the number of shops that offer online options but also the number of people shopping online registered a rapid growth. Many companies have to re-evaluate the purchase and

decision-making processes with a view to reaction to customer feedback. In connection with e-commerce and especially cross-border online selling, source system of data set is extended. Decision making processes are also proceed on the side of customers. Managers´ decisions should lead to make the customers´ decision-making process easier. An extended data set in terms of cross-border e-commerce systems evokes needs to use information systems containing requisite and appropriate tools. By these systems are Business Intelligence systems at the present time. Business intelligence systems contain BI tools like reporting tools, OLAP tools and data mining tools. All these outputs provide the managers very important information which can be used for the all managerial activities. Managers can choose from many software products. BI tools are contained not only in many special software products, but also in many ERP systems.

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