Business intelligence and deicion making tools - New trends on romanian market

~ *Ph. D.* **Silviu Cojocaru** *(Faculty of Business and Administration, University of Bucharest, Romania)*
~ *Ph. D. Associate Professor* **Camelia Cojocaru** *(Faculty of Business and Administration, University of Bucharest, Romania)*

Abstract: Despite the limits imposed by the computer's impossibility to perfectly duplicate the human reasoning, the information systems that assist decision making and the business intelligence components are considered nowadays compulsory instruments of the modern manager; most of the daily decision procedures, the information required by the decision making process together with the information search and retrieval techniques are taken over completely by these systems. Furthermore, their continuous development, doubled the improvement of computers' performances, offer increased possibilities to take over major parts of some of the most intense reasoning activities performed by humans.
Keywords: business intelligence, database, decision making, warehouse

1.Introduction

The Decision Support Systems (DSS) and business intelligence solution are based on an assembly of components, technologies, server solutions, as well as on different instruments of informatics system projection and development. Another important thing that we want to emphasize is the exposure to Web and Internet of all the applications that are parts of the entire system. In this manner, all the programs that are part of DSS solution are Web-enabled, and this feature allows and easy and uniform access to information resources. The Web-oriented characteristic of the informatics system was applied, as a response to contemporary business needs:

• Decentralized access to information from Intranet or through Internet access;

• Mobility and uniform access to resources.

From a different perspective, the Web-oriented informatics systems present a series of advantages in terms of administration processes:

• The data level and applications are centrally stored on one or several servers. In this manner, the back-up processes and application configurations are much easier.

• Because applications and data are stored on some part of the server, the system can integrate "thin clients". Only the Web browser is used for adding clients, without having to install new applications or other components on the working servers.

2. Literature review

The category of information systems that assist in the decision making process can be defined as business intelligence. This term refers to the assembly of informatics instruments that bring added „intelligence" to the business process. The integration of traditional operational applications, with a wide range of data analysis programs or the expert systems ensures an efficient support to the assistance of decision maker.

With regards to the decision making process based on the business intelligence solutions; we can identify the following main stages:

• Analysis – The selection of useful information (in accordance with the business model) from a large number of data and the identification of the performance indicators. The processing of information in different contexts, in order to be able to identify tendencies. Business intelligence means the to offer information to all departments in the enterprise, so that each manager is able to make his own set of analysis and to watch the evolution of the performance indicators in a specific area of interest;

• The discovery of those factors that influence the decision making processes – Explaining the causes of certain occurrences that do not correspond to the business model;

• Action – The decision process is based on all the studies pieces of information. These decisions are based on the projection of future effects of a certain action (for e.g. increased product sales after a promotional campaign). Again, the human component plays an important role: it is able to judge which action can lead to the desired result. Business Intelligence assists the decision maker with the simulation of different results (What If analysis);

• Measuring results– In this final stage we can see if the decisions were correct or, when the results are different from the ones that we expected, this stage can show us where we need to act, to improve the results.

3. Research about DSS on Romanian companies

The research was realized for 38 companies that are between the first 200 from Romania considering the 2010 turnover and its main purpose was to identify how the interoperability technologies were implemented. The enterprises come from different fields, such as financial-banking, telecommunications, retail and industry.

The study was developed during December 2011-February 2012 and included a set of questions, from which we mention the most important.

1) Did you implement Decision Support Systems (DSS)?

85% of the companies implement solutions for the interoperability of informatics systems, and the rest of 15% plan to implement these solutions within one year.

2) Did DSS solution improve substantially decision making process?

Those companies that use the DSS solution have come to the conclusion that these technologies lead a major role for the improvements of processes. 90% of the companies have registered increased efficiency. More than 55% of the companies have registered an increased performance within the company.

3) Is your IT strategy align with the general business strategy of the company? (the question was addressed to Chief Information Officer - CIO)

More than 70% of companies surveyed said that IT strategy is aligned with company strategy.

4) If IT majored projects and implementation of the newest Information Technologies are driven by business or IT side of the company?

Also, a fairly large proportion (60%) of respondents said that new technologies are aligned with the business organizations.

5) Do you use balanced scorecard components?

Although most of the companies apply IT systems destined to the decision support, the usability of balances scorecard is extremely reduced. Only 35% of the companies use components that allow developing balanced scorecard.

4. The drivers of the decisions concerning implementation of new information technologies

The new technologies are there and could be implemented. The question is: are these organizations ready to adopt the new revolutionary technologies? Who are the drivers of this IT transformation? Which part of the organization should be in charge with innovation and adopting new technologies and how they could assess the strategic advantages and threats which come along with a new technology?

Who are supposed to be in charge with this unprecedented IT transformation? This paper will assess the IT and management responsible actions towards the alignment of IT both to general trends of IT world and to general strategic goals of the company.

The top management team characteristics, such as international experience, nationality, skills, organization characteristics such as size and performance, are deeply influencing the process of making strategic decisions in IT field. The use of information technologies especially those Internet-related, have a direct impact on business strategic decisions.

Chief Executive Officer (CEO) is the highest-ranking corporate executive of a company, in charge of total management of an organization. The CEO must lead the interests of the company, also take the lead in the innovation path and develop a management culture at the organization level that recognizes the need to implement corporate initiatives to achieve corporate earnings goals. Today's CEO has a near impossible task of having to keep path to the changing technologies, legislation and business demands, managing both internal and external resources to deliver the improved business

performance.

With the above in mind any CEO needs to think carefully about its current IT investments and delivery capability. Is the company really maximizing the financial returns on IT investment? If not, why not? Does the company have all the specific skills, knowledge and expertise to determine with confidence how best to apply future IT investments to maximize benefits to the business? Is the CEO confident that the IT management understands and successfully aligns the IT to enable the strategic goals to be achieved by the company?

Most CEO agrees on the importance of IT innovation to business strategies. Still, most executives say it is difficult to allocate appropriate resources to strategy and innovation. A recent study indicates that the money spent on the IT innovation budget is moving away from innovative business solutions, and moving toward maintaining the day-to-day IT environment.

Chief information officer (CIO) irresponsible for the information technology in an organization. The CIO responsibilities include anticipating trends in the market place with regards to technology as it is about ensuring that the business navigates these trends through expert guidance. At the same time, the general strategy of the organization should be follow and aligned with the proper strategic IT planning.CIO should be a consistent contributor in establishing strategic goals for an organization. The CIO manages the implementation of the useful technology to increase information accessibility and integrated systems management. The prominence of the CIO position has significantly increased as the information technology has become more and more important in the modern organization.

CIO is involved with driving the analysis and re-engineering of existing business processes, identifying and developing the capability to use new technologies, keeping up-to-date and also up-and-run the enterprise's physical infrastructure and network access, and with identifying and exploiting the enterprise's knowledge resources. Also, in the knowledge based organizations, CIO lead the companies' efforts to integrate the web technology into both its long-term strategy and its immediate business plans. CIO's often tasks are managing crucial IT projects which are essential to the strategic and operational objectives of an organization. The CIO is evolving into a role based on creating and monitoring business value from IT assets, more than managing day-to-day tasks. By developing new skills and widening their responsibilities, CIOs can take a leading role in the pursuit of technological and organizational change.

The questions is: how can CIO/ CTO help their organizations respond to the demand for sustainable change? Many companies create a new leadership role for CIOs, since any fundamental change a company makes today depends increasingly on IT. Therefore, the CIO faces the challenges of the new nature of company change. Fortunately, CIOs are well positioned to support their enterprises with the tools that are (or at least should be) at their disposal, which include the following: a comprehensive perspective on the change portfolio, information management and analytics capabilities, communication and collaboration tools, a portfolio and program management discipline and also process improvement capabilities.

CIOs must be proven leaders of change in their own organizations and respected

for their knowledge of business operations. Finally, CIOs must play a proactive role in the planning process for enterprise change initiatives, culminating in leadership of the portfolio of change.

According to latest studies, CIO mentioned as their concerns the followings:

- Understand the IT needs of the business side of the company, their preferences and trends
- Reveal to the CEO and to the board the link between IT, business strategy goals and budget formation
- Obtain good knowledge with respect to company's vertical and country markets and challenges
- Identify key business drivers for the adoption of crucial IT solutions
- Involve in the process of business IT related decision-making processes.

The main topics of the decade, with respect to business development, are as follows:

a) Setting up the business priorities to be assessed by IT
b) IT strategic priorities
c) IT spending dynamics and sourcing
d) IT strategy execution and operations management preferences, new software and hardware solution penetrations and investments priorities.

Improving the IT side of the company is the declared goal of most of the CIOs. These include reducing the IT costs, by consolidating, virtualization, automatization, optimization of applications and hardware, outsourcing of IT activities. Also, alignment with general business goals and risk management are the next in rank concerns of CIOs knowing the correct trends of IT market and making the right investment choices and decisions are very important for every

company. IT strategies and execution plans and measures of technology adoption are present in many large companies. Alignment of IT strategies with the general business line is a must.

While business and IT executives agree on intent, they often disagree on delivery and execution. Both business executives and chief information officers (CIOs) say IT is a critical component of their business and that new technologies will continue to change the competitive landscape. Technology invades all aspects of current business operations and is considered a critical innovation tool that can help support future growth. Delivering on that promise is the challenge for the IT organization. But when it comes to execution, IT professionals and business executives have very different perceptions. Business leaders are less likely than their IT counter parts to say that IT contributes to various aspects of business strategy. In fact, nearly half of CEO agrees that the IT department focuses primarily on day-to-day IT requirements.

Business strategy should emphasize how organizations enable both businesses and IT people to execute their responsibilities in support of business/IT alignment and the creation of business value from IT enabled corporation investments.

Establishing the general strategy of the company should always provide good insights into the management and contribution of IT within organization. It also takes into consideration gaining business value from IT. Today, many organizations use Information Technology in their planning and execution of strategy, in order to ensure that IT brings value to their businesses. One lesson learned through IT governance is that realizing value from IT requires a mature organization

that can deliver such value. Performance measurement and management, therefore, is a key element in realizing business value through IT.

The information systems that assist in the decision making process, defined as business intelligence, are extremely important for bringing added „intelligence" to the business process. The integration of traditional operational applications, with a wide range of data analysis programs or the expert systems ensure an efficient support to the assistance of decision maker. These could lead to an improved operational processes and operational excellence within the organization.

No need to emphasize that this unprecedented development of information technologies have led to different changes in the business environment: the appearance and development of knowledge-based organizations, and of the knowledge-based management within the organizations.

Within the total resources of a knowledge-based organization, the informational resources register a spectacular dynamic. The IT resources are now becoming the engine of successful enterprises, representing not only the operational base, but also the means for marketing and communication strategies. The organizations based on such systems are able to extract, label, organize, file, apply and share knowledge, experiences and surveys to make superior performances possible. This can be translated in: better business solutions and decisions, a better collaboration and share of information, more capable and qualified jobs.

The result of such implementation is, no doubt, positive: extraordinary results in innovation, product and service quality, cost decrease and continuous update, according

to the market's requests.

In order to face new challenges, the companies must improve their digital and technological knowledge and capacities, in spite of all financial restraints. At the same time, organizations must review the relevance of business to operational managers within.

Many businesses are missing out on similar opportunities for leveraging new technologies to radically change the way they compete. Most IT departments cannot effectively explore innovative uses of technology because they are stuck in the daily operational jobs. This way, IT side is a tactical department focused on cutting costs and maintaining day-to-day operations and not a key resource for achieving strategic business goals.

IT executives must be able to move beyond fixing the past and participate more actively in planning for their companies' future by focusing on the following actions: maximizing the value of IT assets, reducing IT complexity, focusing innovation efforts on the customer and creating a more strategic IT organization.

5. Conclusions and implications

Information analysis is a must in our world, nowadays. The term "Information society" has everyday new and various meanings, because knowledge is a key element that can determine the evolution of our society.

The rough information (that looks like a huge data volume) gets no special interest, probably just because it cannot offer an efficient and detailed analysis. The things change when we talk about integrated and centralized information that offers a good assistance for the decision maker and also

about the data analysis that is a must for an efficient management.

Given the target study, the target represented by large companies in Romania (in the top 200 companies by turnover), we conclude that this level of adoption of decision support solutions is satisfactory.

REFERENCES:

1. **Armistead, C**. (1999). *Knowledge management and process performance. Journal of Knowledge Management*, Vol. 3 Iss: 2, pp.143 – 157

2. **Bhatt, G.D.** (2001). *Knowledge management in organizations: examining the interaction between technologies, techniques, and people. Journal of Knowledge Management*, Vol. 5 Iss: 1, pp.68 – 75

3. **Chan, T.Y.D.** (2002). *Knowledge Management Company (XEROX). Capitalizing on Knowledge Workers.* Tokyo. APO

4. **Chew, E.K., Gottschalk P**. (2009). *Theories and Models of Business Firms. Information Technology Strategy and Management: Best Practices*(pp. 1-30). Retrieved from www.igi-global.com/chapter/theories-models-business-firms/23739

5. **Cumps, B., Viaene, S., Dedene, G.** (2010). *Linking the Strategic Importance of ICT with Investment in Business-ICT Alignment: An Explorative Framework .International Journal on IT/Business Alignment and Governance* (pp. 39-57). Retrieved from www.igi-global.com/article/linking-strategic-importance-ict-investment/40957

6. **Davenport, T.; Prusak, I.** (1998). *Working Knowledge: How Organisation Manage, What They Kno.* Boston: Harvard Business Press School

7. **Fairchild, A. (2004).** *A View on Knowledge Management: Utilizing a Balanced Scorecord Methodology for Analyzing Knowledge Metrics. Strategies for Information Technology Governance* (pp. 169-186). Retrieved from www.igi-global.com/chapter/view-knowledge-management/29903

8. **Floarea Năstase, Pavel Năstase** – *Tehnologia aplicațiilor Web (XML-DOM-ASP)* – Editura Economică 2002 .

9. Gartner Executive Programs Worldwide Survey of More Than 2,000 CIOs Identifies Cloud Computing as Top Technology Priority for CIOs in 2011. Gartner. Retrieved from http://www.gartner.com/it/page.jsp?id=1526414

10. Grupul BDASEIG – *Baze de date fundamente teoretice și practice* – Editura Infomega 2002.

11. **Hagen, C., Starta, D., Livingston, M., Anderson, B.** (2012) *Why Today's IT Organization Won't Work Tomorrow.* A.T. Kearney. Retrieved from: http://www.atkearney.com/index.php/Publications/why-todayss-it-organization-wont-work-tomorrow.html

12. IBM Study (2011) *IBM Global CMO Study.* Retrieved from http://www-935.ibm.com/ services/us/cmo/cmostudy2011/cmo-registration.html

13. IBM Study (2007) *Transition and Transformation. Transitioning services with minimal risk.* Retrieved from http://www-935.ibm.com/services/au/igs/pdf/tt_booklet_final_web.pdf

14. IDG White Paper (2012).*IT Transformation: Planning, Execution and Objectives in Europe.* Retrieved from http://www.idgconnect.com/view_abstract/8795/it-transformation-planning-execution-objectives-eu-

rope

15. **Lopez, J.** (2011). *Working Through Conflicting Priorities of the Power Triangle to Gain Competitive Advantage.* USA: Gartner. Retrieved from http://www.gartner.com/technology/cio-priorities/conflicting-priorities-competitive-advantage.jsp?prm=TW_CHCIOP

16. **Lawler, E., Worley, C.** (2006). *Built to Change: How to Achieve Sustained Organizational Effectiveness.* Video on DVD .Retrieved from http://www.kantola.com/Edward-Lawler-PDPD-74-S.aspx

17. **Stevens F.** (2011). *Frameworks for IT Governance Implementation. Enterprise IT governance, Business Value and Performance Measurement* (pp. 1- 18). www.igi-global.com/chapter/frameworks-governance-implementation/47452

18. **Tamaş Iilie. Popa Gheorghe, Berbec Florentina, Vrîncianu Marinela, Glăvan Nicolae** – S*isteme de gestiune a bazelor de date – Visual FoxPro* – Editura CISON 2001.

19. **Ulubil, S**. (2012). *Innovative ideas with IBM PureSystems to regain control of IT*.Retrieved from http://expertintegratedsystemsblog.com/index.php/2012/04/innovative-ideas-with-ibm-puresystems-to-regain-control-of-it/

20. **Van Gremergen, W., De Haes, S.** (2005). *Measuring and Improving IT Governance Through the Balanced Scorecard. Information Systems Control Journal*, Volume 2, 2005

21. **Zikopoulos, P.; Eaton, C.; Deusch, T.; Deroos, D.; Lapis, G**. (2012). *Understanding Big Data. Analytics for Enterprises Class,* Hadoop and Streaming Data. USA: McGraw-Hill. Retrieved from http://public.dhe.ibm.com/common/ssi/ecm/en/iml14297usen/IML14297USEN.PDF

22. **Zaharie Dorin, Ioan Roşca** – *Proiectarea obiectuală a sistemelor informatice* – Editura Dual Tech 2002.

23. **Weldon, L., Hunter, R., Dreyfuss, C.** (2012). *Sustainable Enterprise Change.* Retrieved from http://my.gartner.com/portal/server.pt?open=512&objID=270&mode=2&PageID=3862698&ref=dd_rec&resId=1934117