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Abstract: - Business Intelligence (BI) is unanimous considered the art of gaining business advantage from data; therefore BI systems and infrastructures must integrate disparate data sources into a single coherent framework for real-time reporting and detailed analysis within the extended enterprise. Also the solution to a business problem is a process that includes business intelligence, BI, by itself, is rarely the complete solution to the problem. Therefore, BI tools must understand the process and how to be part of it. Subordinated to performance management, Business Intelligence approaches help firms to optimize business performance. Looking inside the business and at the environment in which they operate, managers are able to fundament the most productive and profitable decisions. The new trend of social BI in business analysis comes with an innovative approach in consolidating performance management. A data warehouse schema for social BI will be a good start for future debates.

Key-Words: - business intelligence, performance management, social business intelligence, social data warehouse

1 Introduction

Business Intelligence (BI) is unanimous considered the art of gaining business advantage from data; therefore BI systems and infrastructures must integrate disparate data sources into a single coherent framework for real-time reporting and detailed analysis within the extended enterprise. Gaining into the business/organization by understanding the company′s information assets, like customer's information, supply chain information, personnel data, manufacturing data, sales and marketing activity data as well as any other source of critical information (Negash, S., Gray, P., 2003), BI tools have the power to make informed decisions more effectively. Including aggregation, analysis, and reporting capabilities, BI solutions transform data into the high-value insight that allows managers to make more timely and informed decisions. Without any doubts, business decisions are only as good as the information on which they are based.

BI initiatives help decision makers in solving business problems for maximizing the business value. Subordinated to performance management at operational and strategic level, the actual Business Intelligence approaches consolidate the corporate management strategies (Melfert, F., Winter, R., Klesse, M., 2004).
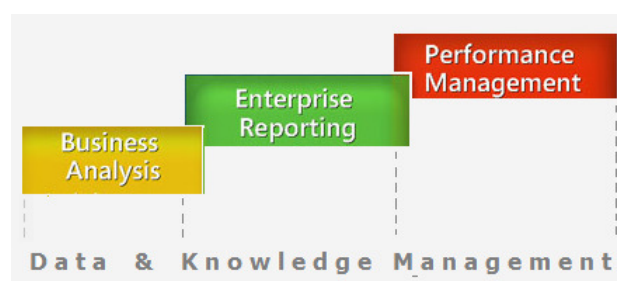

Fig. 1 Driving business performance with BI

Also the solution to a business problem is a process that includes business intelligence, BI,

by itself, is rarely the complete solution to the problem. Therefore, BI tools must understand the process and how to be part of it.

2 Business Intelligence for business performance

According to Melfert, F. (2004), performance management can be separated into an operational level and a strategic level. Benefit will be realized when the company manages to optimize the business processes that affect the key performance indicators (KPI) metrics.
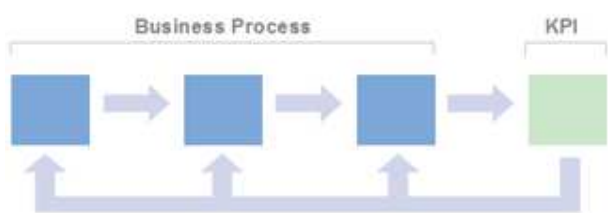
Fig. 2 KPIs & performance management

KPIs used to assess or measure certain aspects of the business operations (at operational level) and business strategies (at strategic level) that may otherwise be difficult to assign a quantitative value to. They should be specific, measurable, achievable, result-oriented, and time-bounded. The strategic KPIs are based on process KPIs and external data, e.g. the market share or a product quality index. A deviation of current values from target values can be caused by internal processes as well as by an inadequate business strategy. If processes analysis shows that processes are not the cause for missed targets, business strategy and

therefore business goals have to be adapted. This can demand new strategic and process performance indicators and initiate a complete redesign of the business processes.

The relations between business goals, strategic KPIs and process KPIs can be derived by applying a specific management methodology like e.g. the Balanced Scorecard.

According to Aberdeen Group recent research studies, „the creation, management and continual review of KPIs can be difficult because it implies referees to large, complex data volumes and a rapidly changing business dynamics". Any performance management initiative must take into considerations Aberdeen's recommendations: 1 - direct KPI projects beyond the typical financial focus areas; 2 - take a fresh look at KPIs and ask whether they remain aligned with the current state of the business; 3 - build a corporate culture around the KPI strategy; 4 - make KPIs visible to line-of-business management and decision-makers; 5 - drive KPI measures down to the lowest level of the organization; 6 - regularly measure the use of KPI information to determine decision quality; 7 - establish operational metrics across multiple areas of the business (Aberdeen Group, QI, 2009).

2.1 BI value chain

Based on the company's information assets, the Business Intelligence value chain represents a „From DATA To PROFIT" approach and is recommended to ground any performance management program (Muntean, M., Cabău, L., 2011).
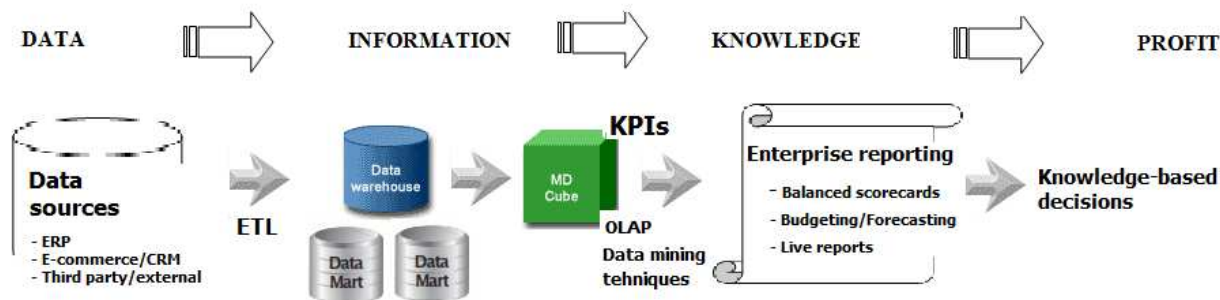
Fig. 3 Business Intelligence value chain (adapted from www.businessobjects.com)

BI applications take data that is generated by the operations of an enterprise and translate that data into relevant and useful information for consumption by people throughout the enterprise. Further, the obtained valuable knowledge supports any decision-making processes in order to achieve profit. According to Porter, M. E. (1980), a value chain is a systematic approach to examine the development of competitive advantage, consisting of a series of activities that create and build value. Business Intelligence can be described as a value proposition that helps organizations in their decision-making processes.

Succesful implementation of performance management relies on technology platforms that sustain the whole BI value chain. Some literature references (Brohman, D.K., 2000; McKnigts, W., 2004; Mukles, Z., 2009) analyse

the value delivered by BI solutions; Aberdeen Group defines the BIPM AXIS (Business Intelligence – Performance Management AXIS) and provides an objective vendor assesment looking at the provider's history of Value Delivered (Y-axis) and their Market Readliness (X-axis) (Aberdeen Group, QI, 2009). In all situation „Value delivered" implies the knowledge created with respect to the introduced BI value chain.

2.2 Deploying a BI project

The SQL Power Data Warehousing methodology developed by the Canadian Business Inteligence Authority has proved its eficiency and therefore is widely adopted. Phases like 1 – BI vision; 2 – Scope; 3 – Architect; 4 – Build; 5 – Test; 6 – Deploy; 7 – Support are grounding any BI project initiative.

Fig. 4. BI project live cycle
(http://www.sqlpower.ca/consulting/page/data-warehouse-methodology)

It is obvious that, establishing a proper enterprise data warehouse (EDW) architecture is a good start for any BI approach (McKnights, W., 2004). The efficacy of having a centralized data store with quality, integrated, accessible, high performance and scalable data can't be denied, but short term business needs can conduct to a data mart oriented BI solution.

Data warehouses (DW) are not a once off implementation; they are a medium/long term investment (Cope, D., 2007).

Therefore, IT professionals, develop BI approaches on the „data warehouse environment"concept, supposing the BI value chain (Inmon, W. H., 2000; Borysowich, C., 2010).

Unanimously, a data warehouse environment is considered to consist of four main elements: 1 - source systems: they provide the raw material for the data warehouse and business intelligence systems; 2 - extraction, transformation and load systems; 3 - data warehouse repository: most are built on relational database management systems and advanced users combine them with OLAP systems as well; 4 - reporting tools and portals (Muntean, M., 2007). Despite the dominant technological perspective, business performance is not neglected.

3 Social BI in business analysis

Analyzing the BI market at the end of 2011, the domination of „traditional on-premises solutions linked to PCs" was identified, but „key forces like cloud, mobile, social and big data will play a key role in future BI initiatives.

The widespread use of the Internet and its rapid adoption as a primary means for social interaction has enabled businesses to interface with the public in new ways. Various social media and social networking websites have made it possible for businesses to gather an unprecedented amount of consumer feedback about how and why people engage with a brand or product. Social BI is the process of collecting this new type of social data, analyzing it in order to make better decisions.

The deployment of a Social BI project with respect to the SQL Power Data Warehousing methodology implies a particular DW data model for the social perspective. The DW schema from figure 5 is proposed as a good starting point for any Social BI initiative.

The measures MS_1, MS_2, ..., MS_n are defined within a multi-dimensional approach that includes dimensions like *Problem*, *Action*, *Definitions* and *Old_Facts_New_Dimension*. The proposal enables to develop a subject-oriented analysis based on the problems identified by individuals and their recommendations to solve the problems (actions). Regarding the individuals, we have considered them having a function at departmental level and also a role within relevant discussion groups.

The approach is based on a traditional existing BI solution, a fact table being transformed into the dimension *Old_Facts_New_Dimension*. Based on this transformation (FACT → DIMENSION), the social perspective of the whole approach can be interpreted as an add-one facility of the traditional BI system.
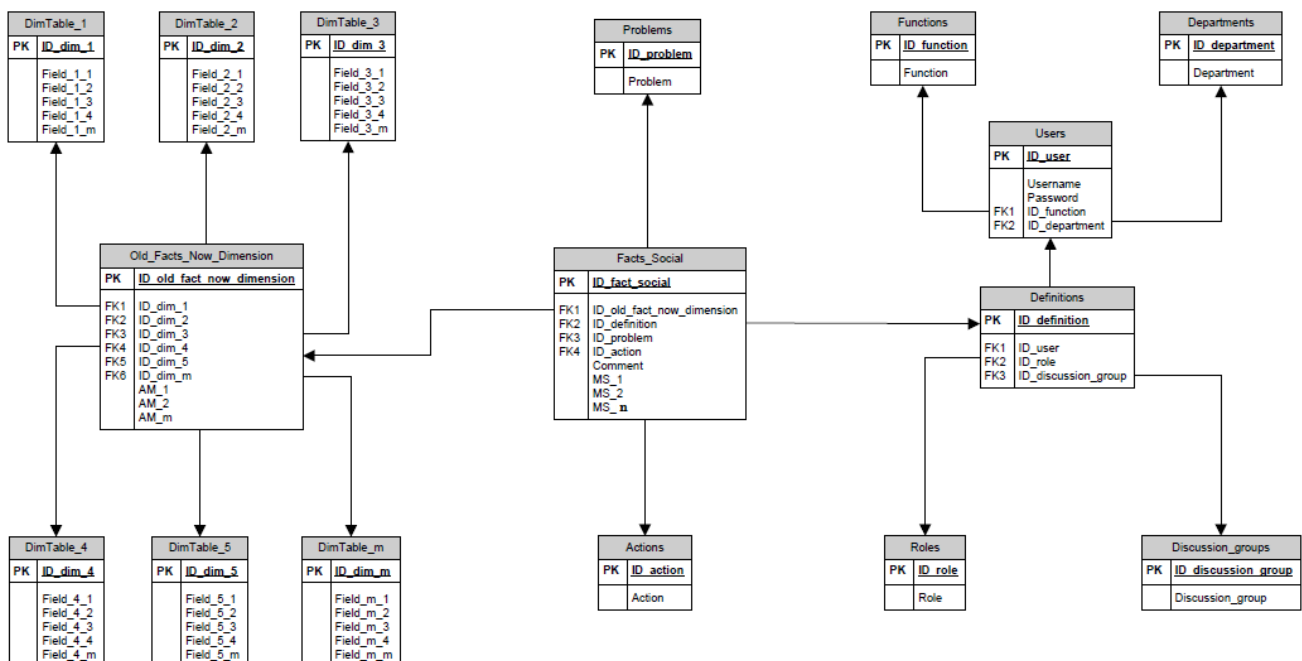

Fig. 5 Data warehouse schema proposal for Social BI

AM_1, AM_2, ... AMm initial measures in the traditional Business Intelligence analysis, become now dimensional attributes. Practically, the schema in figure 5 allows a social analysis on AM_1, AM_2, ..., AMm.

Concrete implementation aspects of this approach will be subject of a future debate (Muntean, M., Cabau, L, 2012). New ways of collecting and analyzing social data are being discovered as quickly as new software and technologies galvanize the imagination of the public.

The best use and rightful place of social BI in strategic business analysis is yet to be fully determined. Many business leaders remain wary of using data garnered from social media, which can be less than accurate or reliable. Business executives and business analysts want to ensure that the feedback data they incorporate into critical decisions is of comparable quality to the internal data they've been using.

4 Conclusion

Business Intelligence and Performance Management goes hand in hand. Approaches based on BI value chain or data warehouse environment have the same goal: PERFORMANCE.

Beyond analysing feedbacks and seeking for advice, companies are interested to develop a collaborative environment to ensure that decisions made have consensus at approval at the same time. Collaborative Business Intelligence – the integration of information sharing features and functionality of popular Web 2.0 technologies and social media platforms within a BI platform – will become a powerful BI tool and will drive efficiency and effectiveness in decision-making.

References:

[1] Borysowich, C., Tuning the Data Warehouse Environment, http://it.toolbox.com/blogs/enterprise-solutions/ , 2010

[2] Brohman, D.K., The Business Intelligence Value Chain: Data Driven Decision Support in A Warehouse Environment. An Exploratory Study, *Proceedings of the 33rd Hawai International Conference on Systems Science*, 2000

[3] Cope, D., Business Intelligence Architecture. Components Overview, IBM Corporation, 2007

[4] Inmon, W. H., Building de Data warehouse, http://inmoncif.com/inmoncif-old/www/library/whiteprs/ttbuild.pdf, 2000

[5] Kaplan, R., Norton, D., *Translating Strategy Into Action. The Balanced Scorecard*, Haward Business School Press Boston, 1996

[6] Kaplan, R., Norton, D.P., *How to Implement a New Strategy Without Disrupting Your Organization*, Haward Business Review, march 2006

[7] McKnights, W., The New Business Intelligence Architecture Discussion, *Information Management Magazine*, September 2004

[8] Melfert, F., Winter, R., Klesse, M., Aligning Process Automation and Business Intelligence to Support Corporate Performance Management, *Proceedings of the 10th America Conference on Information Systems*, 2004

[9] Mukles, Z., Business Intelligence: Its Ins and Outs, Technology Evaluation Centers, April 29th, 2009, http://www.technologyevaluation.com/research/articles/business-intelligence-its-ins-and-outs-19503/

[10] Muntean, M., Business Intelligence and Data Warehousing, Proceedings of the AMIS Conference, 2007

[11] Muntean, M., Cabau, L., Business Intelligence Approach In A Business Performance Context, http://mpra.ub.uni-muenchen.de/29914/, MPRA Paper No. 29914, 2011

[12] Muntean, M., Cabau, L., Social BI, work in progress, 2012

[13] Negash, S., Gray, P., Business Intelligence, *Proceedings of the Americas Conference on Information Systems*, 2003

[14] Sabherwal, R., Becera-Fernandez, I., *Business Intelligence. Practices, Technologies and Management*, John Williey & Sons, Inc., 2011

[15] *** Aberdeen Group Research Studies, QI 2009

[16] ***, Business Objects. SAP and Business Intelligence – www.businessobjects.com

[17] http://www.valuebasedmanagement.net/methods_balancedscorecard.htm

[18] http://smartdatacollective.com/yellowfin/47360/top-14-business-intelligence-predictions-2012