Business Intelligence Impacts on Design of Enterprise Systems

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INTRODUCTION

In this information age, the approach to decision support as an individual system, such as decision-support systems (DSS), has been replaced by a new viewpoint of intelligent software and systems (Mehdi Ghazanfari, Rouhani, Jafari, & Taghavifard, 2009). Based on this new approach, enterprise systems are designed to have Business Intelligence (BI) as an umbrella concept which covers various enabler tools and capabilities in the form of non-functional requirements (Rouhani & Zare Ravasan, 2015b). Most organizations still experience a lack of business intelligence (BI) in their decision-making processes when implementing enterprise systems. The current state-of-the-art in decision support focuses on the intelligence requirements of enterprise systems as important quality aspects, along with other functional and non-functional needs. But the literature lacks studies on the evaluation of these intelligence requirements (Rouhani & Zare Ravasan, 2015a).

In this book chapter, business intelligence and enterprise systems literature are reviewed. Also based on the latest researches, the position of BI on these systems is discussed. In the following, through the study of BI capabilities and proposing them as non-functional, the BI Impacts on the design of enterprise systems and software would be described and the direction for future research and insights for information systems development would be prescribed.

BACKGROUND

In this chapter, it will be given literature review about business intelligence and enterprise systems. The lack of a large number of researchers will limit this work on newer research period.

Business Intelligence

The term Business Intelligence was introduced to describe a set of concepts and methods to improve business decision-making by using fact-based, computerized decision support systems. This term is introduced by Howard Dresner of the Gartner Group (Nylund, 1999). The first definition introduced BI as a management philosophy and tool that help organizations to manage and refine business information to make effective decisions (Gbosbal & Kim, 1986).

Business intelligence presents the process through which organizations take advantage of virtual and digital technology to collect, manage and analyze structural or non-structural data. In other words, the technology and commercial processing procedures in the decision-making are supported through the extraction, integration and analysis of data (Berson & Smith, 1997).

The purpose of business intelligence is to help control the resources and the information flows of the business which exists in and around the organization. BI makes a large contribution to the required intelligence and knowledge of the

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organizations' management by identifying and processing data in order to explain their hidden meanings (Azoff & Charlesworth, 2004).

As a total definition, Lönnqvist & Pirttimäki (2006) stated that "Business intelligence as a term can be used when referring to the following concepts":

1. Related information and knowledge of the organization, which describe the business environment, the organization itself, the conditions of market, customers and competitors and economic issues;
2. A system and a systematic process by which organizations obtain, analyze and distribute the information for making decisions about business operations.

Eckerson realized that business intelligence must be in able to provide the production reporting tools, end-user query and reporting tools, on-line analytical processing (OLAP), dashboard/screen tools, data mining tools and planning and modeling tools (Eckerson, 2010).

Bose (2009) believed that the role of BI is preparing the right information to the right people at the right time to improve decision making, hence improve managerial proceeding and enterprise performance. Generally, the main focus in managerial approach is on the process of gathering data from internal and external sources and of analyzing them to produce relevant information to the decision making process (M. Ghazanfari, Jafari, & Rouhani, 2011; Petrini & Pozzebon, 2009). In technological point of view, BI has been proposed as an instrument of analysis, providing automated decision making about business conditions, sales, customer demand, product preference, and so on. It uses a different type of analysis and mathematical, statistical and artificial intelligence, as well as data mining and OLAP to take a decision in more suitable format (M. Ghazanfari, et al., 2011; Petrini & Pozzebon, 2009). Ghazanfari et al. (2011) and Rouhani et al. (2012) claimed that there is one more approach in BI definition called system enabler in which the main focus is on value added features on supporting information.

Enterprise Systems

Enterprise systems (ES) which also called Enterprise Information Systems, have emerged as a promising tool used for integrating and extending business processes across the boundaries of business functions at both intra-organizational and inter-organizational levels in the past decade. ES provides an IT platform that enables industrial organizations to integrate and coordinate their business processes; it is considered a revolutionary advance in the continuous evolution of computer applications in business and industry (Xu, 2011). Enterprise systems as a commercial software packages, promise the integration of all the information flowing through a company, from customer information, financial and accounting information to human resource information and so on.

In the 1990s, enterprise systems have been mainly used for managing the physical assets of an enterprise but today it is known that the knowledge is a compilation of an enterprise's invisible assets (Xu, 2011). Increasing requirements for extended enterprises have also stimulated the integration of the knowledge management function into enterprise system for knowledge asset management (Xu, 2011). The concept of integration enterprise system and knowledge management becomes a strategic initiative for providing competitive advantages to enterprises. Entire Resource Planning is considered a significant step in the evolution of ES.

Types of enterprise systems include Enterprise Resource Planning (ERP), Supply Chain Management (SCM), Supplier Relationship Management (SRM) and Product Lifecycle Management (PLM). The enterprise resource planning system integrates software applications in the same way as the business processes (such as purchasing, finance, human resources and inventory manage-