Chapter 1
Emerging Business Intelligence Technologies for SMEs

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ABSTRACT

Small and Medium-Sized Enterprises (SMEs) are socially and economically important, since they represent 98% of all enterprises, providing around 90 million jobs in the European Union, and contribute to entrepreneurship and innovation. However, SMEs face particular difficulties in order to be competitive in a global world. In recent time, technology applications in different fields, especially Business Intelligence (BI) have been developed rapidly and considered to be one of the most significant uses of information technology. BI is a broad category of applications and technologies for gathering, storing, analyzing, and providing access to data to help enterprise users make better business decisions. This represents a tremendous competitive advantage that allows achieving and exploring the collective intelligence of the organization, enabling contextual, agile, and simplified information exchange and collaboration among distributed workforce and networks of partners and customers, which can be defined as Enterprise 2.0. Despite these advantages, the companies applying such systems may also encounter problems in decision-making processes because of the highly diversified interactions within the systems. Hence, the choice of a suitable BI platform for SMEs is important to take the great advantage of using information technology in all organizational fields. The authors analyze seven open source Business Intelligence tools, free of charge, given that one of the main objectives is to reduce costs and enhance Enterprise 2.0 using new open source technologies.

1. INTRODUCTION

Data Warehouses (DWs) have become an essential component of modern decision support systems in most companies of the world. In order to be competitive, even Small and Medium Enterprises (SMEs) now collect large volumes of information and are interested in Business Intelligence (BI) systems (Lawton, 2009). BI is now widely used, especially in the world of practice, to describe analytic applications allowing companies analyze large amounts of information collected while do-

ing business to capture trends, gain insights, and draw conclusions about the organization.

SMEs are regarded as significantly important on a local, national, or even global basis and they play an important part in the any national economy (Mullins, et al., 2007). Only in European Union they represent 98% of all enterprises, providing around 90 million jobs. Micro, Small, and Medium-Sized Enterprises (SMEs) are the engine of the European economy. They are an essential source of jobs, create entrepreneurial spirit and innovation and are thus crucial for fostering competitiveness and employment. The category of micro, Small and Medium-Sized Enterprises (SMEs) is made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding 50 million euro, and/or an annual balance sheet total not exceeding 43 million euro (European Union, 2003).

However, they are often confronted with market imperfections. SMEs frequently have difficulties in obtaining capital or credit, particularly in the early start-up phase. Their restricted resources may also reduce access to new technologies or innovation. Therefore, support for SMEs is one of the European Commission's priorities for economic growth, job creation and economic and social cohesion (European Union, 2003). BI and Decision Support Systems (DSS) can help SMEs to be competitive in a global world. In spite of multiples advantages, existing DSSs frequently remain inaccessible or insufficient for SMEs because of the following factors (Grabova, et al., 2010):

- High price.
- High requirements for a hardware infrastructure.
- Complexity for most users.
- Irrelevant functionality.
- Low flexibility to deal with a fast changing dynamic business environment. (Xie et al., 2007)

- Low attention to difference in data access necessity in SMEs and large-scaled enterprises.

Today organizations compete in a hyper competitive business environment characterized by a massive influx of data. Information has gained significance as a key resource in organizations and it is undisputed that effective information use is a source of major competitive advantage (Bucher et al., 2009). In this dynamic environment, Business Intelligence (BI) is seen as a critical solution that will help organizations leverage information to make informed, intelligent business decisions to survive in the business world (Jordan & Ellen, 2009). BI describes the concepts and methods used to improve decision making using fact based systems (Watson & Wixom, 2007).

Using BI initiatives, businesses are gaining insights from growing volumes of data generated by applications such as customer relationship management, supply-chain management, and Web analytics. BI enables access to diverse data, manipulation and transformation of these data, and provide business managers and analysts the ability to conduct appropriate analyses and perform actions (Turban et al., 2008). As such, organizations are eager to adopt these technologies to take advantage of the power of BI. BI is seen as a critical solution that is a necessity to survive in the business world (Bucher et al., 2009). A survey of over 4000 Chief Information Officers (CIO) conducted by Gartner Group, revealed that business intelligence is rated as the number one technology priority in organizations (Strange, 2009). A similar survey of CIO's by IBM revealed that BI is the top visionary plan for enhancing enterprise competitiveness (IBM, 2009).

As a result, the BI field has experienced steady growth despite the recent economic downturn that has affected the growth of other IT applications. In its worldwide forecast for BI for 2007-2012, Gartner forecasts the BI market to grow at a

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