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## **Business Intelligence Empirical Study on the top 50 Finnish Companies**

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### **ABSTRACT**

Comprehensive and timely information and knowledge is crucial in generating new products and improving business operations. Business Intelligence (BI) plays a central role in producing up-to-date information for operative and strategic decision-making. This study was carried out in order to find out what BI represents for Finnish large-scale companies in the year 2002. The study is the first comprehensive study of its kind in Finland. Telephone surveying was used as the primary research method in this study. Individuals responsible for BI activities in the top 50 Finnish companies were telephone-interviewed. Before the actual interview the questionnaire was sent to the interviewees. The response rate reached 92 percent forming a sound basis for the study. The objective of this study is to find out how common the BI activities are and how BI is currently applied in large Finnish companies. The study examines the initiation and organization of BI activities as well as the future prospects concerning BI activities in the companies interviewed. The research will also examine the key areas of improvement in BI activities, benefits gained from BI as well as the future outlook for the field. The companies researched in the study are categorized into three groups by industry: manufacturing, trade and services, and information and communication technology (ICT).

### **INTRODUCTION**

In recent years, Business Intelligence activities have increased significantly in Finnish companies. It is obvious that the effective use of the concepts and processes of Business Intelligence is necessitated by the global business environment in which Finnish companies operate. Comprehensive and timely information and knowledge are crucial in generating new products and improving business operations. Business Intelligence and related Management Information Systems play a central role in producing up-to-date information for operative and strategic decision-making. There are currently several firms offering BI consultancy or BI systems development in Finland. Business Intelligence terms and practices in companies have not yet become very well established, however, and several different terms are employed for this concept. Most firms think of BI activities as a process focusing on monitoring the competitive environment around them. This study was carried out in order to find out what Business Intelligence represents for Finnish large-scale companies in the year 2002. It is the first comprehensive study of its kind in Finland. Current literature on BI has proved to be fairly sketchy and theoretical. There is no generally agreed conception of BI but, rather, each author has promoted his or her own idea of its connotations. In this study Business Intelligence (BI) concept is defined as organized and systematic processes, which are used to acquire, analyze and disseminate information significant to their business activities. With the help of BI, companies learn to anticipate the actions of their customers and competitors as well as different phenomena and trends of their market areas and fields of activity. Companies then use the information and knowledge generated to support their operative and strategic decision-making.

#### **Changing Business Environment and Decision-Making**

In planning their strategy, companies need to consider the pressures and challenges caused by the business environment in order to thrive in the global digital economy. A rapidly changing business environment brings about a growing need for very timely, first-rate business information and knowledge. In addition, the amount of information available is increasing along with advances in information and communication technologies. It may be very difficult to sift what is relevant from such an overload of information. Yet, the competitive edge is only gained through the ability to anticipate the information, turn it into knowledge, and to craft it into intelligence relevant to the business environment, and to actually utilize the knowledge gained from it. Lahtela et al. (1998, p. 4) define competitiveness as the company's ability to operate successfully in changing circumstances. Up-to-date knowledge is thus the basis for competitiveness in ever-changing business environment. The management and decision-making of a company is most often – after all – a collective effort, involving several people with distinct expertise from different organizational levels. Managerial input, therefore, is particularly crucial in bringing together contributions from a diversity of fields and knowledge bases. Further, managerial input is needed in turning information into useful business knowledge. According to Räsänen (2000, p. 17), business success is dependent upon three factors.

A company must be able (1) to satisfy its core business agenda and, secondly, (2) to form a product entity that is successful among the customers. The third factor is (3) the external business environment. Management needs to predict any changes and make decisions based upon flawless real-time information. Forrester has put forward a definition (Yrjö-Koskinen 1973, p. 1) by which management is in fact about transferring information into decisions. Sydänmaanlakka (2001, p. 171) emphasizes that information per se is not as significant as the fact that the information is meaningful and that it is being utilized in practice, which then calls for appropriate management of the information. Information needs may be either explicitly recognized or unconscious. Expressing information needs comprehensively is very challenging – or even impossible. Therefore, those responsible for acquiring the information should not confine their search only to information specifically defined and pre-ordered, but also try to perceive the information needs more holistically. Maybe the information needs could be considered through the concepts of explicit and tacit information in an organization. Tacit information cannot be explicitly expressed or disseminated. Accordingly, some information needs may be more tacit than explicit in their nature. Although Business Intelligence has become a trend-like phenomenon, it is not so new as a concept or practice. Already in the 1980's, Tyson (1986, p. 9) identified the term and emphasized the need for continuous monitoring of customers, competitors, suppliers and other fields. According to Tyson, Business Intelligence comprises a variety of information:

- Customer Intelligence
- Competitor Intelligence
- Market Intelligence
- Technological Intelligence
- Product Intelligence and
- Environmental intelligence.

Viva Business Intelligence Oy (1998, p. 5) has defined Business Intelligence as a continuous and systematic process, which produces knowledge, insights and forecasts on a company's operating environment. Effective Business Intelligence then increases the quality of strategic and operative planning and reduces the time used for decision-making processes. The definition adopted in this study is more comprehensive and includes the whole process from acquiring relevant information to analyses and dissemination of useful knowledge to decision makers.

### **The Objectives of the Study and Methodology**

Business Intelligence activities have recently become much more common in Finland. It is common knowledge that large-scale companies operating in a global market place – especially in the ICT sector – do put effort into sophisticated BI activities. There have not been studies aiming to research Business Intelligence from a practical viewpoint in the country and, therefore, the objective of this study is to find out how common BI activities really are and how BI is currently being applied in large Finnish companies. The study examines the initiation and organization of Business Intelligence activities as well as the future prospects concerning BI in the companies interviewed. The research will also examine key areas of improvement in BI activities, benefits gained from BI as well as the future prospects the field. Telephone survey was used as the primary research method in this study. Individuals responsible for BI activities in the top 50 Finnish companies by sales revenue were telephone-interviewed. The list of the top 50 companies was taken from the Finnish business magazine *Talouselämä* (2002). Cover letters and questionnaires were sent in advance to the interviewees while the interviews, attracting a total of 46 participants, took place between June 11 and July 3, 2002. The response rate reached 92 percent forming a sound basis for the study. Four companies declined to answer citing commercial secrecy or busy schedules.

## **THE RESULTS OF THE STUDY**

The companies researched in this study were categorized by their industry: (1) manufacturing, (2) trade and services, and (3) information and communication technology (ICT). 80 percent of the companies interviewed in this study have systematically organized BI activities. All of the ICT companies included in the study report a systematic way of collecting information on their business environment. When comparing industries, in the trade and services sector, there were more companies with no systematic business information acquisition and analysis than in the other sectors. It should be noted, however, that in the trade and services sector three quarters of the companies do indeed have systematic BI activities.

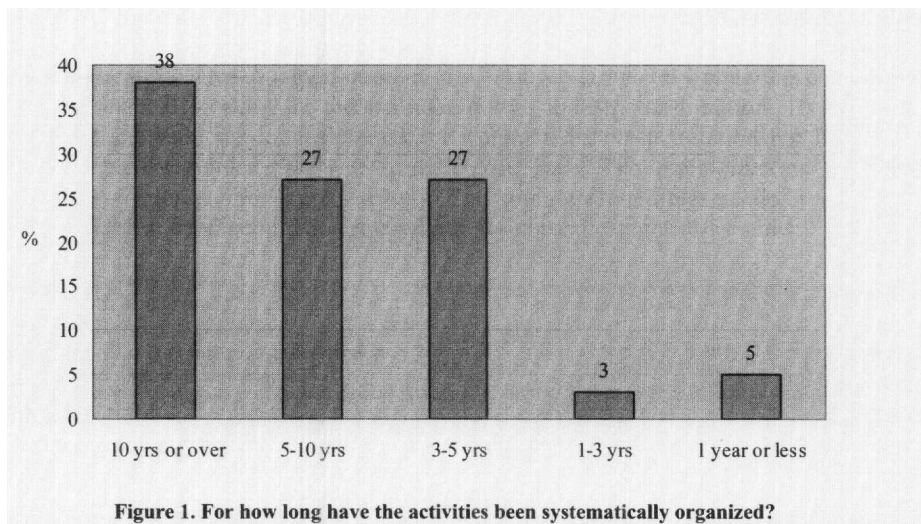
### **Which term is being used for business information acquisition and analysis?**

Of the companies interviewed, 61 percent place business information acquisition and analysis under the heading of Business Intelligence, Competitive Intelligence or Market Intelligence. 48 percent of all companies

interviewed apply the term Business Intelligence. In addition, 11 percent are considering relabeling the concept Business Intelligence in the near future. 16 percent of the companies have initially named the concept Competitive Intelligence, but in these firms the term has been changed to Business Intelligence in the past three years. Business Intelligence activities have previously been called Market Intelligence, Information Services or Market Research in 11 percent of the companies.

**For how long have the related activities been systematically organized?**

Of the companies surveyed, 92 percent have embarked on a systematic process of business information acquisition and analysis more than three years ago as shown in Figure 1. 38 percent began their activities more than a decade ago. Eight percent of the companies began the operations within the last three years. Overall, the companies have conducted business information acquisition and analysis activities for a fairly long period of time.



Companies in the trade and services sector have been conducting business information acquisition and analysis for the longest time: 94 percent of the companies in this sector have had such activities for the past three years or longer. 47 percent of companies in trade and services sector began business information acquisition and analysis over ten years ago. This percentage was 36 in manufacturing and 17 in the information and communication technology sector.

**Why were the activities established?**

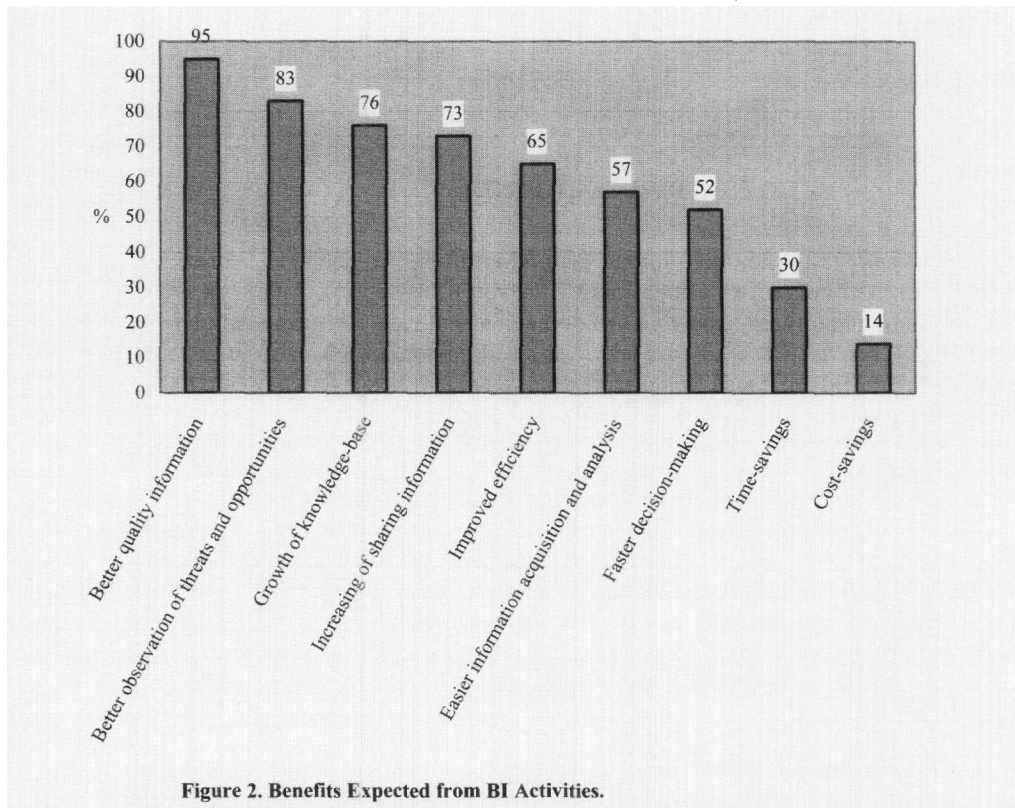
The interviewees were asked to name reasons for initiating the activities from eight given choices, or to name some other reason themselves. One of the given options, “active promotion by service providers”, was not chosen by any of the interviewees. 81 percent of the companies have begun business information acquisition and analysis as they have identified a need for enhanced information to support their planning and decision-making. For 65 percent of the companies, the driving force behind starting operations has been a need to obtain knowledge about the business environment and its development to support operative actions. Over half of the companies (51 percent) have embarked on the activities because it has become a prerequisite for maintaining their competitiveness. Only five percent indicated that the reason for them to embark on these activities was that “BI has become a trend in the business world”.

**How significant are the benefits expected?**

In this question the interviewees had the option of selecting the benefits they are expecting from business intelligence activities. A scale of the level of significance was used for this interview question. Levels included *highly significant*, *significant*, *fairly significant*, *not particularly significant* and *insignificant*. The benefits and the percentages of interviewees considering the benefit in question to be highly significant or significant are presented in Figure 2. The interviewees felt that the most significant benefit provided by BI activities was “acquiring better quality information” (95 percent) for decision-making, “improved ability to anticipate earlier the possible threats and opportunities” (83 percent) and “growth of knowledge base” (76 percent). “Time-savings” (30 percent) and “Cost-savings” (14 percent) were not considered particularly important. The interviewees were also asked to name one

factor to describe the most significant benefit of their BI activities. The following benefits were rated as important ones by the interviewees:

- Harmonizing the ways of thinking of company personnel
- Broadening understanding of business in general
- Strengthening strategic planning
- Increasing professionalism in acquisition and analysis of information
- Understanding the meaning of information.



#### Which topics is the information gathered about?

Of the companies 95 percent gather information on their competitors and also about their own field of business. Over 80 percent say they gather information about customers (87 percent) and general macro-trends (84 percent). Other important subjects are customers' field of business (78 percent) and country specific market information (70 percent). Technology related information, parallel industries and legal aspects are also considered important. The interviewees themselves name the following as essential subjects for information gathering: legislative moves by the European Union, the world market situation in different fields, specific trends in the companies' own fields and prices of raw materials. A near third considers information related to their suppliers and their fields to be less important.

#### How important are the various sources of information?

The companies consider their own personnel as their most important source of information. 76 percent of the interviewees felt that personnel are a significant or highly significant source of information. Reports prepared and written by the employees are also very important. The term report refers to in this study information that cannot be acquired directly from explicit information systems, but requires a follow-up and investigation by personnel. These reports include competitor profiles, news updates and field reviews. Over half of the interviewees (54 percent) named such reports as highly significant or significant sources of information. 49 percent of the interviewees consider information systems significant or highly significant in this respect. On the other hand, subjects that cannot be presented by information systems can be presented in reports. The most important external sources for

information are customers, market research institutes, and competitors, while the least significant external sources of information are considered to be universities, investors, suppliers or sub-contractors and public research institutes. 79 percent of the interviewees consider customers significant or highly significant sources for information. 68 percent of the interviewees considered market research institutes significant or highly significant. Competitors seem to be nearly as important external information sources since 64 percent of the interviewees considered them significant or very significant. Other important external sources of information were the media and investment analysts. The interviewees themselves cite the reports of the European Union, international information banks, industry associations, field-specific networks and information providers as significant external information sources. In this question, there prevails a certain inconsistency in the answers. This may be due to the disparities in the nature and fields of the companies interviewed.

#### **Who utilizes the outcomes of Business Intelligence?**

In 95 percent of the companies top management utilizes the information and intelligence gained through business information acquisition and analysis. About half (51 percent) of the companies name top management as the single most important user of the business information. Middle management and specialists are also an important group of users in 85 percent of the companies. In addition, 14 percent name another user for the information, such as customers, sales and the development organization and communications units.

#### **How will investment on Business Intelligence change in the next 5 years?**

One third of the interviewees (33 percent) believe that investment in activities concerning business information acquisition and analysis will increase considerably in the next five years. 44 percent anticipate that investment in such activities will increase slightly. 20 percent believe investment will remain as it is. Only two percent predict that investment will decrease slightly, and none of the interviewees believe the investment will decrease significantly. Nearly 90 percent of companies who currently have no systematically organized processes for business information acquisition and analysis, presume that investment will increase considerably or at least slightly in the future. Of the companies 75 percent who already have systematically organized operations in business information acquisition and analysis expect the emphasis to grow significantly or at least a little. The results suggest that companies who have already acquired and analyzed business information consider these operations important in the future too. It is also possible, however, that in some companies interviewed this is a sign of not having very mature techniques and methods or efficient information systems for handling and utilizing information, and that investments are needed to improve this situation. Only the companies who have had operations for business information acquisition and analysis for more than ten years expect their investments in these operations to decrease in the future.

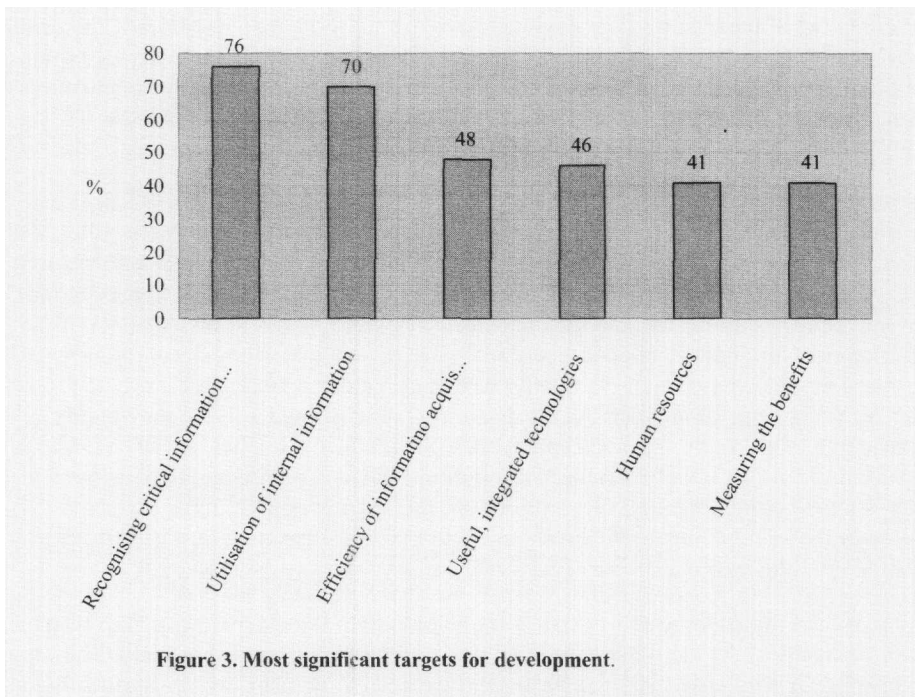
#### **What are the targets for development in the BI activities?**

The targets of future development are presented in Figure 3. 76 percent of the companies feel that crucial needs for information are not recognized at all or not well enough. Recognizing critical information needs was considered an important area of improvement, mainly as the operations concerning business information acquisition and analysis are currently not systematic or comprehensive enough. Another crucial (70 percent) issue of development in the companies is utilization of internal information. In addition, nearly half of the interviewees (48 percent) emphasize the diverse utilization of information as critical for competitiveness. In addition, there may be a lack of suitable integrated technologies and human resources and inefficiencies in information management and acquisition, since these are also considered significant targets for development.

#### **What types of changes are expected in the next five years?**

Nearly 95 percent of the interviewees feel that BI operations will increase in importance in the next five years. BI is expected to become an even more significant instrument for business management and decision-making. 10 percent of the interviewees believe BI will become more common all around, also in small businesses. Currently, about a tenth consider BI an activity mainly for large corporations. About 75 percent of the interviewees consider BI a need-based practice. These firms believe the content and a humane approach are the key aspects of BI. Technology is only considered a supporting and enabling tool. The rest, 25 percent, feel that BI is mainly a technology, and believe the technological approach to BI will even increase in the future. These firms feel that operations regarding BI are currently too manual. On the other hand, nearly all of the interviewees admit that technology makes operations easier. They hope technological tools will be developed in the future to become more clever and tailored for specific needs. Nearly 30 percent hope the methods for measuring the benefits of BI will develop within the next five years. Currently, measuring is not being done as either no suitable measurement methods have been identified or the companies have no resources for

such activity. With the help of appropriate measurement methods BI activities could be more easily proved beneficial and valuable, for instance to a management board not yet committed to the operations. Over half of the interviewees believe that outsourcing basic information acquisition will increase in the next five years, as there is a need to increasingly prioritize operations.



The interviewees also expect the dissemination of information to improve, when the contents of external information banks can be integrated into company portals. On the other hand, the interviewees question the increasing outsourcing of information acquisition, if the price and quality ratio of such services does not improve in the near future. About one tenth consider the current services provided to be inadequate. Of the interviewees 20 percent believe that in the future, acquisition and analysis of information will not be difficult, but the main challenge will be the utilization of information. Efficient use of information requires sharing of it openly within the companies, and providing the management and decision-makers with more value-added pieces of information. A few interviewees also mention that the international nature of their business poses further challenges for monitoring the business environment and analysis of acquired information. 60 percent of the interviewees feel it important that in the future the BI operations utilize information from the whole value chain. The interviewees expect co-operation and networking to increase in BI operations, as currently the benefits of the activities are only partly realized and utilized.

### CONCLUSIONS AND IDEAS FOR FURTHER STUDIES

This study is the first comprehensive study investigating BI practices in Finland. According to the results of the study, BI activities really have become common in Finland – or to be precise – in Finnish large-scale companies. These companies, most of them operating in a global market place, do invest to achieve sophisticated BI applications in order to achieve better competitiveness through better decision making. Although the BI related terms and practices have not yet become very well established in companies or in the literature, Business Intelligence appears to be the most popular term for systematic business information acquisition and analysis in Finnish large-scale companies. According to the results of this study BI will become even more common in the future. It was a slight surprise for the authors that BI activities were quite young in the ICT sector. Only 17 percent of the companies in this sector initiated business information acquisition and analysis over ten years ago. The figures are higher in the other two industrial sectors researched. On the other hand, the ICT sector was the only one in which 100 percent of the companies do have BI activities. Overall, the goal of starting activities for BI activities has mainly been to increase the utilization and sharing of existing information resources in the companies. External application providers or consultants in the field did not seem to have any particular role in initiating BI activities in

the companies. Most companies have begun business information acquisition and analysis simply because they have realized a need for enhanced information and knowledge to support their planning and decision-making. Cost or time savings were not considered very important benefits among the interviewees of this study. The reason for this may be the fact that cost-saving benefits of BI activities are long-term. Besides, cost and time are resources which must be invested into BI activities when a company desires any benefits. Now the benefits belong to the upper side of productivity function i.e. they are outputs achievable. It is obvious that cost and time savings are not the first things which come to a interviewee's mind when benefits noted. Besides, benefits gained from BI activities are quite intangible, and therefore they are often difficult – or even impossible – to quantify. The interviewees see Business Intelligence in the future as an enabling practice, which can assist in controlled management of businesses. On the other hand, the interviewees already see BI already as a crucial element for competitive business operations.

To conclude, systematic business information acquisition and analysis is increasing in Finnish large-scale companies. Business Intelligence as a concept is becoming more common in everyday business life. Presumably, BI activities will also become more systematic within the companies as the emphasis on business information acquisition and analysis increases. According to this study, the companies do not consider BI to be a hyped up fad. For most companies the driving force behind starting BI activities has been a need to obtain knowledge about the business environment and its development to support operative actions. The notion that BI is a comprehensive practice within companies is confirmed by this study. Business Intelligence incorporates people, processes, and also the knowledge as an end product. As in the case of any survey, either an interview or mail survey, the validity of respondents' answers must be considered. This study is no exception. It is difficult to say when an interviewee's answer really represents the company itself or if it is only a subjective opinion. This is a problem which we have to deal with when conducting such studies. Strengthening the validity of the data would require standardized questionnaires, numerous interviews in the same company or even conducting actual case studies. The last option may be the one, which will be adopted after this explorative survey.

The results of this study cover the Finnish large-scale companies belonging to the top 50 group. The results cannot be generalized to all Finnish companies. On the other hand, this was not the intention of this study. The top 50 group was found the most interesting in this case. The response rate reached 92 percent, which implies high reliability. Because of the descriptive nature of the study, no statistical tests were made. On the other hand, when the data are examined in more detail in the forthcoming studies, more sophisticated analyses will no doubt be applied. Several topics for further research have arisen during this study. Possibly the most interesting one deals with the nature of information and knowledge. It is obvious that an important part of the information needs in companies is very difficult to express explicitly. In the academic world, the nature of tacit knowledge has been explored for several years now. The concept of tacit knowledge could conceivably be used when seeking for better ways to specify the implicit information needs in companies. Another interesting topic in this framework is the nature of the information itself produced by BI activities. In theory, the BI process should turn business information into valuable knowledge and even intelligence. The authors have not been able to find a study exploring this area with empirical evidence. There is a lot of work to be accomplished by researchers interested in Business Intelligence.

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