



Measuring Success Factors for Business Intelligence: Management Perspective

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ABSTRACT

This study is to provide a better understanding of factors influencing the success of business intelligence in e-commerce for making better decisions. We proposed the new model for success factor of BI in the decision-making process where there are six factors that have the direct impact on BI achievement on decision-making process. These six factors are user access, integration with other systems, data quality, leadership commitment, analytical-decision making culture, flexibility, and user satisfaction. In Indonesia, BI implementation still not optimal yet. However, many e-commerce companies try to implement BI without knowing to utilize maximally. Therefore, with a model we are expecting to help the practitioners in order to evaluate BI tools especially on increasing decision-making quality.

Key words: Business Intelligence, BI Success, Decision Environment, Success Model, E-Commerce

1. INTRODUCTION

In complex organizations, public or private, decisions are made on a continual basis [1]. There are many managerial problems that show up in various cases and needed responses as soon as possible to solve. In this changing times to remain competitive, managers have to recognize the critical needs, for this a tool is needed which has the capability to allow a complete view of the operating environment of the organization with rich data resources that can help achieve their business goals and targets by providing accurate information to support timely strategic decisions [2], [3]. This can be achieved through business intelligence. Business intelligence is still a topic of interest in academic research [4] and use of business intelligence by companies in recent years is increasing day by day because it is used to gather, analyze data sets [5], also major functions of business intelligence is to provides historical, current, and predictive analysis.

Business intelligence helps to analyze unstructured data sets and transform them into information in an easily understandable form. That often helps managers make strategic and tactical business decisions to improve operational efficiency and effectiveness by providing tools to access and manage information easily [3], [6]–[8]. This actionable information provides crucial insights into customer behavior such as preferred products, visited pages, number of visitors,

online shopping experience, etc.

Many market research analyst predicts the global e-commerce market to grow steadily increase and where it is going to be impressive than 19% by 2020 [9] and this is primarily because of it is underlying ever-changing technology [10]. It happened so fast and brought revolution in business intelligence. A lot of information is available at low cost or even for free. However, it has also proven to be a double-edged sword. Gathering properly analyzes, and utilization big data or information effectively is tough for a human. There is so much information that is uncontrollable [11].

Previous research indicates that data consistency and quality are a major cause of the success or failure of business intelligence initiatives [12], [13]. Regardless of the decision environment, user access and integration BI with other systems are necessary for the success. Another research based on DeLone and McLean's IS Success model, their research results are to find that maturity, information content quality, analytical decision-making culture, and the use of information as the significant element of the success [14]. Data collection for business intelligence system is also related to the provision of clean, consistent, high quality, and integrated data [4].

There are still few research to examine the impact of business intelligence on managerial decision [14]–[17]. However, there is still a big gap [18] to identify in particular mechanism which leads to the success of business intelligence in e-commerce. Our research is about to provide a better understanding of factors influencing the success of business intelligence in e-commerce for making better decisions. Specifically, the research seeks to address is *what are the most important factors influencing business intelligence success in the e-commerce industry?*

2. LITERATURE REVIEW

Many researchers aim to identify success factors for business intelligence as decision-making tools [2], [14], [15], [19], [20]. In this section, existing success factors for business intelligence as decision-making tool are discussed. To proceed, several analysis criteria are considered to compare existing approaches in the literature.

2.1. BI success

BI success is related to the investment that a company obtains the positive value [21]. Many companies use BI to achieve goals and targets. Therefore, the level of success varies from

company to company depending on use and BI investment [22]. For example, the company may implement BI to collect and analyze customer data such as behavior customer, online shopping experience, etc. Another may adopt it to improve quality decision making. The success of BI depends on how much achievement of benefits that the companies obtained such as increased profitability, trend analysis, cost reduction, market analysis, and increased operational efficiency.

Many companies are trying to measure the success of BI implementation. Some try to measure tangible benefits by using explicit measures such as ROI (return on investment) to improve operational efficiency or company profits [19]. Others also interested in measuring intangible benefits. These include whether user considers BI as an important tool achieving company targets, how much top management support BI and the percentage of active users. In our research, BI success is defined as the positive impact obtained companies through their use of BI.

Inadequate Planning and preparation of the BI implementation are one of a reason for the lack of success in BI implementation [23]. Companies that have achieved success with their BI implementation, start from ensuring that their BI implementation is consistent with the company's business objectives, and many researchers on BI success focuses on the alignment between business objectives and BI [24].

2.2. BI capabilities

Demands for the need for data analysis that must be done immediately can be answered with the business intelligence capability in improving the agility of the company [25]. Companies can leverage intelligence tools business in gathering smart data and using it to take a big leap in the market. Previous studies have examined BI's capabilities from the perspective of the BI maturity model [26]. Until now BI's capabilities have not been fully tested in the academic literature [19].

3. RESEARCH METHOD

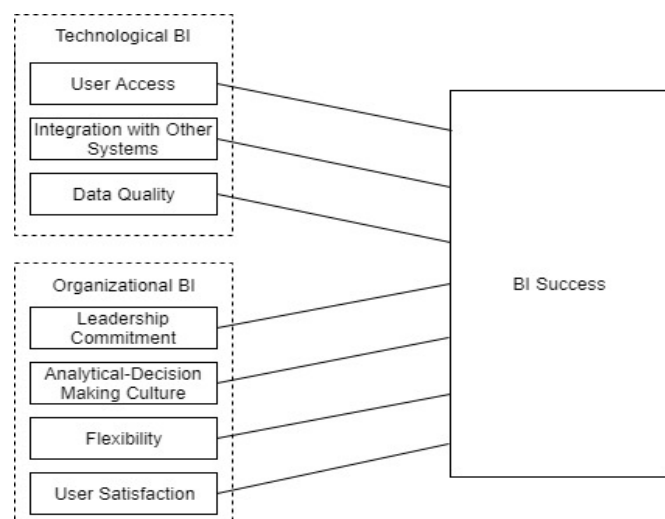


Figure 1 :Conceptual Model.

BI capabilities can be examined from both technological and organizational perspectives. Technological BI capabilities are sharable technical platforms and databases that ideally include a well-defined technology architecture and standards data quality, while organizational BI capabilities are assets that support the effective application of BI in the organization, such as BI management, analytical-decision making culture, problem space complexity, and user satisfaction. In this research, we examine seven technological and organizational BI capabilities—user access, integration of BI with other systems, data quality, leadership commitment, analytical-decision making culture, flexibility, and user satisfaction—and these capabilities' importance to companies especially e-commerce business that implement of BI to improve the decision-making process.

3.1. User Access

One size does not fit all with BI; different BI tools have different capabilities and purposes. Because companies have multiple purposes for and user groups within BI, they need to employ different BI applications with different access methods. Some companies deploy a BI that provides unlimited access to data analysis and reporting tools for all its users, while others offer relatively restricted access [27]. Although most web-centric applications are relatively easy to use, especially for non-technical users, desktop applications are mainly dedicated to specific users and provide specialized functionalities for more effective analysis [28]. The former may increase BI success by providing faster analysis, while the latter may increase it by facilitating more effective decision making. Because user access depends on the characteristics of the BI infrastructure and applications, it is considered a technological BI capability. In this study, we define user access according to users' perceptions of their access to their BI.

3.2. Integration with Other Systems

The integration between BI and other systems in the organization is a critical factor for BI success. Integration involves various systems with their data or applications together, either physically or functionally, so that value can be created above and beyond that provided by each individual system [19].

The level and quality of integration between BI and other systems are becoming increasingly critical to managing performance and ensuring reliable results. For example, evolving technologies that enable in-database analytics and in-memory databases often require faster data refresh than ever before, particularly for sectors that utilize real-time practices such as operational BI and analytics. Some sectors require a higher level of integration between systems, such as those that engage in financial trading, utility grid monitoring, e-commerce product recommendations, commodity price optimization, or the capture and analysis of streaming data in real or near-real time. The growing number and variety of data sources for BI in many organizations place increasing pressure on the integration between the systems.

3.3. Data Quality

Traditionally, BI has largely relied on structured and/or numerical data, which can be measured on a numerical scale and analyzed with statistical methods [29]. However, in an increasing number of BI application areas, the collection and analysis of qualitative and/or unstructured data are critical [30]. This type of data cannot be used in mathematical calculations; it refers to data in a text, image or sound format that requires interpretation. Although research suggests that data quality is a critical success factor for BI [31], less attention has been paid to the quality of qualitative data. The rise in qualitative data means that many companies are storing and managing increasingly large datasets.

In a recent study, data problems are cited as the most common challenge companies face in managing high-performing BI systems. Data quality refers to the consistency and comprehensiveness of the data [19]. Because clean and relevant data are one of the most important factors of BI success [26]. The technological ability of BI to deliver accurate, consistent and timely information across its users can improve company's business agility.

3.4. Leadership commitment

One of the dimensions of organizational factors that need to be considered specifically is the leadership commitment to BI-related efforts [32]. Leadership commitment is a subjective measure of commitment to BI initiatives and investments by the top levels of management. It is exhibited via an understanding of the role of BI in business decision-making, commitment to BI demonstrated via strategy formulation, goals setting, and having explicit policy and guidelines with respect to BI activities and attempting to hire and retain personnel with analytical skills. Thus, it is logical to project the leader's commitment to providing support to BI is the key to BI's success.

3.5. Analytical-Decision Making Culture

Although organizations implement decision support systems in order to improve the delivery of information to decision-makers and to support their decision-making activities, the anticipated benefits are not always realized, especially if organizations neglect factors affecting how the information these systems provide is used. Knowledge workers with analytical decision styles will adapt and use the enterprise's IS and their information to a greater extent than knowledge workers with conceptual decision styles. Hence, an analytical decision-making culture can help with overcoming the well-known trade-off between reach and richness.

3.6. Flexibility

Flexibility is the ability of the BI organization to evolve when business process existing is constantly changing and evolving [33]. Therefore, companies should be careful in choosing technologies that can support BI operations. one of the important factors to consider is flexibility. Ideally, BI tools should be compatible with existing tools and applications. to reduce costs and complexity [19].

Every business process activity supported by BI directly impacts the flexibility of BI. If a series of tight policies and rules are embedded in the application, BI will have relatively

low flexibility: because regulations are tight, handling exceptions and urgency becomes more difficult. Technology does not always support exceptional situations, although organizations need strong flexibility and functionality to optimize BI potential. When assessing the issue of which decision to make requires flexibility, this ability is the key to BI's success.

3.7. User Satisfaction

In all versions of the success model of the DeLone and McLean information systems (1992: 2002, 2003), user satisfaction and system usage are key relationships between information quality and individual impact or net benefit. If the user satisfaction of BI benefits is achieved, of course, BI investment can be said to be successful. Therefore, we suspect user satisfaction has a role in the success of BI.

4.RESULT AND DISCUSSION

Our model gives a better concept about important factors that impact BI achievement at e-commerce company specifically in decision making. BI has an important main role in a decision-making process, therefore, it's become very important for knowing the factors that must be observed hence the decision made can meet its expectations. We have discovered two perspectives which are technology side and BI organizations where there are seven factors that have the direct impact on BI achievement on the decision-making process. These six factors are user access, integration with other systems, data quality, leadership commitment, analytical-decision making culture, flexibility, and user satisfaction.

In Indonesia, BI implementation still not optimal yet. However, many e-commerce companies try to implement BI without knowing to utilize maximally. Therefore, with a model we are expecting to help the practitioners in order to evaluate BI tools especially on increasing decision-making quality.

5.CONCLUSION

We try to see our viewpoint research from the company that implements BI and how BI being used to approaching the purpose of BI investment. For the next research can use our model for being test empirically for important factors that influence BI achievement on decision-making process at Indonesia.

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