

Chapter 1

A Conceptual Model of Metadata's Role in BI Success

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ABSTRACT

Modern organizations rely on Business Intelligence (BI) systems to provide the information needed to support a wide array of decisions, many of which have significant financial and strategic consequences. As such, information quality is critically important but is also highly contextual, meaning that information that is of sufficient quality for one purpose may not be so for others. The implication of this fact is that users must have the ability to assess information for its fitness to specific purposes. The authors submit that metadata provides this capability. Metadata is information that serves to provide insight into the meaning, quality, location, and lineage of information resources (for example, data elements, queries, and reports) provided by BI systems. In this chapter, they describe how organizations can increase the levels of use of their BI systems by providing the right metadata to users. The authors propose a conceptual model that describes how metadata contributes to the level of BI system use by creating positive attitudes toward the information available. They validate the model through consultation with experts in the fields of BI, information quality, and metadata management as well as through a survey of over 250 BI practitioners.

INTRODUCTION

Information is a strategic asset for organizations in today's highly competitive business environment. This information, when leveraged effectively, can be used to strategic advantage (Huang, Liu, & Chang, 2012). Consequently, many organizations today construct business intelligence (BI) systems to support organizational decision making (Kiron, Shockley, Kruschwitz, Finch, & Haydock, 2012). BI systems are a collection of tools and processes that serve to acquire and integrate data in order to provide information that can be used to drive smart business decisions. Effectively leveraging BI capabilities provides the potential for significant organizational benefits (Jourdan, Rainer, & Marshall, 2008; Crable, Brodzinski, & Frolick, 2008). For this reason, BI has been recognized as a top IT priority in recent years (Grajek & Pirani, 2012).

Notable success stories notwithstanding, many BI implementations have been deemed failures by their organizations (Inmon, Strauss & Neushloss, 2008). BI systems are significantly underutilized in many organizations, especially when compared with standalone applications such as spreadsheets and personal databases (Burns 2005; Morse 2007). This phenomenon has significant implications: first, underutilization of expensive BI systems implies a poor return on investment on these systems and second, the overuse of personal databases and spreadsheet software for decision support opens the door to significant risks, including poor decision quality (Lawson, Baker, Powell & Foster-Johnson, 2009; Panko & Aurigemma 2010).

The goal of BI is to provide knowledge workers with the information needed to formulate their decisions which are often strategic in nature and have significant organizational impacts in terms of investment, resource allocation, etc. As such, information quality is critically important to the overall success of BI systems (Popovic, Hackney, Coelho & Jaklic, 2012), and the consequences of

poor quality can be dire (Watts, Shankaranarayanan & Even, 2009). Information quality is a multifaceted concept that is measured by dimensions such as accuracy, completeness and consistency (Wixom & Watson, 2001). However, it is also highly contextual – it is the user who determines if the information is of sufficient quality to be used for a specific purpose (Wang & Strong, 1996).

A basic question that must be asked is: how do BI users know if specific information is fit for the purpose they intend to use it for? We believe that users must understand the meaning of the information as well as its quality in order to assess its fitness for purpose. To facilitate this understanding, we propose that users must have access to high-quality metadata. Metadata is itself a type of information that serves to provide users with knowledge about information resources without having “full advance knowledge of their existence or characteristics” (Dempsey & Heery, 1998, p. 145). Metadata can be viewed as a fundamental component of information quality. Shanks and Darke (1998) claim that there are two basic elements of information quality: the content (the information itself) and the structure (the metadata that describes the information).

In this chapter we explore how organizations can increase the levels of use of their BI systems, focusing on the influence of one element of information quality: metadata, thus addressing a gap in the existing literature. We address the following fundamental questions:

1. What types of metadata are required to assist users gain an appropriate level of knowledge about their information?
2. Why is this knowledge useful and valuable?
3. What is metadata's role in the success of BI systems?

In order to address these questions we propose a conceptual model, informed by both information systems and marketing research literature, which explains the contribution of metadata to BI system

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