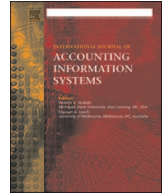




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Impact of business analytics and enterprise systems on managerial accounting



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ABSTRACT

The nature of management accountants' responsibility is evolving from merely reporting aggregated historical value to also including organizational performance measurement and providing management with decision related information. Corporate information systems such as enterprise resource planning (ERP) systems have provided management accountants with both expanded data storage power and enhanced computational power. With big data extracted from both internal and external data sources, management accountants now could utilize data analytics techniques to answer the questions including: what has happened (descriptive analytics), what will happen (predictive analytics), and what is the optimized solution (prescriptive analytics). However, research shows that the nature and scope of managerial accounting has barely changed and that management accountants employ mostly descriptive analytics, some predictive analytics, and a bare minimum of prescriptive analytics. This paper proposes a Managerial Accounting Data Analytics (MADA) framework based on the balanced scorecard theory in a business intelligence context. MADA provides management accountants the ability to utilize comprehensive business analytics to conduct performance measurement and provide decision related information. With MADA, three types of business analytics (descriptive, predictive, and prescriptive) are implemented into four corporate performance measurement perspectives (financial, customer, internal process, and learning and growth) in an enterprise system environment. Other related issues that affect the successful utilization of business analytics within a corporate-wide business intelligence (BI) system, such as data quality and data integrity, are also discussed. This paper contributes to the literature by discussing the impact of business analytics on managerial accounting from an enterprise systems and BI perspective and by providing the Managerial Accounting Data Analytics (MADA) framework that incorporates balanced scorecard methodology.

1. Introduction

Over the years, the role of management accountants has significantly changed. Serving the purpose of assisting and participating in decision making with management, modern management accountants work from four aspects: to participate in strategic cost management for achieving long-term goals; to implement management and operational control for corporate performance measure; to plan for internal cost activity; and to prepare financial statements (Brands, 2015). As business competition has increased tangentially with technology development, the scope of managerial accounting has also expanded from historical value reporting to more real time reporting and predictive reporting (Cokins, 2013).

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While enterprise systems provide improved effectiveness and efficiency of management accountant tasks, studies indicate that management techniques have not changed significantly (Granlund and Malmi, 2002; Scapens and Jazayeri, 2003). The argument is that management accounting principles and standards used by organizations prior to the implementation of enterprise systems have not changed. To provide more relevant and valuable information to management in this highly technical business environment, management accountants should be further utilizing all of the functions of the enterprise system (e.g. descriptive, predictive, and prescriptive data analytics; big data from both internal and external sources; and financial and non-financial information) rather than considering the system merely as a more powerful calculator.

The purpose of this paper is to discuss the potential impact of enterprise systems, big data, and data analytics on managerial accounting and to provide a framework that implements business analytics techniques into the enterprise system for measuring company performance using the balanced score card (BSC) framework from a management accounting perspective. While some literature describes the impact of business analytics on management accounting (Nielsen, 2015; Silvi et al., 2010), little research discusses using business analytics for measuring a company's performance in an enterprise system environment (Nielsen et al., 2014).

This paper contributes to the literature in several ways. First, this paper discusses the impact of business analytics on managerial accounting from an enterprise system perspective. Although some researchers have proposed a BSC framework for management accountants to apply business analytics (Nielsen, 2015; Silvi et al., 2010), few have examined this issue within the enterprise systems context. Second, this study proposes the Managerial Accounting Data Analytics (MADA) framework that incorporates the BSC framework for management accountants to utilize data analytics for corporate performance measurement. Lastly, attributes related to the implementation of a MADA framework (i.e. business intelligence context, data quality and integrity) are discussed to build the connection of the MADA framework and modern business practice.

The paper is organized as follows: The next section discusses the changing role of management accountants and the impact of enterprise systems on managerial accounting. The development of business analytics and big data, as well as their impact on enterprise systems are reviewed next, followed by the development of the proposed Managerial Accounting Data Analytics (MADA) framework. This MADA framework is then applied in the Business Intelligence (BI) environment, followed by a discussion of relevant issues. The paper concludes by briefly expanding on suggestions for future research.

2. Changing role of managerial accounting

2.1. Management accountant's role

Evolving from its traditional emphasis on financially-oriented decision analysis and budgetary control, modern managerial accounting encompasses a more strategic approach that emphasizes the identification, measurement, and management of the key financial and operational drivers of shareholder value (Ittner and Larcker, 2001). The goal of management accounting is to provide managers with operational and financial accounting information. Management accountants serve the role of participating in strategic cost management for achieving long-term goals; implementing management and operational control for corporate performance measurement; planning for internal cost activity; and preparing financial statements (Brands, 2015). To support this intended role, the main obligations of management accountants can be classified into (1) preparing financial statements; (2) measuring the company's performance; and (3) providing decision related information (Cokins, 2013).

With ERP systems and powerful business analytic tools that provide enterprises the ability to interpret and analyze various types of data (such as internal/external, structured/unstructured and financial/nonfinancial), it is crucial for management accountants to adjust their responsibility to help companies gain competitive advantage (Nielsen, 2015). In the preparation of financial statements, management accountants use accumulated historical values to report the financial situation of the company. However, in a business world that requires more timely and relevant information, financial statements usually are not an ideal source of information for decision-making by management as they are backward looking, reporting on past events rather than providing the forward-looking data needed for running the business. Modern management accountants assist management with measuring firm performance from internal data and providing decision related information from both internal and external data. Not only should management accountants provide descriptive reports to answer questions about prior events, they also need to make predictions including consequences for uncertainty and risk in decisions (Nielsen, 2015).

To fulfill these challenging tasks that help the business stay competitive, management accountants now can use business analytical tools to conduct prescriptive analysis to support decision makers against the uncertainties. For example, an optimization model could allow accountants in a manufacturing company to choose among different raw material vendors that could reduce cost and boost revenue (Taleizadeh et al., 2015). It is suggested that management accountants should transgress the boundaries of management accounting and interact with non-accountants to solve practical problems (Birnberg, 2009). Cokins (2013) highlights seven trends that are occurring in management accounting: (1) expansion from product to channel and customer profitability analysis; (2) management accounting's expanding role with enterprise performance management (EPM); (3) the shift to predictive accounting; (4) business analytics embedded in EPM methods; (5) coexisting and improved management accounting methods; (6) managing information technology and shared services as a business; and (7) the need for better skills and competency with behavioral cost management. In summary, management accounting has broadened its domain from conventional financial reporting to also including performance measurement and strategic decision making. Specifically, management accounting has extended its traditional focus to include identifying the drivers of financial performance, both internal and external to the business. New and revolutionary non-financial metrics and approaches have been added to management accounting functions, with an impact that is still being studied by academics and practitioners (Silvi et al., 2010).

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