

## **Impact of Business Analytics and Enterprise Resource Systems on Effective Accounting Practices in Corporate Organizations**

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### **Abstract**

*This study examines the impact of Business Analytics and Enterprise Resource Systems on Effective Accounting Practices in Corporate Organizations . By means of an exploratory research design and based on the empirical reviews on business analytics, the study concludes that businesses should move from a traditional accounting structure to a more comprehensive accounting system that has integrated analytics. The implementation and integration of analytics bring a challenging process for businesses and individuals. Also, Staff of corporate organizations needs to adapt to analytics and allocate more resources to the process management of enterprises for their implementation. The study recommends that; since ERP systems are allowing capital budgeting, budgeting, operating statements, forecasting, performance measurement, and costing to be more detailed, more accurate, and reported more quickly, organizations across the globe should deliberately drive a shift in the role of the management accountant and accounting, as a whole. ERP implementation should remain one of the major contributors to this change. Accountants must persistently consider ERPs that allows them to expand their roles and as against producing figures, they can dispose of more time for further analysis and value adding activities in areas such as cost control.*

**Keywords:** Business Analytics, Enterprise Resource Programmes, Accounting Practises, Corporate Organizations

### **INTRODUCTION**

The fact that information today has become increasingly digitized to enable the combination of conventional company data with digital data, and expansion of the data ecosystem. The changing data structure from the traditional toward digitized provides radical developments in business analytics and makes it a key to the management accounting as well as the organization performance. Big data utilization and technology contribute to a competitive advantage (Granlund, 2011; Haas & Pentland, 2014). Business analytics paves the way for accounting practices applications to take advantage of both internal and external resources by expanding the data ecosystem. Analytics also allows businesses to access more data and details. Increased quality of information supports both quantitative and qualitative performance to reach the targeted level. Analytics becomes a component of organizational processes as important optimization techniques and tools used to solve problems (Vidgen, 2017). Cost performance, which is an indicator of organizational performance, can be positively affected by the interaction between the management accounting practice or system and business analytics. Business analytics methods to be integrated into the management accounting practices improve cost performance by strengthening various aspects of information. On the other hand, studies show that this change is not adequately reflected in management accounting (Scapens and Jazayeri, 2003). Business analytics methods and tools, including descriptive, predictive, and prescriptive features, have a positive impact on management accounting knowledge and cost performance. Technological facilities and sophisticated tools should be used more to obtain information more closely related to managerial processes (Appelbaum et al., 2017). Using business analytics allows businesses to make predictive, descriptive, and prescriptive inferences by obtaining data from various sources.

Organizations have become more complex in terms of their corporate structure and geographical presence due to the globalization process, and they are facing an increasing amount of data to be handled in daily operations. The more and more changes of the business environment and the increased complexity of the companies' activities need to permanently adapt, in an alert rhythm, which sometimes exceeds the effort and analysis capacity of the human factor. In order to overcome the problems incurred by different

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information systems within the organization, companies have integrated all their operational systems into one single system (Shang& Seddon, 2002). This could refer to enterprise system software (ESS) which consists of, for instance, enterprise resource planning (ERP), supply chain management (SCM) and customer relationship management (CRM). These systems are already considered ‘classic’ imperatives within the big companies, a very important condition for maintaining the competitive advantage. enterprise resource planning (ERP) systems enable organizations to integrate business processes and functions and they can supply managers with real time information. Consequently, enterprise resource systems are considered to provide management means to respond more efficiently to changes in the business environment (Spathis& Constantinides, 2003). The role of an accountant includes collecting, recording, analyzing, and reporting of financial data. In the past, the accountant will have to utilize vary basic, manual, and time-consuming methods; data collection is done in person and the records are registered on a traditional file system. Complex analysis is most of the time very hard to perform and sometimes even impossible. For the business, this is not only time consuming but could also cost a lot of money. However, with the advancement of technology, new systems have emerged to assist businesses and accountants. The Enterprise Resource Planning (ERP) system is a group of software designed to “coordinate all the resources, information, and activities needed to complete business processes such as order fulfillment or billing (Swapnil & Mullick, 2010). Thus, the main objective of this research is to discuss the potential impact of business analytics and enterprise resource systems, on effective accounting practices in corporate organization.

### **LITERATURE REVIEW**

#### **Business Analytics**

Organizations need more sophisticated data due to uncertainty and fluctuations in business life. Virtual world and real-life provide more data called “big data” for businesses. Conventional data replaces with digitized data. This transformation expands the data ecosystem like never, bringing both advantages and challenges (Shmueli & Koppius, 2011). Consequently, business analytics are gradually increasing their impact. Business analytics refers to techniques, approaches, applications, and orientations that include data, information-communication technologies, visualization tools, statistical analysis, mathematical and quantitative models in business life to make evaluations and make rational decisions. Business analytics helps test and understand causal phenomena in business life using mathematical and statistical methods (Davenport & Harris, 2007). Research confirms that business analytics is becoming increasingly important both for present and future organizational activities (Aydiner, Tatoğlu, Bayraktar, Zaim, & Delen 2019), as such business analytics may enhance the effective use of organizational resources.

According to Holsapple, Lee-Post & Pakath (2014) business analytics applications consist of three orientations that are descriptive, predictive, and prescriptive in nature. Orientation describes the function and content of analytics. Descriptive analytics provides an analytical summary of business activities and events and, includes basic and advanced statistical analyses, qualitative and quantitative ratios, dashboards and visual tools, and are frequently used in business (IBM, 2013). Descriptive analytics describes the financial and non-financial results of the business following its interaction with the environment through statistical and other tools. It includes all kinds of data sources in the analysis rather than financial statement data. In this way, business analytics changes the traditional data-oriented view of management accounting. Predictive analytics is the next step in obtaining information from descriptive analytics. It provides forecasting about what might be (IBM, 2013). Predictive analytics is performed with probability and forecasting models, statistical advanced analyses and scoring tools. Forecasting and probability models use historical data collected over time to understand possible future events. Descriptive analytics is strongly related to the use of predictive analytics. Prescriptive analytics focuses on the question of what should be done based on data provided by the descriptive and predictive outcomes (Holsapple *et al.*, 2014). With this feature, prescriptive analytics can be considered as an optimization technique. Prescriptive analytics take into the data of descriptive and predictive analytics to the next level by revealing possible solutions. Organizations may achieve their objectives owing to

prescriptive analytics that generates solutions by processing qualitative and quantitative data obtained from various information sources (Basu, 2013).

### **Business Analytics and Management Accounting Practices**

Management accounting has three basic roles: control and planning, performance measurement, and cost management (Cokins, 2013). Business analytics can contribute to each function of management accounting. Accountants can use the data provided by business analytics at every stage of their business. The budget to be prepared using the data obtained from social media can be given as an example. In this way, risk analysis can be done to prevent the allocation of resources to wrong market segments. In addition, social media and industry reports can help managements redesign their business processes. Analytics tools positively affect the performance evaluation, as they include sophisticated tools such as text mining, machine learning, and data mining (Nielsen, 2015). Accounting data quality enhances owing to business analytics. High-data quality is one of the prerequisites of business management (Redman, 2013). Business analytics helps to provide quality data for data users to make valuable analyzes and predictions. In this context, business analytics utilization improves the performance of the accounting system. The management accounting system performs basic functions such as strategic cost management, operational control, and performance measurement, budgeting, and reporting (Brands, 2015). Information produced through reporting should be predictive rather than historical based (Cokins, 2013). Therefore, the need for predictive accounting information and financial statements is increasing rather than historical accounting information and financial statements. It will be useful to integrate business analytics methods into accounting and corporate resource planning systems to realize this change and transformation by enterprises.

Descriptive analytics improves the cost management function of accounting as it helps to summarize and explain an entity's cost structure. Sivarajah, Kamal, Irani, & Weerakkody (2017) addressed those analytics are applied in conjunction with dashboards, scorecards, data visualization to monitor operational processes. Predictive and descriptive analytics such as machine learning, statistical analysis, mathematical modeling, trend analysis, a regression equation can be used in performance measurement and evaluation studies. Prescriptive analytics can improve the efficiency of both cost management and planning by contributing to the determination of optimal solutions. The planning and control function can be performed more efficiently through scenarios provided by risk analytics and prescriptive analytics. Due to predictive, prescriptive, and descriptive analytics, management accounting can provide more optimal solutions in solving business problems. In this way, instead of relying on internal data, management accounting can perform more comprehensive analyses that consider external data. Relatively difficult processes, such as cost reduction, supplier selection, measurement of company reputation, quality, and pricing in material management, can be made by management accounting easier and more feasible owing to business analytics tools. Increased effectiveness of management accounting allows the firm to focus more on cost performance. In this context, business analytics positively affects management accounting and cost performance. Prescriptive analytics utilization not only reduces costs, but also increases the effectiveness of accounting in understanding new markets, developing new products, and determining customer preferences. Data from social media facilitates changes in consumer preferences and understanding of trends by the business. Thus, management accounting can perform more realistic analyzes both in planning activities and in cost management.

Business analytics improves the planning and control effectiveness of management accounting by providing the data needed to help businesses get to know their customers better. For example, indicators such as customer satisfaction, the return rate of products, customer complaints can be easily monitored through analytics. The analytics also enable the accounting unit to compile customer ratings from various websites or forums. The effect of this change is seen in the creation of a social media analysis team for many companies. Analytical techniques, such as text mining, enable the accountant to perform budgeting and control more effectively by identifying the frequency of company brands taking part in customer conversations (such as Facebook, Instagram, Pinterest). Analysis on Facebook, Twitter, Instagram

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statistics can be reflected in the management accounting studies through business analytics tools. Business analytics contribute to management accounting for evaluating the internal processes of the business. The use of descriptive analytics enables internal processes to be summarized for managers. Summarizing and aggregating data increases the success of planning and control functions (Sun, Strang & Firmin 2017). The evaluation of internal performance and development of forecasting models can be easier with predictive analytics utilization. Management accounting controls the success levels of internal processes and objectives using transaction mining. Descriptive analytics contribute to the quality of control by providing descriptors such as mean, median and standard deviation for managerial processes. Prescriptive and predictive methods support management in developing employee skills, improving product quality. An example is when the accountant chooses a raw material supplier using an optimization model that increases revenue by reducing costs in the production process (Taleizadeh, Noori-daryan & Cárdenas-Barrón, 2015). Business analytics has a vital position in creating value and using resources effectively (Hindle & Vidgen, 2018).

### **METHODOLOGY**

This study adopts an exploratory research design through an in-depth analysis of Enterprise Resource System and Effective Accounting Practices in assessing the Impact of Business Analytics and Enterprise Resource Systems on Effective Accounting Practices in Corporate Organizations.

### **RESULT AND DISCUSSION**

#### **Enterprise Resource System and Effective Accounting Practices**

The interaction between the enterprise resource planning systems and accounting practices is quite a new research topic and is continually developing. The emergence of ERP systems has signified the beginning of a new era in the business environment, where companies can integrate business processes/applications and respond to real-time information (Stefanou, 2002; Nicolaou, 2003; Spathis, 2006). Nevertheless, the focus of the relevant literature has been on ERP systems in general and there is limited published scientific evidence on the ERP implementation processes and their effects on accounting practices in particular (Sutton, 2016). According to quite recent studies, the implementation of ERP systems affects the accounting processes and the accountants' role (Granlund & Malmi, 2002). Spathis and Constantinides (2003) identified in their study the benefits of ERP systems which include: increased flexibility in information generation, as well as improved quality of reports and financial statements. Also, in 2004, they examined the impact and the changes occurred by replacing the traditional information systems with ERP systems, in terms of accounting application. One relevant finding of the study was the fact that ERP implementation produced important benefits for accounting. Further, researchers have investigated the impact of ERP systems on management accounting. Both, Matolcsy and Wieder (2000) studied the effects of ERP systems on management accounting. Although they did not observe significant differences between ERP adopters and non-adopters regarding the use of advanced management accounting techniques, they concluded that ERP systems function as a driver behind the adoption of modern management accounting techniques. According to the researchers, implementation of the new ERP system did not change the management accounting practices. Nonetheless, the study provides evidence that ERP systems reduce the time needed for execution of routine tasks and, thus, leaves accountants additional time to conduct more useful information analysis.

Expectations for ERP systems to change management accounting were introduced by Kaplan and Cooper (1998), especially through the fourth of their four-stage model for cost and performance measurement systems. When speaking about first stage systems of a company, these systems are basically inadequate for all purposes, even for financial reporting. When improvements are made, the first stage companies tend to add financial systems to meet regulatory requirements. As a result, they evolve into second stage systems where financial reporting systems dominate; these companies being driven by financial reporting. The companies with third stage systems have customized, relevant cost management, financial reporting, and performance measurement systems; however, these systems are independent. ERP systems are only



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used with the fourth stage systems where ERP systems integrate cost management, financial reporting, and performance measurement (Kaplan and Cooper, 1998). Kaplan and Cooper (1998) also state that the integration with ERP systems allow all managerial processes, including budgeting, what-if analysis, and transfer pricing to be also based on activities rather than only on dollars. Furthermore, the activity-level focus of budgeting leads to more accuracy in forecasting the demands for all direct and, especially indirect activities. Cook et al.'s (2000) field study suggests that ERP systems can increase the effectiveness of capital budgeting by anchoring financial numbers to activities rather than stopping at monetary measures with pre-ERP practices. Their arguments were convincing, yet not able to be verified. Scapens and Jazayeri (2003) reviewed the literature to find that 'ERP systems are having relatively limited impacts on management accounting and management accountants'. According to the literature, the purpose of Scapens and Jazayeri (2003) was 'to explore the processes of change and to examine in more depth the nature of the changes in management accounting which have accompanied the implementation of an ERP system ... within a specific organization.' The latter lead to more information sharing and teamwork on one hand and greater centralization of information processing activities on the other. Although the authors considered three years to be long enough to study the change process, this would not appear long enough given the existence of institutional forces (Burns and Scapens, 2000).

Booth et al. (2000) analyzed the extent to which the application, by an enterprise, of an ERP system can result in the adoption of new accounting practices. It was concluded that ERP systems represent data sources for new accounting practices, being designed to support that practices. More exactly, Rom and Rohde (2006) found that ERP proved to be very useful in terms of data collection, as well as management accounting. This was further confirmed by Javernpaa (2007), who noted that such systems lead to more efficient development of the routine activities, adoption of new management accounting practices, use large databases more quickly and reporting in a more flexible and faster way. According to Colmenares (2009), the implementation of the ERP systems generated benefits for the enterprise, consisting of the improvement of the decision-making processes, as well as enterprise integration. On contrary, Kelton *et al.* (2010) noted that the effects of the information presentation, through ERP implementation are pervasive and affect the decision making processes in various contexts. There are some reasons for which the days of the ERP systems are considered numbered, due to the shift regarding the way in which people consume products and services. It is considered that ERP systems were specifically designed for the 20<sup>th</sup> century manufacturing era rather than the 21<sup>st</sup> century services-based world, according to Tien Tzuo, the CEO of Zuora (2012). In the literature there are also additional studies which indicate that ERP systems improve the decision-making process within an organization (Spathis, 2006; Spathis and Kanellou, 2007), other benefits derived from ERP implementation being: more accurate reports - statements of accounts and improved service of accounts in accounting tasks (Velcu, 2007; Colmenares, 2009). Furthermore, Brazel and Dang (2008) pointed out that ERP implementation appears to reduce reporting lags. To sum up, in the literature exists confusion regarding the potential for ERP systems to change management accounting, as well as confusion regarding the changes that have actually occurred. Perhaps management accounting practices will take longer to reflect changes because of the institutional forces (Burns and Scapens, 2000).

### **CONCLUSION AND RECOMMENDATIONS**

Based on these empirical reviews on business analytics, it can be stated that businesses should move from a traditional accounting structure to a more comprehensive accounting system that has integrated analytics. The implementation and integration of analytics bring a challenging process for businesses and individuals. The staff needs to adapt to analytics and allocate more resources to the process management of enterprises for their implementation. Enterprise Resource Planning systems also have the capability to help in the current management accounting activities. This conclusion supports the claim that having an ERP system is still better than having no ERP system with regard to the existing management accounting tasks. Also, ERP systems are changing the practices of capital budgeting and management accounting. ERP systems lead to highly standardized and highly computerized information. Without significant

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changes, ERP systems are allowing capital budgeting, budgeting, operating statements, forecasting, performance measurement, and costing to be more detailed, more accurate, and reported more quickly. It is proved, through the conducted studies over the past decades that there has been a shift in the role of the management accountant and accounting, as a whole. ERP implementation is one of the major contributors to this change. Accountants consider that ERP allows them to expand their roles and instead of producing figures, they dispose of more time for further analysis and value adding activities in areas such as cost control. Although there are negative aspects of the ERP implementation in management accounting, the truth is that, overall, there also exist positive aspects, which certainly outweigh the negative ones. The academics and practitioners can use the findings of this study to effectively comprehend how business analytics and enterprise resources planning system impacts the accountant's performance/ accounting practices and the difficulties they have faced during the implementation and can help to improve the performance of their businesses.

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