

The Impact of Big Data on Accounting and Auditing

Dimitris Balios, National and Kapodistrian University of Athens, Greece

 <https://orcid.org/0000-0002-0130-9320>

ABSTRACT

Big data and big data analytics will unavoidably change the role of accountants. This paper considers the impact of big data on accounting and auditing. Financial accountants need to move beyond the book-keeping process and become key information providers to decision-makers. That upturns accountants' consulting role and their ability to think strategically, providing critical help in management decision making. The relationship between managers and management accountants becomes closer and more effective because of big data. Management accountants can use additional analytical methods to detect processes and product excellence, combined with diminishing cost. Big data and big data analytics in auditing ensure audit quality and fraud detection. Upgraded information systems and automation in business procedures diminish the need for staff participation. Inevitably, the skills of accountants and knowledge must be associated with big data and big data analytics and modern accountants must develop an analytics mindset by being familiar with data and technologies.

KEYWORDS

Accounting, Auditing, Big Data, Big Data Analytics

1. INTRODUCTION

Organisations collect more and more data because of rapid technological advances. The cost of data storage becomes smaller because of technological change. Organisations are able to collect massive volumes of data that cannot manage, data that is difficult to analyse in order to improve their decision making. Organisations can store data such as transactions data, financial data, cost production data, environmental data. Big data consists of datasets that cannot reasonable analysed by traditional analysis software systems.

What makes these data “big” is determined by the capability of the information systems that organisations use to utilise these data (Manyika et al., 2011). The amount of data that relevant software systems can store or process is not as big as the volume of information can be collected nowadays using modern technology. In addition, big data is related to better decision making because of the analysis of these information sets (Markus and Topi, 2015). Big data allows users to develop information computer systems that apply distributed queries over high voluminous data and in return to obtain the intended outcome for decision making.

Since 1999 that Mashey referred to “Big data” term, exponential growth in publications relating to big data happened (more than 30.000 documents in Scopus database; Cockcroft and Russel, 2018). A taxonomy of big data themes is presented by Cockcroft and Russel (2018) structured according to 75 articles regarding accounting, finance and information systems. This taxonomy is based on

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techniques and processes, information governance, privacy/security/ethics, professional roles and new applications.

So, technology has advanced, and accounting records have developed over time from handwritten books to book-keeping software, to Enterprise Resource Planning (ERP) systems and cloud accounting. Big Data is yet another technology paradigm that changes the business environment. As noted in the title of this paper, the purpose is to discuss the technological issues impacting accounting and auditing. The key point is that big data and big data analytics increase the informational power managers can receive from accountants and make better decisions. Financial statement audits can be more efficient and effective. The author puts forward the hypothesis that the technological change will continue rapidly and the available information stored and managed will be low-cost. In particular, the researcher begins by exploring the meaning of “big data” and “big data analytics” and then he discusses how financial accounting, management accounting and auditing change because of the technological revolution.

The remainder of the paper is organized as follows. First, we will present the meaning of big data and big data analytics. The third section of the paper analyses the impact of big data on financial accounting. Section 4 focuses on management accounting and how big data influences management control systems. In section 5 we investigate the changes in auditing and financial fraud detection. Lastly, we will discuss implications for employment, the role of accountants, the accounting profession and the required skills, as well as suggestions for future research concluding remarks.

2. THE MEANING OF “BIG DATA” – BIG DATA ANALYTICS

It seems that there is no standard definition on “Big data” as researchers adopt different views depending on the situation they are interested in. Mashey (1999) seems to be the first commonly used the term. Big data is (a) a combination of a massive amount of various types of information and various types of analytical tools (Russom, 2011) or (b) the datasets that are beyond the ability of classic database software tools to accumulate, manage and analyse (Manyika et al., 2011). Additionally, big data is “big” and significant because the available datasets are very voluminous. Big data can generate knowledge and added value because of their conversion in useful information that improves decision-making (Markus & Topi, 2015).

Various Vs characterise big data. Laney (2001) introduces the 3Vs of big data as he describes the data management in three dimensions. Laney’s three Vs are Volume, Velocity and Variety. Veracity becomes the 4th V (IBM, 2014). Nowadays, researchers suggest that big data are characterized by many Vs and one C. The Vs are Volume, Velocity, Variety, Veracity, Validity, Variability, Visualization/Visibility, Virtual and Value. The C has to do with Complexity.

Volume is a journey from bytes to zettabytes, yottabytes or beyond. Volume refers to the enormous amount of big data, the continuously growing size of data which is unmanageable with traditional-conventional systems. On the other hand, data creates another data that has to be transmitted to users for analysis.

Big data raises, and velocity contributes to bigger data. Velocity concerns not only to speed of data growth but to speed of data transfer too, the speed at which the data is flowing. For example, cloud computing in accounting generates massive data e.g. from transactions, to store, process and manage. Many data are available at the end of a business day. Except for the traditional structured data, semi-structured (e.g. log data or XML data) or unstructured data (e.g. images, videos) can be part of the decision-making process. Variety concerns the available types of data. So the volume grows, a variety of data is available and velocity makes this data growth exponential.

Veracity (Xiaolong et al., 2015) raises the integrity of data. Decision making is problematical if the available data are not accurate. Accuracy and reliability make big data meaningful. On the other hand, veracity leads to worthiness if there is validity. For example, transaction data imported in cloud

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