



(RESEARCH ARTICLE)



Data analytics impacts in the field of accounting

Farooq Aziz *

C.T Bauer College of Business, University of Houston, Houston, Texas, USA.

World Journal of Advanced Research and Reviews, 2023, 18(02), 946–951

Publication history: Received on 11 April 2023; revised on 17 May 2023; accepted on 19 May 2023

Article DOI: <https://doi.org/10.30574/wjarr.2023.18.2.0863>

Abstract

This research study has focused on the impact of business intelligence and data analytics in the field of accounting. Based on the information collected from scholarly sources, data analytics, and business intelligence is helpful for business organizations in the improvement of their accounting processes and enhancing accuracy in real-time data storing and analysis. The research paper has analyzed the possible impact of big data analytics and business intelligence regarding the transformation of accounting practices. This research paper has also highlighted three main benefits or advantages of data analytics and business intelligence adoptions in accounting systems which include: increasing accuracy, enhancing efficiency, and improvement in the decision-making processes.

Based on the research findings we suggest a significant impact of data analytics on the accounting industry which has enabled accounting professionals to draw appropriate decisions based on real-time data. However, some challenges and issues are associated with the implementation and adoption of advanced analytics and business intelligence in accounting systems. These challenges and issues are required to be focused on by the business managers while implementing technological advancement plans in business organizations, especially accounting departments. This research paper has also highlighted the possible issues and challenges with those analytics in accounting systems. The overall objective of this research paper is to review existing literature containing secondary and primary research information on similar research topics.

Keywords: Data Analytics; Accounting; Business intelligence; Decision-making; Efficiency; Accuracy; Real-time Data

1. Introduction

Technological advancements are rapidly changing overall business industries. A shift from manual accounting systems to advanced algorithms, digital accounting, and automated accounting systems is the outcome of technological advancements in the business sector. Technology advancements are rapidly adopted by large business organizations focused on improved business strategies and enhancement in accounting transparency systems. Publicly traded organizations are using automated accounting and digital accounting systems to ensure the accuracy, accountability, and transparency of their accounting systems. By using advanced accounting technologies, they can minimize the risk of fraud and manipulations in the accounting systems. Such accountability and transparency improvement brings them more opportunities to collect equity from private investors and institutional investors (Appelbaum, Kogan, Vasarhelyi, & Yan, 2017; Kaya & Akbulut, 2018). Although adoption of advanced accounting technology is not only limited to large business organizations and publicly traded companies only. Now SME companies and enterprises are also interested in improved accounting systems through the use of advanced algorithms and business intelligence-related technological advancements.

Auditor review of large amounts of financial data is becoming easier with the help of accounting analytics tools. They can now analyze entire financial records instead of just small samples, making it easier for them to spot unusual data

* Corresponding author: Farooq Aziz

points and make necessary correction recommendations with less room for error. Tax accountants can utilize predictive models in light of administrative data, market patterns, and financial risks to figure out market developments and forecast market movements and offer tax-saving & profitable investment advice. Cost estimation is also getting better due to accounting data analytics, which makes budgets more precise and relevant. Accounting professionals can update budgets more frequently with the assistance of real-time data analysis, which is helpful for making necessary adjustments as conditions change.

By enhancing accounting framework with data analytics, organizations can gain a deeper understanding of the impact of their operations on the environment and society and make more informed decisions that promote sustainable development. (Aziz, 2023).

Data analytics technology has improved audit quality to a lot of extent. Through data analytics auditors can analyze the financial statements of the organization more accurately and efficiently. Data analytics has made the analysis of complete financial records possible. In the past auditors take small samples from the overall data so that they can analyze the accuracy of the financial records. The past methods of analyzing financial records were not very efficient because the chances of errors in audits remain higher. With the passage of time, the latest technologies like data analytics have made the audit process easier for auditors and allow auditors to finish their tasks in a short time period (Johnson, Wiley, Moroney, Campbell, & Hamilton, 2019).

Data analytics allow auditors to check financial records without applying various tests. It means that time and resources both are saved due to data analytics. This modern technology has increased internal control in the organization as well. Today employees know that if they are going to manipulate the financial information or going to make any mistake in the financial statements then data analytic technology will help the authorities to identify errors on time. Therefore this technology has lowered the chances of fraud and errors in corporations. For improving security data analytics plays an important role in the organization (Johnstone-Zehms, Gramling, & Rittenberg, 2015).

The research paper is properly structured *in* four main headings including literature review, methodology, discussion, results, and conclusions (Kaya & Akbulut, 2018).

2. Material and methods

This section entails information about the research approach and design followed in this research project. The entire research project is based on qualitative research findings. The research data is collected from a systematic literature review on the topic of data analytics and its impact on the accounting sector (Pandey, 2015).

The research study has employed a systematic literature review approach to analyze the possible impact and outcomes of data analytics in the accounting field. The research status was collected from the relevant research status published in reputed journals and peer-reviewed research journals during previous years. The obtained information is based on articles published from 2010 to 2022. We prefer to use online academic databases and authentic research information sources for peer-reviewed research articles. For the identification of relevant information and research studies, we have used Scencedirect, JSTOR, and Google Scholar. While collecting research data a clearly defined research criteria was used. According to this criteria, research articles were required to contain at least one or more than one selected keyword (Pulley, 2016).

2.1. Data Collection Technique

Regarding this research project, we have used five keywords which include data analytics, accounting, business intelligence, financial reporting, and auditing. We used a perfect combination of these keywords to identify the most relevant research publications on similar topics.

Considering these inclusion criteria, we found more than 63 research articles. In this research article, at least one keyword was detected by the selected systems. Later these articles were analyzed by following the abstract screening approach. After the abstract screening, a total of 10 research articles were used for a detailed literature review. Information collected from these research articles is presented in this research paper. Furthermore, while selecting research articles for this research project, we have also given attention to research findings and research methodologies followed by the researchers in each research article. We preferred to select research articles with empirical evidence and primary research information (Parameswaran, 2011).

After the selection of research articles, we applied the thematic analysis approach to identify common themes in selected research articles. Regarding the thematic analysis, we created two categories: benefits of data analytics in accounting practices and challenges of data analytics in accounting practices. Based on these two themes of benefits and challenges the overall research articles and obtained information sources are critically reviewed. Conclusively availability of authentic and valid information sources is ensured by critically reviewing each research article before finalizing its inclusion or exclusion in this research project (Appelbaum, Kogan, Vasarhelyi, & Yan, 2017).

3. Results and discussion

Data analytics has become an essential tool for organizations to make informed decisions and address global issues such as climate change, social inequality, and resource depletion. By leveraging data analytics, organizations can identify trends, predict outcomes, and optimize their operations, which can lead to improved sustainability reporting and management (Aziz, 2023).

Based on the literature review and collected research data the following five challenges are identified with the use of big data analytics in business organizations for accounting systems. According to the following figure, the five main challenges associated with big data implementation in business organizations for accounting systems are variety, value, velocity, volume, and veracity (Ghasemaghahi, 2021). These categories have further different types of challenges that need to be considered by the business organizations and managerial staff members of accounting departments while using big data analytics and other data analytical approaches in business organizations. Velocity and value represent important challenges while working on decision-making processes regarding the use of accounting systems for preparing financial reports with advanced accounting.

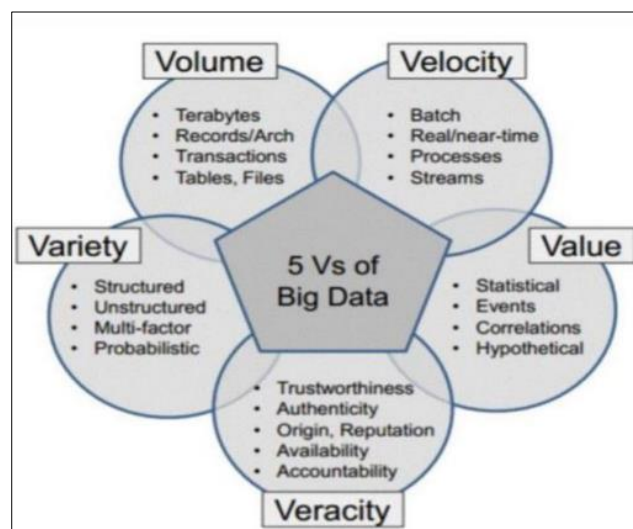


Figure 1 Five Vs of Big Data 3-1

3.1. Velocity

Velocity is directly linked with the speed and capacity of an accounting system. Usually, high data velocity requires more capacity in the accounting systems to easily deal with the accounting demands without compromising the quality of information management systems. Business organizations fail to manage proper accounting system capability or capacity to manage higher velocity data therefore systems do not comply with the frequently reported accounting transactions and records. Some common challenges associated with the velocity category are batch, processes, streams, and real-time record-keeping systems. The accounting system should be able to record accounting transactions as incurred and reported by the responsible entities. Any delays in the record-keeping systems because of poor processes and insufficient capacity of accounting systems can cause chances of fraud and risk in the future (Mohana, 2011).

3.2. Value

The adopted advanced technologies and big data analytics can sometimes bring complications in the existing accounting systems by offering new statistical information or creating new events which require to be tested statistically before decision-making regarding a situation. Considering the research findings and available information the value category of big data challenges usually relates to correlations, hypothetical, events, and statistical data analysis.

3.3. Veracity

Business organizations also use big data and data analytics for accounting for the decision-making processes while using external information sources and measurement tools which can have a high risk for authenticity and trustworthiness. Sometimes adopted accounting systems do not comply with their internal business requirements therefore an authentic information system can also cause troubling situations for business managers while taking accounting decisions. Apart from all this, the reputation and authenticity of big data are also important if the information is collected from external sources for improved accounting decisions. Business organizations working in the manufacturing sector and service sector usually have different contexts and industrial responses therefore selection of a single approach is inappropriate. Consequently, managerial staff members in the accounting system are supposed to employ different types of approaches and techniques regarding big data analytics to effectively take more suitable decisions for accounting departments.

3.4. Veracity

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3.5. Volume

Another important possible challenge associated with the use of big data analytics and big data information in accounting systems is linked with the volume of collected data. Business organizations are supposed to record internal information for future use in different tables and structured forms. Selecting the appropriate data type is complex in the presence of high volume. While on the other hand, the unavailability of sufficient information or data regarding a situation may also reduce the overall effectiveness of big data analytics in the decision-making process.

In this research project and relevant research studies are critically reviewed to identify the possible impact of business intelligence and data analytics in the field of accounting following the systematic literature review approach we have found authentic information and reliable research data to represent the benefits and challenges of business intelligence and data analytics in the field of accounting. According to the data analysis, several benefits and challenges are associated with the implementation of big data analytics and business intelligence which can significantly impact overall auditing effectiveness and financial reporting systems. In business organizations, business managers are supposed to have excellent skills to use business intelligence tools and big data analytics appropriately (Appelbaum, Kogan, Vasarhelyi, & Yan, 2017).

Appropriate selection and use of quick data analytics and business intelligence tools can enhance the overall probability of taking effective decisions on the basis of the previous information for future business operations. According to the research findings, an important benefit associated with the use of that analytics is improvement in the accuracy and efficiency of financial reporting systems. The research findings shared in the selected 10 research articles have equally presented the importance of data analytics to enhance accuracy in accounting systems (Accaglobal.com, 2023) (Online.maryville.edu, 2023). According to these research articles manual accounting systems can cause a higher risk of human error in financial reporting. The probability of human error in financial accounting systems can be reduced by enhancing accuracy in automated accounting systems by using advanced software and accounting programs (Alshaikh, 2022).

Later on, information stored in these software and accounting programs can be used in data analysis for future decision-making processes. While working on manual calculations, managers can have errors and challenges to deal with complex data or information sources regarding a scenario. Apart from all this, manual systems of accounting cannot provide information about fraud and manipulation by the accountants under miscellaneous funds or any inappropriate account. However, such a reduction is possible using advanced accounting systems with data analysis techniques and modern technologies for data storing and management. According to the research findings advanced data analytics provide an opportunity to finance professionals and accountants for higher quality services in their business while working on predictions and forecasting of future market trends. Furthermore, cost reduction-related benefits are also

possible after the implementation of data analytics in accounting systems as it will reduce human costs in the accounting department (Accaglobal.com, 2023).

Forwarding to the obtained information invention of new technologies is also causing transformation in the accounting systems as companies are now relying more on automation as compared to human resources and finance professionals. Such a situation can have negative consequences for the economic development of a country as it replaces human employment opportunities with automated systems. Consequently, the labor market may experience a decrease in employment opportunities for candidates with advanced knowledge in accounting and finance. Furthermore, in this situation, the future labor market will require advanced technical skills to deal with accounting and finance data with automated systems and advanced algorithms for data analytics (Online.maryville.edu, 2023).

4. Conclusion

The whole discussion concludes that accounting and finance departments are experiencing changes after the implementation of advanced technologies data automation and recording systems. The introduction of new algorithms has not only provided several benefits to the business managers producing-making process but also introduce different challenges and issues which need to be taken into account while understanding the impact of data analytics in accounting systems. When working with big data business organizations are supposed to ensure the accurate use of available information otherwise overall decision-making process can have a negative impact. Furthermore, business organizations can use data analytics from a wide range of varieties while considering the specifications of each context and accounting system.

The accounting system should comply with the requirement of frequency was appeared in the data recording and financial reporting otherwise it will not be able to provide sufficient support to business managers in the decision-making process. Using advanced algorithms and big data analytics business organizations can reduce the overall time and effort required to manually analyze and compare different options. Based on the obtained information from the systematic literature review we can conclude that the overall impact of big data analytics and business intelligence is positive for accounting systems unless and until it contradicts the organizational requirements and systems. However further future research is required to analyze the empirical research findings on this topic to generalize the research findings about the possible impact of data analytics in accounting systems of different organizations from manufacturing and service sectors.

Compliance with ethical standards

Acknowledgements

The authors would like to thank for the support of University of Houston.

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Author's short biography



Farooq Aziz is an esteemed data analytics solution architect, recognized for pioneering data-driven solutions. With multiple degrees and certifications, Farooq Aziz has developed industry standards, guiding organizations towards informed decision-making. Specializing in advanced analytics techniques, Farooq Aziz crafts solutions driving business opportunities. An international award recipient for technological expertise, Farooq Aziz is a globally recognized influencer in the data analytics field.