LITERATURE REVIEW OF THE EFFECTS OF THE ADOPTION OF DATA ANALYTICS ON GATHERING AUDIT EVIDENCE

Wadesango N, University of Limpopo, Polokwane
Muzvuwe F.T, Midlands State University, Gweru
Malatji S, Tshwane University of Technology, Pretoria
Sitsha, L, Midlands State University, Gweru
Wadesango O, University of Limpopo, Polokwane

ABSTRACT

Research shows that companies that can effectively utilize big data, on average, have a 5 to 6 per cent higher gain in productivity. The aim of this desktop research was to understand the effects of adopting data analytics on gathering audit evidence. The researchers scrutinised available documents in order to find out what other authors have found out to be the effects of big data and data analytics in gathering audit evidence. This study basically serves as an evaluation of the literature by other scholars who researched on the related field of data analytics. The study looked at data analytics theory, literature review and gap analysis. The two variables of the research which are data analytics and audit evidence were discussed. It emerged that adoption of data analytics have a positive effect on gathering audit evidence. Recommendation is given for KPMG to fully adopt data analytics as solutions to challenges faced when using data analytics.

Keywords: Adoption, Data Analytics, Gathering, Audit Evidence.

INTRODUCTION

The digital economy has become the most pervasive disruptor of today's business operations with the increased use of data analytics in business functions. Amongst all deliberations stands, "*the effect of the adoption of data analytics in gathering audit evidence is yet to be examined in-depth*" Wadesango et al. (2020). This study serves as an evaluation of the literature by other scholars who researched on the related field of data analytics. The study looked at data analytics theory, literature review and gap analysis. The two variables of the research which are data analytics and audit evidence were discussed in depth under conceptual framework

DATA ANALYTICS

AICPA (2017) defines data analytics "*as the science of analysing data to make conclusions about that information*". Cao et al, (2015) also define data analytics "*as a process of modelling, cleaning, inspecting and transforming big data so as to communicate patterns and information which will improve decision making and suggestion of conclusions*". AICPA (2017) agrees with Cao (2015) as the research states that data analytics is the art and science of analyzing and discovering anomalies and patterns of information through visualization, modelling and analysis. IBR (2018:34) also defines data analytics "*as a process of analyzing data sets in order to come up with conclusions about information contained by these data sets and this is done with the aid of software and specialized*

systems". Furthermore, Soileau et al, (2015) also add that data analytics also involves separation of data into component parts so as to establish more meaningful information.

BIG DATA

Cao et al, (2015), AICPA (2017) and IBR (2018) highlight from their definitions that data analytics are linked with big data. Kessel (2014:87) defines "*big data as large and unstructured data produced by machines, transactions and people*". Russom (2011) also defines big data as large volume of data. Russom (2011) adds that big data goes beyond volume as it has other attributes which are data variety and data velocity. In the same vein Kessel (2014) in his research discovered another factor to describe big data which is veracity. According to Wen (2018:34) "*big data is described as a collection of data with high complexity and high volume*". In support of the above scholars Bender (2017) also identifies big data with the volume, veracity, velocity and variety.

AUDIT EVIDENCE

Alles (2015:54) defines "*audit evidence as the information or data that is used or collected by auditors as part of their audit works, to conclude their opinion on whether or not financial statements are prepared in all material respect in accordance with applicable financial reporting framework*". According to ISA 500:456, "*audit evidence, the auditor to obtain 'sufficient' and 'appropriate' audit evidence in order to draw reasonable conclusions on which to base the audit opinion*". Financial statements assertions (ISA 315), paragraph A.124 states that the auditor should use assertions for classes of transactions, account balances, and presentation and disclosures in sufficient detail to form a basis for the assessment of risks of material misstatement and the design and performance of further audit procedures.

COSTS OF THE AUDIT

Earley (2015:90) points out that "*audit costs are dependent on the hours spent on an audit engagement*". Bender (2017) adds on to highlight that "*the job level of employees recording hours on that specific engagement contributes to audit costs*". In agreement with Earley (2015), Briggs (2013) highlights that costs incurred during the audit are influenced by with number of hours spent auditing thus, if the time spent decreases costs will likewise be reduced. Furthermore, Byrnes et al, (2014) suggest that one of the main factors which denotes audit costs is the experience of the auditor, more experienced auditors incur more costs because they have a higher charging rate. On the other hand, Hay and Davis (2014) suggest that the size of a client being audited also determines the costs of an audit if the client is big mostly it will require more human resources. Furthermore, Bender (2017) states that audit costs need to decrease so that audit efficiency can be realised.

AUDIT FEE

Hossain et al, (2016) state that in return of assurance services offered by an audit firm to a client, the firm gets an audit fee. IAASB (2016) requires that the basis of audit fee be included in the engagement letter. Bender (2017) states that audit fee need to be increased to improve efficiency. Nonetheless, Earley (2015) disputes with Bender (2017) as Earley states that audit fee cannot increase when the hours recorded at an engagement decreases. Earley (2015) further points out that "*audit fee is not a major variable in the gathering of audit evidence and in the extent of procedures which can be performed by auditors*". In addition,

Hay and Davis (2014) suggest that audit fees are determined by the size of the client and as such, even if data analytic tools are used audit fees will remain unchanged if the size of the company being audited has not changed. Hosseinniakani (2014) alludes that audit fee cannot be determined as a major scope of procedures is dynamic depending on each client.

IMPACT OF DATA ANALYTICS ON AUDIT PROCEDURES AND AUDIT EVIDENCE

"*The primary objective of an external auditing engagement is to give an opinion regarding the client's financial statements and internal controls in the auditor's report*" (Appelbaum, 2016). Ibid also highlighted that in order to reach that output, auditors have to gather sufficient and reasonable evidential assurance that those financial statements are relatively free of material misstatements. This implies that auditors should plan and then complete procedures to collect enough verifiable evidence. ISA 200 also states that "*an auditor must gather sufficient and appropriate audit evidence to reduce audit risk to an acceptably low level, and thereby enable the auditor to draw reasonable conclusions on which to base the auditor's opinion*". Moreover, ISA 200 paragraph A28 specifies that such audit evidence can be from sources inside and outside the entity and that the purpose is for the auditor to find data that supports and corroborates management's assertions (Adrian, 2013).

Glover et al. (2015:76) added that "*data analytics has been influencing the way audit procedures are conducted by impacting the profession's analytical procedure choices*". Substantive tests, which depend more heavily on detailed audit examination had more power over regression and other "*softer*" analytical techniques. According to Rezaee et al. (2017), "*ISA 330 requests the analysis of the source and reliability of the available information and the persuasiveness of audit evidence. Overall, these standards capture the big picture of what constitutes audit evidence and they are not written in a way that constrains the use of any source of data*". Nevertheless, auditors are lagging regarding the use of non-traditional data to support their work. Alles (2015) then argued that "*the lack of guidance of the international auditing standards could be an obstacle to the evolution of big data in auditing in the future*".

Rezaee et al. (2017:45) highlighted that "*there are four phases of an audit engagement*". Rezaee et al. (2017:46) go on to add that "*the introduction of big data and data analytics on the audit process triggers the question of to what extent these methods can be included and in which phase*". They further added that "*in the planning and design audit phase, there are some audit activities that are likely to benefit from big data analytics and adds that they significantly help to identify and evaluate risks associated with taking or continuing an audit engagement*". Rose et al. (2017:102) the argued that "*data analytics is also useful in identifying and assessing the risks of material misstatement for fraud (ISA 240) or even for understanding the company, its environment and design further auditing procedures shaped to the identified risks (ISA 315), given the wide variety of sources, the increased use of big data holds much appeal as a way to improve the effectiveness of preliminary analytical review procedures*".

"*The second phase of the audit engagement includes performing preliminary analytical procedures, as well as evaluating the design and implementation of internal controls and testing their operating effectiveness*" (Alles & Gray, 2014; & Alles, 2015). They also add that "*big data is useful to gather and inspect data for evidencing that control is operating as it is supposed to*" pp15. Alles (2015:87) adds that "*data analytic tools enable auditors to search for patterns in big data that would likely be undetectable in typical audit samples and in some circumstances, data analytics can also revise the control activity itself*".

IMPACT OF DATA ANALYTICS ON AUDIT

Increased Effectiveness

According to the study by EY (2015) audit effectiveness is defined as a combination of competency, quality control, procedural arrangements and quality assurance. Centre for Financial Reporting Reform (2017) underlined that application of data analytics increases the effectiveness of audit more than efficiency. Additionally, Centre for Financial Reporting Reform (2017) explained that audit effectiveness is improved as data analytics enables auditors to perform more frequent testing in shorter intervals contrasting performing few tests at year end. Byrnes et al, (2014) back the above research as their research states that if a public firm fully implements data analytics making it possible to perform 100% tests therefore improving the results obtained unlike when using samples.

Improved Client Service

Russom (2011), highlights that big data analytics benefits with good customer relations, business intelligence and swift service delivery to clients. According to (2016), stakeholder expectations regarding the use of technology in auditing, specifically client expectation are growing. Centre for Financial Reporting Reform (2017) indicates that application of data analytics allows auditors to raise issues earlier thus improving communication between the auditors and client as auditors will be able to provide responses on time. IFAC (2017) agrees with the research by Centre for Financial Reporting Reform (2017) stating implementation of data analytics results in clients analysing data differently everyday, enabling a fresh look and the opportunity to understand their own information in a diverse perspective.

Enhances Audit Quality

The IAASB, (2014) highlights that the term '*audit quality'* has no agreed definition which has achieved worldwide recognition since it constitutes a multifaceted subject. Albeit (2014) agrees with (IAASB, 2014) highlighting the difficulty in defining audit quality however, the scholar indicates that "*it holds within a number of key elements which create an environment which possibly maximizes the likelihood that quality audits are performed*". According to IFAC (2017) data analytic techniques enhances audit quality as these techniques enable audit teams to clearly analyse client`s financial information early in the audit process which will enable auditors to identify areas which need further investigation. In addition, KPMG (2018) states that application of data analytics is raising the bar on audit quality enables auditors to test entire population and understand for obtaining outliers and anomalies.

CHALLENGES ENCOUNTERED WHEN USING DATA ANALYTICS

Expertise of Auditors

Earley (2015) highlight that with auditors are behind when it comes to use of data analytics because they lack the required skills to implement data analytics fully. Brown-Liburd et al, (2015) also add that application of data analytics requires a different skillset from the more traditional skills auditors possess and this results in the auditors facing challenges when using data analytics. In addition, Adrain (2017) supports the above scholars

by stating that technological developments in auditing have created compound systems which are affecting auditors in using these systems

System Breakdown

Laura (2018) alluded that some data analytical tools like embedded routines are inserted in client`s information system and if client`s information system have breakdowns this will imply that even the auditors` tools will not be spared. Brown-Liburd et al. (2015) also argue that when there is system breakdown some information might not be captured and in some circumstances data might be lost and this will affect the time taken to complete an audit as some audit procedures will have to be re-done. Earley (2015) also strengthens the argument by that auditors face system breakdowns when using data analytical tools. The scholar noted that data analytical tools used by auditors might have breakdowns during the audit and this will cause auditors to take more time working on an engagement. Russom (2011:78) also adds that "*problems with database software can be barriers to big data analytics. The scholar highlights that issues arise when the current database software lacks in database analytics, has scalability problems with big data, cannot process analytic queries fast enough, or cannot load data fast enough*".

Compatibility Of Hardware

Mansour (2016) highlighted that data analytical tools require more developed versions of computers which process information faster. Brown-Liburd (2015) argued that auditors are facing a challenge that some of the computers they use are not compatible with data analytical tools. In addition, Kumar (2017) highlighted that when data analytical tools are inserted in some auditors` computers, computers sometimes slow down and or crash. Alles (2015) also added that compatibility of hardware is one of the major challenges encountered by auditors in using data analytics. Alles (2015) also noted that some data analytical tools are not compatible with client`s hardware thus a risk of client`s hardware being corrupted and lost and all the blame will be on auditors.

SOLUTIONS TO CHALLENGES FACED

Access To Data

Bender (2017:43) highlighted that "*the auditor must be given access to all data without interference and challenges from the client*". Bender (2017) however argues that auditors consider the extraction of data their greatest challenge when applying data analytics and this can be solved if auditors are allowed to extract data from client systems by themselves as this will increase integrity of data. Michael & Uday (2018) suggest that reliability of data can be achieved by application of evolving techniques of data analytical tools which restricts manipulation of data.

Data Encryption

Kumar (2017) highlighted that since application of data analytics is use of computers in auditing, there must be strict security such as restricted access to systems and limited after-hour use. Mansour (2016) also added that auditors must encrypt their computers with passwords as their computers contain all confidential information when applying data analytics. Kumar (2017) agrees with Mansour (2016) as he also highlights that when auditors are applying data analytical tools, controlling of hardware and software should be priority. In

addition, Alles (2015) added that access to system or software must have password and these passwords must frequently be changed so as to avoid unauthorized access of data.

Back Up

Kumar (2017) highlighted that auditors must have data backed in case of system breakdowns so that audit will work will not stop due to system breakdowns. Furthermore, Kumar (2017) added that it is necessary to take frequent backups of all software and keep them separate from the usual media so that even if there are break downs and some of the data is lost auditors can easily retrieve that information. Alles (2015) also states that frequent backups should be done when using these analytical tools in case auditors' computers might be lost or stolen data, information from the client will be readily available.

CONCLUSION

The assessment, review and evaluation of various related literature has exhumed the reasons for the need to carry out a research on the effect of adoption of data analytics on gathering audit evidence. The researchers then noted that it is important to differentiate between more of the same type of data that auditors are already using (traditional accounting data), and in which they usually rely on, or more data of a different source. in a common scenario, an auditor could just call on continuous auditing by increasing data volume based on time-frequency instead of expanding the scope of data. It also emerged that big data implies covering not only financial information and structure data from inside the organization, but also non-financial and unstructured data from exogenous sources. It was also found that for many years auditing firms have been comfortably operating in using traditional data analytic tools, as Excel, to analyse samples of financial data. Now, they have started moving away from sampling and starting to adopt data visualization tools. The point mentioned above necessarily implies a paradigm shift in the way audit processes are conducted.

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