# BIG DATA ANALYTICS AND ITS INFLUENCE ON MANAGEMENT ACCOUNTING: EVIDENCE FROM SOUTHERN AFRICA

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**ABSTRACT.** This paper explores the influence of big data and big data analytics on management accounting practices and decision making in southern Africa. We collected qualitative data from 24 management accountants in three countries using an online questionnaire with open-ended questions. The results indicate that big data analytics have changed management accounting practices, leading to better decision making. There has been a shift away from manual processing of information to automation, ensuring heightened accuracy and timely decision making. It was found that big data supported organisational strategy through improved customer service, targeted marketing and cost management. The need for management accountants to gain expertise in data analytics was identified. The results offer unique insight from a southern African perspective of the change in management accounting practices and how big data influences decision making. The findings contribute by reporting how big data can impact corporate strategy and its use in decision making.

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## Introduction

Operational change in the business environment is a significant determinant of evolving management accounting practices (Talha *et al*., 2010; Tiron-Tudor & Deliu, 2021; Zainuddin & Sulaimana, 2016). However, this is not new; Kaplan (1984) called for a re-examination of management accounting practices four decades ago. Kaplan's call was prompted by technological developments and a shift in competitive forces at the time (Johnson & Kaplan, 1987; Kaplan, 1984). The current 4th Industrial Revolution (perhaps even the 5th Industrial Revolution) accelerated technological change, as illustrated by the increased use of digital technologies such as sophisticated robotics, blockchain, and artificial intelligence (Oesterreich *et al*., 2019; Rachinger *et al*., 2019), as well as the associated big data phenomenon (Raguseo, 2018). Such digitalisation has profoundly affected the contemporary functioning of business enterprises (Bhimani, 2020), which in turn requires management accounting practice to adapt to current circumstances (Bhimani, 2015; Oesterreich *et al*., 2019; Talha *et al*., 2010; Zainuddin & Sulaimana, 2016).

The application of management accounting techniques revolves around the sourcing, analysis and communication of decision-relevant, financial and business information (CIMA, 2018). It is therefore fair to assume that management accountants should have some foundational business acumen and appropriate specialist skills. However, since big data comprises complicated and extensive data sets which require particular abilities to deal with (Janvrin & Watson, 2017; Power, 2014; Phillips-Wren & Hoskisson, 2015; Raguseo, 2018), it may be that management accountants today could lack the necessary specialist skills (Rikhardsson & Yigitbasioglu, 2018; WEF, 2023).

Research on the impact of big data on the role of the management accountant includes conceptual papers (e.g. Appelbaum *et al*., 2017; Bhimani & Willcocks, 2014), literature reviews (e.g. Nielsen, 2018; Rikhardsson & Yigitbasioglu, 2018), and empirical studies that consider management accounting automation (e.g. Korhonen *et al*., 2021), business analytics competencies in context (e.g.

Oesterreich & Teuteberg, 2019), the impact of data analytics on the tasks of management accountants (e.g. Spraakman *et al.*, 2021). Abdelhalim (2024) investigated the integration of management accounting practices with big data analytics by focusing on the impact on corporate sustainability performance management in a Saudi Arabian manufacturing company.

As the need to change management accounting practices in the era of big data is recognised, there are current calls for empirical research on the impact of big data on management accounting to understand better the effect of digitalisation on the finance function (Gartner & Hiebl, 2018; Möller *et al.*, 2020). Furthermore, Saleh *et al.* (2023) emphasised that more research is needed on the implications of big data analytics for the accounting profession. These calls build on the assertion of Kaplan (1984) that management accounting practice must adapt to its current environment. As big data can be regionally specific and its role in southern African management accounting practices is not well known, this study investigates its influence in selective aspects of business support in the subcontinent.

This paper therefore reports a preliminary insight from industry practitioners into how such practices have changed and affected decision-making in business, corporate strategy and the role of the management accountant in three southern African countries – South Africa, Zimbabwe and Uganda. In a South African context, demand for management accountants has been acknowledged by its addition to the local critical skills list (South African Government, 2020). Furthermore, many southern African countries report an imbalance in access to technology known as the *"digital divide"* – a disparity between available skills and those required in the industry (Durodolu & Mojapelo, 2020; Janse van Rensburg *et al.*, 2019; Maisiri *et al.*, 2019; Ongbali *et al.*, 2019). Against this backdrop, the question arises whether big data-related developments have resulted in any noteworthy changes in management accounting practices in the subcontinent.

## Literature Review

### *Big data versus big data analytics*

Big data results from the contemporary business and social environments' digitisation (Gartner & Hiebl, 2018; Inoubli *et al.*, 2018) and the interlinking of machinery, computers, mobile phones, and social media (Raguseo, 2018). According to Appelbaum *et al.* (2017), Grover *et al.* (2018) and Inoubli *et al.* (2018), the main pertinent dimensions of big data are data-related concepts such as high *volume*, high *velocity*, and wide *variety* set in a complex *veracity* structure (also known as the "4Vs"). According to Grover *et al.* (2018), big data can help defend against the competition by allowing entry barriers and market enhancement.

Some authors use the concepts of *big data* and *big data analytics* interchangeably (Moll & Yigitbasioglu, 2019; Nielsen, 2018), yet there are conceptual differences (Oesterreich & Teuteberg, 2019; Raguseo, 2018). The concept of big data in itself refers to the large volumes of unstructured data that are difficult to process with conventional technology (Power, 2014). Big data analytics, in turn, refers to the use of software in the processing and analysis of the vast volumes of data in a big data environment (Raguseo, 2018). Data analytics encompasses a variety of techniques such as data search and mining, textual and statistical analysis, and visualisation (Duan & Xiong, 2015; Tiron-Tudor & Deliu, 2021). Data analytics, therefore, seeks to answer questions such as, what may happen if this trend continues, or what is the best option (Nielsen, 2018)? According to Joshi & Marthandan (2020), the workplace is transformed by data analytics. As such, big data analytics is part of the new digital technologies that impact the core management accounting practices.

### *Evolution of management accounting practices*

External and internal institutional pressures have long influenced management accounting practice (Alsharari *et al.*, 2015; Appelbaum *et al.*, 2017, Ter Bogt & Scapens, 2019). Kaplan (1984) and Kristandl *et al.* (2014) explain that the three significant historical drivers of change in management accounting have been: 1) improved production methods, 2) new technology, and 3) increased globalisation.

As mentioned earlier, the practice of management accountancy is to collect, analyse, and communicate information for supporting internal decision-making (CIMA, 2018; Van der Stede, 2017). Big data can be seen as a powerful technological development, the emergence of which has disrupted the modern finance function (Tiron-Tudor & Deliu, 2021). For example, Quattrone (2016) highlights that the *discussion process* of conventional decision-making has evolved with the current digital revolution. However, this decision discussion process is often eliminated when management reports are merely tabled as pre-packaged data sets from which *managerial judgment calls* are to be made. Charles & Gherman (2013) support this line of thinking when expressing their concern of not knowing whether the source of the pertinent information is reliable and accurate. They also identified a need to consider the broader context of the information presented.

A case study investigation by Abdelhalim (2024) at a Saudi Arabian manufacturer revealed that the investment in big data analytics facilitated and improved organisational management accounting practices, consequently enabling sustainable development. Appelbaum *et al.* (2017) and Rikhardsson & Yigitbasioglu (2018) emphasises the evolving role of management accounting in the context of

emerging technologies, while Schmidt *et al*. (2020) also consider factors causing resistance in adopting emerging data analytics technology. Using an interventionist case study, Korhonen *et al*. (2021) explored the automation of management accounting, resulting in their cautioning against premature automation of management accounting tasks without the practitioners understanding its ramifications. Other commentators have reported that big data analytics could enhance marketing-related decision making (Gartner & Hiebl, 2018; Raguseo, 2018) and generate enhanced customer insights at lower costs than the traditional market survey and analysis approaches (Kitchens *et al*., 2018). The cost of investing in such technologies versus their effective application has been highlighted by Charles & Gherman (2013), Clayton & Clopton (2019), and Wamba *et al*. (2017).

In light of the above, it may be argued that organisations able to harness big data's potential have a distinct advantage over those that do not. Abdelhalim (2024) argues that management accounting practices and big data assist businesses in quickly adapting to internal and external changes. However, Rikhardsson & Yigitbasioglu (2018) observed that although management accountants may have (perceived) business acumen, they could also be lagging in the expertise needed to exploit the latest data handling practices. Oesterreich & Teuteberg (2019) illustrated this when they found a skills gap in the competence profiles of management accountants in Germany.

## Materials and Method

To answer the research question, we collected qualitative data from professional management accountants in South Africa, Zimbabwe and one in Uganda. Such an approach allows for an in-depth examination of how the (management) accounting function operates and develops (De Villiers *et al*., 2019). As an exploratory study, our approach may also be considered *a valid means of asking open-ended questions to build knowledge about the topic* (Saunders *et al*., 2016).

Even though our initial targeted population was industry-based management accountants, we acknowledge that not all individuals fulfilling a management accounting role are registered with a professional accounting body. Nevertheless, in context, we thought it prudent to start our data collection by targeting *professional registered* management accountants. In the subcontinent, the primary professional accounting bodies represented include the Association of Chartered Certified Accountants (ACCA), the South African Institute of Chartered Accountants (SAICA), and the Chartered Institute of Management Accountants (CIMA) (Short, 2021), with the CIMA primarily focused on management accounting. Hence, we purposively selected five CIMA-registered management accountants

as our starting point. This number was increased using chain-referral (or snowball) sampling in line with the research practices of Etikan *et al*. (2016) and Heckathorn (2011).

A questionnaire with open-ended questions (Appendix 1) was used, which allowed the participants to respond as they saw fit and not be constrained by predetermined alternatives (Ghauri & Grønhaug, 2005). Since the focus of the study is on the changes in management accounting practices, no participant-specific demographic information was collected. The questionnaire comprised five sections, with the first section focusing on general big data topics and the remainder on four key themes identified in the literature, namely:

1) Management accounting change due to technological development;
2) the impact of big data on corporate strategies;
3) the impact of big data on the management accountant; and
4) the skills required by management accountants.

The questionnaire was compiled and then distributed online using the QuestionPro survey tool. This approach was used by Molinari and De Villiers (2021), due to the restrictions imposed on face-to-face human interaction and work-from-home protocols due to COVID-19. A link was sent via e-mail to the first five participants, who forwarded it further. Initially, only 16 responses were received between June and November 2020; in an attempt to increase the responses, the link was reopened between May and June 2021. Figure 1 illustrates the process of reaching the final sample.
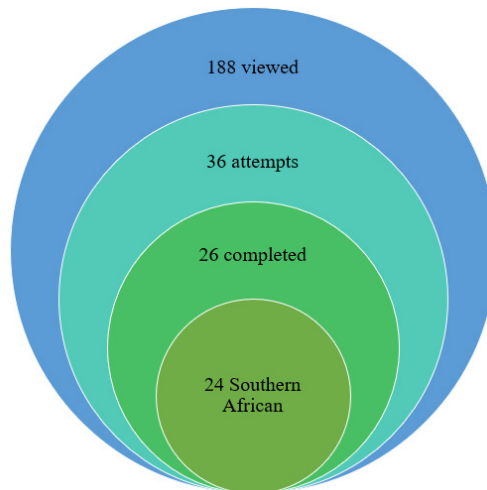


**Figure 1.** Sample selection
(Source: Authors' compilation)

A total of 188 targets viewed the survey. There were 36 attempts to complete the questionnaire, with ten dropping out before completion, resulting in 26 completed surveys. Sixteen participants were in South Africa, seven in Zimbabwe, one in Uganda, and two in Europe. Since the focus is on southern Africa, we excluded the European responses. Therefore, 24 responses were analysed which is comparable with the Betti & Sarens (2020) study. The completed questionnaires provided much detail, allowing an in-depth analysis of the responses. The average time taken to complete the questionnaire was 32 minutes.

The raw data from QuestionPro was downloaded into Microsoft Excel, filtered, and incomplete responses removed. Initially, structural coding was used to identify and label common words and phrases and categorise the data, with each question analysed manually (Saldana, 2015). The data was also uploaded to Atlas.ti 8.0, coded, and analysed by an external consultant, categorising it into the appropriate themes. The manually coded data and the Atlas.ti reports provided comparable results.

## Results and Discussions

The results are categorised and presented via the following four themes.

*Understanding the big data phenomenon*

A total of 18 participants (75%) contextualised the concept in terms of large volumes of data. Although the remaining six (25%) did not specifically refer to the volume of data, they agreed that it related to a wide variety of unstructured data collected by businesses, as outlined by Participant 3, as the:

> *"... collection and storage of seemingly mediocre bits of information of just about everything to be mined, analysed, and used to profile people, machines, processes, and businesses."*

Most participants stressed that the data make sense only after further analysis or processing (i.e., generating information) using various software applications, as explained by Participant 11, that it is:

> *"...not possible for a human to look at the data and make sense of it or be able to identify patterns in it. It needs to be processed by super-computers."*

In line with a general understanding of big data, all participants described the phenomenon as large, massive, or exponential growth in business data and information. The majority of participants highlighted that, if appropriately

analysed, big data should aid in decision-making. Specific benefits of big data analytics noted by participants include "... *improved decision making*", "... *can be used very strategically*", "... *determine behaviour and patterns for decision making*", and "... *make strategic decisions*". Participant 4 specifically highlighted big data's role in gaining a competitive advantage:

> *"Companies have started using all of this data to ensure they gain a competitive advantage."*

Overall, the participants' general understanding of the big data phenomenon relates to large volumes of data that can aid organisational decision-making, identify patterns, and provide a competitive advantage.

### *Management accounting changes due to technological development*

First, the participants were asked to reflect on the change in management accounting practice. The majority of participants (22; 92%) acknowledged that management accounting practice has changed. The responses demonstrate examples of changes. Eight participants (33%) mentioned improved ability to analyse data, resulting in enhanced trends and pattern analysis, cost behaviour information, and profiling. Five participants (21%) emphasised that being big data-enabled can assist with understanding of costs and better decision-making, as stated by Participant 9:

> *"... using applications such as Power BI, big data is being investigated to help make better decisions and assumptions of cost and revenue trends."*

Three participants (13%) reported time savings due to quicker data interrogation, whereas four (17%) mentioned benefits of moving away from manual entry to automated data capture. Participant 1 noted:

> *"... less manual work to do which means less human error. The use of big data saves a lot of time for management accountants and allows them to be more efficient."*

Other changes mentioned include the capability of improved planning and forecasting. Participant 3, in particular, described the ability to enhance marketing efforts as follows:

> *"You have different levels of big data. Accounting and management accounting used to look at simple metrics in the books to provide analysis. Now systems provide detailed information about the*

*behaviour of individual customers, which assists with profiling customers which in turn assists with marketing efforts to retain business and bring loyalty amongst customers."*

Furthermore, 14 participants (58%) supported the view that the big data phenomenon creates organisational challenges:

*"The company needs systems to process all the big data. Our current system is slow and can't handle the amount of data involved." [Participant 1]*
*"Having the correct systems in place to facilitate and cope with data…" [Participant 22]*

However, Participant 5 mentioned that although top management bought into the idea of big data, there is "*a lot of push back from the finance team and lack of confidence that it will work.*"

Another potential obstacle is a lack of accurate, quality data, as raised by Participant 9: "The data that is being gathered is not always of a high quality, which may lead to misleading conclusions."

The next two questions sought the participants" opinion on whether management accounting techniques are becoming irrelevant in their setting and if they noticed new techniques developed. Overall, six participants (25%) believed very few (if any) management accounting techniques were becoming irrelevant, three (13%) noted that standard costing is either evolving or becoming irrelevant. Seven participants (29%) reported that the role of management accountants has changed. Participant 9 opined:

*"I don't think that management accounting techniques are becoming irrelevant. I do think that some of the techniques are being automated and done by programs such as Power BI, making the accountant free to only focus on analysing the results retrieved from the techniques performed."*

Further, 14 participants (58%) noticed that the role of data in decision-making has changed, leading to changes in skills required. Participant 22 reasoned:

*"Not necessarily new techniques but more a shift in the skill set required and the focus of your attention. Instead of spending most of your time doing data preparation, manipulation and formatting, more time is spent on what the data actually means and how it affects your organisation."*

All the participants believed that management accountants needed skills development in the various areas of data analysis. For instance, three respondents (13%) mentioned the ability to perform data queries using Structured Query Language (SQL) skills, while others mentioned software programming, advanced Excel skills, and communication skills. Participant 3 claimed that, depending on the level of experience of the management accountant, there is a need for either:

> *"… technical skills to produce information, or … interpretation skills as a manager to give the technical specialist direction in terms of what needs to be mined and how it should be analysed. The skill I therefore need is the latter, including getting a full understanding of what is available and what can be done with the data."*

Therefore, some dynamism in management accounting practices can be observed, but any developments are gradual and largely linked to how technological tools are used in data analysis, not in management accounting as a discipline.

### *The impact of big data on corporate strategies*

Next, we outline whether the participants perceived that big data impacted organisational strategies. Even though four participants (17%) indicated that their organisations" big data capabilities and infrastructure are now not sufficiently developed, twenty participants (83%) confirmed that big data is currently used to support organisational strategies. Examples include three participants (13%) reporting that big data analysis enabled more effective cost management, a further three reporting improved customer service and marketing, and two emphasising better-informed decision-making. The positive impact of big data was noted by Participant 13:

> *"We have developed several models that help us in cost reduction, improving sales, debt collection. We developed the shortest path model for our logistics team to reduce costs of delivery per trip. We have also developed a consumption prediction model for our commercial consumers, enabling us to plan our stock holding positions and when to sell to the customers."*

Participant 23 highlighted how the use of big data supports risk strategies:

*"The way the company is using big data to aid corporate strategy is using the data available to better forecast and model the changing environment and to be able to understand the high/medium and low risk strategies and what are the things that will drive the different outcomes."*

In terms of how big data contributes to a competitive advantage in business, nine participants (38%) mentioned a focus on customers, including "… *buying patterns from clients*", "… *market analysis and responding to potential customer needs*", "… *forecasting demand and development of new products*", and "… *understand customer trends*". Participant 3 noted that:

*"Using big data, the group can determine what products are doing better than others and more focus is placed on those. Areas, complimentary spend patterns, and its reaction to it from customers are all used to provide a competitive edge, which leads to that ultimate vision of creating lasting memories for customers."*

It was noted that the results of big data analytics might serve as an early warning signal to enable the timeliness of generated information in timely action. Information becomes more readily available through trend analysis, and big data models produce projections in sales, expenses, and inventory levels, including:

*"… decreases turnaround time and helping the company to serve [the] client quicker."* [Participant 10].
*"… market benchmarking and market penetration analysis."* [Participant 6].

From the above responses we can observe that big data and big data analysis in the developing economy context of southern Africa contribute to organisational strategies on various levels, including more effective (internal) management as well as enhanced (external) market and customer analysis.

### The impact of big data on the management accountant

Aiming to explore how big data impacts management accountants, participants were asked whether they have an influence in implementing technologies enabled by big data. Notably, nineteen (79%) confirmed such influence, with one participant specifically mentioning the successful recommendation to implement Microsoft Power BI, a business analytics tool. Other interviewees shared their influential role in providing information for decision-making. For example, Participant 22 mentioned:

*"As management accountants we are in the best position to drive technologies, not only in finance but also in strategic and operational areas. We also have a very good understanding about what is required and if the company can afford it (cost / benefit)."*

Participant 18 emphasised the overarching view that management accountants" strategic role is valued within organisations:

*"As a management accountant, I have a holistic view of the entire organisation and my recommendations and advice are considered highly and respectfully. Therefore, by putting a strong argument showing how the benefits of big data outweigh the cost, I think I am in a position to influence that. The only constraint may be the financial resources."*

Regarding the practical application of big data-enabled software, 14 participants (58%) confirmed the use of software applications, such as Microsoft Power BI, Azure, Abaca, Python, and SAP BI. Some of the drawbacks reported included expensive software that sometimes did not meet organisational requirements. Three participants indicated a shortage of specialised IT skills by the management accountants to adequately use the software applications.

Even though robust reporting capabilities were noted, suggestions for enhancing these software applications include better user-friendliness, flexibility, and adaptability, as recommended by Participant 9:

*"… handle large sets of data, be highly adaptable to different types of data, give the user the ability to make calculations with the data, should use machine learning to self-adapt and learn to better manage the data."*

Based on the feedback, big data-enabled management accountancy technology should be cloud-based, with a dashboard format, and capable of collecting both internally and externally sourced data. Participant 3 formulated this requirement as follows:

*"Data collection sources should be semi-automated and possibly strengthened by A[rtificial] I[ntelligence] technologies. Reporting tools should be flexible and be able to easily export information to analysis software to be used by lower-level resources such as Excel etc. for additional reporting purposes. Cross compatibility is a must."*

Therefore, big data impacts southern African management accounting practice, especially in its technological aspect.

Our research indicated that the study population's understanding of the big data concept as large volumes of data (and its analysis) aligns with the definitions of Gartner & Hiebl (2018) and Power (2014). Kristandl (2014) believes that, given the historical adaptation of the profession to changes in the business environment, management accounting will continue to evolve in a big data environment. Additionally, our participants emphasised that big data analytics helps their respective organisations to gain a competitive advantage.

We found, firstly, that big data developments in management accounting practice should lead to better decision-making due to:

- an enhanced ability to analyse the data and identify trends and cost behaviour characteristics, leading to improved managerial planning and forecasting,
- quicker availability of analysed data enabling a faster response to identified trends and customer behaviour, and
- employees spending more time on interpreting analysed data than on performing calculations, resulting in accurate reporting.

Even though these findings support those of Raguseo (2018), who documented 1) *transactional* benefits of big data analysis as employee productivity growth and reducing operating costs, 2) *informational* benefits such as improved data accuracy and management data, and 3) *strategic* benefits in the provision of better services and products, and enabling a quicker response to change, our participants also underlined the resistance by the finance function for using big data.

Second, our results revealed that traditional management accounting techniques were not considered irrelevant or outdated due to big data, but instead, have evolved or become automated. Some of the tasks that will become automated were listed by Rikhardsson & Yigitbasioglu (2018) as inventory valuation, depreciation calculations, and asset valuation. However, Saleh *et al*. (2023) found that although some of the operational tasks performed by accountants will become automated, the need for accountants will not be entirely replaced by big data analytical tools.

Third, besides extant literature positing that big data motivates firms to reconsider their business models and strategy (Bhimani, 2015; Oesterreich *et al*., 2019; Rachinger *et al*., 2019), we found that it positively supports corporate strategy internally and externally.

Fourth, our research shows that the participants reported reservations when the big data-related challenges were linked to technological systems:

- Inadequacy of the software applications: The participants reported that some data analytics software does not meet all organisational needs, which builds on the findings of Patrizio (2018) that there is no universal packaged software to serve all potential customers.
- Lack of the requisite skills: We found a need for management accountants in the southern African region to develop new data analytical skills, which complements the management accountants' skills gap identified by Oesterreich & Teuteberg (2019), and Möller *et al.* (2020).

Our study demonstrates the practitioners' view on the importance of developing these skills. Additionally, the participants highlighted the influential role that management accountants play in implementing big data technologies. With their holistic business view, management accountants may provide positive contributions to the organisation's strategic directions, including selecting and applying the appropriate big data technologies.

## Conclusions

This paper explored the influence of big data and big data analytics on management accounting practices and decision making in southern Africa. We reported unique insights about the change brought by the big data phenomenon as offered by 24 management accountants in practice in South Africa, Zimbabwe, and Uganda. Our study responds to calls for empirical research on the impact of big data on management accounting (Gartner & Hiebl, 2018; Möller *et al*., 2020).

Our findings contribute to the literature by revealing that management accounting practitioners appear optimistic about the influence of big data and big data analytics and that it leads to better decision-making in southern Africa. Their perceptions are that it enhances competitive advantage through quicker response times to customer needs as trends and patterns of customer behaviour are identified faster. They reported that traditional management accounting techniques have evolved but are not irrelevant. The participants feel that more time can be spent interpreting information than manually analysing data. The negative effects are relative resistance by the finance team or management to incorporating big data due to a perceived lack of 1) confidence and 2) quality data. Our results show that using big data and big data analytics assists organisations in achieving corporate strategies through a better understanding of internal and external trends. The participants felt that they influenced the choice and implementation of big data technologies, and their opinions and contributions were valued.

The potential limitations of the paper include a relatively small sample size that can be considered as minor, the scale of big data and big data analytics use in the participants' companies is lacking, and the benefits of using big data technologies in their respective companies are not quantified. The areas for future research include expanding this study to other African countries and extending this study to address the identified limitations.

The practical implications of our findings are that management accountants are encouraged to become skilled in using big data technologies. It provides quicker, more accurate, and informed decision-making, enabling organisations to reach strategic goals and gain competitive advantage.

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# Appendix 1

This Appendix is based on the dissertation of Masuke (2021).

General questions relating to the topic
- What is your understanding of the big data phenomenon?
- What is your definition of big data?

Management accounting change due to technology/ change in business environment
- Based on your opinion, has management accounting practice changed in your organisation due to the big data phenomenon?
- If yes, please explain how it has changed.
- Are you facing challenges in your organisation in the practice of management accountancy due to the big data phenomenon?
- If yes, please explain the challenges you face.
- What management accounting techniques, in your opinion, are becoming irrelevant in your organisation due to the big data phenomenon?
- In your opinion, are there new management accounting techniques developing in your organisation due to the big data phenomenon?
- If yes, please explain.

Impact of big data on corporate strategy
- What strategy, in your opinion, does your organisation follow? Differentiation, Cost leadership, Focus.
- How is your organisation using big data to aid corporate strategy?
- How is your organisation using big data to gain competitive advantage?

Impact on the management accountant
- Do you think you have influence as a management accountant in your organisation to implement a big data driven technology for management accountancy practice?
- If yes, please explain how
- Are you using big data driven software in your organisation in the practice of management accountancy? If yes, please give details of the software used.
- If your answer to the above question was yes, please answer this question:
- What shortfalls do the big data analytics applications / you use or available in the market, have in meeting the requirements and functions of management accountancy?
- What features and capabilities should a big data driven management accountancy technology have?
- How can the traditional management accounting practices, such as target costing, budgeting, break-even analysis, product profitability analysis and performance evaluation be incorporated into a big data driven analytic system?
- Do you think we can incorporate social media data into a big data driven management accountancy system? If so, please explain how.

Skills of a management accountant
- What skills do you need to develop as a management accountant in order to effectively utilise the big data opportunities?