IMPACT OF BIG DATA ANALYTICS ON MANAGEMENT ACCOUNTING. CASE STUDY OF ZB FINANCIAL HOLDINGS, GWERU

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ABSTRACT

The research focused on whether the use of big data analytics has an impact on the management accounting of ZB Financial Holdings, Gweru. The study suggests that utilizing big data analytics tools can enhance decision-making, improve performance evaluation and provide insights for strategic planning. A descriptive research method was employed to gather evidence from the organization through surveys and interviews. The results showed that big data analytics has improved decision-making, cost efficiency and risk management at ZB Financial Holdings, Gweru, but there is still room for enhancement in terms of data privacy and security measures for big data analytics systems and the need for employees to possess knowledge and proficiency in utilizing big data analytics systems. Recommendations were provided based on the research findings, including implementing training programs, collaborating with experts, fostering a culture of continuous learning and investing in resources and infrastructure.

Keywords: Big Data Analytics, Management Accounting, Training Programmers.

1. BACKGROUND OF THE STUDY

ZB Financial Holdings is a prominent financial institution incorporated in 1989. It has evolved to become one of the leading banks in Zimbabwe, offering a wide range of financial services to private individuals and companies. As part of its operations, ZB relies heavily on management accounting practices and financial analysis. The management accounting team of ZB has traditionally relied on conventional accounting practices to handle financial transactions and reporting. These traditional practices involved manual data entry, spreadsheet-based analysis and periodic budgeting and forecasting processes. The reliance on manual input led to inefficiencies and limited insights for decision making. According to Schnitt (2023) human mistake is a risk factor that increases with the amount of financial data in paper-based accounting systems.

To modernize and improve operational effectiveness, ZB transitioned from these traditional accounting practices to the implementation of ERP (Enterprise Resource Planning) systems. ERP is a type of system that is regarded as a cross-functional, process-oriented and legacy system as alluded by Chandra and Rastogi (2021). This is because it integrates management information throughout the entire organization and meets the information need of the entire enterprise. According to Holland and Light (2016), ERP systems are enterprise information systems that seamlessly integrate multiple functional areas within an organization. Reviewing management accounting solutions, especially those related to cost accounting, budgeting or performance evaluation, is a smart idea during an ERP project (Zarzycka 2017). In addition, Makota, Moyo and Kabote (2024) stated that ERP systems can be utilized as a tool to improve the performance level of a supply chain since they help reduce cycle time. As a result, private sector companies and public sector organizations in Zimbabwe have adopted the ERP systems. Furthermore, Berchet and Habchi (2020) highlighted the potential advantages of an ERP system, including increased output and improved quality in crucial domains like knowledge

management, customer support and product dependability. However, some researchers have identified ERP adoption as a challenge in organizations. Dehbi et al (2022) stated that ERP systems simply use internal data to do time-and-space-limited analysis with additional analysis depending on report and KPIs. At ZB, ERP systems have provided them with several features that have significantly aided management accounting. The features of these systems include real-time data processing, predictive analytics and advanced reporting capabilities. These features have allowed management accountants at ZB to base judgements on precise and current financial data in an informed manner.

However, despite the implementation of ERP systems, the management accounting department faced challenges in leveraging the full potential of the system. They faced limitations in data storage, slower processing speeds, the inability to handle diverse data types and the inability to accurately analyze historical patterns and make future predictions. Another notable challenge was the difficulty in using the ERP systems to facilitate customer loan repayments which resulted in delays and errors in the repayment processes. These challenges highlighted the need for additional tools and technologies to enhance the capabilities of the management accounting team. Advancements in technology have paved the way for leading to the integration of big data analytics (BDA) into management accounting practices. According to Gupta and George (2016), big data analytics is the process of handling massive amounts of complex data and looking for patterns and insights within it. Herath (2021) argues that new insights concerning data can be obtained by using efficient data analytic technologies. A rational use of management accounting information and an improvement in corporate management accounting efficiency can be achieved through the dynamic mining, analysis, processing, and storage of massive amounts of data thanks to the introduction of big data cloud computing technology (Yang 2021). Furthermore, Yang (2021) alluded that, staff members responsible for management accounting in the big data era should focus on streamlining the process to make it easier to complete and more frequently react to changing needs for development. Ndoro (2023) explains how management accountants use data analytics to track financial performance, identify trends, and make recommendations to improve efficiency and profitability. According to Reddy (2022), the analytics of big data provide an advantage when projecting potentially occurring events and assist to structure business operations using models.

ZB managed to implement BDA tools in the management accounting department. They use machine learning, deep learning, BI tools and statistical analysis system. These tools aid management accountants in alleviating the challenges that they were facing in using ERP systems. BDA tools help management accountants at ZB to store and process large volumes of data, provide real-time insights and handle diverse data types effectively than the ERP systems. Moreover, by analyzing extensive financial records, credit history, transaction patterns and economic trends, BDA tools help management accountants in assessing the creditworthiness of borrowers, identify potential risk factors and efficiently mitigate the chances of loan default. Additionally, these tools help in detecting and preventing fraudulent activities, personalize loan offers and repayment plans creating early warning systems to identify potential payment default and optimize collection strategies. However, the management team of ZB is failing to fully utilize the BDA tools to come out with accurate results. Ndoro (2023) has suggested that if you are a management accountant, it is important to develop your skills in data analytics. The study then focuses on investigating the impact of big data analytics on management accounting of ZB Financial Holdings.

2. RESEARCH QUESTION

Does the use of big data analytics has an impact on the management accounting of ZB Financial Holdings?

3. RESEACH METHODLOGY

The study adopted quantitative research methodology and data was collected using a questionnaire. The targeted population included the Chief Financial Officer, Data analysts, Data Engineers, Management Accountants, IT department and Internal auditors. The sample size was 26 as shown in table 1.

Table 1. Population sample size

Offices	Study population size	Research sample size	%Representation
Chief Financial Officer	1	1	100
Data Analyst	2	2	100
Data Engineer	3	3	100
Management Accountant	8	6	100
Financial Accountant	8	7	100
IT Department	6	5	67
Internal Auditor	2	2	100
Total	**30**	**26**	**87**

4. DATA PRESENTATION AND ANALYSIS
4.5 The impact of big data analytics on management accounting practices at ZB
4.5.1 Enhanced decision-making
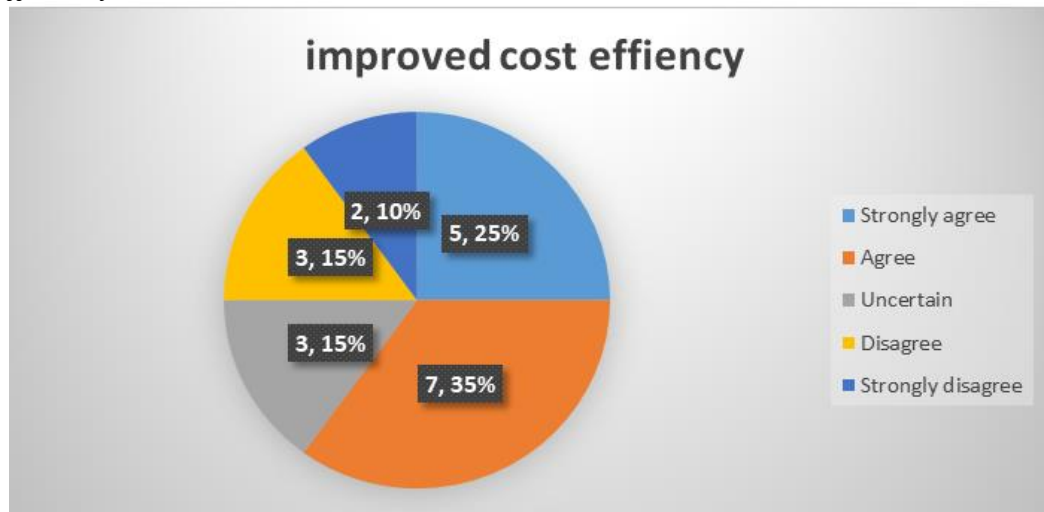
Table 2. Responses to statement 4.5.1

Response	Frequency	Response rate
Strongly agree	8	40%
Agree	6	30%
Uncertain	4	20%
Disagree	2	10%
Strongly disagree	0	0%
Total	**20**	**100%**

Table 2 above shows that 8/20 (40%) strongly agree that decision-making is increased by the use of big data analytics by management accountants, 6/20 (30%) of the respondents agree with the statement, 4/20 (20%) had a neutral view in the statement and 2/20 (10%) respondents disagreed. Majority of those surveyed are on the strongly agreeing side. This lends credence to the notion that big data analytics has a significant influence on the quality of the decisions made by the management accountants. As alluded by Franke and Hiebl (2023) there is a positive correlation between the effectiveness of decision-making process and the availability of high-quality large data sources.

4.5.2 Improved cost efficiency

FIGURE 1
RESPONSES TO STATEMENT 4.5.2

Figure 1 above indicates that 2/20 (10%) of the respondents strongly disagree with the improvement of cost efficiency. 5/20 (25%) agreed with the statement, 3/20(15%) of the respondents disagreed, another 3/20 (15%) were uncertain of the statement and 7/20(35%) of the respondents agreed with the statement. From the results shown above, it indicates that the majority were of the view that the technological advancement tool has a positive impact on the minimization of cost without compromising the quality of the services that the organization is offering to the public.

4.5.3 Enhanced risk management

Table 3. Responses to statement 4.5.3

Response	Frequency	Response rate
Strongly agree	7	35%
Agree	9	45%
Uncertain	2	10%
Disagree	2	10%
Strongly disagree	0	0%
Total	**20**	**100%**

Table 3 above indicates that 7/20(35%) respondents strongly agree with enhancement of risk management, 9/20(45%) agreed with the statement, 2/20(10%) had a neutral view and the other 2/20(10%) disagreed to the statement. None of the respondents strongly disagreed to the statement. Most of the respondents (16/20) agree or strongly agree that big data analytics improves risk management, from the wide range of views, the whole population highlighted the importance of the tool in mitigating threats and uncertainties that can affect the organization. This is supported by Nyandoro (2023) who stated that data analytics can help management accountants identify risks and take steps to mitigate them.

### 4.6 Strategies for improving the integration between BDA technology and management accounting
4.6.1 Investing in training and development

Table 4. Responses to statement 4.6.1

Response	Frequency	Response rate
Strongly positive	5	25%
Positive	10	50%
Uncertain	3	15%
Negative	2	10%
Strongly negative	0	0%
Total	**20**	**100%**

Table 4 above indicates that 5/20 (25%) of the respondents showing a strongly positive effect, 10/20 (50%) stated that there is a positive effect on improving the integration between BDA technology and management accounting. 3/20 (15%) of the respondents are uncertain of the statement, 2/20 (10%) indicated a negative effect and none of the respondents had a strongly negative effect. Most respondents are of the opinion that management accounting at ZB can be better integrate with BDA technology through training and development. Zinc et al (2022) also alluded to the fact that management accountants to adapt big data advancements in their work environment, they require two elements which are knowledge and skills in BDA.

4.6.2 Advanced analytics adoption

Advanced analytics adoption
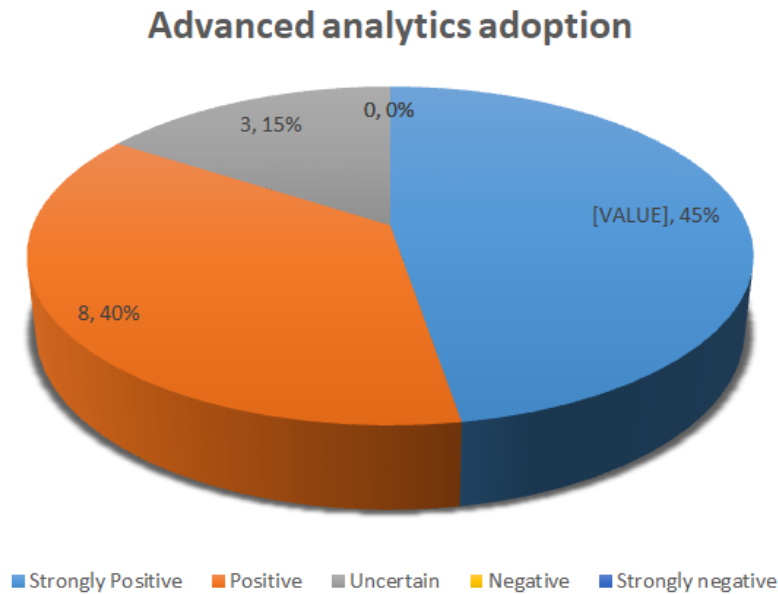
FIGURE 2
RESPONSES TO STATEMENT 4.6.2

Figure 2 above shows that 3/20(15%) of the respondents are uncertain about the effectiveness of advanced analytics adoption. A total number of 8/20 (40%) have a positive effect, 9/20 (45%) of the respondents have a strong positive effect on the adoption and none of the respondents had neither a negative nor strong negative effect on the adoption of advanced BDA. Majority of the respondents are in support of the notion that adopting advanced analytics in management accounting improves the integration of BDA technology and management accounting. This was supported by Dai and Liang (2022) in their study which revealed that the current more advanced data analytics software ought to be chosen as technical assistance to improve big data information analysis skills and further offer a foundation for decision-making for the enterprise's evolving strategy.

4.6.3 Cross-functional collaboration

The IT and finance departments must work closely together for BDA and management accounting to integrate effectively. To speed up the integration process and make sure that all departments are working toward the same objective, ZB should promote regular communication and cooperation between these two departments. Figure 3 below shows the responses to the statement 4.3.
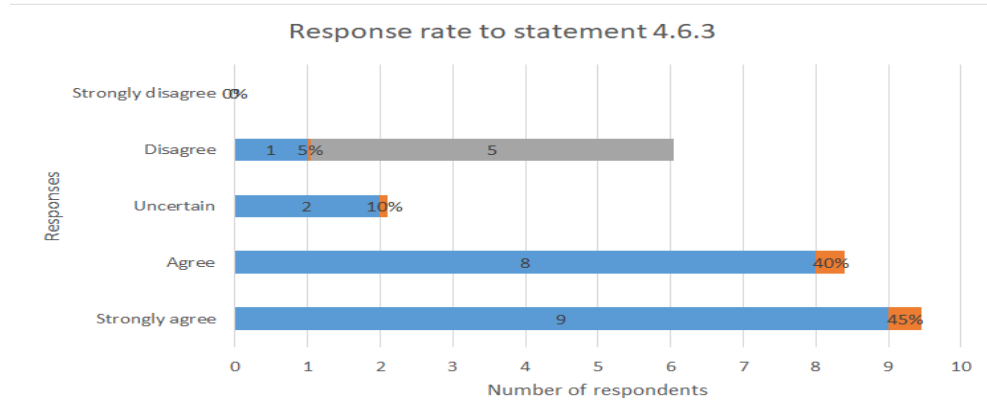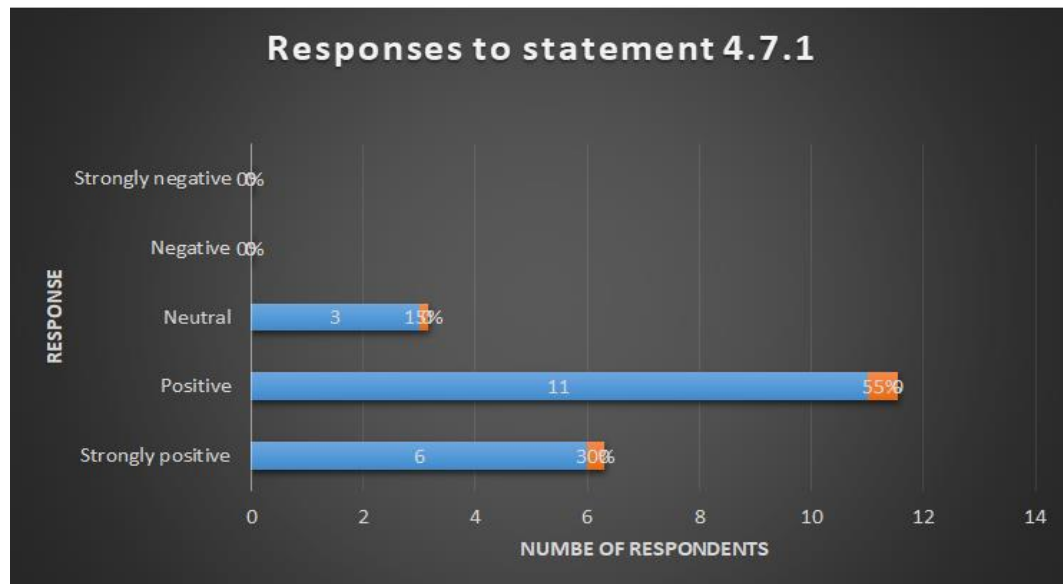
FIGURE 3
RESPONSES TO STATEMENT 4.6.3

Figure .3 above indicates that none of the respondents strongly disagreed with the statement and only 1/20 (5%) had a negative view towards the statement. 8/20 (40%) of the respondents agreed with the statement and the other 9/20 (45%) strongly agreed to the statement. Most of the respondents agreed with the idea that communication and cooperation positively contribute to the improvement of the integration between BDA technology and management accounting at ZB Financial Holdings.

4.7 Management accounting practical interaction with BDA tools in forming corporate value-added strategies
4.7.1 Data analysis and visualization

FIGURE 4
RESPONSES TO STATEMENT 4.7.1

Figure 4. above indicates that none of the respondents have neither strong negative nor negative effect towards the statement. 15% (3/20) have a neutral view on the statement, 11/20 (55%) have a positive effect and 6/20 (30%) have a strong positive effect to the statement. The results from the findings explained and showed

that, in management accounting, data analysis and visualisation are used to find patterns, trends, and correlations in financial data using statistical methods and software tools. Comprehending the financial performance of the organisation and formulating strategies that enhance decision-making are facilitated by this approach. This was supported by Dai and Liang (2022) who indicated that data visualisation can help track changes over time which assist in identifying irregularities.

4.7.2 Forecasting and scenario planning

Table 5. Responses to statement 4.7.2

Responses	Frequency	Response rate
Strongly agree	5	25%
Agree	7	35%
Uncertain	3	15%
Disagree	2	10%
Strongly disagree	3	15%
Total	**20**	**100%**

Table 5 above shows that 5/20 (25%) of the respondents strongly agreed to the statement, 7/20 (35%) agreed and 3/20 (15%) had a neutral view to the statement. Other 2/20 (10%) had to disagree and the other 3/20 (15%) had to strongly disagree. It appeared that from the findings, the respondents supported the idea that forecasting, and scenario planning are made possible through BDA technology since the two practises helps in broadening the outlook of the future and questioning the assumptions of the future attached by the management accountants for decision-making purposes. As alluded by Vitari and Raguseo (2019) which stated that technological advancement tools assist management accountants in preparing for potential disturbances through advanced forecasting tools.

4.7.3 Performance Measurement and Monitoring

Table 6. Responses to 4.7.3

Responses	Frequency	Response rate
Strongly positive	6	30%
Positive	10	50%
Neutral	3	15%
Negative	1	5%
Strongly negative	0	0%
Total	**20**	**100%**

Table 6 shows that 0/20 (0%) respondents had a strongly negative view on the statement. Only 1/20 (5%) respondents also gave a negative view, neutral respondents were 3/20 (15%). 6/20 (30%) gave a strongly positive view and 10/20 gave a positive view. Majority which is 16/20 (80%) respondents agree and strongly agree that performance measurement and monitoring can enhance the way BDA tools and management accounting interact to build value-added plans. Based on the results, the participants stated that performance measurement and monitoring have a strong impact in reducing process costs and thereby increasing the productivity, this in turn has resulted in the forming of corporate value-added strategies by the management accountants. This is supported by Vitari and Raguseo (2019) who stated that using BDA technology can positively impact a company's overall performance, specifically in terms of financial performance, market performance and customer satisfaction.

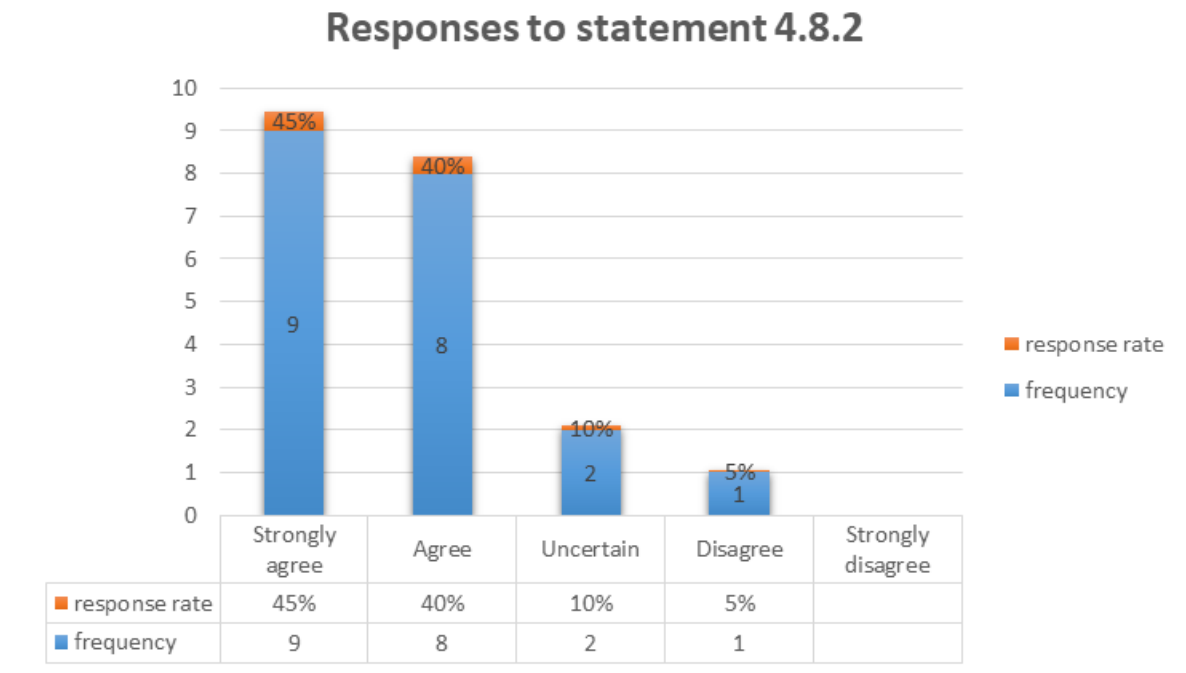### 4.8 Risks associated with implementing big data analytics

4.8.1 Lack of expertise and skills in handling data

Table 7. Response rate for statement 4.8.1

Response	Frequency	Response rate
Strongly Agree	5	25%
Agree	11	55%
Uncertain	4	20%
Disagree	0	0%
Strongly disagree	0	0%
Total	**20**	**100%**

Table 7 above illustrates that 5 respondents strongly agreed to the statement, 11/20 agreed, neutral respondents were 4/20 and none of them had to disagree or strongly disagree. Majority of the respondents which is 16/20 (80%) agreed to the statement. This suggests that a large number of employees recognise the potential risk associated with lack of expertise and skills in handling data and this has been a major problem at ZB which has resulted in having difficulties in predicting the future, which is leading to inaccurate financial forecasts, miscalculated budgets, decreased efficiency and ultimately, reduced profits. Ndoro (2023) suggested that mishandling of data can result in losses due to inaccurate information processed for use by the stakeholders of the organization.

4.8.2 Data privacy and security concerns

Responses to statement 4.8.2

	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
response rate	45%	40%	10%	5%	
frequency	9	8	2	1	

FIGURE 5
RESPONSE RATE FOR STATEMENT 4.8.2

Figure 5 above illustrates that 45% of the respondents strongly agree, 40% (8/20) agree to the statement, 10% are uncertain of the statement and only one respondent had to disagree. None of the respondents had a strongly negative view. Most of the respondents (17/20) 85% either agree or strongly agree that data privacy and

security concerns is a risk which is encountered at ZB since the tools are prone to viruses and external theft of data through hacking. Atoum and Keshta (2021) assert that data privacy and confidentiality concerns pose a danger to the utilisation of big data information in addressing various business difficulties.

4.8.3 Integration challenges with existing systems and processes

Table 8. Response rate for statement 4.8.3

Responses	Frequency	Response rate
Strongly agree	6	30%
Agree	8	40%
Uncertain	5	25%
Disagree	1	5%
Strongly disagree	0	0%
Total	**20**	**100%**

Table 8 shows that 6/20 of the respondents strongly agree to the statement, 8/20 had to agree, 5/20 had a neutral view to the statement and only one respondent disagreed . None of the respondents had a strongly negative view to the statement. Majority (14/20) of the respondents had a positive view to the statement highlighting that many employees at ZB view integration with existing systems and processes as a potential risk since the employees are failing to implement and adapt due to lack of knowledge. This was supported by Elhoushy, Elhennawy and Zaytoun (2023) who stated that the integration between technological advancement tools and the existing systems can be a threat to the organisation due to incompatibility between the two variables.

4.9 Opportunities associated with implementing BDA
4.9.1 Improved decision-making processes

Table 9. Responses to statement 4.9.1

Responses	Frequency	Response rate
Strongly positive	12	60%
Positive	6	30%
Uncertain	2	10%
Negative	0	0%
Strongly negative	0	0%
Total	**20**	**100%**

The table 9 above indicates that 12/20 (60%) of the respondents have a strong positive view towards the statement, 6/20 (30%) have a positive view, neutral respondents were 2/20(10%) and none of the respondents have neither a strong negative nor negative view towards the statement. Majority of the respondents which is 18/20 (90%) are of the view that big data analytics has a very strong impact on decision making processes of ZB, the tools provide insights and meaningful predictions of the future through predictive analytical tools provided by the BDA technology. The characteristics of big data have assisted the expansion of the role of management accountant in supporting the decision-making processes (Elhoushy, Elhennawy and Zaytoun (2023).

4.9.2 Enhanced operational efficiency

Table 10. Responses to statement 4.9.2

Responses	Frequency	Response rate
Strongly positive	10	50%
Positive	7	35%
Uncertain	3	15%

Negative	0	0%
Strongly negative	0	0%
Total	**20**	**100%**

Table 10 illustrates that 10/20 (50%) of the respondents have a strongly positive view towards the statement, 35% have a positive view, 3/20 are uncertain if BDA can enhance operational efficiency and none of the respondents have neither a negative nor strongly negative view towards the statement. 17/20 (85%) of the respondents agreed that operational efficiency is enhanced by using BDA tools which means that BDA utilisation has a strong impact on the operational efficiency of a company. This was also supported by Bykadarov (2024) who stated that Operational efficiency is achieved through the adoption of advanced technological advancement tools.

4.9.3 Better customer insights and segmentation

Table 11. Responses to statement 4.9.3

Responses	Frequency	Response rate
Strongly positive	8	40%
Positive	9	45%
Uncertain	2	10%
Negative	1	5%
Strongly negative	0	0%
Total	**20**	**100%**

Table 11 shows that none of the respondents strongly disagree to the statement, only one had a negative view towards the statement, 2/20 were uncertain, 9/20 have a positive view and 8/20 have strongly agreed that use of BDA tools results in better customer insights and segmentation. Majority of the respondents 17/20 (85%) strongly agree with the notion that BDA utilisation has a strong impact on improving customer insights and segmentation since the technology helps in assisting and identifying profitable markets, reaction of customers to the product in different markets thereby assisting management accountants to acquire better customer insights and achieve proper market segmentation. Market segmentation is properly achievable through the adoption of predictive analytical tools (Bykadarov (2024).

4.9.4 Increased competitive advantage

Table 12. Responses to statement 4.9.4

Responses	Frequency	Response rate
Strongly agree	5	25%
Agree	7	35%
Uncertain	4	20%
Disagree	2	10%
Strongly disagree	2	10%
Total	**20**	**100%**

Table 12 above shows that 25% of the respondents strongly agree with the statement, 35% (7/20) agree with the statement, 4/20 (20%) have a neutral view towards the statement, 2/20 disagreed and 2/20 strongly disagreed with the statement. Majority of the respondents (12/20) agree that BDA brings an opportunity of increased competitive advantage indicating that there is a strong relationship between the variables since the tool helps in providing strategies for the effective management of the organization. Bykadarov (2024) asserts that using business analytics gives organisations a competitive edge. By examining consumer behaviour, market trends, and rival plans, companies can spot special opportunities, set themselves apart, and stay ahead of the competition.

5. CONCLUSION

In conclusion, the findings clearly demonstrate that big data analytics significantly influences management accounting practices at ZB, enhancing decision-making, risk management, operational efficiency, and strategic planning. The majority of respondents acknowledge the positive impact of BDA tools in improving cost efficiency, customer insights, and competitive advantage, while also highlighting the opportunities these technologies present for creating value-added strategies. However, the study also reveals notable challenges, including skill gaps, data privacy concerns, integration issues, and the need for continuous training and cross-functional collaboration. Addressing these risks through targeted strategies will be crucial for maximizing the benefits of big data analytics and ensuring its effective integration into management accounting processes, ultimately fostering a more data-driven, agile, and competitive organization.

REFERENCES

1. Abdelhalim, A. M. (2024). How management accounting practices integrate with big data analytics and its impact on corporate sustainability. *Journal of Financial Reporting and Accounting*, *22*(2), 416-432.
2. Alsghaier, H., Akour, M., Shehabat, I., & Aldiabat, S. (2017). The importance of big data analytics in business: a case study. *American Journal of Software Engineering and Applications*, *6*(4), 111-115.
3. **A**nadan, R. 2021. A closer look at Big Data Analytics, Nova Science Publishers, Kansas State University.
4. Atoum, I. A., & Keshta, I. M. (2021). Big data management: Security and privacy concerns. *International Journal of Advanced and Applied Sciences*, *8*(5), 73-83.
5. Azjen, I., 1991. The Theory of Planned Behavior. Organizational Behavior and Human *Decision Processes*, 50, pp.179-211.
6. Batko, K., & Ślęzak, A. (2022). The use of Big Data Analytics in healthcare. *Journal of big Data*, *9*(1), 3.
7. Berchet, C., & Habchi, G. (2005). The implementation and deployment of an ERP system: An industrial case study. *Computers in industry*, *56*(6), 588-605.
8. Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of management*, *17*(1), 99-120.
9. Bhandari, P., 2023. Questionnaire Design\Mthods, Question Types and Examples.
10. Boučková, M. (2015). Management accounting and agency theory. *Procedia Economics and Finance*, *25*, 5-13.
11. Brinch, M. (2018). Understanding the value of big data in supply chain management and its business processesTowards a conceptual framework. *International Journal of Operations & Production Management*, *38*(7), 1589-1614.
12. Budert-Waltz, T. and Moffitt, K. 2023. Research Methodds, Definitions, Technology and Examples.
13. Bykadarov, N., 2024. Mastering Business Analytics: A Computer to Data Driven Decision Making.
14. Chandra, N., & Rastogi, P. (2018). Analysis of Benefits and Drawbacks of Traditional ERP versus Cloud Based ERP Systems. *International Journal of Latest Trends in Engineering and Technology*, *9*(4), 52-56.
15. Clayton, P. R., & Clopton, J. (2019). Business curriculum redesign: Integrating data analytics. *Journal of Education for Business*, *94*(1), 57-63.
16. Chen, H., & Tian, Z. (2022). Environmental uncertainty, resource orchestration and digital transformation: A fuzzy-set QCA approach. *Journal of Business Research*, *139*, 184-193.
17. Coursea Staff., 2023. What is Big data analytics? Definition, Benefits, -and More, available at https://www.coursera.org/ , accessed on 03 January 2024.
18. Dai, M. and Liang, K., 2022. Research on the integration of Big data Finance information and management accounting. Proceedings of the 2022 Int Con on Artificial Intelligence, Internet and Digital Economy, pp.671-678.
19. Dehbi, S., Lamrani, H. C., Belgnaoui, T., & Lafou, T. (2022). Big data analytics and management control. *Procedia Computer Science*, *203*, 438-443.
20. Dekate, T., 2022. 'The Origin of Big Data Analytics', available at https://www.hbr.org accessed on 03 January 2024
21. Elhoush, M.M., Elhennawy, E.M. and Zaytan, M. K., 2023. The impact of Big Data's Characterristics on the Management Accountants' Role as a Business Partneship. *Journal of Finance and Accounting,* 1191), pp.9-27.
22. Quinto II, E. J. (2022). How technology has changed the field of accounting.
23. Sniehotta, F. F., Presseau, J., & Araújo-Soares, V. (2014). Time to retire the theory of planned behaviour. *Health psychology review*, *8*(1), 1-7.
24. Fishbern, M. and Azjen, I., 1975. Beliefs, Attitude, Intention and Behavior.
25. Franke, F., & Hiebl, M. R. (2023). Big data and decision quality: the role of management accountants' data analytics skills. *International Journal of Accounting & Information Management*, *31*(1), 93-127.

26. Gao, Y., & Tang, Y. (2023). A study on the mechanism of digital technology's impact on the green transformation of enterprises: Based on the theory of planned behavior approach. *Sustainability*, *15*(15), 11854.

27. Gronke, K., Heim, R.N. and Wenning, A., 2018. Recognising the opportunity of digitization and mastering the digitital transformation of the finance function.

28. Gupta, M., & George, J. F. (2016). Toward the development of a big data analytics capability. *Information & Management*, *53*(8), 1049-1064.

29. Hasan, M., Hoque, A., & Le, T. (2023). Big data-driven banking operations: Opportunities, challenges, and data security perspectives. *FinTech*, *2*(3), 484-509.

30. Herath, S. K., & Woods, D. (2021). Impacts of big data on accounting. *The Business and Management Review*, *12*(2), 195-203.

31. Holland, C. P., & Light, B. (2003). A framework for understanding success and failure in enterprise resource planning system implementation. *Second-wave enterprise resource planning systems*, 180-195.

32. Kumar, N., Kumar, G., & Singh, R. K. (2022). Analysis of barriers intensity for investment in big data analytics for sustainable manufacturing operations in post-COVID-19 pandemic era. *Journal of Enterprise Information Management*, *35*(1), 179-213.

33. Khan, M. (2019). Challenges with big data analytics in service supply chains in the UAE. *Management Decision*, *57*(8), 2124-2147.

34. Kuphanga, D., 2024. The Interview Method in Psychology

35. Lawson, R., 2016. What Do Management Accountants Do. *Management Accounting Research*, 1(1), pp.1-15.

36. Lee, H., Kweon, E., Kim, M., & Chai, S. (2017). Does implementation of big data analytics improve firms' market value? Investors' reaction in stock market. *Sustainability*, *9*(6), 978.

37. Liu, F. (2023, November). On the Impact of Big Data on Management Accounting. In *2023 International Conference on Finance, Trade and Business Management (FTBM 2023)* (pp. 299-306). Atlantis Press.

38. Justin, M., Abel, M., & Ferdinand, K. (2023). The Impact of Enterprise Resource Planning (ERP) on the Internal Controls System in Zimbabwean Organizations. *International Journal of Research and Innovation in Social Science*, *7*(8), 1504-1518.

39. Mirarab, A., Mirtaheri, S. L., & Asghari, S. A. (2019). Value creation with big data analytics for enterprises: a survey. *TELKOMNIKA (Telecommunication Computing Electronics and Control)*, *17*(6), 2790-2802.

40. Muhamad Luqman, K. H. A. L. I. L., & Norzalita Abd, A. Z. I. Z. (2023). Influence of Big Data Analytics Capability on Innovation and Performance in the Hotel Industry in Malaysia. *The Journal of Asian Finance, Economics and Business*, *10*(2), 109-121.

41. Munné, R. (2016). Big data in the public sector. In *New horizons for a data-driven economy: A roadmap for usage and exploitation of big Data in Europe* (pp. 195-208). Cham: Springer International Publishing.

42. Ndoro, B., 2023. The Importance of Data Analytics for Management Accountants.

43. Oben, A. I. (2021). Research instruments: A questionnaire and an interview guide used to investigate the implementation of higher education objectives and the attainment of Cameroon's Vision 2035. *European Journal of Education Studies*, *8*(7).

44. Oesterreich, T. D., & Teuteberg, F. (2019). The role of business analytics in the controllers and management accountants' competence profiles: An exploratory study on individual-level data. *Journal of accounting & organizational change*, *15*(2), 330-356.

45. Palanisamy, V., & Thirunavukarasu, R. (2019). Implications of big data analytics in developing healthcare frameworks–A review. *Journal of King Saud University-Computer and Information Sciences*, *31*(4), 415-425.

46. Polle, E., 2021. The Influence of Big Data Analytics Capability on Firm Performance and the role of Strategic Planning.

47. Popovič, A., Hackney, R., Tassabehji, R., & Castelli, M. (2018). The impact of big data analytics on firms' high value business performance. *Information Systems Frontiers*, *20*(2), 209-222.

48. Potluri, R. M., & Vajjhala, N. R. (2021). Risks in Adoption and Implementation of Big Data Analytics: A Case of Indian Micro, Small, and Medium Enterprises (MSMEs). *International Journal of Risk and Contingency Management (IJRCM)*, *10*(3), 1-11.

49. Pradhan, K., 2024. Data Analytics in Accounting. Retrieved from https://www.oneclickitsolution.com on 04/01/24.

50. Reddy, G., 2022. A Study on Impact of big Data Analytics on Accounting Professionals. *Journal of Advanced Research in Accounting & Finance Management*, 4(1), pp.1-4.

51. Russom, P. (2011). Big data analytics. *TDWI best practices report, fourth quarter*, *19*(4), 1-34.

52. Said, F., Jalil, A.A.and Zainal, D., 2023. Asia Journal of Business and Accounting.

53. Sarwoko, H., 2016. Agency Theory Perspective in Implementation of Corporate Governance. *dd*, pp.68-84.

54. Spraakman, G., Sanchez-Rodriguez, C., & Tuck-Riggs, C. A. (2021). Data analytics by management accountants. *Qualitative Research in Accounting & Management*, *18*(1), 127-147.
55. Srivastava, U., & Gopalkrishnan, S. (2015). Impact of big data analytics on banking sector: Learning for Indian banks. *Procedia Computer Science*, *50*, 643-652.
56. Schnegg, M., & Möller, K. (2022). Strategies for data analytics projects in business performance forecasting: a field study. *Journal of Management Control*, *33*(2), 241-271.
57. Schnitt, D., 2023. The Challenges of Having a Manual Accounting System.
58. Shmueli, G., & Koppius, O. R. (2011). Predictive analytics in information systems research. *MIS quarterly*, 553-572.
59. Sutton, S. (1994). The past predicts the future: Interpreting behaviour–behaviour relationships in social psychological models of health behaviour.
60. Sun, Z., Sun, L., & Strang, K. (2018). Big data analytics services for enhancing business intelligence. *Journal of Computer Information Systems*, *58*(2), 162-169.
61. Tamang, I. (2020). *Big Data Analytics: Challenges and obstacles in deployments* (Master's thesis, NTNU).
62. UK Essays, 2015. The Critisms on Agency Theory and its Application Finance Essay. Retrieved from https://www.ukessays.com/
63. UK Essays, 2018. Limitations of The Resource Based View Management Essay. Retrieved from www.ukessays.com/essays/management,limitations-of-the-resource-based
64. Varma, A. (2018). Big data usage intention of management accountants: blending the utility theory with the theory of planned behavior in an emerging market context. *Theoretical Economics Letters*, *8*(13), 2803-2817.
65. Vitari, C., & Raguseo, E. (2020). Big data analytics business value and firm performance: linking with environmental context. *International Journal of Production Research*, *58*(18), 5456-5476.
66. Wahyuni, T. (2023, January). Literature Study of The Influence of Big Data and Data Analytic on Cost Controls. In *Proceedings* (Vol. 83, No. 1, p. 52). MDPI.
67. Yang, R., 2021. Analysis on the impact of Big Data on Management Accounting. *Proceedings of Business and Economic Studies,* 4(4), pp.153-158.
68. Yuniarwati, Y., Ardana, I. C., & Dewi, S. P. (2022, April). Theory of Planned Behavior for Predicting Fraudulent Financial Reporting Intentions. In *3rd Tarumanagara International Conference on the Applications of Social Sciences and Humanities (TICASH 2021)* (pp. 529-537). Atlantis Press.
69. Yiu, C., 2012. The Big Data Opportunity.
70. Yokoyama, S., 2023. The Power and Limitations of Information Theory. International Journal of Advancements in Technology, 14(5), pp.1-2.
71. Zhang, R., 2024. Information Theory Series.
72. Ziezo, M. M., Osakwe, J. O., Ujakpa, M. M., & Iyawa, G. E. (2021). Challenges of implementing big data technology in higher institutions. *Journal of Information Systems and Informatics*, *3*(3), 376-391.
73. Zhong, M., & Fan, T. (2021, March). Research on the integration of corporate financial accounting and management accounting under Big Data and Block Chain. In *Journal of Physics: Conference Series* (Vol. 1827, No. 1, p. 012202). IOP Publishing.