IMPACT OF BIG DATA ON QUALITY OF ACCOUNTING INFORMATION OF LISTED COMPANIES IN SRI LANKA: PERCEPTIONAL VIEWS FROM ACCOUNTING PROFESSIONALS

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Abstract

Big data has the potential to produce more accurate, complete, and timely data, which could improve the caliber of accounting information. The current situation in Sri Lanka emphasizes how vital it is to look into how big data could enhance the quality of accounting information and, consequently, influence the decision-making processes related to investments. Quality of accounting information has been further divided into fundamental (relevance and faithful representation), enhancing (comparability, verifiability, timeliness, and understandability) characteristics. Altogether 112 questionnaires were issued of which 100 were valid for the statistical analysis. Cronbach's Alpha Coefficient was used to test the internal consistency. Multiple Correlation Matrix was employed to check if any multicollinearity problem exists. ANOVA test results indicate that there is a positive statistically significant effect of correlation between big data and fundamental as well as enhancing characteristics of accounting information. When exploring further, data variety and data velocity have a statistically significant effect on fundamental characteristics of accounting information quality while data volume, data variety, and data velocity have a statistically significant effect on enhancing characteristics of accounting information quality. Again, a stepwise regression study was performed to ascertain which big data dimension had the strongest impact on the fundamental and enhancing elements of accounting information quality. Accordingly, when data variety which was ranked first was added along with data velocity will make a huge impact on fundamental characteristics of accounting information quality, while data velocity which was ranked first was added along with data variety will make a huge impact on enhancing characteristics of accounting information quality. In addition, big data, which is reflected in the fundamental or enhancing aspects of the accounting information, has an impact on the investment decisions made by the readers of the financial reports. According to the survey, companies should give big data management top priority to enhance their accounting information.

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1 Introduction

Information technology (IT) and electronic technologies are becoming vital resources on par with human and material resources in the rapidly evolving global technological revolution. According to Janvrin and Watson (2017) and Rezaee and Wang (2017), businesses are becoming increasingly interested in IT as a result of their need to stay up to date with technical advancements and use IT to further their goals. As a result, the field of business IT is growing rapidly.

Big data is a term that is now frequently used to characterize large data volumes that call for sophisticated data management strategies (Varma, 2018). Big data differs from "traditional" data in that it has a large volume, high velocity, and a wide variety of verified attributes (Chen et al., 2012). Big data and sophisticated analyses of it have been extensively covered in IT literature; however, although big data has the potential to transform financial accounting and reporting practices by delivering more information at the right time at a faster rate, this phenomenon has not received enough attention in the academic circles of financial accounting. Neither has its role in financial reporting been addressed. Big data can provide more precise, timely, and thorough data, which could enhance the quality of accounting information. Better investment choices may result from this enhancement. Comprehending this correlation facilitates stakeholders in optimizing big data for improved decision-making. This study was the first attempt to find out the impact of big data on the quality of accounting information, especially when considering investment decision-making.

1.1 Problem Statement

Sri Lanka finds itself at a critical crossroads in the quickly changing global finance scene, where the incorporation of big data technology has the potential to revolutionize conventional accounting methods. During this shift, it is critical to comprehend how big data affects the integrity of accounting information, especially when making investment decisions. This is because the financial sector in Sri Lanka has to remain competitive and develop sustainably. The current state of affairs in Sri Lanka highlights how urgent it is to investigate how big data might improve the caliber of accounting information and, in turn, impact the processes involved in making investment decisions. Leveraging big data in accounting processes becomes a strategic requirement as the country aspires to become a regional financial hub. However, there is still a lack of research on the precise mechanisms by which big data affects the quality of accounting information and how that affects investment decisions in Sri Lanka. This research study aims to provide stakeholders with actionable insights that pave the way for sustainable growth, innovation, and competitiveness in Sri Lanka's evolving financial

ecosystem by clarifying the complex interactions between big data, quality of accounting information, and investment decision-making

1.2 Objectives of the Study

Main Objective - The main objective of this study is to investigate the Impact of Big Data on the Quality of Accounting Information of Listed Companies in Sri Lanka.

Specific Objectives

- To study the effect of data volume on the quality of Accounting Information in Listed companies in Sri Lanka.
- To examine the effect of data variety on the quality of Accounting Information in Listed companies in Sri Lanka.
- To examine the effect of data velocity on the quality of Accounting Information in Listed companies in Sri Lanka.

2 Literature Review

"Big Data" is defined as "data of a very large size, typically to the extent that its manipulation and management present significant logistical challenges; (also) the branch of computing involving such data" by the Oxford English Dictionary in 2013. This definition does not fully cover the big data narrative. Big data is the term for vast amounts of data that are driven by the development of computer technologies, the appearance of new data sources, and the expansion of information technology infrastructures (Russell, 2018).

However, as organizations and industries like banks have historically used enormous amounts of data, big data does not exclusively refer to large volumes of data (Jia, 2020). Big data are datasets that are challenging to manage using conventional tools and procedures because they are large, highly variable, and rapidly changing (Elgendy & Elragal, 2014). Big data handles complexity through the use of advanced approaches. Large volumes of data flowing at a high pace are referred to as big data and a wide range of data is produced faster. The latter includes semi-structured, unstructured, and structured data that can contain text.

The amount of data gathered is a significant potential obstacle for applying big data analytics and big data information in accounting systems. It is the responsibility of business organizations to document internal data in various tables and organized formats for later usage. It isn't easy to choose the right data type when there is an abundance of it. Conversely, the total efficacy of big data analytics in decision-making may also be lowered if insufficient information or data about a scenario is available.

The most crucial factor to consider when discussing big data is volume. Massive amounts of data directly relate to the notion of big data. (Ernst & Young, 2014) acknowledged that, compared to traditional data sources, an enormous amount of data is being created in the big data era. Al-Barznji and Atanassov (2017) articulated the big data volume characteristic as data increasing with exponential growth, while Ask et al. (2016) described it as a massive amount of data requiring huge storage.

The diversity of extensive data is its next characteristic. Ask et al. (2016) defined big data's diversity attribute as data derived from a broader range of sources encompassing multidimensional data fields. (Ernst & Young, 2014) emphasize the methods used to generate the data; they define big data diversity as data originating from various human or machine-generated sources.

According to Ask et al. (2016), velocity is the frequency at which data is generated and delivered. Big Data Velocity handles data that is produced very quickly. Big data velocity has been described as "a process that never stops, even while we sleep" (Ernst & Young, 2014). To put it another way, big data velocity is the pace at which data flows; this flow is massive, continuous, and comes from a variety of data sources, particularly with the emergence of the Internet of Things and digital life, which can produce thousands of data in a matter of minutes.

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Kaya and Akbulut (2018) demonstrated how big data analytics affect accounting and financial reporting. The study used a qualitative methodology that involved interviews with academics and professionals in several accounting-related areas. Eight individuals were interviewed for this study. The study demonstrated how traditional approaches to gathering, logging, and interpreting accounting data change in the era of big data analytics, yet the essence of financial reporting remains constant. The report also showed that big data analytics has become a pressing problem and has significant potential for accountants, particularly those in the forensic and valuation industries. Lastly, the study suggested that for accounting professionals to stay competitive, they should enhance their knowledge and proficiency in big data analytics.

The impact of big data analytics on Saudi Arabia's financial reporting quality was examined by Younis (2020). The survey also clarified how big data is changing the accounting industry and the roles played by accountants. In 2019, a

questionnaire-based field study was conducted in the Kingdom of Saudi Arabia. The study's findings showed that big data has a statistically significant impact on enhancing the quality of accounting information, which favors the caliber of financial reporting. The study also concluded that big data is essential in giving businesses highly competitive advantages and delivering pertinent information to support internal decision-making processes and those made by stakeholders.

Reviews of pertinent research verified by qualitative data analysis are conducted using a methodical literature review technique. Depending on the nature of the problem, different levels of automation can potentially replace management decision-making with data-driven decisions. There is proof that big data analytics employing structured data can replace administrative, operational, and tactical decision-making in stable settings. According to the report, the nations of Europe stand to gain the most from tactical and operational choices made in the absence of managerial oversight. For high-quality decision-making and error prevention, decision-makers should, therefore, reevaluate strategic judgments emerging from automated processing in unstable settings (Sedzani, 2021).

George Staubus's (1961) decision-usefulness theory is the foundation for this investigation. It is predicated on the idea that rational people utilize accounting data and that the primary goal of financial reporting is to offer relevant data for decision-making regarding investments. However, for people to make the right choices, the information they are given must be pertinent (Kareem et al., 2017), and timeliness is crucial.

In conclusion, we believe that the lack of rigorous methodology and the changing function of the big data variables over time are the reasons for the studies' inconsistent findings.

3 Study Hypotheses

The following hypotheses have been developed in light of the earlier literature review:

H1: There is a significant positive effect of data volume on the Quality of Accounting Information in Listed companies in Sri Lanka.

H2: There is a significant positive effect of data variety on the Quality of Accounting Information in Listed companies in Sri Lanka.

H3: There is a significant positive effect of data velocity on the Quality of Accounting Information in Listed companies in Sri Lanka.

H4: Investment decision making moderate the relationship between Big Data and the quality of Accounting Information in Listed companies in Sri Lanka.

4 Methodology

The study used various statistical techniques to analyze the data gathered through a questionnaire meant to measure the variables of the study to describe the impact of big data on the quality of accounting information in the presence of investment decision-making as a moderating variable to examine the model.

A quantitative research approach has been used during this research study. In addition, this research study employed the research method of data collection by issuing questionnaires to respondents and collecting responses from them. Likert scale method was employed in the questionnaire. The study population included accounting professionals working in listed companies in Sri Lanka. As per the convenience sampling method, altogether 112 questionnaires were issued of which 100 were valid for the statistical analysis, after excluding 12 incomplete questionnaires. The SPSS software was used to analyze the data. The statistical tools used in the study included descriptive statistics such as minimum, maximum, mean, and standard deviation.

Cronbach's Alpha Coefficient was used to test the internal consistency coefficient of the study tool. Pearson correlation coefficient used for testing to find out if any multicollinearity issue presence. Multiple regression analysis was used to test the effect of the independent variable on the dependent variable. In addition, to examine the impact of the moderating variable on the dependent variable, hierarchical regression analysis is used.

5 Data Analysis and Findings

The reliability of the questionnaires issued was calculated using Cronbach's Alpha's coefficient test.

Table 1: Reliability Test of Study Tool

Variable	Reliability Coefficient
Big Data	0.966
Fundamental Characteristics	0.993
Enhancing Characteristics	0.972
Investment Decision Making	0.923

Source – Author findings

Cronbach's Alpha coefficient that is accepted for research as per Hair et al., (2006) is 0.7 (shows a very high degree of reliability). As per the above table, Cronbach's Alpha Coefficient for all variables is greater than 0.7, hence this is an indication of the existence of an acceptable level of reliability among the variables used in the study.

5.1 Demographic Factors of the Sample

Table 2: Demographic Factors of the Sample

Variable	Category	Frequency Percentage
Gender	Male	54
	Female	46
Age	Less than 20	1
	20 – 25	20
	26 – 30	23
	31 – 40	23
	41 – 50	27
	51 – 60	3
	Over 60	3
Highest Academic Qualification	Certificate/Diploma	23
	Basic Degree	26
	Postgraduate Diploma	26
	MBA/MSc	25
Professional Qualification	ICASL	17
	ACCA	25
	CIMA	25
	CMA	33
Current Designation	Charted Accountants	13
	Chief Financial Officers (CFO)	13
	Cost Controllers	13
	Financial Analysts	13
	Auditors	12
	Accountants	12
	Management Accountants	12
	Budget Analysts	12
Number of years of industry experience	Less than 5 years	13
	5 – 10	12
	11 – 15	12
	16 – 20	13
	21 – 25	13
	26 – 30	13
	31 – 35	12
	36 – 40	12
Status of the institution	State	54
	Non-State	46

Source – Author findings

Table 2 indicates the socio-economic background of respondents. The age group belonging to 41 – 50 was the largest number of respondents while 25% of respondents held Bachelor, Postgraduate, or Master's degrees respectively. In terms of professional qualifications, both ACCA and CIMA qualified

professionals were 25% each and the rest were qualified in ICASL and CMA, while CMA finalists were the highest number of respondents (33%) which indicates that individuals. This indicates that the individuals in the sample were elite people with relevant knowledge in the area.

The questionnaire was issued to accounting professionals, where 13% of them worked as Chartered Accountants, CFOs, Cost controllers, and Financial Analysts respectively. In terms of industry experience, around 13% was having the experience of 16 – 30 years which indicates individuals who responded to the questionnaire has plenty of background knowledge in the field that they are working.

5.2 Descriptive Statistics of Responses

Table 3: Descriptive Statistics of Responses

Variable Type	Variable Name	Mean	Standard Deviation
Independent Variable (Big Data)	Volume of data	4.45	0.539
	Variety of data	4.70	0.522
	Velocity of data	4.44	0.656
	BIG DATA	4.52	0.785
Dependent Variable (Fundamental Characteristics)	Relevance	4.75	0.500
	Faithful Representation	4.03	0.300
	Fundamental Characteristics	4.390	0.330
Dependent Variable (Enhancing Characteristics)	Comparability	4.70	0.461
	Verifiability	4.67	0.473
	Timeliness	4.50	0.560
	Understandability	4.67	0.637
	Enhancing Characteristics	4.635	0.445
Moderating Variable (Investment Decision Making)	Investment Decision Making	4.440	0.656

Source – Author findings

The above table indicates the mean and standard deviation values of all variables. As per above table 3, relevance has the highest amount of mean with a value of 4.75 which indicates that relevance was the highest central tendency among all other variables, or in other words it was the highest-performing variable among all. In addition, the big data variable has the highest standard deviation with a value of 0.785.

5.3 Testing Hypotheses

To test the hypotheses, statistics tests were conducted. The analyses were multiple correlation analysis, multiple regression analysis, stepwise regression analysis and hierarchical regression analysis. Before using the analysis techniques, the data was examined for evidence of the multicollinearity phenomena.

Table 4: Multiple Correlation Matrix

Variable	Volume	Variety	Velocity	Relevance	Faithful Representation	Comparability	Verifiability	Timeliness	Understandability	Investment Decision Making
Volume	1									
Variety	0.485**	1								
Velocity	0.663**	0.743**	1							
Relevance	0.422**	0.677**	0.708**	1						
Faithful Representation	0.228*	0.316**	0.394**	0.320**	1					
Comparability	0.590**	0.546**	0.441**	0.504**	0.066	1				
Verifiability	0.589**	0.577**	0.668**	0.460**	0.213*	0.654**	1			
Timeliness	0.653**	0.726**	0.715**	0.668**	0.331**	0.588**	0.745**	1		
Understandability	0.437**	0.793**	0.786**	0.532**	0.370**	0.279**	0.608**	0.723**		
Investment Decision Making	0.406**	0.743**	0.742**	0.708**	0.394**	0.441**	0.668**	0.715**	0.786**	**1**

Source – Author findings

Note: ** indicates statistically significant at the level of significance of 0.01, * indicates statistically significant at the level of significance of 0.05

As per Table 4, the highest value of correlation has been found in between a variety of data and understandability with the value of 0.793. At the same time, all other variables have very lower value of correlation in between them. This indicates that there is no perfect correlation between the variables used in the research study. When one or more independent variables in the study model have significant correlations (coefficient value > 0.80) with another independent variable, this is known as multicollinearity (Akoglu, 2018). Consequently, it is reasonable to conclude that multicollinearity is not a concern for this research study.

Results of the main hypotheses test H1:

Table 5: Model Summary and ANOVA Results

Dependent Variable	Model Summary		ANOVA	
	R	R^2	F	Sig F*
Qualitative Characteristics	0.894	0.799	127.42	0.000

Source: Authors finding

Table 6: Coefficient Results

Independent Variable (Big Data)	Coefficients			
	B	**Std. Error**	**t**	**Sig t***
Volume	0.081	0.040	2.028	0.045
Variety	0.293	0.046	6.369	0.000
Velocity	0.233	0.043	5.460	0.000

Source: Authors findings

Note: * Indicates statistically significant at the level of significance of 0.05

As per the table 6 correlation coefficient value is 0.894 and it depicts that there is a positive statistically significant effect (Sig F = 0.000) of correlation between big data and fundamental characteristics of accounting information. In addition, it was found that (R^2 =0.799) concludes that variance in the big data is explained by 79.9% of the variance in the qualitative characteristics of quality of accounting information.

Accordingly, hypothesis H1 is accepted, and it indicates that there is a statistically significant effect of big data in terms of its dimensions (Volume, Variety, Velocity) on the quality of accounting information in Listed companies in Sri Lanka.

The qualitative aspects of the accounting information have a significant impact on how well the big data is improved. As a result, for this information to be useful in making decisions and accurately conveying financial operations, these reports need to include a few key attributes: relevance, faithful representation, comparability, verifiability, timeliness, and understandability. This finding is highly supported by (Omar, 2020).

The following values were displayed in the coefficient table with the findings of testing the sub-hypotheses associated with the first main hypothesis:

As per Table 6 of coefficient results of volume (B = 0.081, t = 2.028, Sig = 0.045 which is less than 0.05), it can be concluded that there is a statistically significant positive effect of data volume on the quality of accounting information in listed companies in Sri Lanka. Accordingly, hypothesis H1 is accepted.

In addition, in Table 6 of coefficient results of variety (B = 0.293, t =6.369, Sig = 0.000 which is less than 0.05), it can be concluded that there is a statistically significant positive effect of data variety on the quality of accounting information in listed companies in Sri Lanka. Accordingly, hypothesis H2 is accepted.

Further to the above, Table 6 of coefficient results of velocity (B = 0.233, t =5.460, Sig = 0.000 which is less than 0.05), it can be concluded that there is a statistically significant positive effect of data velocity on the quality of accounting information in listed companies in Sri Lanka. Accordingly, hypothesis H3 is accepted.

A stepwise regression study was performed to ascertain which big data dimension had the strongest impact on the essential elements of the quality of accounting information. The outcome was as follows:

Table 7: Results of Stepwise Regression

Model	Big Data	B	t	Sig*	R^2	F	Sig*
First Model	Velocity	0.762	10.132	0.000	0.532	102.598	0.000
Second Model	Velocity	0.581	4.988	0.000	0.602	58.405	0.000
	Variety	0.279	2.730	0.008			

Note: * Indicates statistical significance at the level of significance of 0.05

The regression analysis's findings indicate the variables' order of entry in the regression model, which illustrates how the big data has affected the fundamental characteristics of accounting information quality. Velocity ranked first and explains 53.2% of the variance in big data. When variety was added on to the second model, this has increased to 60.2%. In addition, all of the independent variables are statistically significant (>0.05) except for the big data dimension volume.

Table 8: Results of the Main Hypotheses Test H4

Dependent Variable	Independent Variable	Coefficient Table (First Model)			Coefficient Table (Second Model)		
		B	T	Sig t*	B	T	Sig t*
Big data	Volume	0.215	4.002	0.000	0.262	5.424	0.000
	Variety	0.410	6.621	0.000	0.272	4.483	0.000
	Velocity	0.181	3.151	0.002	0.045	0.797	0.427
	Investment decision making				0.259	5.304	0.000
	R^2	0.773			0.825		
	Δ R2	0.773			0.052		
	Δ F	109.136			112.017		
	Sig Δ F	0.000			0.000		

Note: * Indicates statistical significance at the level of significance of 0.05

The results of a hierarchical regression using two models are displayed in the above table. As per 1st model, it reflects the statistically significant effect of big data on the quality of accounting information in the absence of moderating factor investment decision-making (Sig ΔF = 0.000 which is less than 0.05) and the value of R^2 = 0.773 which indicates that big data components explain 77.3% of the variance in quality of accounting information.

As per 2nd model, it reflects the statistically significant effect of big data on the quality of accounting information in the presence of moderating factor investment decision-making (Sig ΔF = 0.000 which is less than 0.05) and the value of R^2 = 0.825 which indicates that big data components explain 82.5% of the variance in quality of accounting information.

According to the above, investment decision-making improves the impact of big data in terms of its components (volume, variety, velocity) on the quality of accounting information. Investment decision-making that makes use of big data

components yields a more complete, varied, and timely dataset, which improves the quality of accounting information. Better decision-making, more precision, and a more strategic approach to investing result from this, which eventually boosts financial performance and gives businesses a competitive edge.

6 Conclusion

The purpose of this study was to determine whether big data might have a statistically significant effect on the quality of accounting information in the presence of investment decision making as the moderating variable. The primary qualities of the accounting information are much improved by the big data. Therefore, in order for this information to be useful in making decisions and accurately portray the financial operations, these reports need to have two main qualities: relevance and truthful depiction. The improvement of the accounting information's quality is greatly impacted by big data. This means that a set of improving features, namely comparability, verifiability, understandability, and timeliness, must be included in these reports. Big data, which is reflected in the primary or enhancing aspects of the accounting information, has an impact on the investment decisions made by the readers of the financial reports.

7 Recommendation

Based on the study's findings, the following recommendations are made:
Directing the financial report preparers to be concerned with supplying the big data-affected qualitative features of the accounting information because they optimize the quality of these reports and assist in making decisions about forecasting economic events and creating plans. Considering big data to be one of the most significant sources of information that investors and debtors rely on when making decisions, we are concerned about fostering a culture of awareness among investors regarding the significance of the data it contains in financial reports. Investing in cutting-edge platforms for data analytics that can manage the amount, diversity, and velocity of big data is advised. AI-powered analytics tools and cloud-based solutions fall under this category. Accordingly, Financial reports will be accurate and based on the most recent data available attributable to these systems' capacity to process and analyze data in real time. Provide accounting and financial professionals training programs to help them become proficient in advanced analytics tool usage, data interpretation, and big data analytics. As a result, skilled workers will be more capable of using Big Data to provide accurate and pertinent financial reports, which will enhance the decision-making process as a whole. To guarantee compliance, match Big Data processes with national and international regulatory requirements. Adherence to regulatory guidelines will

bolster the veracity and trustworthiness of financial statements, hence bolstering accurate portrayal.

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