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# Evaluating the impact of Big Data on Financial Reporting Quality in Pakistan's Banking Sector

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***Abstract*:** Realizing that financial reporting information is valuable for stakeholders, including lenders, investors, and regulators in decision-making. In this case the study aims to evaluate the impact of big data on financial reporting quality of banks in Pakistan. The empirical analysis focuses on big data's three dimensions, namely volume, velocity, and variety, on financial reporting quality dimensions: relevance, faithful representation, understandability and comparability. The study employs a cross-sectional research design. The data were collected from 240 employees from banks operating in Pakistan. So that we can obtain their perception on the effects of big data attributes that include volume, velocity and variety on financial reporting quality. Structural equation modelling (SEM) to analyse data in turn, the analysis confirmed that all the three attributes of big data: volume, velocity and variety have positive and significant impact on financial reporting quality. Therefore, the banking institutions in Pakistan need to incorporate big data analytics in their financial reporting for the factual, eliminating information lopsidedness, and for better decisions.

**Keywords:** Big data, Financial reporting quality**,** SEM, Banking sector

## 1. Introduction

In the present era where information is critical, financial reporting and the use of big data cannot be underrated. When making financial decision of a certain specific company which include credit decisions, investment decisions such as lending and decisions involving compliance with regulations some financial information is necessary for the stakeholders, including lenders, investors and or regulators (Dechow & Schrand, 2010). In other words, financial reporting quality is a relative measure that captures the degree to which financial data portrays the company's cash flow position the financial performance as well as the overall health of the firm (Bai, Tang, & Zheng, 2023).

Hsu and Yang (2022) suggested while doing the study on the ways of improving the features of the global reporting of financial are ways that are supervised and came up with an approach to improvement. To increase the financial reporting quality, accounting professionals must be able to study and evaluate the tendencies in the development of accounting standards. Also the regulations obtainable in an organisation locally as well as internationally, including GAAP and IFRS as noted by (Wahlen, Baginski, & Bradshaw, 2018).

However, there is an increasing amount of structured and unstructured data that is collected from different sources ranging from financial transactions, social network and customer relations among others, accounting has in the

recent past experienced a drastic transformation (Faccia, Cavaliere, Petratos, & Mosteanu, 2022). It is impossible to handle and analyse this data with traditional practices due to its high speed, heterogeneity, and sophistication (Alrashidi, Almutairi, & Zraqat, 2022). Sihombing, Narsa, and Harymawan (2023) opined that big data is capable of improving risk assessment, fraud prevention, financial analysis and operations.

With the help of many sophisticated algorithms and data mining techniques, which are possible to apply in the accountancy processes, the accountants could analyse the many large sets of data and get important insights for obtaining more suitable and judicious financial reports (Xie, 2022). However, Nissim (2022) stated the advantages of big data present challenges since accountants are now in charge of data security and privacy besides respecting the legal requirements, GDPR, in the handling of sensitive financial information.

In the case of Pakistan banking industry, the incorporation of big data in financial reporting processes is one of the most advantageous as well as challenging activities. Nevertheless, compared to the other nations, the sector has not actively incorporated with big data technology although its posses the range of opportunities that it can offer such as improved risk analysis, fraud detection, and enhanced financial quantification (Zhang, 2017). Among many, the lenders, investors, and regulators are some of the major stakeholders who rely on the financial reports of the company to make good decisions this due to financial reports' reliability.

Nevertheless, when there is a lot of data and it is also divergent, then data management and evaluation become tough due to a large number of records of transactions, interaction with customers, and trends in the market. Issues with the data such as quality, divulging, and merging can pose a risk to the reliability of financial reports (Nawaz et al., 2024). For enhancing the soundness of financial reporting in Pakistan's banking industry, there is a need to understand how big data is feasible to integrate into the process of financial reporting and to address the associated problems.

Many studies have been conducted to examine the benefits and challenges of applying big data into the accounting process and financial reporting, there is a paucity of literature concerning developing countries including Pakistan. Hsu and Yang (2022), Wahlen et al. (2018) and Sihombing et al. (2023) studies of big data techniques, for the most part, have targeted developed countries with advanced technology and dedicated big data environments. Besides, the implantation and usage of such technologies have not been researched much in context of Pakistani banking even though its direct advantages have been acknowledged, such as the enhancement of financial analysis and risk management by applying big data.

Although there have been various publications on big data management, the subject of Pakistan's specific issues regarding data integration, data quality, and legal and regulatory framework is insufficient. This study aims to fill this gap by discussing how big data could enhance the quality of financial reporting of banking institutions in Pakistan, the prospects and challenges linked to its adoption and how data quality and system timeliness could be enhanced as well as the general recommendations for an enhancement of the quality of reporting.

## 2. Literature Review

### 2.1 Big Data

Knowledge is the cornerstone of the rational action that is applied in order to increase effectiveness and efficiency of the business, primarily, its business performance and financial performance. Systems theory consider data to be the foundation of information because data is subjected to processes such as filtering, sorting, and analysis that produces results that are comprehensible and experiential (Sun, 2023). The feature that defines the contemporary environment of corporate work is big data. As Sihombing et al. (2023) suggested that, big data is an immense and complex body of systematically and non-systematically collected structured and unstructured data for which traditional approaches to deal with data are not effective.

According to Hasan, Popp, and Oláh (2020), big data is an information that is immense, intricate, also evolving to a point that it cannot be handled in reasonable time by traditional tools, manpower and systems. Xie (2022) suggested that the term "big data", should be understood as the set of new technologies and solutions that provides an ability to find, acquire and/or analyse vast amounts of various data. Big data is the amalgamation of huge quantities of data which can be gathered from social media platforms, sensors, point of sale terminals, and much more. According to Ghasemaghaei and Calic (2020) big data as the volume, velocity, and variety of information asset that require innovative and cost-effective manner of handling to enhance insight and effectiveness of decisions making.

### 2.2 Financial Reporting Quality

The effectiveness of financial statements is evident through the level to which the financial statements present the

company's performance, cash flows and financial position. As pointed out by Muttakin, Mihret, and Lemma (2020), it means the reliability and credibility of the financial figures presented in the company's balance sheets and statements that is related with several shareholders. IASB defines financial reporting quality as the extent with which the financial statements depict the economic reality and present the relevant information which is required by users in order to make economic decisions (Chen & Gong, 2019).

Moreover, the Financial Accounting Standards Board (FASB) describes it as the reliability, completeness, and the information that an organization discloses in its financial statements (Bratton, 2007). These ideas demonstrate roles of the financial statements in presenting the economic certainties of a business, facilitating the decision-making process and reassuring the users of the financial statements. Abed, Hussin, and Haddad (2022) confirms that the reliability of financial reports is anchored on four elements on which people depending on the reports for decision-making. Relevance can be defined as the accounting data's ability to assist users in their decision-making by aiding them in their forecasting, checking previous assumptions, or providing feedback.

In its proper usage, financial data presents the events and transactions that the numbers are said to reflect when they are presented honestly. Thus, there is a stipulative definition of faithful representation as the end-result of the process of representation which is total, unbiased, and accurate. It also includes the extent of distinctiveness as far as financial data's clear textual/numerical replica or portrayal that a person with minimal awareness of business and economic operations can easily recognize it at understandability Eleimat, Ebbini, and Aryan (2023). The qualitative characteristic known as comparability also helps one distinguish and be in a position to comprehend the differences and similarities within many sets of financial data.

### 2.3 Big Data and Financial Reporting Quality

Big data contributes to the expansion of the additional informational sources through an increase in the number of analytical skills and the rate and accuracy of the financial reports. A case of Arabia for the year 2019, Younis (2020) further elucidated that organizations encounter abundant challenges while carrying out data, big data can be seen as a key driver to the high competitiveness of the enterprises where big data analytics creates high quality. as well as offering reports of accounting information and information that enable the rationalization of decisions. To improve the credibility of the reports and expert decision by providing professionalism (Saleh, Ayoush, & Afifa, 2022). In addition, Zraqat (2020) aimed to investigate the relationship between big data and the quality of financial reporting with business intelligence. the study established the influence of big data usage on the improvement of financial reporting quality since the leverage of business intelligence can be used to boost the use of big data in the enhancement of the quality of financial reporting.

There is a way in which big data can be looked at towards establishing its link with the quality of financial reports through its three dimensions defined as 3Vs that includes Variety Volume, and Velocity. In regards variety, the fact that the number of data sources increases, the credibility to the data thereby enhancing the quality of information relayed in financial reports and rung. The usage of business intelligence technologies has risen immensely leading to the emergence of frequency of data and this is because of the variety of the sources that are involved in providing the said data (Zraqat, 2020). Hence, there is increased necessity to a system that ensures an increased speed of the analysis of big data in real time or the speed of obtaining solutions in swift time.

Regarding the volume, the size of amounts that are collected by it as a result of their speed, as well as the variety of types. The resources that are available to the organization do not have to contain all of them as a condition provided someone in the organization can get hold of them, as; due to the availability of numerous data resources, small data has transformed into large data. Ramesh (2015) concerning the quality of the financial reports, given the fact that it becomes very challenging for companies to cope with massive volumes of data. To compile this list, it is necessary to return to business intelligence approaches.

Methods for handling the data to present them systematized and in a comprehensible form as for the concept of velocity, it refers to the growth and/or generation rates of data or the rate of data mining. This is the time taken from the point in time at which these data arrive to the point in time at which the decision is made in basis of tickets to people to increase their resilience and, in turn, the resilience of society in general (De Mauro, Greco, & Grimaldi, 2015). Speed is an important component of decision making based on this information because the confidentiality, quantity of data that decision- makers can obtain, novelty of these data paths, and the possibility to analyse them is an also crucial criteria when it comes to increasing business velocity and supporting actions in real-time and making decisions during the day.

According to Herath and Albarqi (2017), quality entails the attributes that the information that is reported by

accountants must possess to be useful for purpose of producing the necessary reports for its users such as relevance, faithful representation, understandability, and comparability which is mainly in relation to information that makes a changes in the decision making of the reports. Accounting information quality can therefore be defined as the characteristics that are found in accounting numbers in the financial statements and reports. These help in assessing the quality of the information in accounting, the decisions made from it and in the prognosis of a company's financial failure.

The effect of big data analytics is beneficial for the facility as it helps in the prognosis of the future profits as well as risks, helps in the prognosis of the future growth opportunities, helps in prognosticating the future sales, facilitates the prognosis of the financial frauds, facilitates (Xie, 2022). The early identification of weaknesses and strength, enhances the capacity for evaluation of financial statements, and hence, enhances the capacity for the grading the performance of the firm. Big data provides a better experience for auditors according to the studies of (Adrian & Linnenluecke, 2018; Singh, 2020) in accounting and auditing, especially in the tax process, it evaluates tax codes and reduces the rate of fraud, and monitoring of budget and tax expenses carry out efficiently. Rezaee, Dorestani, and Aliabadi (2018), stressed the importance of big data for the field of accounting and auditing as the management of the organization can use big data, time series analysis to forecast net incomes, share prices, fair values, risk and frauds with the financial statements.

The use of big data analysis results in the generation of finished financial reports, enhancement of risk prediction for the facility and stakeholders'' consensus as well as revelation of other information in the financial reports that minimizes information skewedness and enhances the veracity of financial reports (Al-Htaybat & von Alberti-Alhtaybat, 2017). In its naivety, big data analytics delivers information that makes the data in accounts reportable and less susceptible to bias and distortion and has high means faithful representation as it also engages in analysis of data of internal communication such as talks, meetings and calls that usual GAAP cannot capture. An elaboration of critical items, different from financial reports, which includes creating extra materiality with videos and images by firms can improve the quality of an investment concept. This means that in accordance with the findings of Kaya and Akbulut (2018) suggests that big data analytics has implications to accounting and the reliability of financial reports.

As the information above derives, the companies perform the key measures of big data analytics, namely the procedures used by other businesses to maintain and enhance their competitive positions. Mavens working in the area of the preparation of financial reports are attempting to overcome issues related to the use and command of emerging technologies and their applications as well as expanding the competency and proficiency of the sector in aspects of big data analysis. Researchers Griffin and Wright (2015) suggested, big data analytics is now a concern and is a future revenue stream for accountants and share holders and it studied that there is no modification in the fundamental premise of accounting and financial reporting, but definitely a change in the method or ways how the accounting data is recorded, stored and processed. It also discovered that big data significantly affects not only the precision but also the orientation of the forthcoming financial reporting and the emergence and standard-setting for accounting particularly on subjects fundamental to revelation of 'off-balance-sheet assets and fair value accounting.

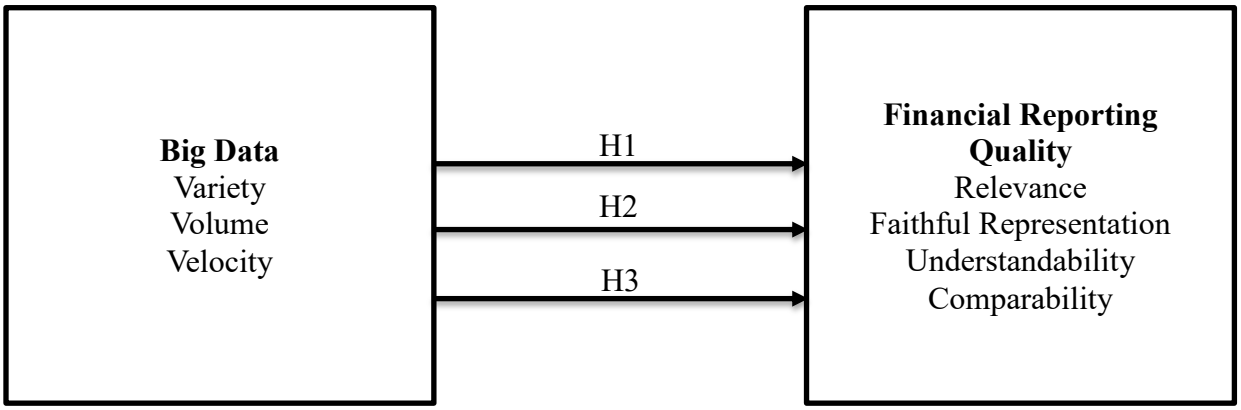
Due to big data analytics, there is an enhancement in the analysis of the substance of the content within the financial reports which presents unclear information; an enhancement of the pictorial presentation of the company; an improvement in the analysis made on other information provided in other reports such as discussions, phone calls and videos; an improvement in the appreciation of the strategic performance of the company; an improvement in the appreciation of the different operations of the company hence an improvement in the appreciation of success or failure of the company. More hidden accurate knowledge about the company could be achieved; the future success or failure of the company could therefore be evaluated (Ochuba, Amoo, & Okafor, 2024).

According to Lattabi (2018), big data is described as the future and advanced features of the information industry and the value creation towards the development of the economy with a view to enhancing growth, improving decision-making processes, raising productivity, as well as overhauling the quality of products. Abbott, Parker, Peters, and Presley (2019) research has provided similar evidence of how data analytics can help in the escalation of the intellectual value of financial information on portfolio's allocation.

Moreover, big data improves the degree of comparability of the enterprise's sectors, the company's comparison for over one financial period, comparison with similar sectors of other facilities because of the large amount of obtained information, which is provided by means of big data analysis. According to Faye (2016), Halen Crofts a content advisor of Koplan Company stated, the manufacturing division as well as retrial and services sectors each appreciate the ability to mine the opportunity of enhancing operating efficiency, analyse the risk and uncover the

advantages & weaknesses through big data.

**H1:** Variety influences financial reporting quality.
**H2:** Volume influences financial reporting quality.
**H3:** Velocity influences financial reporting quality.




## 3. Methodology

The advancement in technology and the integration and implementation of big data have greatly affected several industries, especially the banking sector. They established that big data integration is still in its infancy in Pakistan but has become an important determinant affecting the quality of financial reports. The research will therefore attempt to establish the effect that big data has on the quality of financial reporting in Pakistan's banking industry in order to determine how handling large amounts of information can improve the quality of reporting on financial statements.

To obtain the objective the study employed a cross-sectional research design to examine the impact of big data on financial reporting quality. Electronic questionnaires were used to collect primary data from the employees of all banks in Pakistan. The study adopted the questionnaire and were distributed via e-mail through the HR departments of all banks in Pakistan. Originally the targeted sample size was 300, but some of the questionnaires were returned with invalid responses. Thus, the study was conducted with 240 valid feedbacks.

The study used Structural equation modelling (SEM) to analyse data. 5-point Likert scale questionnaire were used to determine the impact of big data in financial reporting quality. To attain this, thirty-six items were used in the measurement of both the exogenous and endogenous variables. Regarding the assessment of the exogenous construct, namely big data, thirteen components were employed as outlined by (Ghasemaghaei & Calic, 2020). This construct was based on three key dimensions of big data: known by the three Vs of big data: volume, velocity, and variety.

According to the Hossam, Al-Ramahi, and Ali (2022) study, the endogenous construct was financial reporting quality, which included twenty-five items. The questionnaire adapts four dimensions of financial reporting quality: they are: faithful representation, understandability, comparability, and relevance. Although these dimensions were taken into consideration, the study focused on examining the collective impact of big data dimensions on financial reporting quality.

## 4. Results

### 4.1 Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) is the statistical approach applied to estimate the validity and reliability of big data and financial reporting quality constructs. In fact, CFA is a type of structural equation modeling commonly used when investigators possess a whenever that theory or previous understanding of the constructs 'immersing' in the model and their interrelations (Brown, 2015). Furthermore, it defines if the relationships indicated by the findings correspond to what they expected in theory. This is illustrated in Table 1 which partly sheds light into the validity and reliability of measurement model that is related to the use of big data and the financial reporting quality.

Table 1: Measurement Model Assessment

| Constructs | Items | Loadings | Alpha | rho_A | CR | AVE |
|---|---|---|---|---|---|---|
| Volume | Vol1 | 0.658 | 0.79 | 0.821 | 0.863 | 0.613 |
| | Vol2 | 0.823 | | | | |
| | Vol3 | 0.872 | | | | |
| | Vol4 | 0.763 | | | | |
| Velocity | Vel1 | 0.793 | 0.857 | 0.871 | 0.902 | 0.698 |
| | Vel2 | 0.812 | | | | |
| | Vel3 | 0.879 | | | | |
| | Vel4 | 0.854 | | | | |
| Variety | Var1 | 0.900 | 0.874 | 0.881 | 0.922 | 0.798 |
| | Var2 | 0.911 | | | | |
| | Var3 | 0.869 | | | | |
| Relevance | Rel1 | 0.617 | 0.793 | 0.806 | 0.858 | 0.55 |
| | Rel2 | 0.690 | | | | |
| | Rel3 | 0.812 | | | | |
| | Rel4 | 0.768 | | | | |
| | Rel5 | 0.804 | | | | |
| Faithful Represent | FR1 | 0.814 | 0.91 | 0.91 | 0.933 | 0.735 |
| | FR2 | 0.854 | | | | |
| | FR3 | 0.882 | | | | |
| | FR4 | 0.874 | | | | |
| | FR5 | 0.862 | | | | |
| Understandability | Und1 | 0.837 | 0.916 | 0.917 | 0.937 | 0.749 |
| | Und2 | 0.864 | | | | |
| | Und3 | 0.883 | | | | |
| | Und4 | 0.892 | | | | |
| | Und5 | 0.850 | 0.901 | 0.903 | 0.931 | 0.77 |
| Comparability | Com1 | 0.882 | | | | |
| | Com2 | 0.889 | | | | |
| | Com3 | 0.861 | | | | |
| | Com4 | 0.897 | | | | |
| | Com5 | 0.838 | | | | |

The table 1 is the summary of confirmatory factor analysis result: from the above given table, it was observed that the volume, velocity and variety had the alpha Cronbach of 0. 79, 0. 857, 0. 874 respectively. However, Cronbach alpha of relevance, faithful representation, understandability and comparability was 0. 793, 0. 91, 0. 916 and 0. 901 respectively. In this regard, it is concluded that Cronbach alpha values of all variables have reliability because all Cronbach alpha values are greater than 0. 7. Secondly, the factor loadings' values are above 0. 5, as well as AVE above 0. 5, which indicates that the constructs have convergent validity. Lastly, it is resulted that the value of CR for the variables which are greater than 0. 8 for all the constructs indicates data reliability.

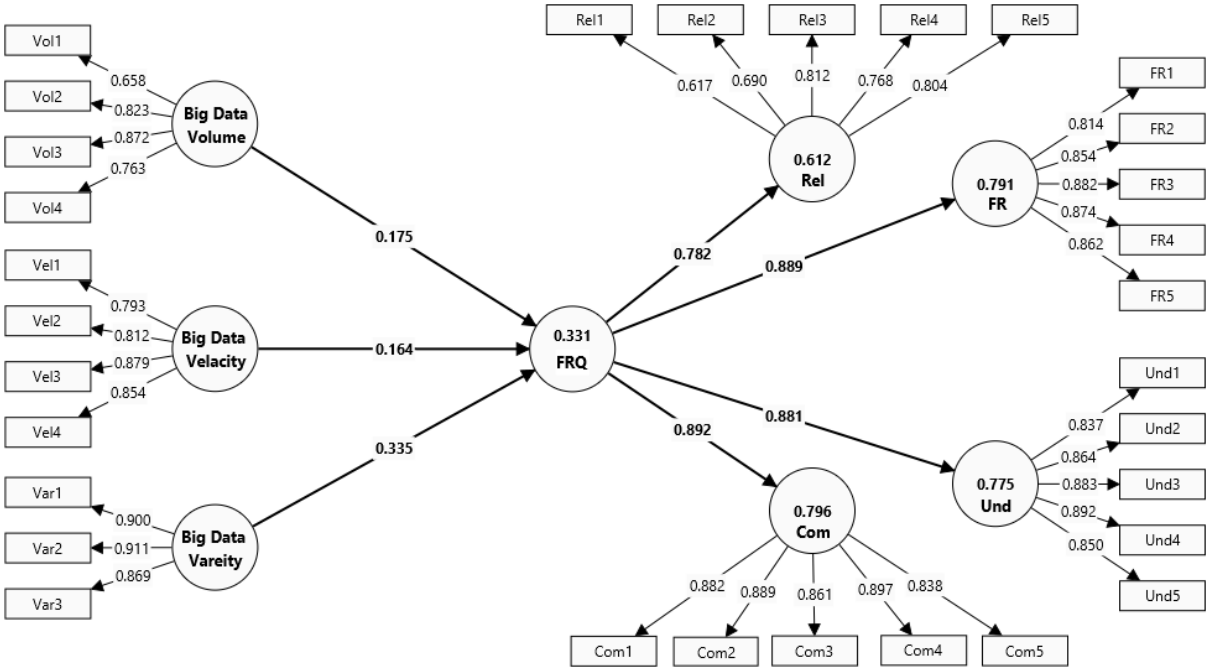
### 4.2 Discriminant Validity

Table 2: HTML

| | Vol | Vel | Var | Rel | FR | Und | Com |
|---|---|---|---|---|---|---|---|
| Vol | | | | | | | |
| Vel | 0.548 | | | | | | |
| Var | 0.668 | 0.717 | | | | | |
| Rel | 0.595 | 0.684 | 0.697 | | | | |
| FR | 0.389 | 0.497 | 0.504 | 0.84 | | | |

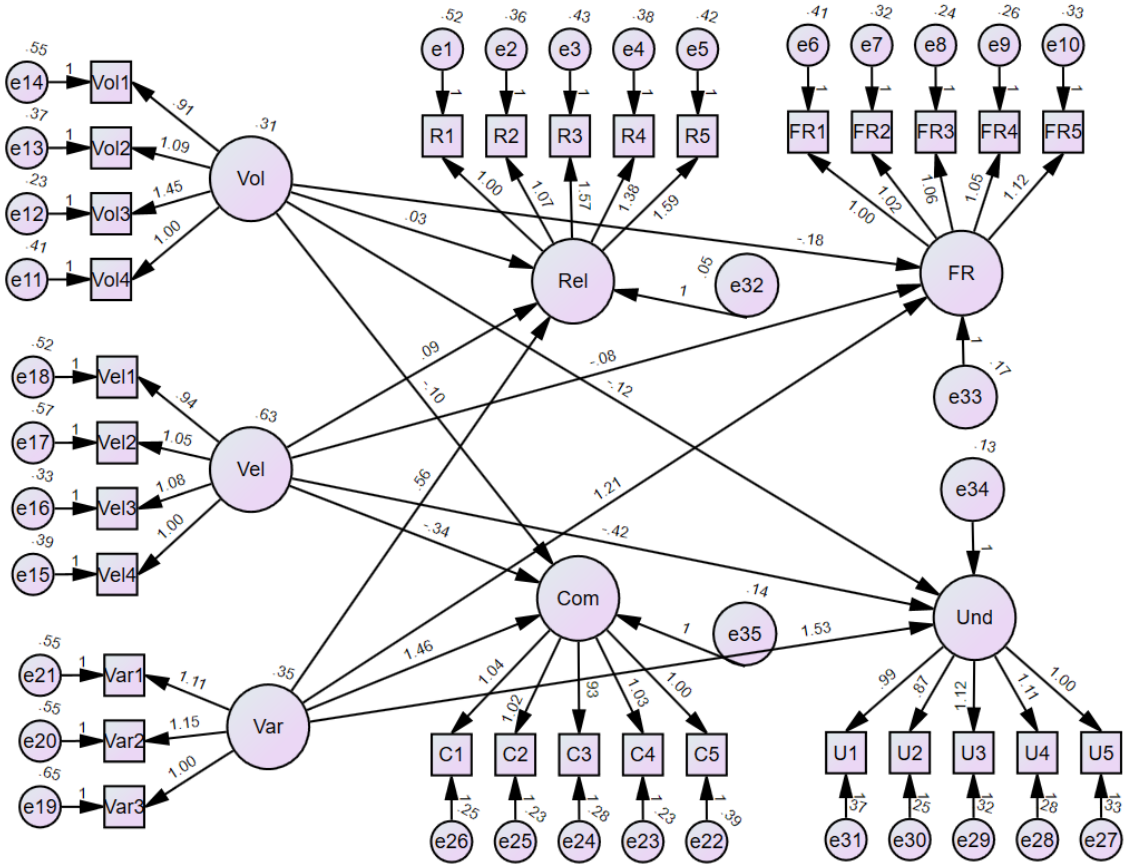
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Und | 0.389 | 0.309 | 0.478 | 0.609 | 0.735 | | |
| Com | 0.45 | 0.372 | 0.489 | 0.652 | 0.742 | 0.855 | |

When establishing the relationship among the variables it is important to test discriminant validity so as to ensure that the variables measure something other than the other variable. Based on the outcomes, the study applied the HTMT to test the discriminant validity. The values allocated to HTMT for all the variables are below 0. 85, proving that all of the variables are different from one another (Henseler, Ringle, & Sarstedt, 2015). Hence, discriminant validity is confirmed as the HTMT of all the variables is below the value of 0. 85.




## 4.3 Hypothesis testing

To test the various hypotheses concerning the outcome that big data on financial reporting quality, structural equation modeling, SEM, was applied. This technique enables the hypotheses to be formed and put to test about the straight and indirect relationships between the latent variables (Hair, Risher, Sarstedt, & Ringle, 2019). Moreover, they present distinct fit measures to compare how well the imposed model suits the encountered data. Structural representation of the study is further described with the help of Figure 2 given below.




**CMIN/ DF = 2.843** **CFI = .845** **TLI = .829** **RMSEA = .088**

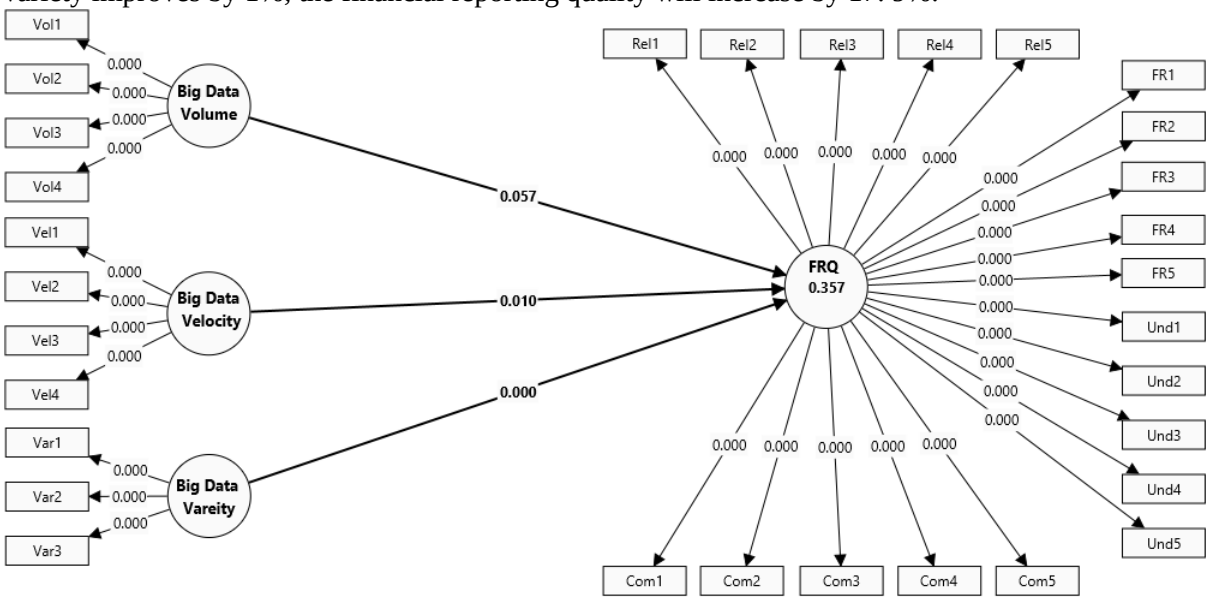
The model employed to evaluate the impact of big data on financial reporting quality. As you can observe in the results illustrated in Figure 2 the CMIN/DF of the chi-squared test was 2.843 which is lower than the maximum permissible value has been accepted as 3. Indices such as the comparative fit index (CFI) was .845 as was the Tucker-Lewis index (TLI) the lower threshold of the index to be .829. Furthermore, the analysis of results showed that the ''Root Mean Square Error of Approximation'', or RMSEA, was .088, hence, it did not go beyond the desired value of 0.08.

Table 3: Path Coefficients

| | Standardized Estimates | | | Significance | Explained Variance | Collinearity |
|---|---|---|---|---|---|---|
| **Hypotheses** | **β** | **SD** | **t value** | **p-value** | **$R^2$** | **VIF** |
| Vol → FRQ | 0.339 | 0.097 | 3.495 | 0.057 | 0.357 | 1.493 |
| Vel → FRQ | 0.183 | 0.071 | 2.587 | 0.010 | 0.357 | 1.712 |
| Var → FRQ | 0.179 | 0.094 | 1.9 | 0.000 | 0.357 | 1.998 |

The data regarding the path coefficients, explained variance, and collinearity statistics are given in the table 3. Based on the results the R Square of volume, velocity, variety and financial reporting quality is .357 implying that the variation is explained 35. 7% by the independent variables of volume, velocity, variety. In addition, using the VIF, it can be observed that all of the given variables' VIF values are below 3; thus, multicollinearity is not present in the data. Importantly, the table also indicates the level of path coefficients that underlines the connection between the variables, the analysis showed that volume had positive and significant relationship with financial reporting quality (β=0. 339, t=3. 495, p=0. 057); it affirmed that 1% change in volume will cause 33. 9% change in financial reporting quality. Velocity, and financial reporting quality (β=0. 183, t=2. 587, p=0. 010), suggested that

amount of change in velocity is 1% then corresponding change in financial reporting quality is 18. 3%. However, the relationship between variety and financial reporting quality (β=0. 179, t=1. 9, p=0. 000), to show that when variety improves by 1%, the financial reporting quality will increase by 17. 9%.




## 4.4 Discussion

The study reveals the Significant positive association among big data and financial reporting quality in Pakistan's banking industry. More particularly, it is ascertained that regarding the three Vs of big data, namely volume, velocity, and variety, they have significant positive impacts on the financial reporting quality. This is in line with the previous research of how big data contributes to positive change within the context of improving the precision, speed, and depth of the financial information that is prepared and reported (Ghasemaghaei & Calic, 2020). The positive effect of data volume on financial reporting quality means that the quantity of datasets increases the comprehensiveness of the firms' financial activities' description at the level that allows for a higher quality of financial reports, facilitating better decision-making by stakeholders. Furthermore, there is the rate of processing whereby the quicker data processing enhances improved generation of financial reports that meet quality standards in terms of assuming current information.

Also, the richness and depth of the sources of data improves the quality of the financial reports since different form of data including the transactional data, social media interactions and market trends among others give a middle to end view of the health of the company. The results imply that it is high time for the Pakistani banking industry to leverage big data solutions to the maximum extent possible. Nevertheless, the sector has still not realised its full potential of big data mainly because of the Barriers like data quality, integration complications, and requirement of proper data governance (Nazir, Butt, & Sabah, 2024). However, the study finds that it is possible to transform these challenges into solutions and thus improve the quality of financial reporting and the relevance and reliability of financial information for the users. Thus, the application of big data in financial institutions can help the organizations to increase the quality and relevance of their financial reports, which will in turn benefit the end-users of the reports, including investors, regulators, and management teams.

However, Big data can be implemented in the banks of Pakistan through the incorporation of innovations data operation into the system to facilitate the provision of financial reports. This involves leveraging the three key dimensions of big data: The three V's including volume, velocity, and variety of the financial data is improved to provide reliable reports and results. First, banks should install proper big data structures and use complicated methods of data analysis to process big amounts of data from different sources such as transactions, customer activity on social networks, and market statistics.

Further, the efficiency of using real-time procedure will make it possible to produce financial reports faster to make information actual. Employees should be trained in data analysis, as well as attempts should be made to promote the usage of big data at the organization. Furthermore, there are critical issues surrounding data quality, integration as well as governance that need to be solved through the development of well-coordinated data management policies and the need to adhere to the current data management regulations. In this way, it is possible to facilitate

the enhancement of risk evaluation, fraud identification and financial analysis in banks making the financial reporting more accurate, timely and effective for stakeholders, such as investors, regulators and managers.

## 5. Conclusion

The study found the volume, velocity and variety of big data positively impact the financial reporting quality in the banking sector of Pakistan. In relation to its stakeholders, where increased volume, velocity, and variety of data can lead to higher quality, reliable, and relevant financial reports that are essential for decision making. However, the use of big data in the financial reporting becomes an important issue that has some of responsibility issues such as data management, security, and compliance. These problems can be solved though the directed investments and training of employees by properly managing big data to maximize benefits in banking institutions. Hence, the study has aforementioned limitations including the type of big data, which is limited to the Pakistani banking sector hence restricting generalization to other sectors or other regions as well; the cross-sectional study design which may not establish causal association between big data usage and financial reporting quality.

Therefore, studies that will be conducted in future should use longitudinal research design to effectively explain causal relationships concerning the effects of big data on financial reporting quality as well as to analyse effects in the long run. Furthermore, cross-sectional studies across various industries and geographical areas can help in gaining better insights of the influences of the big data on quality of financial reports. Future work should also investigate on the possibility of applying other analytical methods in improving the quality of financial reports; these include machine learning and artificial intelligence. However, there is a gap in the literature in regards to the analysis of the adequacy and efficiency of the existing legal acts in regulating the mentioned problems related to big data application in financial reporting.

## References


Abbott, L. J., Parker, S., Peters, G. F., & Presley, T. (2019). Control self-assessment and costs of compliance with Sarbanes-Oxley section 404. *31*(3), 5-24.

Abed, I. A., Hussin, N., & Haddad. (2022). The moderating impact of the audit committee on creative accounting determination and financial reporting quality in Iraqi commercial banks. *10*(4), 77.

Adrian, & Linnenluecke. (2018). Big data techniques in auditing research and practice: Current trends and future opportunities. *40*(1), 102-115.

Al-Htaybat, K., & von Alberti-Alhtaybat, L. (2017). Big Data and corporate reporting: impacts and paradoxes. *30*(4), 850-873.

Alrashidi, M., Almutairi, A., & Zraqat, O. (2022). The impact of big data analytics on audit procedures: Evidence from the Middle East. *9*(2), 93-102.

Bai, J., Tang, X., & Zheng, Y. (2023). Serving the truth: Do directors with media background improve financial reporting quality? *, 85*, 102452.

Bratton, W. W. (2007). Private standards, public governance: A new look at the Financial Accounting Standards Board. *48*, 5.

Brown, T. (2015). *Confirmatory factor analysis for applied research*: Guilford publications.

Chen, A., & Gong, J. J. (2019). Accounting comparability, financial reporting quality, and the pricing of accruals. *Advances in accounting*, *45*, 100415.

De Mauro, A., Greco, M., & Grimaldi, M. (2015). *What is big data? A consensual definition and a review of key research topics.* Paper presented at the AIP conference proceedings.

Dechow, W., & Schrand, C. (2010). Understanding earnings quality: A review of the proxies, their determinants and their consequences. *50*(2-3), 344-401.

Eleimat, D., Ebbini, M., & Aryan. (2023). The effect of big data on financial reporting quality. *7*(4), 1775-1780.

Faccia, A., Cavaliere, L. P. L., Petratos, P., & Mosteanu, N. R. (2022). *Unstructured over structured, big data analytics and applications in accounting and management.* Paper presented at the Proceedings of the 2022 6th International Conference on Cloud and Big Data Computing.

Faye, C. (2016). Big data: Its power and perils, the big data effect. In.

Ghasemaghaei, M., & Calic, G. (2020). Assessing the impact of big data on firm innovation performance: Big data is not always better data. *108*, 147-162.

Griffin, P. A., & Wright, A. M. (2015). Commentaries on Big Data's importance for accounting and auditing. *29*(2), 377-379.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *31*(1), 2-24.

Hasan, M. M., Popp, J., & Oláh, J. (2020). Current landscape and influence of big data on finance. *Journal of Big Data, 7*(1), 21.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the academy of marketing science, 43*(1), 115-135.

Herath, S. K., & Albarqi, N. (2017). Financial reporting quality: A literature review. *2*(2), 1-14.

Hossam, Al-Ramahi, N. M., & Ali, M. A. (2022). The moderating impact of the audit committee on creative accounting determination and financial reporting quality in Iraqi commercial banks. *10*(4), 77.

Hsu, Y.-L., & Yang, Y.-C. (2022). Corporate governance and financial reporting quality during the COVID-19 pandemic. *J Finance Research Letters, 47*, 102778.

Kaya, I., & Akbulut, D. H. (2018). Big data analytics in financial reporting and accounting. *7*(1), 256-259.

Lattabi, M. (2018). Big Data and the information industry. *6*(4), 56-84.

Muttakin, M. B., Mihret, D., & Lemma. (2020). Integrated reporting, financial reporting quality and cost of debt. *28*(3), 517-534.

Nawaz, H., Maqsood, M., Ghafoor, A. H., Ali, S., Maqsood, A., & Maqsood, A. (2024). Huawei Pakistan Providing Cloud Solutions for Banking Industry: A Data Driven Study. *The Asian Bulletin of Big Data Management, 4*(1), 89-107.

Nazir, M., Butt, Z., & Sabah. (2024). Machine learning-based business risk analysis for big data: a case study of Pakistan. *14*(1), 23-41.

Nissim, D. (2022). Big data, accounting information, and valuation. *8*, 69-85.

Ochuba, N. A., Amoo, O. O., & Okafor. (2024). Strategies for leveraging big data and analytics for business development: a comprehensive review across sectors. *5*(3), 562-575.

Ramesh, B. (2015). Big data architecture. 29-59.

Rezaee, Z., Dorestani, A., & Aliabadi, S. (2018). Application of time series analyses in big data: practical, research, and education implications. *15*(1), 183-197.

Saleh, Y., Ayoush, M., & Afifa. (2022). Big Data analytics and financial reporting quality: qualitative evidence from Canada. (ahead-of-print).

Sihombing, R. P., Narsa, I. M., & Harymawan, I. (2023). Big data analytics and auditor judgment: an experimental study. *Accounting Research Journal, 36*(2/3), 201-216.

Singh. (2020). Effect of Big Data on Accounting and Financial Services. In.

Sun, H. (2023). Construction of integration path of management accounting and financial accounting based on big data analysis. *272*, 170321.

Wahlen, J. M., Baginski, S. P., & Bradshaw, M. T. (2018). *Financial reporting, financial statement analysis, and valuation: A strategic perspective*: Cengage learning.

Xie. (2022). Role of big data in the accounting profession. *2*(01), 324-326.

Younis, N. M. M. (2020). The impact of big data analytics on improving financial reporting quality. *4*(03).

Zhang, W. (2017). Machine learning approaches to predicting company bankruptcy. *Journal of Financial Risk Management, 6*(04), 364.

Zraqat, O. (2020). The moderating role of business intelligence in the impact of big data on financial reports quality in Jordanian telecom companies. *14*(2), 71-85.