

## Developing an Accounting Disclosure Framework in a Big Data Environment: An Applied Study in the Egyptian Banks

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### Abstract:

The research aims to suggest a model for accounting disclosure in a big data environment that improves the quality of accounting information of Egyptian banks. The researchers depend on the use of the content analysis method to analyze quarterly financial reports, the reports of the Board of Directors of banks operating in Egypt from 1/1/2019 to 31/12/2020. The E-VIEWS program have been used to test the study's assumptions that reflect the relationship between disclosure development in a big data environment.

Additionally, Qualitative Characteristics of Useful Financial Information. The results of the study indicate a significant digit's correlation between the development of accounting disclosure in a big data environment expressed by the total disclosure model in a big data environment and relevance, as well as a non-significant digits and a direct correlation between the form disclosure index in a big data environment and relevance. It also indicates significant digits and a direct correlation between (the public content disclosure index, the financial content disclosure index, and between the disclosure index through the use of networks and social media) in a big data environment and relevance. It also indicates a significant digit's relationship between the development of accounting disclosure in a big data environment expressed by the total disclosure model the form disclosure index in a big data environment and faithful representation. It also indicates significant digits and the expletive relationship between the public content disclosure index, as well as a significant digits and direct correlation between the financial disclosure index and faithful representation and specifies significant digits and direct correlation between the disclosure index through the use of networks and social media in the context of a big data environment and faithful representation.

**Keywords:** Accounting Disclosure - Big Data - Qualitative Characteristics of Useful Financial Information

## **I. Methodological Framework:**

### **1/1 Introduction:**

Big data has been a matter of great interest over the past years, as big data affects both financial accounting, management accounting, financial reporting practices, audit reporting support, as well as investor and management decisions, and big data improves the transparency of disclosures and measurements, will bring THE UNITED States GAAP closer together, and international financial reporting values, and will contribute to modifying non-GAAP assumptions. For objectivity in assessing fair value accounting, big data must be seen as a trademark-like corporate asset. Due to multiple big data foundations, it can provide numerous opportunities to create added value along the way from strategic to operational, together with cost reduction, enhanced customer relationships, risk management, and operational competence, and permits big data to examine customer behavior, knowledge of purchasing forms and product development to meet customer needs (Hartmann, Zaki, Feldmann, & Neely, 2016).

Accounting is a dynamic profession prejudiced and influenced by economic, social, technological, and other variables, which means that it is not big data that drives accounting to change, but the reorganization and perception of accounting in a big data environment that drives accounting standards makers to develop standards in the information environment in the future. The big data environment has become a certainty that is recognized and interacted with by individuals, institutions, and governments around the world, requiring interaction with that fact by various stakeholders, especially researchers. To identify problems and obstacles, develop possible solutions, determine rules of dealing on the one hand, and recommend various areas of development according to the interests of researchers in countless fields.

The accounting thought should examine the accounting dimensions of these big data in terms of recognition and accounting measurement standards and in terms of supply rules and disclosure, and the appropriateness of current accounting standards and regulations in regulating accounting practices under big data, henceforth the impetus for this research.

### **1/2 Research problem:**

There is no argument among accountants about the need to keep pace with the financial reporting system for sequential technological developments, and among the developments that have compulsory themselves in recent years on accounting thought and practice and require their own attention, the subject of accounting disclosure appears in a big data environment, given its nature and characteristics that make its financial reporting scheme one of the encounters facing accounting thought and practice, due to the insufficiency of studies and research tackling with accounting problems of big data in general, and the absence of a framework of detailed standards and models for accounting disclosure in a big data environment in the Egyptian environment in particular, these banks may display and disclose their information using different criteria and models, which may result in inadequate accounting disclosure of this information, difficulty in making comparisons between banks, as well as asymmetry of information between management and third parties using accounting information.

It can be said that disclosure in the environment of big data for banks operating in the Egyptian environment is still deficient to meet the accounting information needs of users of financial reports, where the information content of disclosure in the environment of big data agonizes from several shortcomings, including general, vagueness, shortness, preeminence, and transparency.

The problem with research is the lack of specific rules or models for accounting disclosure in a big data environment, causing asymmetry of information between management and stakeholders, as these banks do not provide sufficient information in a big data environment in their annual financial reports.

1. What are the perception and characteristics of big data and its implications for the financial reporting system of banks operating in the Egyptian environment?
2. What are accounting disclosure problems in a big data environment and how can they be addressed?
3. What accounting issues are connected with accounting disclosure in a big data environment in the banking sector? And the extent and relevance of accounting disclosure in the context of the big data environment in banks operating in the Egyptian environment?
4. What is the relationship between the planned accounting disclosure model in a big data environment and Qualitative Characteristics of Useful Financial Information published in the annual reports of banks operating in the Egyptian environment?

### **1/3 Research Objectives:**

The main objective of this research is to propose a model for the development of accounting disclosure in a big data environment in light of the requirements of the financial report of banks operating in the Egyptian environment, which has been divided into the following sub-objectives:

1. Declaration of the concept and characteristics of big data and its implications for the financial reporting system of banks operating in the Egyptian environment.
2. Identify accounting disclosure problems in a big data environment in the published reports of banks operating in the Egyptian environment.
3. Analysis of accounting issues and regulations connected to accounting disclosure in a big data environment in the published financial reports of banks operating in the Egyptian environment.
4. Propose a model for the development of accounting disclosure in a big data environment that can be relied upon to issue an Egyptian Standard or guidance for accounting disclosure in a big data environment.
5. Identify the relationship between the components of the proposed model for the development of accounting disclosure in a big data environment and Qualitative Characteristics of Useful Financial Information of banks operating in the Egyptian environment.

### **1/4 Research hypotheses:**

This research is based on the verification of the following two hypotheses:

**The first hypothesis:** There is a relationship between the development of accounting disclosure in the context of the big data environment and the suitability of banks operating in the Egyptian environment.

**The second hypothesis:** There is a relationship between the development of accounting disclosure in the context of the big data environment and the faithful representation of banks operating in the Egyptian environment.

#### **1/5 Research Importance:**

The importance of this research is to help in the development of disclosure systems and practices in Egyptian banks through proposing a model for the development of accounting disclosure in a big data environment contributes to addressing accounting disclosure problems.

#### **1/6 Research limits:**

- 1- This research is limited to the progress of accounting disclosure in a big data environment in commercial banks operating in the Egyptian environment and therefore will not address the problems of recognition and accounting measurement in a big data environment, or technical facets in a big data environment only to serve the objectives of the research.
- 2- The sample of the applied study was limited to the number of (11) banks listed on the Egyptian Stock Exchange, which met the requirements of the study.

#### **1/7 Research Methodology:**

The researchers relied on the inductive method by studying the conceivable focused scientific references, accounting versions, and regulations on the concept and characteristics of big data and its implications for the financial report system and the problems and importance of accounting disclosure in light of the requirements of the financial report of banks. The innovative approach was also used to develop the proposed model for the development of accounting disclosure in a big data environment, and to verify the compatibility of theory with reality in the accounting practice environment, the applied study method of the proposed model was used to develop accounting disclosure in a big data environment in enhancing the quality of accounting information of banks operating in the Egyptian environment.

#### **1/8 Research Structure:**

Based on the research problem and its objectives it has been divided as follows:

- Theoretical framework and literature review,
- The proposed model for the development of accounting disclosure in a big data environment in banks operating in the Egyptian environment,
- The applied study of the proposed model for the development of accounting disclosure in a big data environment.
- Summary, findings, recommendations, and future research proposals.

## **II. Theoretical framework and literature review:**

This section deals with an analysis of previous studies on the topic of research and identifying the research gap, as well as the conceptual framework of big data and its implications for the financial reporting system of banks. In addition to accounting disclosure

problems in the context of big data environment in the published reports of banks operating in the Egyptian environment as follows:

### **2/1 literature review**

(Warren, Moffitt, & Byrnes, 2015) have indicated that big data will have increasingly important accounting allegations, as visual, audio, and textual information provided through big data improves management accounting practices, financial accounting, and financial reporting. Accordingly, enhancing transparency, and the rationality of decision-making, big data can help change accounting standards, helping the accounting profession continue to provide useful information in real-time.

In their study (Al-Htaybat & Von Alberti-Alhtaybat, 2017) have showed that big data can offer more exact approximations, big data will fundamentally change the way businesses report, and the use of big data helps convert periodic corporate reports to real-time reports, thus having a positive impact on investor confidence in accounting practices, and the impact on changing corporate disclosure methodology in terms of disclosure timing and accuracy. The study stressed the importance of the need to share future research to link accounting standards with big data analyses and to determine whether standards need to change.

The study has specified that insubstantial assets have a positive impact on the market value of companies, but that the submission of big data will usually not be well included in the balance sheet, mainly those related to information technology, that the accurateness of the valuation of money and insubstantial assets is important for investors and creditors alike, and that the application of big data will lead to the emergence of many items that were not formerly planned due to the increased ability to gather sufficient data to evaluate those items.

In their study (Arnaboldi, Azzone., & Sidirova, 2017) have identified the relationship between technological development and accounting function, social media, big data, and took advantage of this in accounting. Attain outstanding performance and take advantage of big data in accounting.

In his study (Al-Maghazi, 2018) has aimed to prove that the impact of big data on the objectivity of financial reports, their contribution to the transformation of financial reports from periodic to real-time reports and suggested the importance of companies applying big data technologies, the necessity to develop corporate performance assessment models, financial reporting standards, and the formation of new measuring tools in line with the application of big data. The study indicated that companies encounter many challenges posed by big data and can be overcome using business intelligence techniques, serial database solutions to be able to collect and analyze data in real-time, and produce information used by management in making appropriate decisions and the study (Shehata, 2018) aimed to present a proposed model reflecting the use of big data analytics to improve the quality of financial reports and their reflection on the strategic performance evaluation index of companies listed on the Egyptian stock market, and reached The study to a set of results, the most important of which is that big data promotes increasing the operational efficiency of companies and risk management as a security by studying the documentation of data and the extent of its incorporation and the requirements of control on it and building predictive models and the

result of the field study found a correlation between the dimensions of big data and improving the quality of financial reports.

In his study (Youssef, 2018) has aimed to assess the importance of accounting development in a big data environment using a comprehensive overall assessment, focusing on three elements: (progress of accounting standards, progress of curricula and courses, and the most important skills that should be included in these courses, and the progress of the characteristics of the superiority of accounting information), and the results found the importance of big data in general accounting and considered it very important from the point of view of Experts in the use of big data, and financial reporting authors. The results were at the level of each evaluation element: 60% for the importance of big data for the development of accounting standards, 23% for the importance of big data for curriculum and course development, and 17% for Qualitative Characteristics of Useful Financial Information. In light of the results of the previous study, the researchers recommend that accounting standards makers identify the importance of big data when issuing or developing accounting standards, developing curricula and courses for accounting division students, taking advantage of CIB's experience to disseminate the experience to numerous Egyptian banks, conducting more studies on the effect of big data on accounting, and conducting more studies that control the quality of data that accounting should include in a big data environment.

In his study (Shura, 2019) has addressed the role of IT governance in the analysis of big data and its impact on improving the quality of information in the cloud computing environment where the study aimed to test the part of IT governance in the investigation of big data and its influence on refining the quality of information in the cloud computing environment, and the study found several challenges facing organizations when analyzing big data including: High recruitment costs for experienced professionals, rapid flow of big data affecting rationalization of decision-making, difficulty in transferring, storing and processing big data, difficulty understanding and clarity when viewing users – and institutions achieve many advantages when analyzing big data, the researcher recommended the need to teach big data in university education curricula, workshops and training courses for researchers and academics and inform them of the importance of big data and how to analyze, process, manage and use it in dissimilar fields.

In his study (Al-Bassoon, 2019) has verified the relationship between big data disclosure with corporate financial reports, the quality of accounting information and the financial performance of companies listed on the Egyptian Stock Exchange, and the extent to which this relationship affects the quality of accounting information and the financial performance of companies.

In his study (Younis, 2019) has showed the impact of big data analysis on the quality of accounting information in the Saudi environment, conducted a field study, and the survey form was in the form of four questions, and the researcher measured each variable using sub-questions, these variables are the advantages of big data analysis, the challenges faced by business organizations when analyzing big data, the extent to which big data affects the parts of accountants and the accounting profession in the future, and the impact of big data analysis on the quality of accounting information.

In their study (Hussainey, Basuony, Mohamed, & Elragal, 2020) have examined a new vision on online business disclosure that will help stakeholders interested in corporate reporting, with results showing that corporate disclosure practices are not based on a single determinant; High leverage to better disclose online. A range of elements, including two aspects of disclosure, corporate and social media sites, have been used to verify online corporate disclosure practices among the best-listed companies in Australia, Canada, the United Kingdom, and the United States of America using big data analytics. The study provided a model for the disclosure of big data, which the researcher relied on upon in the applied study with some changes to suit the Egyptian environment.

Following the literature review, a number of findings can be abstracted as follows:

1. Even though accounting disclosure in a big data environment is important in providing information to users of banks' financial reports, it has not received adequate attention from accounting thinking, all efforts are mere attempts to demonstrate the importance of big data in improving the quality of accounting information.
2. These studies agreed on the need to analyze big data and its impact on the quality of accounting information.
3. Some of these studies were aimed at providing a model to measure the level of disclosure in the big data environment (Hussainey, Basuony, Mohamed, & Elragal, 2020), while others were aimed at exploring the impact of big data on accounting in general and the quality of financial reports in particular.
4. These studies focused on the influence of big data on accounting, without focusing on accounting disclosure in the context of the big data environment of banks operating in the Egyptian environment, where there is no study aimed at accounting disclosure in a big data environment within the limits of the information obtainable to researchers.
5. Lacking the practical aspect of these studies, most studies have been concerned with the theoretical narrative of the concept, importance, and impact of big data on the accounting profession, and the lack of interest in these studies is due to the applied aspect of the novelty of the subject on the one hand and the difficulty of application on the other.
6. Efforts continue weak in addressing the subject of big data, its potential impacts, and its importance to financial reporting equipment, users, and professional organizations interested in the accounting profession.
7. Although big data has benefited technology companies, those interested in quantitative methods, and others in various fields, access to this information is still limited in accounting, with no clear rules for taking benefit of that data.
8. Working in a big data environment raises some accounting problems connected with accounting disclosure that relate to the information to be disclosed, the form and location of the disclosure, and is disclosure at the core of the financial statements or through complementary clarifications? Does accounting disclosure in a big data environment affect the Qualitative Characteristics of Useful Financial Information?

This research is therefore to help bond the research gap on disclosure in the context of the huge data environment of banks operating in the Egyptian environment.

### **2/3 The nature of big data and its implications for the financial reporting system of commercial banks:**

Big data is the raw form of any knowledge content, and it is a store of value if it turns into information, as initiated by big technology companies and social media companies, where they make significant gains from the sale of their customers' data and browsing habits, to be demoralized in behavioral advertising, and teach America's Big Data Committee said in a report that big data can change governments and society itself (Youssef, 2018).

#### **2/3/1 Big Data Definition:**

There are lots of definitions for big data, and here are the most important ones as follows:

- McKinsey Global Institute defined it in May 2011as: "A data set that exceeds and exceeds the capacity of traditional database programs to capture, store, manage, and analyze that data." The educational data is available and analyzed.
- IDC defined it as a new generation of technologies and infrastructure designed to extract value from very big and diverse data volumes (Anagnostopoulos et al., 2016).
- The International Standards Organization (ISO, 2017) demarcated them as data sets with single characteristics such as size, speed, diversity, contrast, credibility, data validity, which cannot be efficiently processed using traditional techniques.
- Gartner (Gartner, 2018) has defined it as a big, high-speed, high-diversity information asset that requires innovative forms of information processing, cost-effectiveness, to enhance corporate visions in decision-making, which are the most common tariffs.
- (Wang, Qiong, & Wang, 2020) study in 2020 defined it as big amounts of complex, variable, high-speed data, demanding advanced technologies to manage, analyze, store, and require innovative forms of data processing because traditional programs cannot handle them.

It is clear to us that there are many definitions of big data, but the researchers believe that all of these pricelists have agreed that big data is a term used to define big and complex data, which are difficult to store and process using obtainable database management tools or traditional data processing applications.

#### **2/3/2 The characteristics of big data and its implications for the financial reporting system of banks:**

Big data has several characteristics that can cause many challenges to the financial reporting system in banks, most notably:

Big data has several characteristics that need to be called huge data, with Gartner identifying three big data features: volume, velocity, variety, and Vs. English, IBM added credibility (Veracity), and SAS Software added two change features. Variability, Complexity, Oracle added value as an additional feature of big data (Value) and added (Lee, 2017) decay property.

- 1- Volume: Indicates the generation of a big amount of data, requiring enormous storage space.
- 2- Velocity: Indicates the speed of data flow and growth, requiring real-time data processing and processing.

- 3- Variety indicates that data vary in several forms: structured or structured data, unregulated or unstructured data, and semi-structured or semi-structured data.
- 4- Credibility(Veracity): States the lack of confidence characteristic in data, the quality of data obtained from different sources can vary greatly, affecting the accuracy of the analysis, indicating the accuracy of the ability of big data technologies to eliminate data biases.
- 5- Variability: Data changes continually and that data can be accomplished.
- 6- Complexity: Since data are heterogeneous, given the multiplicity of sources of access, it is difficult to store and process that data.
- 7- Value: The focal objective of collecting so much data is to create value, and the value of big data can be measured by how valuable the information the company derives from that data.
- 8- Decay: Which designates a decrease in the value of data over time (Lee, 2017).

The researchers wonder whether these eight characteristics must be combined to call data the term big data. Or is the accessibility of a number adequate to call it big data.

According to the researchers, the availability of the three features identified is sufficient to call the data a huge data term, because the rest of the assets are non-essential and sub-core characteristics from the researchers' point of view.

**The impact of these characteristics on accounting in general and on the financial reporting system of banks, in particular, can be clarified as follows:**

Affects big data properties on accounting, where the big data environment contributes to use Data processing software; on trends Diverse patterns of information, companies usually use various big data processing programs to increase interest in their operations, as well as conducting studies on Effectiveness And the efficiency of those operations. The error form requires on Securities are regularly monitoring this huge and complex area. by using big data tools, illegal activity can be detected more quickly through commercial records and what's available. From data Other, as Complaints possible illegal conduct, and tightening on accounting deceptions, insider trading, and suitable data alteration to information for further analysis of its operations (Youssef, 2018).

It is clear that big data can meaningfully develop accounting standards, as accounting standards were first issued during the period of high costs of obtaining and analyzing data, and in the environment of big data, (John & Titera, 2015) suggested that accounting standards deal with database content rather than disclosure rules so that accounting standards can meet users' financial information needs and requirements, as accounting standards in the big data age will give users accountability larger in exchange for their information needs, (Youssef, 2018).

**These characteristics will result in several challenges to the financial reporting system in banks, including:**

- a) Changes towards the instantaneous processing of accounting data, real-time financial reporting, and the implementation of the online financial report. (KPMG, 2017).
- b) Changes in the timing of the needs of users of financial reports for accounting information; (Al-Htaybat & Von Alberti-Alhtaybat, 2017)

- c) Digital technology helps reduce the burden of financial reporting on accountants, so accountants can emphasize more creative, non-routine and un regulate tasks that require more thinking and additional skills (PWC, 2018)
- d) Technology helps collect and store huge amounts of data, and it may be very difficult to keep it safe. Just one breach can mean enormous amounts of private information reaching the hands of hackers, intrants from banks, or financial technology companies.
- e) Bank risks are no longer limited to traditional financial and operational risks but have extended to big data risks, the most important of which are cyber-risk and outsourcing risks, due to breaches and hacking of smart systems.
- f) Big data depends on the conversion of all transactions into a digital information body and thus the physical nature of the providing of banking services and therefore banks can create value for their services and make profits without any physical presence in a particular area, which imposes limitations on the financial report system on accounting divisions and departments. As well as outsourcing the financial report to other countries. (OECD, 2020)
- g) With the dependence of big data on insubstantial assets, it is well known that the perception of insubstantial assets generated internally is not severely defined in accounting practice and cannot be appropriately taken into account when accounting recognition due to the difficulty of exactly approximating its value, requiring accounting disclosure. (OECD, 2020)
- h) Digital banking relies on the use of big data, principally personal data from customers and the active participation of users on social media, and the procedure of collecting and using data attitudes tests to the financial reporting system in commercial banks, data collected without further analysis and processing, without storage, the development of new platforms for use, etc. are not originally creating value. Their use is a value creation procedure. (OECD, 2020).

Data and big data analytics will affect the financial reporting system in several ways, for example by influencing how financial reports are prepared and reviewed, as big data reduces financial reporting time. In addition, big data has a significant impact on the quality of accounting information, as it improves accounting measurement results and makes accounting information better understood. (Bhimani & Willcocks, 2014)

Conversely, the accessibility of big data and the ease of granting credit using digital technology may inspire banks to expand credit grants, creating a kind of credit bubble, and increasing credit risk.

### **2/3/3 Accounting disclosure problems in the big data environment in the banking sector:**

Accounting disclosure in the context of the big data environment in banks operating in the Egyptian environment increases several accounting problems, the most important of which are:

- Is disclosure in a big data environment in financial reports, published sustainability reports for banks, or both?

- What big data information should be disclosed to meet users' accounting information needs?
- How can results be stated in a big data environment and its economic implications in the available reports of commercial banks?
- What is the right time for disclosure in a big data environment and its economic implications?

In short, the concept and characteristics of the big data environment promotion several encounters and problems for the financial report system in commercial banks operating in the Egyptian environment, some of which are related to recognition and accounting measurement, some of which are related to the presentation and accounting disclosure, which indicates the rationality of the hypothesis of the first research, which states that big data has distinguishing characteristics requiring new rules for accounting disclosure, which highlights the importance of reaching a proposed model for the development of accounting disclosure in the context of the big data environment of banks operating in Egyptian environment, and that's what the next section covers.

### **III. Proposed model for the development of accounting disclosure in a big data environment in light of the requirements of the financial report of commercial banks:**

#### **3/1 Introduction:**

Users of published financial reports need suitable and reliable information as well as comparability to help them assess the Bank's sustainability and growth in light of the competitive challenges resulting from financial technology innovations and are useful to them in understanding the Bank's ability to manage the risks of digital transformation, as well as need this information when assessing the Bank's efforts to achieve financial inclusion, so this section addresses the relationship of accounting disclosure in an environment Big data requirements of the financial report of commercial banks, also presents the proposed model for the progress of accounting disclosure in the light of the big data environment and the impact of this model in refining the quality of accounting information contained in the published financial reports of banks operating in the Egyptian environment as follows:

#### **3/2 Accounting disclosure in a big data environment in light of the requirements of the financial report of commercial banks:**

The financial report of commercial banks governs several requirements of Egyptian accounting standards, sustainability accounting standards, standards of the Global Reporting Initiative, and the rules and instructions of the Central Bank of Egypt, whose relationships with accounting disclosure are examined in the context of the big data environment as follows:

##### **3/2/1 Accounting disclosure in a big data environment in light of Egyptian accounting standards:**

Egyptian accounting standards established the objectives of published financial reports by providing information to current and prospective investors, providing information on the financial performance of the facility, and reducing the cost of invested capital, where it was stated in the framework of the preparation and presentation of Egyptian financial statements

that economic decisions made by users of financial statements need an assessment of the ability of the enterprise to generate cash and what is in its judgment and the timing and degree of authorization of these generations, and the users are better able to evaluate the ability of the enterprise to If they are provided with information focused on the financial position, performance and changes in the financial position of the facility, the financial reports should contain supplementary clarifications, tables, and other information. For example, it can contain additional information appropriate to users' needs about balance sheet items and income statements. It can also contain clarifications on the risks and doubts affecting the facility, and any resources and obligations not recognized in the budget (Investment, 2019).

Rendering to Egyptian Accounting Standard No. (1), complementary statements of financial statements provide additional data, mainly those that have not been presented at the core of balance sheet, income statements, statement of change in property rights, or cash flow statement, but may be necessary to understand any of these statements, and big data contain important characteristics that must be disclosed to assess the amounts and timings of future cash currents, the inevitability of this and the nature and extent of their diverse rights and obligations.

The Egyptian accounting Standard (47) contains more detailed requirements for revealing quantitative and qualitative information about bank risks in general, especially financial risks, the most important of which is credit risks to eliminate asymmetry of information, to be disclosed in financial reports, and includes metadata about the objectives, policies, and methods of managing these risks to provide information that enables users of financial reports to assess risks affecting the bank's performance.

The above is clear to the researchers, although there are no specific rules for accounting disclosure in the context of the big data environment in Egyptian accounting standards, it is part of the mandatory disclosure of risks, due to its importance in providing information that enables users of financial reports to assess the risk of big data on the bank's performance.

### **3/2/2 Accounting disclosure in a big data environment in light of sustainability accounting standards.**

The conceptual framework of the Sustainable Accounting Standards Board (SASB) defined the main objective of sustainability reporting to measure the performance of the company or organization in accomplishing the Maintainable Development Goals, as well as revealing this presentation to all stakeholder parties, and containing all the positive and negative contributions of the company in the field of economic, environmental and social performance to decrease risks and confirm the steadiness of the company or organization's future business and identify the risks and prospects surrounding it. SASB Conceptual (SASB, 2017)

In 2014, the Board allotted sustainability accounting standards classified according to economic sectors, counting Sustainability Accounting Standard No. (FNO101) for commercial banks to guide commercial bank disclosures on four areas of sustainability: financial inclusion and capacity, customer privacy and data security, legal and regulatory environmental management, systemic risk management, and the measures, risks, and

opportunities associated with their work and operations to provide information that helps understand and know its difficulties. Bank in Sustainable Development (SASB101, 2014).

One of the most important things that come with this Standard and has to do with accounting disclosure in the big data environment is the second area, which requires banks to disclose the risks of data security and customer privacy and the mechanisms and strategies used to manage these risks and protect the rights of customers, where the protection of personal data of customers is a primary responsibility of the bank, and banks that fail to protect this data are at risk of losing customer confidence and thus low revenues.

By examining and evaluating this Standard in the light of accounting disclosure requirements in a big data environment, researchers can see that the Standard was limited to disclosing data risks and information security only to other big data risks.

### **3/2/3 Accounting disclosure in a big data environment in light of the rules and instructions of the Central Bank of Egypt.**

The Central Bank of Egypt has recognized rules governing the provision of digital banking services such as regulations governing the provision of mobile payment services, rules governing prepaid card payment services within the Arab Republic of Egypt, rules leading the use of quick response technology, the criteria for issuing and accepting contactless electronic payments within the Arab Republic of Egypt, as well as necessitating banks to comply with Egyptian accounting standards and international financial report standards, and to establish a conventional of rules for the disclosure of financial risks and Operational to provide a framework for disclosure to participants in the banking market and improves the equivalence feature and allows the provision of capital adequacy information, acquaintance to risk, risk assessments, and major business transactions.

### **3/2/4 Accounting disclosure in a big data environment in light of the global reporting initiative standards.**

Banks operating in the Egyptian environment are keen to disclose sustainability practices by issuing their annual sustainability reports by the standards set by the Global Reporting Initiative (GRI) to highlight their exertions in enhancing their economic, social, environmental, governance, ethical, and risk performance, as they issued their sustainability report beginning in 2015, and have since tried to develop sustainability practices at all levels by launching initiatives and combining a culture of sustainability by integrating sustainability practices. Environmental, social, and governance principles in all its operational activities, this disclosure is made optional, so now there are no mandatory models for influential the sustainability of banks operating in the Egyptian environment.

The researchers settle that there are no specific rules or models for accounting disclosure in the context of the big data environment in the financial report requirements of commercial banks operating in the Egyptian environment, which necessitates their progress by the nature of big data.

### **3/3 The proposed model for the development of accounting disclosure in a big data environment:**

The researchers aim to offer a model for the progress of accounting disclosure of big data, which replicates on refining the quality of accounting information in the light of the

model, and the model is flexible to accept any changes in the external environment. The researchers relied on the model provided by the study (Hussainey, Basuony, Mohamed, & Elragal, 2020) with some adjustments to suit the Egyptian environment, where the model consists of a set of elements that include two aspects of online disclosure, namely corporate and social media sites. Transparency in the financial market reduces the ambiguity of many trading operations. Building an accounting disclosure model in a big data environment will strengthen the four essential values resulting from corporate governance to transparency - accountability - liability determination - shareholder rights protection, as well as contribute to supporting ethical behavior within companies, and enhancing disclosure resulting from compliance with the disclosure standards of the proposed model in a big data environment represents a positive step towards equal opportunities in financial markets among small and big investors to stabilize markets and reduce financial crises. (Hussainey, Basuony, Mohamed, & Elragal, 2020).

The main objective of formulating the planned model for the development of accounting disclosure in a big data environment is to increase the quality of accounting information, and to determine the accessibility of Fundamental Qualitative Characteristics, the researchers will rely on the model presented by the study (Ahmed, 2019), and according to this model the quality of the financial reports is available through the relevance of the information contained in it and sincere expression and the availability of both is verified through some of the variables to be referred to.

The following is a presentation of the model's items and measurement methods:

**Table 1 Model items** (Hussainey, Basuony, Mohamed, & Elragal, 2020)

No	Items
<b>Format Disclosure Index (FDI) Items from 1 – 12 (12 Items)</b>	
1	Search engine
2	Multilingual site
3	Site map
4	Graphic image
5	Video
6	Help section
7	E-mail
8	Postal address
9	Telephone number
10	Annual report in PDF English
11	One clicks IR (Information retrieval)
12	Financial data in the processable format
<b>General Content Disclosure Index (GCDI) Items from 13 - 25 (13 Items)</b>	
13	Background/History
14	Date of establishment
15	Products or services

No	Items
16	Corporate vision
17	Future strategy
18	Forward-looking information
19	Chairman details
20	List of senior managers
21	Board of directors' information
22	Corporate governance information
23	IR/information (Information retrieval)
24	CEO duality
25	Auditor information
<b>Financial Content Disclosure Index (FCDI) Items from 26 - 37 (12 Items)</b>	
26	Brief highlights/summary of a financial performance
27	Financial ratios
28	Annual report past years
29	Annual report current year
30	Financial statements past years
31	Financial statements current year
32	Financial statements note past years
33	Financial statements note the current year
34	Auditor report past years
35	Auditor report current years
36	Accounting policies current year
37	Share price information
<b>Total-Content Disclosure Index (TCDI) Items from 13 - 37 (25 Items)</b>	
<b>Internet Disclosure Index (TWDI) Items from 1 - 37 (37 Items)</b>	
<b>Social Networks&amp; Media Disclosure Index (SNMDI) Items from 38 -42 (5 Items)</b>	
38	Use of Social Networks and social media
39	Use of Social Networks and social media general information
40	Use of Social Networks and social media financial information
41	Social Networks and social media annual report
42	Use of Mobile application
<b>Total Disclosure Index (TDI) Items from 1 - 42 (42 Items)</b>	

**Table 2 Measuring model items** (Hussainey, Basuony, Mohamed, & Elragal, 2020)

Symbol	Variable Definition	Measurement
<b>The method of measuring variables</b>		
<b>FDI</b>	Shape disclosure index (format)	Actual grades granted divided by possible maximum (12 items)
<b>GCDI</b>	Public Disclosure Index	Actual grades granted divided by possible maximum (13 bands)
<b>FCDI</b>	Financial Disclosure Index	Actual grades granted divided by possible maximum (12 bands)
<b>TCDI</b>	Total world disclosure index	Actual grades granted divided by possible maximum (25 items)
<b>TWDI</b>	Total disclosure index on the website	Actual grades granted divided by possible maximum (37 bands)
<b>SNMDI</b>	Disclosure index for the use of networks and social networking sites	Actual grades granted divided by possible maximum (5 items)
<b>TDI</b>	Total disclosure index	Actual grades granted divided by possible maximum (42 bands)

The proposed disclosure model contains 42 items and signifies two characteristics of online disclosure: corporate sites and social networking sites, which the researchers will rely on when conducting the practical study.

### **3/4 The impact of the proposed accounting disclosure model in a big data environment on the quality of accounting information of commercial banks:**

If accounting disclosure in the context of the big data environment in Egyptian commercial banks is a response to the variables of the accounting practice environment in commercial banks resultant from the digital alteration, the information provided by the proposed model has a direct impact on the quality of accounting information in the financial reports published to commercial banks:

1. The accounting information provided by the proposed model replicates the economic influence of big data, helping to enhance stakeholders' empathy with the nature of big data.
2. The proposed model offers leadership for accounting disclosure in a big data environment, by this means reducing innovative accounting practices and their negative impact on the quality of financial reports.
3. The proposed model provides information investors necessity about the potential risk impacts under the big data environment on the bank's activity results and financial position, thereby affecting the returns and value of the stock.

It is clear from the above that the proposed model provides information that contributes to refining the level of financial reports by achieving the Fundamental Qualitative Characteristics, as it helps to accomplish reliability because the information provided by the proposed model is supportable, faithful in presentation and impartiality, and the information

provided by the model is suitable to the requirements of users of financial reports because it affects their economic verdicts.

#### IV. Applied Study:

##### 4/1 Introduction:

This section aims to specify the method of applied study that the researchers will follow to answer the questions of the current study and accomplish its objectives.

##### 4/2 Community and sample study:

The study community is represented in the banking sector, whose shares are traded on the Egyptian Stock Exchange, and the researchers used the comprehensive inventory method of these banks, which grasped thirteen banks by the end of 2020, and the Egyptian Gulf Bank and Arab International Banking Company Bank were excluded because the currency of trading their shares is the U.S. dollar.

The sample was selected by the following conditions:

- Quarterly reports being available from 1 January 2019 to (31/12/2020)
- Quarterly Board reports being available from 1 January 2019 to (31/12/2020)

**Accordingly, the size of the sample of the study in which the previous conditions were met was 11 banks and the number of quarterly reports available was 88 (8 quarters of the year × 11 banks).**

##### 4/3 Study variables:

##### 4/3/1 Accounting disclosure development in a big data environment:

Accounting disclosure in a big data environment signifies the independent variable in the study, and the researchers 2017 on the model provided by basiony, 2017 Mohamed, Elragal & Hussainey, 2020) After making some adjustments to it to suit the variables of the Egyptian environment, which has already been mentioned, where the model contains 4 dimensions and each dimension contains a set of items where it takes the value (1) of the companies that disclose each item and (0) Other

##### 4/3/2 Qualitative Characteristics of Useful Financial Information:

The characteristics of the quality of the variable accounting information in the study, the researchers relied to measure the Qualitative Characteristics of Useful Financial Information on the Fundamental Qualitative Characteristics and this is reliable with the studied conceptual framework for 2018 (Conceptual Framework, 2018) which focused on the importance of both Relevance characteristic and faithful representation as to the Fundamental Qualitative Characteristics, focusing on only two characteristics: Relevance characteristic and faithful representation, as secondary or sub-characteristics are usually not measured because of their vulnerability to their importance to for its rudimentary characteristics.

**Table 3 Introducing study variables and methods of measuring them <sup>1</sup>**

Variable	Measurement method	Data source
<b>Independent variable</b>		
<b>Development of accounting disclosure in a big data environment: measured by (Hussainey Data Disclosure Model, 2020) with disposal</b>		
Figure disclosure model: - Search engine - Multilingual site - Location map - Graphic image - video - Assistance Section - E-mail - Postal address - Phone number - Annual pdf report in English - Annual report in HTML format in English - One-click information retrieval Financial statements in a treatable form	A fictitious variable that takes the value (1) when the bank discloses each item individually and (0) to banks that do not disclose the item, and the form disclosure index is measured by the actual grades granted divided by the probable maximum.	Online banking sites
- Public content disclosure index: - Historical background - Founding date - Products or services - Company Vision - Strategy for the Future - Forward-looking information - President's Details - List of senior managers - Information about the Board of Directors - Corporate governance information - Retrieval of information - CEO duplication - Auditor information	A fictitious variable that takes the value (1) when the bank discloses each item separately and (0) to banks that do not disclose the item. The community content disclosure index is measured by the real grades approved divided by the probable maximum (13).	Online banking sites
- Financial Disclosure Index: - Financial Performance Summary - Financial ratios - Annual report on past years	A fictitious variable that takes the value (1) when the bank releases each item separately and (0) to banks that do not disclose the item, and the financial content disclosure	Online banking sites

<sup>1</sup> source: Preparation of the researchers

<ul style="list-style-type: none"> <li>- Annual report for the current year</li> <li>- Financial statements for past years</li> <li>- Financial statements for the current year</li> <li>- Complementary explanations of financial statements for past years</li> <li>- Complementary explanations of the financial statements for the current year</li> <li>- Auditor's report on past years</li> <li>- Auditor's report for the current year</li> <li>- Accounting policies for the current year</li> <li>- Information about the share price.</li> </ul>	<p>index is measured by the real grades granted divided by the probable maximum.</p>	
<p>Disclosure index through the use of networks and social media:</p> <ul style="list-style-type: none"> <li>- Use YouTube, Facebook, Twitter, and LinkedIn</li> <li>- + Google, Blogs, Flickr, and Slide share</li> <li>- Use of public information in social media networks and media</li> <li>- Use of financial information in social networks and media</li> <li>- Annual report on social media networks</li> <li>- Use phone apps</li> </ul>	<p>A fictitious variable that takes the value (1) when the bank discloses each item separately and (0) to banks that do not disclose the item. The disclosure index is measured through the use of networks and social media by the real grades granted divided by the probable maximum.</p>	<p>Social media and social networking sites</p>
<p>Total disclosure index (Disclosure of form, disclosure of public content, disclosure of financial content, disclosure of the use of networks and means of communication)</p>	<p>The total disclosure index is measured by the actual grades granted divided by the possible maximum.</p>	
<b>Dependent variable</b>		
<b>Fundamental Qualitative Characteristics: measured by Ferdy, 2009 model with disposal</b>		
<p><b>First: Relevance characteristic:</b> The Relevance characteristic is measured by some of the properties that are branched out, and the Relevance characteristic is measured by four items and each item can be evaluated by five points (1-5): as follows:</p>		
<p>1- To what extent do reports</p>	<p>1. There is no information about</p>	<p>Quarterly</p>

<p>provide information on future events or help predict future events?</p>	<p>future events or help to predict them.</p> <ol style="list-style-type: none"> <li>2. Limited disclosure of future information and there is no separate part.</li> <li>3. Disclosure of future information is found in a separate part.</li> <li>4. Broad disclosure of future information in a separate part.</li> <li>5. Comprehensive disclosure of future information that helps in decision-making.</li> </ol>	<p>financial statements and reports and board reports</p>
<p>2- To what extent does the enterprise disclose non-financial information about opportunities and risks?</p>	<ol style="list-style-type: none"> <li>1. There is no disclosure of non-financial information.</li> <li>2. Limited disclosure does not cover digital data on non-financial information related to opportunities and risks and is not useful in predicting future events.</li> <li>3. Detailed non-financial information that does not contain valuable digital data in identifying current opportunities and risks.</li> <li>4. Theoretically detailed non-financial information interpreted in numbers relating to present opportunities and risks</li> <li>5. Full theoretical and figure-interpreted non-financial information that helps deliver other information that is useful in predicting future proceedings.</li> </ol>	
<p>3- To what extent does the enterprise use fair value or historical cost?</p>	<ol style="list-style-type: none"> <li>1. The institution uses the historical cost only for all the items of the financial statements.</li> <li>2. The enterprise uses the historical cost of most items on financial statements.</li> <li>3. The stability of the establishment between the use of historical cost and fair value when evaluating.</li> </ol>	

	<ol style="list-style-type: none"> <li>4. The enterprise uses the fair value of most items on financial statements.</li> <li>5. The enterprise uses fair value only when evaluating items on financial statements.</li> </ol>	
<p>4- To what extent are financial reports providing feedback on the information on preceding and present important events and transactions, which helps users of financial statements correct or change their predictions?</p>	<ol style="list-style-type: none"> <li>1. Financial reports do not offer any feedback on previous transactions and events.</li> <li>2. Feedback is provided only about previous transactions and events.</li> <li>3. Reverse nutrition is provided only about current transactions and events.</li> <li>4. Reverse sustenance helps to understand how events and transactions affect the enterprise.</li> <li>5. Financial reports offer comprehensive feedback and serve to correct or change forecasts.</li> </ol>	
<p><b>Second: Faithful representation:</b> Faithful representation can be measured by four items, and each item can be assessed by five points (1-5) as follows:</p>		
<p>1. To what extent the whole photography (description and digital depiction of the item, and explanation of what digital photography represents) of information of high Materiality was carried out on the monetary lists of the facility?</p>	<ol style="list-style-type: none"> <li>1. A brief description of elements of relative importance is developed without placing them in a distinct part and without explaining what digital photography signifies in financial statements.</li> <li>2. The description of elements of relative importance is developed with digital imaging, without explaining what digital photography signifies.</li> <li>3. Digital selection only of items of relative importance with an explanation of what digital photography represents without describing these elements in a separate part.</li> <li>4. Detailed and digital explanation, with an explanation of what digital</li> </ol>	<p>Quarterly financial statements and reports and board reports</p>

	<p>photography of items of relative importance represents in an accumulated method in the report.</p> <p>5. Detailed and digital explanation, with an explanation of what digital photography of items of relative importance represents in a distinct part of each item.</p>	
<p>2. To what extent has the institution disclosed the financial results related to positive and negative events?</p>	<p>1. Disclosure of positive events is focused only on the ordinary actions of the establishment.</p> <p>2. Negative events are disclosed in a very short and complete margin, with a greater focus on the disclosure of positive events and the normal activities of the company.</p> <p>3. Disclosure of positive events is focused on referring to negative events or reporting the absence of negative events.</p> <p>4. To disclose in a stable method positive events and negative events.</p> <p>5. Disclose in detail the influence of positive events and negative events on financial statements.</p>	
<p>3. What kind of auditor's report concerning financial statements?</p>	<p>1. A report containing a reverse opinion on the financial statements.</p> <p>2. Refraining from expressing opinions.</p> <p>3. A report with a conventional view.</p> <p>4. Unreserved report (clean report).</p> <p>5. A clean report and a robust system of interior control with explanations in numbers.</p>	
<p>4. To what extent does the institution provide information on corporate governance?</p>	<p>1. No corporate governance information is disclosed.</p> <p>2. Limited information on business governance, not found in a separate part.</p> <p>3. Limited information on</p>	

	<p>corporate governance in a separate part.</p> <p>4. Increasing the tendency towards providing corporate governance information in a separate part.</p> <p>5. Disclosure in detail and comprehensive about corporate governance.</p>	
<b>regulatory Ruling variables:</b>		
Company size	It's measured by the usual logarithm of total assets.	Quarterly Financial Statements and Reports
Leverage	Measured by total obligations on the company's total assets	

#### **4/4 Study hypotheses**

Based on the problem and objectives of the study, the study can express the research assignments as follows:

**The first hypothesis:** "there is a relationship between the development of accounting disclosure in a big data environment and the Relevance characteristic of banks listed on the stock market."

**The second hypothesis:** "there is a relationship between the development of accounting disclosure in a big data environment and the faithful representation of banks listed on the stock market."

#### **4/5 Statistical methods used in study assignment tests:**

The researchers used the content analysis method to analyze information received by financial reports and published periodic disclosures, information on bank websites, networks, and social networks, and then developed scores to measure both accounting disclosure in a big data environment (through the model proposed by the researchers), and to measure the Fundamental Qualitative Characteristics (through the model referred to). The data were then entered using the Social Sciences Statistical Package (SPSS) program and statistical analysis was carried out in agreement with the E-VIEWS program to deal with statistical problems resulting from the assessment of the regression models of autocorrelation and heteroskedasticity variation.

**1-** Multiple Regression Analysis includes ordinary Least Square (OLS)

**2-** Tests to detect Standard problems, including:

- Total significant digits test for F-Test regression model
- Selection coefficient and multiple correlation coefficient
- T-Test Independent Variable Significant Digits Test
- Variance Inflation Factor
- Whit test to check the assumption of the stability of errors (homoscedasticity)
- Breusch-Godfrey Serial Link LM Test to check for no Autocorrelation self-link

#### **4/6 Study validity test:**

##### **The first hypothesis:**

The first hypothesis states that "there is a relationship between the development of accounting disclosure in a big data environment and the suitability of banks registered on the stock market."

To test this hypothesis, multiple Regression Analysis was used.

$$Y_1 = \beta_0 + \beta_1 X + \beta_2 Z_1 + \beta_3 Z_2 + e \quad (1)$$

Where:

$Y_1$  is the Dependent variable (Relevance characteristic)

$X$  is an accounting disclosure variable in a big data environment (Overall model of accounting disclosure)

$Z_1$  and  $Z_2$  are the Ruling variables (company size and leverage respectively)

$\beta_0$  is the fixed limit in the regression model

$\beta_1, \beta_2, \beta_3$  are regression transactions.

$e$  is a random error

The following table explains the results of the analysis.

**Table (4) Results of the multiple regression analysis of the relationship between accounting disclosure and Relevance characteristic <sup>2</sup>**

Dependent variable: Relevance characteristic				
Independent variables	Transactions Regression B	Test T T-Test		Contrast inflation coefficient VIF
		Value T	Significant digits Sig.	
Accounting disclosure	0.219	2.226	0.029	1.243
Company size	-0.157	-1.764	0.081	1.210
Leverage	-0.140	-0.016	0.987	1.1099
<u>F-Test P-Test</u> Value (f)	7.231			
Significant digits (Sig.)	0.000			
Selection Coefficient ( $R^2$ )	0.205			
Multiple Link Coefficient (R)	0.453			

From the previous table, it is clear:

- **The overall significant digits of the regression model:**

The result of the F-Test test indicated that the multiple regression model is significant digits and statistically significant, as the significant digits level is less than 0.05, so there is at least one independent variable that has a significant digit's impact on the dependent variable.

The value of the selection coefficient ( $R^2$ ) was 0.205, i.e., the independent variables included in the form (accounting disclosure, company size, and leverage) explain 20.5% of the variation in the Dependent variable (Relevance characteristic).

<sup>2</sup> Source: Outputs of the Statistical Program Package for Social Sciences SPSS 'e- views

The value of the multiple link coefficient (R) was 0.453, indicating a medium correlation between the independent variables included in the form - combined - and the dependent variable.

● **The significant digits of independent variables:**

The results of the T-Test (to test the significant digits of each independent variable) indicated the following:

- There is a significant digit's relationship between the independent variable (accounting disclosure in the big data environment) and the dependent variable (Relevance characteristic), where the significant digits level is less than 0.05, the slope factor has reached 0.219, and the positive indication is that the relationship between the two variables is a direct correlation.
- There is no significant digit relationship between the size of the company and the Dependent variable (Relevance characteristic), as the significant digits level is greater than 0.05.
- There is no significant digit's relationship between leverage and the dependent variable (relevance characteristic), as the significant digits level is greater than 0.05

**Based on the previous results, the first hypothesis is accepted, which states that "there is a relationship between the development of accounting disclosure in a big data environment and the Relevance characteristic of banks registered on the stock market."**

**Check Mathematical requirements:**

❖ **No Multicollinearity:**

This assumption was verified using the Variance Inflation Factor (VIF), and its value for all variables was found to be less than 10, indicating that there was no problem of double-paced between the independent variables included in the regression model.

❖ **Stability of error contrast (homoscedasticity)**

Heteroscedasticity affects the Standard errors of OLS normal micro-box method capabilities, and this would affect the results of the significant digits tests of independent variables (using the T-Test).

The assumption of homogeneity was verified using the White test, and the significant digits level (Sig.) was found to be less than 0.05, i.e., the result of the test was significant digits, indicating a problem of heterogeneity.

Assumption of consistency of error variability (coherence):	
White Test	
Value	Significant digits (Sig.)
4.271	0.000

❖ **No Autocorrelation:**

Autocorrelation affects the Standard errors of OLS normal micro-box method capabilities, and this would affect the results of the significant digits tests of independent variables (using the T-Test).

The assumption that there was no Inherent relation was verified using the Breusch-Godfrey test, and the significant digits level (Sig.) was found to be less than 0.05, i.e., the test result was significant digits, indicating a problem of Inherent relation.

Assuming there is no Inherent relation: Breusch-Godfrey Serial Correlation LM Test	
Value	Significant digits (Sig.)
7.275	0.001

The possessions of the problem of Inherent relation and heterogeneity have been addressed using the Newey-West method, where Standard capacity errors have been corrected using heteroscedasticity and Autocorrelation-Consistent (HAC) Standard Errors.

**To test the relationship between the four components of the CSR in the big data environment and the Dependent variable: Relevance characteristic,** Multiple Regression Analysis was used. Company size and Leverage, according to the following model:

The following table explains the results of the analysis.

*Table (5) Results of the multi-regression analysis of the relationship between the components of the total accounting disclosure index in a big data environment and the Relevance characteristic <sup>3</sup>*

Dependent variable: Relevance characteristic				
Independent variables	Transactions Regression B	Test T T-Test		Contrast inflation coefficient VIF
		Value T	Significant digits Sig.	
Accounting disclosure of the form	0.699	3.172	0.002	3.736
Accounting disclosure of the general world	0.103	0.484	0.6297	1.800
Accounting disclosure of the financial world	0.610	2.337	0.022	1.845
Accounting disclosure through the use of networks and social media	-0.577	-1.226	0.224	2.232
Company size	0.082	0.512	0.610	2.865
Leverage	-8.927	-1.284	0.203	1.388
<u>F-Test P-Test</u> Value (f)		4.811		
Significant digits (Sig.)		0.000		
Selection Coefficient (R <sup>2</sup> )		0.263		
Multiple Link Coefficient (R)		0.513		

From the previous table, it is clear:

❖ **The overall significant digits of the regression model:**

<sup>3</sup> Source: Outputs of the Statistical Program Package for Social Sciences SPSS 'e- views

The result of the F-Test test indicated that the multiple regression model is significant digits and statistically significant, as the significant digits level is less than 0.05, so there is at least one independent variable that has a significant digit's impact on the dependent variable.

The value of the selection coefficient ( $R^2$ ) was 0.263, i.e., the independent variables included in the form (accounting disclosure of form, accounting disclosure of the general content, accounting disclosure of financial content, accounting disclosure through the use of networks and social networking sites, company size and leverage) explain 26.3% of the variation in the subordinated variable (Relevance characteristic).

The value of the multiple link coefficient ( $R$ ) was 0.513, indicating a medium correlation between the independent variables included in the form - combined - and the dependent variable.

#### ❖ The significant digits of independent variables

The results of the T-Test (to test the significant digits of each independent variable) indicated the following:

- There is a significant digit's relationship between the independent variable (accounting disclosure of the shape under the big data environment) and the dependent variable (Relevance characteristic), where the significant digits level is less than 0.05, the slope factor has reached 0.699, and the positive indication is that the relationship between the two variables is a direct correlation.
- There is no significant digit's relationship between the independent variable (accounting disclosure of the general content under the big data environment) and the dependent variable (Relevance characteristic), as the significant digits level is greater than 0.05.
- There is a significant digit's relationship between the independent variable (accounting disclosure of the financial content under the big data environment) and the dependent variable (Relevance characteristic), where the level of significant digits is less than 0.05, the value of the regression factor was 0.610, and the positive indication indicates that the relationship between the two variables is a direct correlation.
- There is no significant digit's relationship between the independent variable (accounting disclosure through the use of networks and social networking sites in a big data environment) and the dependent variable (Relevance characteristic), as the significant digits level is greater than 0.05.
- There is no significant digit relationship between the size of the company and the Dependent variable (Relevance characteristic), as the significant digits level is greater than 0.05.
- There is no significant digit's relationship between leverage and the dependent variable (Relevance characteristic), as the significant digits level is greater than 0.05.

**Check Mathematical requirements:**

❖ **No Multicollinearity:**

This assumption was proved using variance Inflation Factor (VIF), and its value for all variables was found to be less than 10, indicating that there was no problem of double-paced between the independent variables included in the regression model.

❖ **Stability of error contrast (homoscedasticity):**

Heteroscedasticity affects the Standard errors of OLS normal micro-box method capabilities, and this would affect the results of the significant digits tests of independent variables (using the T-Test).

The assumption of homogeneity was verified using the White test, and the significant digits level (Sig.) was found to be less than 0.05, i.e., the test result was significant digits, indicating a problem of heterogeneity.

Assumption of consistency of error variability (homogeneity): White Test	
Value	Significant digits (Sig.)
2.747	0.001

❖ **No Autocorrelation:**

Autocorrelation affects the Standard errors of OLS normal micro-box method capabilities, and this would affect the results of the significant digits tests of independent variables (using the T-Test).

The assumption that there was no Inherent relation was verified using the Breusch-Godfrey test, and the significant digits level (Sig.) was found to be less than 0.05, i.e., the test result was significant digits, indicating a problem of Inherent relation.

Assuming there is no Inherent relation: Breusch-Godfrey Serial Correlation LM Test	
Value	Significant digits (Sig.)
6.077	0.004

The effects of the problem of Inherent relation and heterogeneity have been addressed using the Newey-West method, where Standard capacity errors have been corrected using a snorter Heteroscedasticity and Autocorrelation-Consistent (HAC) Standard errors

**The second hypothesis:**

**The second hypothesis "there is a relationship between the development of accounting disclosure in a big data environment and the faithful representation of banks listed on the stock market."**

To test this hypothesis, multiple Regression Analysis was used.

$$Y_2 = \beta_0 + \beta_1 X + \beta_2 Z_1 + \beta_3 Z_2 + e \quad (2)$$

Where:

$Y_2$  is the Dependent variable (faithful representation characteristic )

X Accounting disclosure changes in the big data environment

$Z_1$  and  $Z_2$  are the regulatory variables (company size and leverage respectively)

$\beta_0$  is the fixed limit in the regression model

$\beta_1, \beta_2, \beta_3$  are regression transactions.

e is a random error

The following table explains the results of the analysis.

**Table (6) Results of the multi-regression analysis of the relationship between accounting disclosure in a big data environment and faithful representation**

Dependent variable: faithful representation				
Independent variables	Transactions Regression B	Test T T-Test		Contrast inflation coefficient VIF
		Value T	Significant digits Sig.	
Accounting disclosure in a big data environment	0.1979	3.918	0.000	1.243
Company size	-0.144	-1.626	0.108	1.2105
Leverage	-6.614	-1.157	0.251	1.1099
<u>F-Test P-Test</u> Value (f)	8.631			
Significant digits (Sig.)	0.000			
Selection Coefficient ( $R^2$ )	0.236			
Multiple Link Coefficient (R)	0.485			

From the previous table, it is clear:

● **The overall significant digits of the regression model:**

The result of the F-Test test indicated that the multiple regression model is significant digits and statistically significant, as the significant digits level is less than 0.05, so there is at least one independent variable that has a significant digit's impact on the dependent variable.

The value of the selection factor ( $R^2$ ) was 0.236, like the independent variables included in the form (accounting disclosure under the big data environment, company size, and leverage) explain 23.6% of the variation in the Dependent variable (faithful representation characteristic).

The value of the multiple link coefficient (R) was 0.485, indicating a medium correlation between the independent variables included in the form - combined - and the dependent variable.

● **The significant digits of independent variables**

The results of the T-Test (to test the significant digits of each independent variable) indicated the following:

- There is a significant digit's relationship between the independent variable (accounting disclosure in the big data environment) and the dependent variable (faithful representation

characteristic), where the significant digits' level is less than 0.05, the value of the regression factor was 0.1979, and the positive indication indicates that the relationship between the two variables is a direct correlation.

- There is no significant digit relationship between the size of the company and the dependent variable (faithful representation characteristic), as the level of significant digits is greater than 0.05.
- There is no significant digit's relationship between leverage and the dependent variable (faithful representation characteristic), as the significant digits' level is greater than 0.05.

**Based on the previous results, the second hypothesis is accepted**, which states that "there is a relationship between the development of accounting disclosure in a big data environment and the faithful representation of banks registered on the stock market."

**Check Mathematical requirements:**

❖ **No Multicollinearity**

This assumption was verified using the Variance Inflation Factor (VIF), and its value for all variables was found to be less than 10, indicating that there was no problem of double-paced between the independent variables included in the regression model.

❖ **Stability of error contrast (homoscedasticity)**

Heteroscedasticity affects the Standard errors of OLS normal micro-box method capabilities, and this would affect the results of the significant digits tests of independent variables (using the T-Test).

The assumption of homogeneity was verified using the White test, and the significant digits level (Sig.) was found to be greater than 0.05, i.e., the result of the test was not significant digits, indicating that the problem of heterogeneity was not.

Assumption of consistency of error variability (homogeneity): White Test	
Value	Significant digits (Sig.)
0.591	0.801

❖ **No Autocorrelation**

Autocorrelation affects the Standard errors of OLS normal micro-box method capabilities, and this would affect the results of the significant digits tests of independent variables (using the T-Test).

The assumption that there was no Inherent relation was verified using the Breusch-Godfrey test, and the significant digits level (Sig.) was found to be greater than 0.05, i.e., the test result was not significant digits, indicating that there was no problem with Inherent relation.

Assuming there is no Inherent relation: Breusch-Godfrey Serial Correlation LM Test	
Value	Significant digits (Sig.)
0.557	0.575

**To test the relationship between the four components of the macro accounting disclosure index in the big data environment and the variable of the "faithful representation characteristic ",**

Multiple Regression Analysis was used. The regulatory variables "company size" and "leverage", according to the following model:

The following table explains the results of the analysis.

***Table (7) Results of the multi-regression analysis of the relationship between the components of the total accounting disclosure index in the context of the big data environment and the characteristic of faithful representation***

Dependent variable: faithful representation				
Independent variables	Transactions Regression B	Test T T-Test		Contrast inflation coefficient VIF
		Value T	Significant digits Sig.	
Model of accounting disclosure of the form	0.345	1.683	0.096	3.736
Index of accounting disclosure of the general world	0.357	2.073	0.041	1.800
Index of accounting disclosure of the financial world	0.122	0.6399	0.524	1.845
Accounting disclosure model through the use of networks and social media	-0.162	-0.559	0.578	2.232
Company size	-0.137	-1.001	0.0319	2.865
Leverage	-8.267	-1.290	0.0200	1.388
<b>F-Test P-Test</b>				
Value (f)			4.737	
Significant digits (Sig.)			0.000	
Selection Coefficient (R <sup>2</sup> )			0.2597	
Multiple Link Coefficient (R)			0.5096	

**From the previous table, it is clear:**

● **The overall significant digits of the regression model:**

The result of the F-Test test indicated that the multiple regression model is significant digits and statistically significant, as the significant digits level is less than 0.05, so there is at least one independent variable that has a significant digit's impact on the dependent variable.

The value of the selection factor (R<sup>2</sup>) was 0.2597, i.e., the independent variables included in the form (index of accounting disclosure of form, accounting disclosure model for the general content, accounting disclosure model for financial content, accounting disclosure index through the use of networks and social networking sites, company size and leverage) explain 25.97% of the variation in the subordinated variable (faithful representation characteristic).

The value of the multiple link coefficient (R) was 0.5096, indicating a medium correlation between the independent variables included in the form - combined - and the dependent variable.

● **The significant digits of independent variables:**

The results of the T-Test (to test the significant digits of each independent variable) indicated the following:

- There is no significant digit's relationship between the independent variable (index of accounting disclosure of form in a big data environment) and the subordinate variable (faithful representation characteristic), as the significant digits level is greater than 0.05.
- There is a significant digit's relationship between the independent variable (index of accounting disclosure of the general content under the big data environment) and the dependent variable (faithful representation characteristic), where the level of significant digits is less than 0.05, the value of the regression factor has reached the value of the regression factor was 0.357, and the positive indication indicates that the relationship between the two variables is a direct correlation.
- There is no significant digit's relationship between the independent variable (a model of accounting disclosure of the financial content under the big data environment) and the subordinate variable (faithful representation characteristic), as the significant digits level is greater than 0.05.
- There is no significant digit's relationship between the independent variable (a model of accounting disclosure through the use of networks and social networking sites in a big data environment) and the dependent variable (faithful representation characteristic), as the level of significant digits is greater than 0.05.
- There is a significant digit's relationship between the size of the company and the dependent variable (faithful representation characteristic), where the significant digits level is less than 0.05, the value of the regression factor was -0.137, and the negative indication indicates that the relationship between the two variables is reversible.
- There is a significant digit's relationship between leverage and the dependent variable (faithful representation characteristic), where the level of significant digits is less than 0.05, the value of the regression factor was -8.267, and the negative indication indicates that the relationship between the two variables is inverse.

**Check Mathematical requirements:**

❖ **No Multicollinearity**

This assumption was confirmed using the Variance Inflation Factor (VIF), and its value for all variables was found to be less than 10, indicating that there was no problem of double-paced between the independent variables contained within the regression model.

❖ **Stability of error contrast (homoscedasticity):**

Heteroscedasticity affects the Standard errors of OLS normal micro-box method capabilities, and this would affect the results of the significant digits tests of independent variables (using the T-Test).

The assumption of homogeneity was verified using the White test, and the significant digits level (Sig.) was found to be greater than 0.05, i.e., the result of the test was intangible, indicating that the problem of heterogeneity was not.

Assumption of consistency of error variability (homogeneity): White Test	
Value	Significant digits (Sig.)
0.858197	0.6619

❖ **No Autocorrelation:**

Autocorrelation affects the Standard errors of OLS normal micro-box method capabilities, and this would affect the results of the significant digits tests of independent variables (using the T-Test).

The assumption that there was no Inherent relation was verified using the Breusch-Godfrey test, and the significant digits level (Sig.) was found to be greater than 0.05, i.e., the result of the test was not significant digits, indicating that there was no problem with Inherent relation.

Assuming there is no Inherent relation: Breusch-Godfrey Serial Correlation LM Test	
Value	Significant digits (Sig.)
0.186310	0.8304

**V. Results, recommendations, and future research**

**5/1 Results:**

This research aims to provide a proposed model for the development of accounting disclosure in the light of the environment of big data in Egyptian banks, the researchers provided a model for the development of accounting disclosure in the context of a big data environment consisting of four axes: the figure disclosure index, the index of disclosure of the general content, the index of disclosure through the use of networks and social media, and the theoretical study resulted in several results, the most important of which are: -

- 1- The features of big data raise several challenges and problems for the financial reporting system in commercial banks operating in the Egyptian environment, some of which are related to recognition and accounting measurement, some of which are related to the accounting offer and disclosure.
- 2- The lack of specific rules or models for accounting disclosure in the context of the big data environment in the financial report requirements of commercial banks operating in the Egyptian environment, which requires their development by the nature of the big data environment.

- 3- Accounting disclosure in the context of the big data environment in banks operating in the Egyptian environment, in general, is still within the framework of optional disclosure as there is currently no Egyptian Accounting Standard or regulations for accounting disclosure under big data.
- 4- The most important accounting disclosure problems are two main problems: the complexity of financial reports and the problem of asymmetry of information between management and users of financial reports.
- 5- The importance of developing accounting disclosure in a big data environment as an entry point to reduce the complexity of financial reports as well as to reduce the negative effects of information asymmetry to ensure that users of financial reports need accounting information.
- 6- The importance of optional disclosure in a big data environment in providing investors with information that financial reports fail to provide under mandatory disclosure.
- 7- The Accounting Disclosure Index in a big data environment is a modern mechanism for building an integrated disclosure strategy involving companies, investors, and government agencies as an entry point to reduce the current complexity of financial reports and reduce the high level of asymmetry of information between management and users of financial reports.
- 8- Building an accounting disclosure index in a big data environment has become vital, especially in the face of successive financial crises that have underscored the need to regulate accounting disclosure, thereby limiting the redistribution of wealth from less experienced and knowledgeable investors to highly experienced and knowledgeable investors.
- 9- The main objective of the proposed accounting disclosure model in a big data environment is to improve and increase the efficiency of Qualitative Characteristics of Useful Financial Information by ensuring that the components of the proposed disclosure model achieve the four elements of suitability and provide the four elements achieved for faithful representation through the model presented by the **Ferdy, 2009** study.

**The applied study also revealed several results, the most important of which are:**

**1- The relationship between the development of accounting disclosure in a big data environment and the relevance:**

The results of the applied study indicated that, based on the sample attitudes it was found that there is a significant digit's relationship between the independent variable (accounting disclosure in a big data environment) and the dependent variable (relevance characteristic), and the positive indication indicates that the relationship between the two variables is a direct correlation. That relationship can be explained by the idea that increased disclosures in a big data environment are more appropriate to serve information users both inside and outside the business. Therefore, reducing the problem of asymmetry of information between the internal parties and external parties of banks. This supports the provision of information on future events or assistance in predicting future events, the provision of more information on non-financial disclosure of non-financial information related to opportunities

and risks, as well as the accessibility of financial reports feedback on the information on previous and current important events and transactions, which helps users of financial statements correct or change their predictions.

## **2- The relationship between the development of accounting disclosure in a big data environment and faithful representation:**

The analysis of the respondent's views indicated that there is a significant digit's relationship between the independent variable (accounting disclosure in a big data environment) and the dependent variable (faithful representation characteristic), and the positive indication indicates that the relationship between the two variables is a direct correlation. That relationship can be explained by the idea that increased disclosures in a big data environment improve and increase the efficiency of a faithful representation of information to serve information users both inside and outside the enterprise. Thus, reducing the problem of asymmetry of information between the internal parties and external parties of the enterprise.

3- The proposed model provides information that contributes to improving the level of financial reports by achieving the Fundamental Qualitative Characteristics, helping to achieve credibility because the information provided by the proposed model is verifiable, faithful in presentation and impartiality, and the information provided by the index is appropriate to the needs of users of financial reports because it affects their economic decisions.

## **5/2 Recommendations:**

**Based on the results of the research, the following recommendations can be presented:**

1. The banks listed on the Egyptian Stock Exchange recommend them to apply the components of the proposed accounting disclosure index in the context of the big data environment through the Financial Supervisory Authority as a basic guarantee to meet the needs of shareholders to protect the rights of small shareholders.
2. Egyptian accounting standards should include regulation of disclosure rules in a big data environment in published periodic disclosures, board reports, and business bulletins, which are an important source for investors to obtain information and make decisions.
3. The need to be accelerated by accounting authorities and boards to issue an accounting Standard that regulates accounting practices for transactions conducted in a big data environment.
4. Accounting standards makers should identify the importance of big data when issuing or developing accounting standards, especially in the current trend of providing users with financial and non-financial information needs.
5. Rethink the concept of publicly purposed financial reports in a big data environment, with expanded financial and non-financial disclosure, and with data processing, storage, and retrieval technology, taking into account the specificity of some data.
6. Adopt a model to measure the Qualitative Characteristics of Useful Financial Information to correspond to the size, speed, diversity, and change of data as a result of technological development.

7. Work to create a big data management in companies and banks to increase profitability and customers by taking advantage of the experience of CIB, which has hired experts to deal with big data from around the world.

### 5/3 Limitations and future research direction:

1. Study the influence of big data on international financial reporting standards.
2. A proposed measurement framework in a big data environment (with the introduction of some other modern technology variables) and its impact on investor decisions.
3. A proposed entry for accounting disclosure of big data and its impact on the value of the facility.
4. A proposed framework for assessing insubstantial assets in a big data environment and their influence on the value of the facility.
5. Further studies are conducted to control the quality of data in a big data environment and to use it in accounting for measurement development and accounting disclosure, which data can be used to provide useful information to users of financial information.
6. Merging of U.S. and international standards in a big data environment to increase the quality of accounting disclosure.
7. When measuring the Qualitative Characteristics of Useful Financial Information, the researchers relied merely on Fundamental Qualitative Characteristics, so the study's assignments could be verified taking into account the quality characteristics of secondary or sub-information.

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