Big Data and its Reflection on the Qualitative Characteristics of Accounting Information

Dr. Selma Mansour Saad  
Assistant Professor, Department of Accounting, College of Administration and Economic, AL-Mustansiriyah University, Baghdad, Iraq.  
E-mail: dr_selma_960@uomustansiriyah.edu.iq

Dr. Khadija Jomaa Muter  
Assistant Professor, Department of Accounting, College of Administration and Economic, AL-Mustansiriyah University, Baghdad, Iraq.  
E-mail: khdija_j_m79@uomustansiriyah.edu.iq

Received September 09, 2021; Accepted December 08, 2021  
ISSN: 1735-188X  
DOI: 10.14704/WEB/V19I1/WEB19151

Abstract

This research work has analyzed the use of big data and its effect on the qualitative characteristics of Accounting Information. The study showed that big data is the amounts of data of large and huge sizes that are collected, stored, analyzed, transmitted and processed immediately. To measure this effect, the researchers used statistical analysis. A number of questions were set and the samples of the study were asked to express their opinions. The three-degree Likert scale was used to measure how the sample members think about the aspects and questions. The results show that big data help accountants to manage their work and relations with their customers. They also show that big data can bridge the gap between information technology, marketing and businesses.

Keywords

Big Data, Accounting Information, Qualitative Characteristics, Information Technology and Qualitative Analysis.

Introduction

Before the invention of computers, economic unit data were mainly handwritten paper records and were not easily accessible. Later, advanced technology allowed greater amounts of data to be collected, stored and reused, and the Internet revolutionized information and helped the emergence of mobile phones after a few years and thus it connects everything.
together. In addition, mobile devices made all knowledge of human available for everyone to use, as well as the impact of the cloud computing formation and social media on the emergence of big data.

Big data is a significant step of the development of information systems, and it expresses in its huge amount of complex data simply that exceeds the ability of software and traditional computer mechanisms of storing, processing and distributing it. This has helped to develop advanced alternative solutions enabling the control of its flow.

The significance of big data and its analysis is reflected on accounting and how it affects accounting disclosure, as disclosure in the era of big data will be a comprehensive including non-financial financial information. An example of this is the analysis of the questionnaire submitted to a sample of academics for the purpose of proving or denying the research hypothesis.

**Research Methodology**

1-The Problem of the Study

Given the importance of Accounting Information (referred to as Accounting Information hence forth) and its utilization to make decisions requires the availability of qualitative characteristics of Accounting Information (main and secondary) contained in professional accounting publications. This is in particular in what was stated in the common conceptual framework issued in 2010 to show the importance of big data and its influence on the qualitative characteristics of Accounting Information. The research problem can be formulated in the following question: Is there an effect of big data on the Accounting Information qualitative features?

2-The Aim of the Study

The research aims to show the following.

- The concept of big data, its importance and its impact on accounting.
- The sources of obtaining big data and the challenges facing the analysis of big data in general and in accounting in particular.
- The role of big data and its reflection on the qualitative characteristics of Accounting Information.
1) The Importance of Study

The importance of the research stems from the importance of big data for economic units to make decisions, as it provides an information base that can be used in the work, as well as from its importance in the accounting profession. This analysis helps accountants take advantage in order to get out of the traditional accounting role and adopt a new strategy that supports and develops the role of accountants.

2) Study Hypothesis

The research is based on the hypothesis that "big data has an impact on the qualitative characteristics of Accounting Information."

3) Research Population and Sample

A number of audit offices located in Baghdad were selected, and the questionnaire was distributed to a number of auditors and adults (50) academics carefully. The characteristics of the research sample.

<table>
<thead>
<tr>
<th>Table 1 Research sample properties</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Gender</strong></td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td><strong>Age</strong></td>
</tr>
<tr>
<td>30-41</td>
</tr>
<tr>
<td>40-51</td>
</tr>
<tr>
<td>50-61</td>
</tr>
<tr>
<td>60-71</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td><strong>Qualifications</strong></td>
</tr>
<tr>
<td>Master and its equivalents</td>
</tr>
<tr>
<td>PhD and its equivalents</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td><strong>Years of experiences</strong></td>
</tr>
<tr>
<td>10-19</td>
</tr>
<tr>
<td>20-29</td>
</tr>
<tr>
<td>30-39</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>
1- Methods of Collecting Data and Information

Within the theoretical framework, a group of Arab and foreign references such as books, periodicals and research works form the Internet were used. In the field aspect, a questionnaire, which is one of the important means of obtaining data, was used. The information has been used as a tool to gain field data and information to know the knowledge economy and reflection on practices of financial reporting.

Also, a three-degree Likert scale was used to measure the sample opinion about the aspects and the 20 questions which are distributed on the variables to be studied, and Table (2) shows the questions in relation to the aspects.

Table 2 Questionnaire questions distributed according to themes

<table>
<thead>
<tr>
<th>Aspects</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>The effect of big data on the qualitative characteristics of Accounting Information</td>
<td>1-10</td>
</tr>
<tr>
<td>Opportunities and challenges facing the accountant of using big data</td>
<td>10-20</td>
</tr>
</tbody>
</table>

For the purpose of demonstrating the questionnaire validity, reliability and validity of, the apparent validity (content validity is the basis for finding the validity of the scale) was used. Also, the apparent validity is test by which the phenomenon for the scale was developed can be measured. Here, the arbitrators’ agreement is one apparent honesty type, and the preferred way to establish the apparent validity of a measuring tool is for a number of specialized experts to indicate the validity of the items to measure the quality for which the scale was developed. Accordingly, the two researchers distributed the initial questionnaire form to some arbitrators and to show to what extent are items valid and to what extent the agree with the research aims providing any comments and modifications they find appropriate.

To test stability, the scale or observation accuracy, is the existence of no contradiction with itself and its consistency in the information it provides us about the respondent’s behavior, the Alpha Cronbach method was used. This method is a very common stability measure of, and this scale shows how strong is the correlation between the items in the test. The application of this test to questionnaire shows that the reliability coefficient reached (0.892), which is a good coefficient, as the reliability coefficients ranging from (0.70-0.90) are accepted.
Big Data

1-The Concept of Big Data

Big Data (BIG DATA) Big data is a significant step of the development of information systems, and it expresses in its huge amount of complex data simply that exceeds the ability of software and traditional computer mechanisms of storing, processing and distributing it. This has helped to develop advanced alternative solutions enabling the control of its flow. It refers to structured or unstructured data sets commonly explained in to four features: size, diversity, speed, and reliability, where size is too large data sets to be dealt with traditional tools, and diversity is the difference in the data formats such as quantitative and textual formats and mixed data, images, video etc. Speed is the frequency at which new data exists, almost very quickly. Then, data quality and relevance ability to shift radically over time and is considered true (Gepp, Linnenluecke, O’Neill, & Smith, 2018). Also, BD is divided into three types: unstructured data and financial data (FD) (such as income statement, transactions Banking) or non-financial data (NFD) including e-mail and web searches. Finally, this data can be generated from within the economic unit as transaction data and customer complaint data or from outside inputs such as economic data and social media (Vanbutsele, 2018). Also, similarly, big data, in the IT research firm, is defined by Gartner defines as a “large-volume, fast-flowing, and varied information assets that need cost-effective and innovation in process for advancing insights, process automation and decision-making (Gartner Inc, 2018).

We conclude from the above that big data is the quantities of large and huge data sizes that are collected, stored, analyzed, transmitted and processed immediately. This requires the use of new technologies that are compatible with that big data, and big data is characterized by a set of characteristics, including speed, which indicates that big data is generated in a way faster when Internet is available compared to the data generated by traditional methods. The reason is due to the active interaction of customers, beneficiaries, economic units, and the characteristic of size, as the use of the Internet, software and various applications to increase the volume of data requiring the use of new methods of processing and analysis. Also, the credibility characteristic refers to the reliability of the data that can be used by information users. Finally, the property of diversity in which the data sources are not limited to both internal and external sources, but rather transcend to be in the form of different data including transaction data, records, different uses and structured data including database table and semi-structured data as in XML and uninitialized data such as text, video streams, images, audio data, etc. In addition, the multiplicity of appearances, when big data is used,
it should be examined and shown in a variety of forms that are commensurate with the nature of its use taking multiple shapes including statistics, numbers, geometric shapes etc.

2-Reasons for the Emergence and Spread of Big Data

The reasons that helped the emergence and spread of the term Big Data are (Vasarhelyi & Krahel, 2011).

A. Existence of some scientific fields that require huge data for analysis, such as weather science, genetics, complex physical simulation, biological and environmental research.
B. The emergence of social networks that send a huge amount of data around the clock and to various organizations.
C. Low costs of storing this data.
D. Laws that necessitate the necessity of keeping this data in databases.
E. The emergence of Internet technologies that allow all devices to communicate with each other, interconnection with Internet technologies and produce new data.

3-Sources of Getting Big Data

The sources of obtaining big data can be summarized as follows (Manyika et al., 2011):

A. Sources arising from the management of a program, whether governmental or non-governmental, such as electronic medical records, hospital visits, insurance records, bank records, and food banks.
B. Commercial sources or those related to transactions arising between two economic units, such as credit card transactions and transactions conducted through the Internet.
C. Sources of sensor networks, such as satellite imaging, road sensors, and climate sensors.
D. Sources of tracking devices, such as tracking data from mobile phones and the Global Positioning System.
E. Behavioral data sources, such as Internet searches for a product or service or any other type of information.
F. Data sources related to opinions, as in comments on social media.
4-Challenges Facing Big Data

The World Economic Forum (2014) pointed out some obstacles such as the lack of available talent specialized in data analytics, and economic units face challenges for finding the necessary requirements and technologies. This is due to prior to choosing a tool, they must determine the way the data will be used and what are the objectives of use. If goals are not clearly defined, failure happen. Therefore, the selected data and methods of analysis should be compatible with the desired results or the problems posed (Kuurila, 2016).

Several challenges face economic units of big data are dealt with. The most important of which are (Gihan & Gihan, 2020):

**Section One:** Challenges related to data: size, diversity, speed, reliability, data quality, data discovery, relevance, comprehensiveness, and privacy.

**Section Two:** Challenges related to the process such as storing data, the struggle in selecting similar data, converting data into an analytic form, understanding outputs, data modeling, and presenting complex analyzes of data.

**Section Three:** Challenges related to management such as security, data privacy, ethics and governance.

The challenges facing big data in the field of accounting are (Youssef, 2018):

- The main challenge for the accounting profession is the introduction and application of different knowledge in light of technological progress and the development of information-based software. Therefore, the accounting profession is required to deal with structured and unstructured big data and to extract Accounting Information that can be disclosed to various parties, or financial information for the purposes of internal use. Also, obtaining correct information from among this huge amount of data is not an easy task, especially if the information is related to accounting, because users have confidence in Accounting Information.

- The relationship between accounting and the big data environment must be determined. The big data goal is its use for accounting, or just a means of obtaining information. Practitioners want to use big data to learn more and control, and they do not see that data as a source of information and accounting reports are linked to certain periods for the disclosure of financial information, and therefore accountants are reluctant to deal with those data.

- Setting standards for the quality of information, rules for the governance of big data. Also, ethical standards for the information used in making strategic decisions and
those that are sold to third parties must be set given that more economic units are looking for ways to develop new products and services from the data they own. In addition, the main concerns are privacy or the ethics of using that data.

- Developing knowledge and skills of accountants, curricula and decisions, as big data is an alternative source for making decisions. The extent of the impact of those data on the financial reports of economic units, how accountants and non-accountants understand them, and setting contradictions require accountants to deal with them in an environment of Big data, such as fulfilling vs creating needs, reliability vs enslavement, simplicity vs complexity and reliability vs timeliness.

This requires the attention of accountants to see the potential impact of big data on financial reporting. This requires the necessity of training accountants to use technology and big data in accounting.

5-The Importance of Big Data

The utmost significant areas that benefit economic units is storing and analyzing big data (Sun, Sun, & Strang, 2018):

A. Asset management of economic units: Through the analysis of big data, economic units can deal with the assets innovatively, where it is possible to identify and know the gaps in their assets, and to detect the deficit or growth in those assets more than the required limit. This helps decision making in evaluating assets in in different directions. The analysis of that data also helps in re-division of the units' asset groups and their integration by decision makers for the reduction of the duplication of assets.

B. Databases for beneficiaries: the economic unit has information of beneficiaries, and studies of the beneficiaries’ behavior towards the unit’s groups, whether traditionally or in the digital network environment. These environments are valuable information for innovation of developments to display and make information available in the manner desired by the beneficiaries.

C. Human resources development: the economic units can have different specialized and non-specialized human resources. When a single database is available that includes all the data of workers in terms of gender - marital status - housing - specialization - qualifications - hobbies - economic conditions - experience and others, data can be collected about employees and by analyzing this data, this helps to extract strong relationships and links between them and to derive cognitive and
informational patterns that link all of this together, allowing officials and decision makers to discover the human resources available to them directly.

D. Information systems in the economic unit: by the re-dividing and integrating assets, the development and proper distribution of human resources is available in the unit. Also, in this case, the study of the behavior of the beneficiaries gives the officials a clear vision of evaluating the services and feasibility, in addition to the correct plans to add new services.

We conclude from the above that big data is used in many business processes and decision-making, including forecasting and planning, which was previously based on guesswork using mathematical models. Cash, demand for raw materials and financial status, long-term trends and the use of big data in customer relationship management by understanding consumers and customer behavior and economic units can benefit from big data in providing financial and non-financial information in real time. It also provides customers with the required solutions, products and services in addition to enhancing sales to existing and potential customers. Big data is seen as a powerful in directly or indirectly obtaining consumer data with(out) permission and sharing. In addition to its use in monitoring performance and improving business efficiency by enabling economic units to discover new opportunities in product development processes, it is used in administrative control, fraud detection and reduction, and prediction of financial failure.

The Accounting Information Qualitative features

The Accounting Information qualitative features represent the qualities that must be provided in the Accounting Information presented in the financial statements in order to become useful for decision makers and use them as a basis for evaluating the quality of Accounting Information (Al-Shirazi, 1990). Published financial reports, which make them useful to their users, the qualitative characteristics of useful Accounting Information are criteria used to judge the Accounting Information quality of and therefore the financial report quality. These characteristics are of great interest to both those responsible for setting accounting standards and those responsible in the preparation of the financial reports in the evaluation of the quality of the information resulting from the application of other accounting methods. Accordingly the main objective of determining the set of qualitative characteristics of Accounting Information is to use it as a basis for evaluating the level of quality of Accounting Information contained in financial reports (Al-Mahamid, 2015).

In September 2010, the first phase of the conceptual framework was completed, which dealt with the objectives of the general purpose financial report and to the reporting unit that has
not yet been added due to lack of (Zhang & Andrew, 2014). Also, the Financial Accounting Standards Board (FASB) of the American Institute of Certified Public Accountants (AICPA) issued these characteristics and standards in a hierarchical order, with the aim of determining the objective order of priorities that require their availability in information accounting. In order to achieve the greatest amount of benefit to its users, it is the prevailing basic criterion for judging the extent to which Accounting Information for effective contribution to rationalizing, supporting administrative decisions, formulating various policies and following up on their implementation. The conceptual framework of financial accounting divides the qualitative characteristics of information into two groups.

The First Group: The Basic Characteristics of Accounting Information

The basic characteristics are related to the usefulness of Accounting Information in making decisions, which is achieved through two basic conditions (or at least one of them), which are to contribute to reducing the uncertainty of the decision maker and/or to contribute to increasing the degree of knowledge of the decision maker, which is represented in:

- **Relevancy:** Relevancy refers to information that is capable of making a change in the decisions taken by users.
  
  A. Predictive value: Financial information has a predictive value if it can be used as data in the processes that users use to predict future results.
  
  B. Affirmative value: It is intended to enable the decision maker to reinforce current expectations, or to make changes in them, and to evaluate the results of previous decisions (Zaytoun, 2013).
  
  C. Relative importance: It means that if this information is omitted or presented in a misleading way, it will affect the decisions that users will take, and those who make their decisions on the basis of the reported Accounting Information. With this omission, the Accounting Information cannot be considered to be of relative importance unless the size and importance is considered close to be disclosed (Kieso, Weygandt, Warfield, Wiecek, & McConomy, 2019).

The two researchers consider that the property of relevance is one of the most important characteristics in the information that can be provided to investment and administrative decision-makers at the level of economic units, whether it is at the internal and external levels.

- **Honesty representation:** The second simple characteristic of the qualitative characteristics of Accounting Information is honest representation (SFAC 8).
The credibility characteristic was one of the simple features of Accounting Information and honest representation belonged to the secondary features of the credibility characteristic, but the definition of the credibility characteristic was not clear enough, which led to a different understanding, and blamed the estimates resulting from the application of accounting on the basis of the fair value. There is no credibility if the data is not accurate, but with the issuance of Bulletin No. 8, the term credibility was replaced by honest representation with the implications for that (Qi, Shen, & Dou, 2013). The characteristic of honest representation consists of three sub-characteristics and as embodied in the definition above:-

A. Completeness: It indicates that the financial report includes all the information necessary for the user to understand the phenomenon being depicted, including all the necessary description, expression and detail (Achim & Chis, 2014). The depiction of the economic phenomenon is complete if it includes all information necessary to represent it. In contrast, omission can make the information false or misleading, and therefore not useful to users of financial statements (Draft, 2015).

B. Impartiality: The characteristic of impartiality indicates that the information should affect its users, and the interests of one group should not be preferred over the interests of another group, because impartiality is similar to all concepts related to justice (Stice & Stice, 2013).

C. Freedom from error: It means that there are no errors or omissions in the description and statement of phenomena, and that the processes used to produce information have been selected and applied without any errors in those processes (Financial Accounting Standards Board (FASB), 2018).

Based on the above, the two researchers believe that the characteristic of honest representation is compatible with big data. This is because the use of the computer reflected positively on improving the property of honest representation through the neutrality of Accounting Information and its freedom from errors, in addition to providing the necessary information.

The second group: the supporting characteristics of the basic characteristics of Accounting Information.

The conceptual framework issued by the FASB/IASB joint venture identified four qualitative characteristics of Accounting Information that enhance and complement the basic qualitative characteristics, represented in (Nobes, 2014):
A. Comparability: Comparability means the possibility of comparing the financial statements of one financial period with the financial statements of another previous period(s) of the same economic unit, or comparing the financial statements of the economic unit with that of the other for the same period. Users of financial information benefit from making a comparison for the purposes of making decisions related to investment and financing decisions, tracking the performance of the economic unit and its financial position from one period to another comparing the different economic units.

B. Verifiability: Verifiability refers to the degree of agreement between individuals conducting the evaluation process using the same evaluation methods, that is, the extent to which there is a high degree of consensus among accountants when they use the same evaluation methods producing similar results for economic events. So the characteristic of honest representation is also achieved.

C. Timing: This characteristic indicates the provision of accounting and economic information to the decision-maker at a time that makes it able to influence the decision-making process. This means it is available to decision-maker before the information loses its importance in influencing decisions.

D. Understandability: Understandability is one of the characteristics that support financial information. It should be contained in financial reports based on the fact that it is not understood by ordinary users, as it contains some complexity.

1- Problems and limitations of utilizing the qualitative features of Accounting Information.

A. Possibility of conflict between the main characteristics of Accounting Information: there is no compatibility between the appropriateness of the information and the degree of its reliability, for example, a certain information may be rejected or accepted if it is appropriate but not reliable, or it is reliable but inappropriate.

B. A conflict between the appropriate timing and the predictive ability of information, because speed in preparing information is often at the expense of accuracy, completeness and certainty. Also, there may also be a conflict between honesty in representation and the possibility of verifying information. An example of this is in the use of general indexes especially for the purpose of arriving at a measurement of current values. It is known that indices are only averages and therefore may be far from truth in representing economic phenomena, but in return this method enjoys a high degree of impartiality in application (Jerboa, 2013).
C. Other determinants facing the use of qualitative characteristics of Accounting Information (Batal, 2019).

- The possibility of conflict between honesty in expression and the possibility of verifying information.
- Not all relevant and reliable information is useful, as it may be of little relative importance (importance level test).
- The cost of obtaining information may be greater than the expected return (cost-return test) because of disclosing information whose cost exceeds its benefit.
- Accounting Information may be appropriate and reliable, but its user faces difficulty in understanding, analyzing and using it in the decision model he faces.

D. The cost of obtaining information is greater than the expected return from it (cost / return test). Information that is not closely related to the objectives of the users of financial statements is not considered important information and there is no reason to disclose it. The general rule with regard to a specific cost-benefit test is that financial information should not be produced and Distribute it unless its benefit exceeds its cost. Otherwise, the economic unit will incur a loss when disclosing that information, because of disclosing information whose cost exceeds its benefit (Al-Jubouri, 2014).

**Big Data, Its Analysis and Its Reflection on Accounting**

Big data analysis helps accountants take advantage of the traditional accounting role and adopt a new strategy that supports and develops the role of accountants, and works to bridge the gap between information technology, marketing and business (Agostino & Sidorova, 2017). As the big data analysis will affect accounting by affecting the collection, managing and recording of data, the preparation and auditing of financial statements, accounting is an information system to recording, store, retrieve, summarize, analyze and display financial and economic transactions and events, and thus the information systems. Accounting with big data analytics is critical for successful management of economic units. Also, big data in accounting can have the integration of different data sources into Accounting Information systems. For example, text, visual and audio data are progressively linked with traditional data. Here, accountants need to improve their data analytical skills to be able to deal with large amounts of data. Second, big data could influence fair value accounting and their fair value of liabilities and assets, collected from different bases, can reduce self-judgments in Estimating the fair value (Zabihollah & Jim, 2017), and in the same context, the big data environment affects the accounting measurement as (Yusuf: 2018).
Measurement and presentation methods can be developed to suit the different data environment, such as inventory pricing methods FIFO, LIFO that are used to determine the cost of inventory in a proper manner according to the state of markets, whether boom or bust.

Formalization through accounting standards is a necessity to compel preparers of financial reports to process data and provide the required information.

Providing financial information, using clear and accurate language to remove confusion and incomprehensible words in the financial statements.

The main element for obtaining balances at the present time is the journal registration, but some large economic units have hundreds or thousands of transactions that are recorded in one process, and the mechanism of obtaining big data will affect the characteristics that require taking into account this to accurately measure business results. Journal operations can be linked directly as a supplementary measure as an element, such as invoice, physical parts received.

The names of accounts and traditional accounting books that depend on manual work, and the many details they contain. They can currently be provided at a small cost, and a large explanatory value, for example, stock values according to the type of product, the location of this stock, suppliers, the physical age of the stock, and other available data include be used and benefited from to obtain important information for internal uses or voluntary disclosure.

It is possible to benefit from the available data on sales estimates, costs, sales mix, and human resources estimates, and what can be provided at a very low cost, for example, these data can be used internally by analyzing those data to strengthen the competitive position of the economic unit.

The potential expansion of business reports will be clearly reflected on accounting through disclosure to various stakeholders. Technological development has affected accounting, so ready-made programs have been used in accounting and auditing, and the big data environment is expected to affect accounting and will reflect for you on the decisions of regulators and accounting standard-setting bodies, disclosure rules are scalable. Big data can be used as data raw requires that accounting standards deal with the content of databases and not with existing disclosure rules, such as technology-based relational databases, links with text data, text data analytics, drylons, and XBRL can also be widely used for disclosure.

The big data environment can affect the accounting disclosure as follows (Yousef, 2018):

Despite the flexibility of accounting disclosure standards and rules, comparability will remain an important and governing characteristic, and without comparison, the
assessment of resource allocation and transparency of stakeholders becomes extremely difficult.

- Disclosure standards and rules, in the field of measurement, concentrate on the basic data that must be supplied, especially the content, timing and level of collection.
- Disclosure standards and rules should deal with a more accurate range of disclosure of the economic unit (business and its unit, product, subdivision, etc.).
- Provide alternative directives for disclosure to users of financial information.
- Changing the “one report for all” entry, allowing for strategic changes to the relevant details, and special reports on comparability are required.

Based on the foregoing, we see that accounting disclosure in financial reports is the approved method for disclosing information that represents the physical existence of these reports in light of traditional accounting, and economic units in the era of big data can use multiple channels to disclose that information. It includes their websites and social media, and these disclosures. It has the advantage of being more convenient than annual or quarterly reports, which requires accountants to acquire and increase their data analysis skills in order to convert data into real business value. This requires accountants to collaborate more closely with their IT colleagues who receive a lot of data.

They analyze data with accounting professionals to possess different accounting and statistical skills and information systems such as algorithms, artificial intelligence, expert systems and other modern technologies, as disclosure. This disclosure will be a comprehensive disclosure that includes non-financial information in order to achieve the goals Sustainability accounting in its financial, economic, social and governance dimensions.

As for the qualitative characteristics of Accounting Information according to big data environment, its impact on economic units is gradually increasing, which deepens its impact on business, especially on Accounting Information. This type of data does not only impact the quality of the Accounting Information content, but it also extends to the impact of applying the assessment of the quality of Accounting Information in practice (Xiao, et al., 2014).

The two researchers believe that big data has a prominent impact in achieving the property of relevance through the delivery of information in a timely manner, increasing the possibility of predictions and confirming previous expectations using methods of information analysis, including decision trees, expert systems, artificial intelligence. The fuzzy approach and other methods allow improvement of the quality of information of
accounting. In addition, such data need the use of computers that provide information that is characterized by a better predictive and feedback ability under conditions of uncertainty and risk to which the decision maker is exposed. The information that reduces the degree of uncertainty helps in evaluating the validity of previous forecasts, and the computer led to the possibility of preparing multiple financial reports at the same time, which the professional accounting and academic bodies emphasized the need to submit them by the economic units in order to provide more appropriate information.

The electronic Accounting Information system achieves the characteristic of honest representation by achieving both the characteristic of neutrality in measurement and disclosure, which requires freedom from bias. Thus, that the information is as complete as possible, and is available to all users without distinguishing one category over another by ensuring data communication. Also, the information is contained in the financial reports to all parties in the same form and content and at the same time as well, and this will only be achieved by using the computer for cost considerations (Al-Akhdari, 2016: 17), in addition to the fact that the use of the computer has reduced errors in the financial reports in a way that achieves the property of being free from errors. Here, information technology has contributed to improve the Accounting Information quality of by assisting it to make decisions by shortening costs and time and achieving speed in the operation of data and other information.

With regard to the timeliness feature, the computer has undoubtedly contributed to its realization due to its ability to quickly accomplish and store massive information. Zoelf (2015), and (Faye, 2016) mentioned that Hailey Crofts, content consultant at Kaplan, pointed out every sector, from manufacturing to retail and services, can take advantage of the chance of increasing the operational efficiencies, assessing risks and identifying advantages and weaknesses through big data analysis.

As for the property of verifiability of information, the researchers consider verifiability refers to the availability of the objective condition in scientific measurement, that is, the results reached by a particular person can be reached by another person, provided that the same methods of measurement and disclosure are used, and the electronic Accounting Information system has the ability to achieve This feature is through the use of applied software and statistical methods.
The Influence of Big Data on the Qualitative Characteristics of Accounting Information

The previous items explain the big data and its analyzes and how it is reflected on accounting and how it affected the accounting disclosure. Disclosure in the era of big data will be a comprehensive disclosure that includes non-financial financial information in order to achieve the goals of sustainability accounting in its financial, economic, social and governance dimensions.

In this item, we will show whether big data has an impact on the qualitative features of Accounting Information by analyzing the questionnaire submitted to a sample of academics for the purpose of proving or denying the research hypothesis that “big data has an impact on the qualitative characteristics of AI”. In this hypothesis, we utilized some proper statistical methods to achieve our goal and estimate the dispersion of the answers, such as, the arithmetic mean and standard deviation, as in Table (3). We note that the effect of big data on the qualitative characteristics of Accounting Information reached the arithmetic mean (2.79) and with a standard deviation (0.59) as first in the relative importance by percentage (93.03%).

The table also show that the total arithmetic mean was (2.69), more than the standard mean of (2), and the general standard deviation was (0.56), which means that big data influences the qualitative characteristics of AI.

Table 3 Relative importance Statistical calculations s for the axes of the questionnaire

<table>
<thead>
<tr>
<th>Aspects</th>
<th>Arithmetic mean</th>
<th>Standard deviation</th>
<th>Relative importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opportunities and challenges facing the accountant of using big data</td>
<td>2.62</td>
<td>0.59</td>
<td>87.40%</td>
</tr>
<tr>
<td>The effect of big data on the qualitative characteristics of Accounting Information</td>
<td>2.79</td>
<td>0.47</td>
<td>93.03%</td>
</tr>
<tr>
<td>Total</td>
<td>2.69</td>
<td>0.56</td>
<td></td>
</tr>
</tbody>
</table>

The analysis and interpretation of the answers of the sample members shows the value of the study variable as in Table (4).

The following are the most important analytical indicators for the data in Table (4):

1. The arithmetic mean for opportunities and challenges facing the accountant of in the light of the use of big data is (2.62) being higher than the standard mean (2) and with a standard deviation of (0.59) in second order in the relative importance with a percentage 87.40%. The sixth question had the highest arithmetic mean of (2.94)
and standard deviation (0.24), where the percentage of the answer agreed was 94%, which means that the research sample agreed on the high costs of hiring professionals with expertise in big data.

2. The arithmetic mean of the influence of big data on the qualitative characteristics of Accounting Information was (2.79), higher than the standard mean standard by (2), and with a standard deviation of (0.47) in the first rank in the relative importance with a percentage of 93.3%. The eleventh question had the highest arithmetic mean of (3) and standard deviation (0), where the percentage of the answer agreed was 100%, which means that there is a consensus that the use of big data leads to provide appropriate information helping in making decisions within the economic unit.

3. The highest answers in most of the items of the aspects were distributed among the agreed.

4. Throughout the study, all the arithmetic means were higher than the hypothetical mean on the test scale, and all items showed percentage above the average.

5. Through the answers, we conclude that big data have an effect on the qualitative characteristics of Accounting Information.

The analysis of the relationship between the elements of the study variable using the correlation coefficient showed that all these elements are connected together significantly as the correlation coefficient ranges between (+1, -1) as in Table (5). Also, the positive value is the direct relationship between the variables while the negative value stands for the relationship. The inverse, and the closer linear coefficient show the strength of the relationship.

Here, there is a strong direct correlation between the opportunities and challenges facing the accountant of in light of the use of big data and its influence on the qualitative characteristics of AI, which amounted to (0.98). This leads to the acceptance of the hypothesis "that big data have an impact on the qualitative characteristics of AI."

<table>
<thead>
<tr>
<th>Aspects</th>
<th>Opportunities and challenges facing the accountant of using big data</th>
<th>The effect of big data on the qualitative features of Accounting Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opportunities and challenges facing the accountant of using big data</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>The effect of big data on the qualitative features of Accounting Information</td>
<td>0.98</td>
<td>1.00</td>
</tr>
</tbody>
</table>
### Table 5 Statistical calculations for the axes of the questionnaire

<table>
<thead>
<tr>
<th>aspect</th>
<th>No</th>
<th>Questions</th>
<th>agree</th>
<th>percent age</th>
<th>neutral</th>
<th>percent age</th>
<th>Disagree</th>
<th>percent age</th>
<th>Arithmetic mean</th>
<th>Standard deviation</th>
<th>Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>18</td>
<td>Big data contributes to rationalizing decisions within the economic unit to some extent.</td>
<td>36.00%</td>
<td>31</td>
<td>62.00%</td>
<td>1</td>
<td>2.00%</td>
<td>2.34</td>
<td>0.52</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>30</td>
<td>Big data is a source of future information that affects the decisions of stakeholders in the economic unit.</td>
<td>60.00%</td>
<td>20</td>
<td>40.00%</td>
<td>0</td>
<td>0.00%</td>
<td>2.60</td>
<td>0.49</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>18</td>
<td>The use of big data helps in making forecasts, increasing the transparency of financial reporting</td>
<td>36.00%</td>
<td>32</td>
<td>64.00%</td>
<td>0</td>
<td>0.00%</td>
<td>2.36</td>
<td>0.48</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>47</td>
<td>The integration of big data into the accounting work helps to achieve integration between it and the Accounting Information systems.</td>
<td>94.00%</td>
<td>1</td>
<td>2.00%</td>
<td>2</td>
<td>4.00%</td>
<td>2.90</td>
<td>0.42</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>22</td>
<td>Big data is a source of data that influences the decision-making process, and it is a good alternative in light of digital and informational progress.</td>
<td>44.00%</td>
<td>12</td>
<td>24.00%</td>
<td>16</td>
<td>32.00%</td>
<td>2.12</td>
<td>0.87</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>47</td>
<td>High costs of hiring professionals with expertise in big data.</td>
<td>94.00%</td>
<td>3</td>
<td>6.00%</td>
<td>0</td>
<td>0.00%</td>
<td>2.94</td>
<td>0.24</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>30</td>
<td>Difficulty in dealing with the huge amount of data despite its availability.</td>
<td>60.00%</td>
<td>16</td>
<td>32.00%</td>
<td>4</td>
<td>8.00%</td>
<td>2.52</td>
<td>0.65</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>40</td>
<td>The speed of the flow of big data affects the decision-making process.</td>
<td>80.00%</td>
<td>6</td>
<td>12.00%</td>
<td>4</td>
<td>8.00%</td>
<td>2.72</td>
<td>0.61</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>44</td>
<td>Big data requires exceptional skills and efforts to analyze and benefit from it.</td>
<td>88.00%</td>
<td>6</td>
<td>12.00%</td>
<td>0</td>
<td>0.00%</td>
<td>2.88</td>
<td>0.33</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>43</td>
<td>Big data affects how data is collected and recorded, data is managed and financial reporting is prepared and audited.</td>
<td>86.00%</td>
<td>6</td>
<td>12.00%</td>
<td>1</td>
<td>2.00%</td>
<td>2.84</td>
<td>0.42</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>339</td>
<td>Overall index</td>
<td>68%</td>
<td>133</td>
<td>27%</td>
<td>28</td>
<td>6%</td>
<td>2.62</td>
<td>0.59</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Opportunities and challenges facing the accountant of using big data

| 12.    | 50 | The use of big data leads to the provision of appropriate information that helps in making decisions within the economic unit. | 100.00% | 0 | 0.00% | 0 | 0.00% | 3.00 | 0.00 | 1 |
| 13.    | 38 | The use of big data improves the performance evaluation of the economic unit, which increases the degree of certainty in the Accounting Information | 76.00% | 7 | 14.00% | 5 | 10.00% | 2.66 | 0.66 | 8 |
| 14.    | 45 | The use of big data leads to knowledge of developments in the economic unit, which enhances the property of the relative importance of Accounting Information | 90.00% | 5 | 10.00% | 0 | 0.00% | 2.90 | 0.30 | 3 |
| 15.    | 34 | The use of big data leads to providing error-free information about the economic unit, which | 68.00% | 14 | 28.00% | 2 | 4.00% | 2.64 | 0.56 | 9 |

#### The effect of big data on the qualitative characteristic of Accounting Information
enhances the characteristic of honest representation.

The use of big data leads to providing impartial information to all users without bias to a particular party.

The use of big data improves the comparability of information between the sectors of the economic unit or between a particular sector with its counterpart in the market.

The use of big data leads to providing realistic and verifiable Accounting Information.

The use of big data improves the understanding and analysis of the content of Accounting Information.

The use of big data provides timely information which influences the decision-making process.

The characteristics of big data in terms of size, speed and diversity affect the characteristics of Accounting Information in an integrated manner, as well as the determinants of cost and benefit.

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>16.</td>
<td>The use of big data leads to providing impartial information to all users without bias to a particular party.</td>
<td>36</td>
<td>72.00%</td>
<td>14</td>
<td>28.00%</td>
<td>0</td>
</tr>
<tr>
<td>17.</td>
<td>The use of big data improves the comparability of information between the sectors of the economic unit or between a particular sector with its counterpart in the market.</td>
<td>40</td>
<td>80.00%</td>
<td>10</td>
<td>20.00%</td>
<td>0</td>
</tr>
<tr>
<td>18.</td>
<td>The use of big data leads to providing realistic and verifiable Accounting Information.</td>
<td>34</td>
<td>68.00%</td>
<td>11</td>
<td>22.00%</td>
<td>5</td>
</tr>
<tr>
<td>19.</td>
<td>The use of big data improves the understanding and analysis of the content of Accounting Information.</td>
<td>47</td>
<td>94.00%</td>
<td>3</td>
<td>6.00%</td>
<td>0</td>
</tr>
<tr>
<td>20.</td>
<td>The use of big data provides timely information which influences the decision-making process.</td>
<td>40</td>
<td>80.00%</td>
<td>7</td>
<td>14.00%</td>
<td>3</td>
</tr>
<tr>
<td>21.</td>
<td>The characteristics of big data in terms of size, speed and diversity affect the characteristics of Accounting Information in an integrated manner, as well as the determinants of cost and benefit.</td>
<td>34</td>
<td>68.00%</td>
<td>11</td>
<td>22.00%</td>
<td>5</td>
</tr>
</tbody>
</table>

|   | overall index | 398 | 80% | 82 | 16% | 20 | 4% | 2.79 | 0.47 |

Conclusions and Recommendations

1. Conclusions

Based on the previous review, the most important findings can be summarized.

- Big data is the amounts of large and huge sized data collected, stored, analyzed, transmitted and processed immediately, which requires the use of new compatible technologies.
- The use of such data in managing the relationship with customers through understanding consumers and customer behavior, and economic units can provide financial and non-financial information in real time.
- Big data analysis helps accountants take advantage of the traditional accounting role and adopt a new strategy that supports and develops the role of accountants, and works to link information technology, marketing and business.
• There is a strong direct correlation between the opportunities and challenges facing the accounting according to the use of big data and its impact on the qualitative features of Accounting Information.

2. Recommendations

In light of the previous results, the most important recommendations are:

• Developing a comprehensive and detailed plan for managing big data and working on analyzing it to benefit decision-making in economic units.
• Taking the necessary measures to find specialized professionals capable of dealing with the huge data sources and quantities in the economic units.
• The need for economic units to pay attention to big data in order to develop a plan to educate workers about its importance and areas of benefit in the administrative and financial departments and sections in these universities.
• Establishing workshops and training courses for workers in economic units. These workshops and courses introduce the participants to significance of the analysis of big data explaining processing, storing, manage and using them in the financial and accounting fields.

References

Al-Mahamid, D.R. (2015). The impact of market variables on the intensity and quality of disclosure in published financial reports to meet the requirements of the efficiency of the financial market - a field study on some companies listed on the Damascus Stock Exchange. (Master). Damascus University, Faculty of Administration and Economics.

http://www.webology.org


