

Research Article

# Big Data Technology and Financial Performance of Listed Firms in Palestine: Mediating Role of Accounting Information Systems

Mustafa Faza<sup>1</sup> , Nemer Badwan<sup>2,\*</sup> 

<sup>1</sup>Department of Accounting, Higher Institute of Accountancy and Enterprise Management, Manouba University, Manouba, Tunisia

<sup>2</sup>Computerized Finance and Banking Sciences Department, Faculty of Business and Economics, Palestine Technical University-Kadoorie (PTUK), Tulkarm, State of Palestine

## Abstract

The purpose of this paper is to examine the mediating effect of the rate of quality of accounting information systems on the relationship between big data technology and firms' financial performance in firms listed on the Palestine Stock Exchange. The researchers conducted an account of the previous studies in this field. The researcher used the deductive approach in studying and analyzing previous studies related to big data by relying on books, periodicals, theses, and accounting standards related to the subject of the research. The researcher applied an inductive approach when conducting the field study and testing the statistical hypotheses related to the study of the relationship between the use of big data technology and firms' financial performance. The findings show a correlation coefficient of (0.54) and a coefficient of determination of (48%), indicating that big data analytics positively affects the rate of return on assets, and that there is a statistically significant relationship between the advancement of accounting information systems and the enhancement of financial performance in big data technology, as measured by the rate of return on equity and the rate of return on assets, which have correlation rates of (0.53) and (42%), respectively. This relationship is reflected in the data on the existence of a statistically significant relationship between the use of big data technology and the enhancement of financial performance with big data technology. The intention of big data, as well as the absence of fundamental differences between the sample individuals, states that the use of big data technology leads to improved performance through the development of various accounting practices and good inventory management by predicting customer behaviour, thus increasing the competitiveness of competition and improving the reputation of the establishment on social media. This is reflected in the company's sales and its survival in the market, as well as the development of analytical models and advanced methods of analysis that limit fraud and help control it, which is one of the establishment's goals at present. This paper contributes to the literature by showing that the use of big data leads to a change in methods of preparing the final accounts, especially the financial position, and displaying them at fair value, which increases investor confidence. The study offers insights into the necessity of holding training courses for accountants concerning technology related to digital transformation and big data analysis for use in developing accounting practices.

## Keywords

Big Data Technology, Financial Performance, Accounting Information Systems, Return on Assets, Return on Equity, Palestine Stock Exchange

\*Corresponding author: [nemer.badwan@ptuk.edu.ps](mailto:nemer.badwan@ptuk.edu.ps) (Nemer Badwan)

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## 1. Introduction

The economic issues in the Palestinian market grew worse, growth rates and prosperity decreased, many companies went bankrupt, and significant investments withdrew from the country as a result of the recent global crises, the Corona pandemic, the conflict between Russia and Ukraine, and most recently, Israel's war on the Gaza Strip. These events resulted in the imposition of harsh living and economic restrictions.

Because of this, there aren't enough research in the Palestinian market to close the existing knowledge gap on the application of big data technology to enhance financial performance through the influence of other key intermediate elements, such accounting information systems. This study contends in this work that for BDA to be implemented successfully, tasks and BDA must be aligned [76, 83]. For instance, if BDA's insights don't improve financial performance, they can be viewed as inappropriate or have a secondary effect on financial success [59].

The manner that organizations operate is always changing due to technology. Technology's development and spread have sparked an industrial revolution that businesses have never seen before, affecting nearly every facet of the industry [80]. According to Grewal et al. [41], firms may benefit or suffer from these technical and market shifts based on how well they anticipate and address the difficulties these changes provide. Because big data-AI enabled analytics, or BDA, can gather and analyze both structured and unstructured data and use it to inform business choices, it is essential for managing various organizational activities. In fact, according to a recent poll of technology executives, 92% of major businesses are investing more in BDA [30] as it facilitates a reevaluation of the value that they provide to clients [56, 70].

Simultaneously, the heightened market volatility presents obstacles and difficulties that few organizations are able to transform into advantages. For many businesses, investing in BDA has become a strategic way to address growing technological and market volatility [52, 77].

Although the relationships and interactions between financial performance and IT have changed due to various technologies, BDA has the potential to have an impact on businesses in the future [41, 44, 63, 74] because it establishes the "fit" required to develop strategic capabilities in order to achieve organizational success. This paper contends in this work that for BDA to be implemented successfully, tasks and BDA must be aligned [76, 84]. For instance, the BDA's insights could not be judged adequate for the work if they don't match the standards [59].

The present study extends the anecdotal evidence by examining the impact of big data technology on marketing and financial performance, thereby providing an empirical examination of the relationship between big data and financial performance [42]. Perceived fit with the tasks to be done, or BDA-fit, is generally crucial for the effective implementation

of BDA [76, 84]. This is the subject of the current study.

Lack of knowledge on BDA-fit in relation to the final objective of improving financial and organizational performance is the primary gap in the literature [59, 27, 52, 72, 76]. By examining the mediating role of accounting information systems on the relationship between big data technology and the financial performance of listed companies, this study uses big data technology in this study as a critical component that aids organizations in developing the competitive advantage required to increase financial performance.

The Random Walk Theory, often known as the efficient markets hypothesis (EMH), postulates that there is no possibility to make excess profits using knowledge about the firm's worth other than what is completely reflected in current stock prices. It addresses one of the most important and fascinating topics in finance: the reasons behind and mechanisms behind price fluctuations in securities markets. It affects financial managers and investors in very significant ways. The term "efficient market" was originally used in a research article by Fama in 1965. Fama claimed that in an efficient market, competition will, on average, cause all new knowledge about intrinsic values to be reflected "instantaneously" in prices [10]. When investing in the stock market, investors need to be compensated for delaying their consumption of cash. A market is considered "efficient" if prices consistently represent all available information [34]. Professional money managers and seasoned investors do not have any profit potential in an efficient market; an investor gets what he pays for. Since the prices of traded securities are equivalent to the dividend values also referred to as fundamental values, the market truly "knows best." [33-36].

Values of shares promptly and completely reflect all knowledge about previous prices in a weak form competitive market. This means that historical prices cannot be used to anticipate future price fluctuations. It basically means that historical stock price data cannot be used to forecast future stock price movements. Investors in this type of market should just employ a "buy-and-hold" approach because there is no way to benefit excessively. The most tried-and-true hypothesis for determining a stock market's week-form efficiency is the random walk theory. According to the random walk theory, stock price fluctuations follow no pattern. Specifically, historical stock price fluctuations do not provide for the prediction of future price movements [10, 88].

Big data has become a reality that must be dealt with as one of the most important corporate resources at present if it is managed properly and objectively, it will make an influential contribution to economic and social development, and investing in big data can support and enhance the ability of investors to make decisions by improving the quality of data that is obtained, in addition to improving the decisions of managers, which entails supporting and enhancing the finan-

cial performance of business organizations [87].

Big data technologies monitor every change that occurs in real-time, resulting in the so-called "mirror world" that reflects an accurate picture of the physical world, which led to the emergence of a new economy called the knowledge era, where the basic commodities in it are information as a result of companies shifting from relying on products to rely on the knowledge and compete on innovation rather than on the product, as data is considered today one of the most important assets for companies through which they seek to reach increased operational efficiency, risk management, and efficient supply chain management. Big data is characterized by large levels of production and circulation in a short and fast time, this data comes from different and diverse sources and forms, and the degree of credibility of this data differs in one way or another, which analyzes huge data needs to control how to use the main methods. Curiously, though, there is a dearth of research assessing the contribution of big data technology to attaining regulatory outcomes, despite the technology's significance in transforming financial sector strategies, financial services, and sales, as well as the influence it may have on their interrelationships [59].

The main objective of the research is to examine the relationship between the use of big data technology and the level of financial performance of companies with a mediating role of the accounting information systems on that relationship with the application on companies listed on the Palestinian Stock Exchange.

With the use of this data, this study seeks to close a significant research gap by examining how big data technology affects financial performance directly and through the intermediary function of accounting information systems, which businesses can depend on to improve financial performance over time. For BDT to drive an organization's capabilities and performance in the presence of various DBT tools, alignment between BDT and the tasks to be completed is a must [59]. Academics and practitioners can learn from this investigation why certain companies are more adept at adapting to changes in the complicated business environment [19].

The research derives its importance from the role that accounting information systems can play in increasing the quality of financial performance of companies with the big data technology, which is reflected in increasing investor confidence in financial reports, as well as knowing the challenges facing accountants in light of the big data environment and trying to benefit from the experiences of previous countries, especially with the growing importance of data. In context of digital transformation and the lack of research in the Palestinian environment, the importance of the research also comes from finding applied and field evidence on the validity and interpretation of the effect of accounting information systems on the relationship between the big data and the financial performance index of companies by applying it to a group of joint stock companies registered in the Palestinian Stock Exchange.

The current study takes one step further to empirically evaluate this relationship by analysing the influence of big data technologies on organizations' financial performance, even though anecdotal evidence Gupta et al. [42] indicates a favourable relationship between big data and financial success. In order to provide findings with meaningful insights and useful implications for decision makers, investors, practitioners, and other interested parties, the influence of accounting information systems' mediating function on this connection was listed as a mediating factor.

This study contributes to the existing literature as follows. This research extends the relevant literature by proposing the moderating role of accounting information systems, which is directly determined by technological disruption, in creating organizational capabilities through big data technology. In doing so, our work emphasizes the importance of continuously evaluating the company's internal environment to provide an impact on the financial performance of companies listed in the Palestinian market. In summary, the study's focus is on how well businesses' BDT functions match or fulfil the demands of their organizations in carrying out their allocated responsibilities. It seen that compatibility between BDT functions and the organization's needs when performing specific tasks is a prerequisite for developing capabilities and enhancing the financial performance of these companies in the Palestinian context by expanding previous literature and filling the research gap in the relevant literature. Accounting information systems play a critical role in improving the financial performance and capacity of an organization. This may be explained by integrating big data technologies into duties that align with financial performance theories.

The remainder of this study as follows. Section 2 presents relevant literature review and hypotheses development. The data, methodology, and study design are covered in section 3. The statistical tests, findings and discussion are shown in section 4. Section 5 finished with conclusions, policy implications and future research avenues.

## 2. Literature Review and Hypotheses Development

### 2.1. Big Data Technology (BDT)

Big data technology is a cutting-edge field of information technology that makes use of the power of both structured and unstructured data, encompassing information from many sources, databases, formats, and structures, particularly customer-related data [44]. According to Bag et al. [20], BDA includes improved informational capabilities that are not supported by traditional information systems, such as sensing, reasoning, and performing. Big data is a form of raw material that, when examined, may be converted into insightful business and customer information as well as helpful information. It is not a significant factor in and of itself [86].

Businesses can learn more and understand consumer behaviours and needs through the use of BDT [32]. Additionally, BDT enhances database marketing's primary functions, such as mass customization, segmentation, targeting, and buyer retention [37]. Businesses can improve organizational decision-making capacities by utilizing BDT to boost their dynamic information processing capabilities [27]. This is in line with the Dynamic Capabilities Theory, which backs the notion that organizations might acquire new capabilities as a result of technology [25].

Big data technology facilitates the development of new business capabilities by organizing and using heterogeneous, multi-source, and enormous volumes of structured and unstructured consumer and market data. Compare this to earlier information systems. Furthermore, based on the idea of task-technology fit, the effectiveness of utilizing big data technology is primarily determined by the attributes of both the technology and the job in question [38, 40].

Studies have also demonstrated that BDT, by converting large data into useful information and expertise, has altered the way frontline staff members accomplish their final objectives [63].

BDA essentially endorses the critical role that IT plays in fostering knowledge, proper communication, and reciprocal learning [1, 2]. To build customer interaction strategies, businesses can utilize predictive analytics techniques to profile both present and future consumers [63]. Chief information officers and IT managers were surveyed by Mikalef et al., (2020) [58], who discovered a positive correlation between big data analytical solutions and technological and dynamic capabilities that enable businesses to convert inputs into outputs and turn opportunities into benefits that directly affect their financial performance.

Through information technologies like BDT, businesses may provide insights that impact their financial performance and improve their capabilities [75]. According to Pham et al., (2022) [64], these skills enhance reaction speed, efficiency, and effectiveness while facilitating improved customer relationship management. According to Mikalef et al., (2020) [58], these competencies have the potential to enhance a company's financial and marketing capacities. These competencies include the capacity to gather data for improved customer service, generate market knowledge, establish unique partnerships, and facilitate financial and marketing planning.

Consequently, it is claimed that by strengthening ties with investors and consumers, insights obtained from the use of BDT enhance businesses' financial success [44, 45]. Furthermore, data and insights from big data technologies can help in negotiations between buyers and sellers to enhance businesses' financial performance [20].

Numerous empirical studies have been conducted in an effort to ascertain whether or not particular markets are, in fact, "efficient" as a result of the efficient market argument. In actuality, most technical theory research has produced tactics that are wholly ineffective for forecasting the values of assets.

Technicians may have some optimism because the researchers have recorded certain aberrant technical analysis, even though transaction costs may decrease or eliminate any benefit. It is the opinion of many experts that markets are neither totally inefficient nor entirely efficient. Though not all markets are equally efficient, some are more so than others. Considered to be incredibly efficient are government bond markets. While small capitalization stocks and foreign companies are viewed by some as less efficient, the majority of scholars believe that big capitalization stocks are very efficient [10, 11].

The researcher can conclude that big data is a huge amount of complex data that is characterized by high levels of diversity, magnitude, and speed, and it may be in the form of notes, ordinary numbers, letters, words, symmetrical signs, pictures, percentiles, geometric shapes, or symbols. In a visual form or an audio clip, it is recorded and therefore its storage media differs from the usual one, and it can only be used after processing it by high-tech information systems capable of converting these different types of data into useful information that can be used in decision-making.

Big data can be divided into three types [24, 48, 49, 51]: a) Structured data, the organized data, usually in the form of tables or databases in preparation for processing it. It is distinguished by the ability to search and process it easily using traditional data processing tools. b) Non-structured data, which is usually the largest proportion of big data is generated from text writings, video images and other patterns issued by Internet technology. c) Semi-structured data, which is an intermediate form between the two previous types [83, 87] added another classification for big data, dividing it into text data, video clips, and audio data.

Actionable insights and good information cause competitive advantages. Therefore, big data analysis has become one of the main factors that can be used to distinguish between low performance and high performance, and big data analysis enables companies to forecast long-term, reduce customer acquisition costs, and increase fixed revenues [54, 48, 50]. Accordingly, managers can use big data to learn more about their business and transform the knowledge generated into effective decisions, improving performance and the entire decision-making process [39, 42].

Therefore, companies that are more experienced in managing different types of knowledge tend to be more innovative in using big data [77-79] and analyzing and processing huge amounts of diverse data, which come in structured, semi-structured or unstructured forms. Despite the existing literature on big data and its impact on accounting practices, researchers argue [84, 21, 22, 23] that the goal of accounting remains the same, which is to provide information to decision-makers. Accountants have used tools to record, filter and merge this data, whatever its source, and although big data poses new challenges to the profession, accountants are always used to making changes related to the different types of information provided. The volume, speed and diversity of huge data make data management and analysis a challenge for



traditional data warehouses, which requires new expertise in the field of data and systems management. The first impact of big data on financial accounting is the increased use of diverse data in the accounting information system [69, 72, 73].

## 2.2. Accounting Information Systems (AIS)

Accounting systems, according to Al-Htybat et al.; Al-Okaily et al.; Al-Okaily et al. [2-4], are the methods and techniques used to monitor, record, examine, and condense financial data. To record, store, and process financial transactions, an accounting system combines automated and manual procedures [5-8]. These are employed to produce financial statements, make and oversee budgets, monitor accounts payable and receivable, control inventories, and guarantee adherence to reporting and financial rules [82]. Accounting systems facilitate informed decision-making by offering valuable insights into an organization's financial health and performance [45, 74, 65, 67, 68].

Coyne et al. [29] described accounting information systems as computer-based systems that are used inside an organization to capture, store, and report financial data. Furthermore, Alqtish et al. [11] described it as systems that collect and analyze financial data, support decision-making, and generate financial reports using both accounting and information technology. According to Alrabei; Coyen et al.; Qatawneh [12, 29, 68], AIS is the consolidation of financial data from several sources into a single, all-inclusive system.

According to Coyne et al.; Qatawneh [29, 68], the efficiency of an accounting information system (AIS) refers to its ability to provide desired outcomes with the least amount of labour effort, resource consumption, or data input mistakes. While Pham et al. [64] define AIS efficiency as the capacity to reduce the amount of time and resources required for system maintenance, Hashim [45] contended that AIS efficiency is the ability to offer data that are accurate, reliable, and timely in order to successfully support business activities.

If the accounting information system all this time has only obtained data from entering accounting transaction data, then in the future it will also use different types of data, for example, GPS, text, video and audio recording data are gradually being combined with traditional accounting data. Therefore, the accountant must be able to improve his analytical skills to deal with differences in data patterns that do not only represent financial transaction data. With the use of increasingly richer data, financial accounting will produce more accurate financial information and can increase transparency, which is ultimately very useful for stakeholders to make decisions [46, 55, 68].

Analytical platforms for big data captured from different sources can be used effectively and share this data instantly among all users inside and outside the company to facilitate the creation and management of knowledge towards making effective decisions in companies, and cloud computing can also provide large-scale data exchange services between data

systems heterogeneous [87].

Accordingly, cloud computing contributes greatly to the field of preparing financial reports through the ability to collect data from different sources without any restrictions related to location, it also contributes to making updates to financial reports and disclosing them in real-time. Thus, it can mitigate information asymmetry and enhance the ability to detect any fraud or fraud. It also offers different levels, of data accessibility, interaction, search, and the ability to share data.

Therefore, Palestinian businesses frequently serve as Israeli enterprises' subcontractors, but a considerably greater variety of informal ties have also emerged as a result of the restricted framework, particularly in situations when Palestinian enterprises only require a relatively modest number of basic items. Palestinian companies might avoid laborious and time-consuming processes by purchasing these commodities directly from Israeli importers.

## 2.3. Information Technology (IT)

Information technology infrastructure, according to Furneaux [38, 86], is the collection of hardware, software, networks, data storage, and other technological components needed to build, operate, and maintain an IT system. The scope of this encompasses all relevant technologies and services as well as server hardware and software, network equipment, communications systems, data storage systems, virtualization software, and IT security components [9, 30, 32].

Gamage [39] contend in their investigation that IT infrastructure is a system of parts and procedures used to organize and store data as well as facilitate internal communication in a company. Balios [21] further define it as a networked computer system that supports a range of corporate functions, such as hardware, software, and data storage and transmission. IT infrastructure, according to Coyne et al. [28], is a collection of digital solutions, systems, and procedures that facilitate information flow inside a company. It is made up of the hardware, software, and telecommunications services required to distribute, store, and process electronic data.

The researchers believe that for companies to remain able to survive in the face of intense competition, they must be able to continuously develop their operations to respond quickly to the changing business environment, including financial and non-financial data of various forms, and big data technology has enabled companies to adapt to that environment. Through a survey market data and information in real-time that is related to competitors or developments in products, this leads to a better prediction of market trends to adapt to those changes.

Through the development of information systems to make them capable of collecting and analysing a huge volume of data in real-time, accountants must move away from focusing on analyzing traditional data only and contribute more to data analysis, which is huge and will require the development of new standards and new accounting standards as a result of the

transition from analyzing financial data to non-financial data.

Based on the above argument, this study was conducted to explore the mediating role of accounting information systems on the relationship between big data technology and financial performance within listed companies in Palestine. This study came to fill the research gap related to the relationship between big data technology and financial performance in the Palestinian context and to clarify the impact of the mediating role of accounting information systems on this relationship.

## 2.4. Hypotheses Development

There are many sequential databases, some of which are based on centralization and some are based on decentralization, and these rules must be developed to defraud or manipulate data and make companies in control of the degree of disclosure they desire, whether it is full or partial disclosure or absolute non-disclosure of data with providing guarantees about the availability of reliable data with these companies, and thus these characteristics allow the formation of a new accounting information systems based on serial databases, which prevents accounting records or related electronic documents from being changed or deleted. In addition to the possibility of exchanging the same accounting information systems with many parties, it allows for data symmetry among all data users and increases confidence because there is not only one source of data [13, 14, 15, 74].

It is clear the importance of companies working on the continuous development of the accounting information system to suit the continuous development in information technology and the various forms contained in the big data to provide information characterized by the characteristics of the quality of various accounting information that helps to make sound decisions, which is reflected in improving performance and increasing investors' confidence in the Palestinian market. Companies face difficulties in using big data to improve performance, support decision-making processes, and extract new insights to give companies competitive advantages. These challenges are due to the company's inability to understand the importance of this data, and the extent of its contribution to the development of performance, in addition to the inability to integrate that data to exploit it in a better way and extract the maximum benefit from it. Despite the difficulties that companies face in adopting big data and there are many studies [50, 57]. Hackius & Petersen; Liedtke [43, 53] indicated that in the shadow of big data, many items that could not appear in the budget before will appear in the ability to collect sufficient data to evaluate those items and develop analytical processing, for example, the reputation of the store can be estimated through the use of social media data and Google service, trends provided by Google.

Many studies have agreed that data must be recognized as an essential asset within companies [18, 24, 57, 49], and data can be used to improve ability competitiveness and innovation in companies. The use of big data can help measure the size of

the company, as is the case with other assets, big data can create more opportunities, maximize resource allocation, make decisions in real-time production and services, through its optimal use and thus reducing costs. Big data technology can be used to generate new insights into customers and identify opportunities for quality improvement [53]. To value big data as an asset, accounting and finance professionals will need to define key assumptions, determine which data is of value, and choose an acceptable evaluation methodology, each type of data can be weighted based on data quality dimensions such as credibility, relevance, accuracy, completeness, and monetization of data sources [12, 28, 29, 31, 39]. To build confidence in the quality and origin of that data among all internal and external stakeholders, the work of accountants and specialists has increased. The financial sector works closely with information technology managers to ensure that the data used to make decisive decisions is from reliable sources, and accountants and professionals in the financial sector seek ways to use big data to measure organizational performance and organizational and investment risks for companies which requires new experience in the field of data management and systems.

Concerning fair value accounting, Arnaboldi et al., (2017); PCBS [17, 55] explained that the biggest danger of big data is the slow adaptation of auditors and accountants to the big data environment, which has become a reality sought by most accounting firms for administrative and competitive purposes. The researcher emphasized that the current accounting and auditing standards, which emphasize presentation, compilation and sampling, are going in the wrong direction. Kuurila [50] dealt with how companies apply big data, the challenges that companies face after implementing its application, and its importance in making administrative decisions. As well as the impact of using big data on the field of management accounting, and how companies use big data in business operations and decision support, and it was concluded that large companies are the most using big data, as they have better means of collecting data, and because they can improve their resources.

The researcher concluded that uncertainty about data quality and ways of interpreting and benefiting from data are the biggest challenges that delay or prevent the application of big data.

Richins et al. [73] dealt with the impact of big data on the accounting profession to see if the accounting profession will end in the era of big data or not, and they explained that big data analysis will complement the skills of accountants and will not lead to their elimination, explaining the role of the accountant in using his business knowledge to integrate structural and non-structural data in the analysis, just as accountants can cooperating with data scientists concerning pilot analysis, and then interpreting the results in light of the company's strategic objectives. Sledgianowski et al. [78] addressed the importance of big data in the field of financial accounting, costs, and auditing, and the role of integrating big

data and modern technology into curricula, so that data collection and analysis processes are automated. They also dealt with the importance of big data in the field of finance, costs and auditing, and some important accounting programs in the market and their uses were viewed, with a focus on the importance of the language of extended business reports in data transfer with the importance of using predictive analyzes and the development of performance indicators.

Alberto et al. [9] discussed the impact of big data and business analytics on management accounting, and its transformation from analyzing financial decisions and budgetary control to focusing on identifying, measuring and managing the main financial and operational drivers of shareholder value. They also dealt with the impact of big data and business analytics on corporate systems, referring to the challenges facing companies in the context of big data and the importance of the data's possessing high-quality attributes such as relevance, timeliness, and accuracy, to ensure that the information is useful for decision-making. Chen et al.; Coyne et al. [28] examined the relationship between the accounting function and big data by focusing on social networking data, and they explained that the impact of big data and social networks was not limited to marketing, but extended to accounting, decision-making processes, and the speed of response to customer requirements, which is reflected in performance, they explained that performance indicators will be able to absorb big data in the future.

Arnaboldi et al.; Furneaux [17, 38] dealt with big data analytics and the possibility of analyzing data and classifying it into useful information for companies and converting it into knowledge related to big data and making effective decisions, thus improving performance, and whether data analysis capabilities have a positive impact on companies' performance, and the results showed that companies that developed big data analysis capabilities more than others, whether in terms of technology or management, have increased their performance, and that big data analysis is capable of changing the way companies compete by understanding, processing, and exploiting massive amounts of data coming from various internal and external sources and processes.

It is clear that big data can change accounting, especially in

the field of budget preparation, as big data can complement financial statements confirmations by management such as "existence" and "evaluation" confirmations that can be added to non-accounting data. This data can enhance the documentation to improve the level of confidence of the accountant. The researchers also concluded that big data can affect the possibility of applying integrated reports and that technological change is a double-edged sword for accountants and most other professions. New markets and their development also improve operating efficiency and increase profit margarine researcher pointed out that accounting for big data could be among the biggest challenges in the coming years, which require the development of new standards and the development of accounting and financial standards. Based on the above discussion, the current study could develop the following research model as in Figure 1.

Based on the above research model, the following set of hypotheses was expected:

H1. The advancement of accounting information systems and improved financial performance in the context of big data technologies do not statistically significantly correlate.

H1<sub>a</sub>. As assessed by the rate of return on assets, there is no statistically significant correlation between the advancement of the accounting information system and improved financial performance in the context of big data technology.

H1<sub>b</sub>. As assessed by the rate of return on equity, there is no statistically significant correlation between the advancement of the accounting information system and improved financial performance in the context of big data technology.

H2. There is a significant difference between the study sample on the elements that must be available in the accounting information system in the big data environment.

H3. There is a statistically significant relationship between the use of big data and the development of accounting practices, and thus the quality of financial performance.

H4. There is a significant difference between the opinions of the respondents about the problems facing companies and limiting the use of big data technology.

H5. There is a statistically significant relationship between big data technology and improving the financial performance of companies.

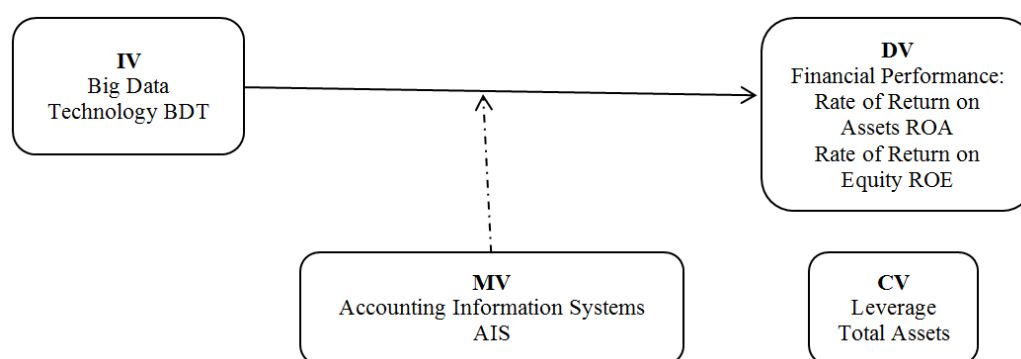


Figure 1. Research Model.

### 3. Data, Design and Methodology

#### 3.1. Population and Sampling

The data was obtained through the published financial reports of the companies in the study sample from the official website of the Palestinian Stock Exchange:

<https://web.pex.ps/>, in addition to the websites of the sample companies on the international information network.

#### 3.2. The Deductive and Inductive Approaches

The researcher used the deductive approach in studying and analyzing previous studies related to big data, by relying on books, periodicals, theses, and accounting standards related to the subject of the research, to develop the theoretical framework for studying the relationship between the use of big data technology and the financial performance of companies within the framework of the modified effect of the quality of the information system accounting, and derivation of statistical hypotheses to be tested in the field study. The researcher applied inductive approach when conducting the field study and testing the statistical hypotheses related to the study of the relationship between the use of big data technology and financial performance of companies in the light of modified impact framework for the quality of accounting information system. Researchers used a survey form to collect the necessary data to test the statistical hypotheses by applying appropriate statistical methods and tests, analyzing the results that outlined.

#### 3.3. Research Plan and Statistical Processing

Based on the importance of the research and to achieve its goal and answer the questions related to it, the research was divided into the following points: 1) Introduction, research problem, objectives, questions, research significance and methodology. 2) Introducing big data policies as one of the digital transformation mechanisms. 3) The relationship between the development of the accounting information system and the use of big data technology. 4) The relationship between big data legalization and financial performance. 5) Literature Review, previous studies and derivation of research hypotheses. 6) Applied and field study. 7) Findings, conclusions, recommendations and future research.

#### 3.4. The Statistical Methods

To achieve the objectives of the research and data analysis, a set of appropriate statistical methods were used using (SPSS)

V 20 programs, which are: a) Descriptive statistics. b) The arithmetic means to identify the extent of low and high responses of the sample members for each paragraph of the survey, and the standard deviation, to identify the extent of the dispersion of the answers of the sample members. c) Cronbach Alpha's test is different, to measure the degree of stability and credibility of the survey items, and it amounted to (81%) as shown in [table 12](#). d) T-test for a sample average to test the research hypotheses, and the hypothesis is accepted if the calculated T-value is greater than the tabular one, which is equal to (1.9778) at a significant level of (5%). e) The Kruskal-Wallis test, which is considered one of the most important non-parametric hypothesis tests, is usually used to apply ordinal descriptive data, and the test is applied to find out the differences between the opinions of the five sample categories.

### 3.5. Applied and Field Studies

#### 3.5.1. The Applied Study

The applied study aims to measure the impact of Big Data Analytics on the financial performance of business organizations in the companies listed on the Palestine Stock Exchange, and the most traded companies in the Palestine Stock Exchange were relied upon, using quantitative models to measure the dependent and independent variables of the study, in addition to a set of control variables.

The study sample was selected according to the following criteria: a) Availability of content for the annual financial reports during the study period. b) Companies that rely on the use of modern information technology and companies that do not use advanced technology in the accounting information system. c) Companies whose shares are traded in the money market and whose activity did not stop during the study period. d) Diversity in the companies' activity between industrial, communications and others.

#### 3.5.2. Study Model, Description and Measurement of Its Variables

The study model consists of the independent variable that is represented by the extent of the use of big data technology, the modified variable of the accounting information system, the dependent variable of the financial performance of the companies, and the regulatory variables that adjust the relationship between the independent, intermediate and dependent variables of the study: the size of the company (SIZE), financial leverage (LEV), and the following [figure 1](#) shows the research model. [Table 1](#) shows the study variables and their measurement methods.



**Table 1.** Study Variables and Measurement Methods.

Variables	Variable Symbol	Measurement Method
Big Data Technology IV	(BDT)	This variable was measured by taking the value (0) if there was no use of big data technology and taking the value (1) if there was a use of big data technology
Financial Performance DV	Rate of Return on Assets (ROA)	It is measured by dividing net profit after taxes by total assets
	Rate of Return on Equity (ROE)	It is measured by dividing net profit after taxes by total equity
Accounting Information Systems MV	AIS	It was measured by taking the value (0) if there is no use of high technology and taking the value (1) if there is a use of technology
Leverage CV	Financial Leverage (LEV)	Total liabilities over total assets at the end of the year
Firm Size CV	F-size (FS)	The natural logarithm of total assets at the end of the year

Source: Authors' own work

## 4. Results and Discussion

### 4.1. Testing of Applied Study Hypotheses

#### 4.1.1. Test the Study's First Hypothesis

H1. The advancement of accounting information systems and improved financial performance in the context of big data technologies do not statistically significantly correlate.

H1<sub>a</sub>. As assessed by the rate of return on assets, there is no statistically significant correlation between the advancement of the accounting information system and improved financial performance in the context of big data

technology.

H1<sub>b</sub>. As assessed by the rate of return on equity, there is no statistically significant correlation between the advancement of the accounting information system and improved financial performance in the context of big data technology.

#### (i). Test the First Sub-Hypothesis

The researcher relied on the multiple linear regression model using the (SPSS) V 20 program, and the following is the presentation and analysis of the results of the first sub-hypothesis.

**Table 2.** The Test First Sub-Hypothesis Results.

Model	R	R-Square	Adjusted R-Square	Std. Error of the Estimation
1	0.544	0.484	0.462	1.977012

Source: Authors' own work

It is clear that the value of the multiple correlation coefficient between the independent variables and the dependent variable is (0.544), and the coefficient of determination  $R^2$  of the model was (0.484), and this means that the independent variable the accounting information system explains (48%) of the dependent variable, which is the return on assets, which confirms that explanatory ability of this model is medium,

which indicates the validity of the model to test the relationship between the variables, the random error percentage returns std. error in the model as a result of not including other independent variables of the study model, and [table 3](#) shows the results of variance test for the regression equation as follows:

**(ii). Variance Analysis****Table 3.** Variance Analysis (ANOVA)

Model	Sum of Squares	DF	Mean Square	F-statistic	Significance
Regression	49.900	3	16.633	4.256	0.003 <sup>b</sup>
Residual	570.652	146	3.909	-	-
Total	620.552	149	-	-	-

Source: Authors' own work

It is clear that the study finds that the (ANOVA) analysis proved the significance of the F-value of (0.003), which is smaller than (0.05) which means the significance of the regression model, which in turn confirms the existence of a significant relationship between the independent variable

(accounting information system) and the dependent variable (measured performance) rate of return on assets), and this indicates the significance of the statistical model and its validity to achieve the objectives of the study.

**(iii). Coefficients of the Regression Model**

Table 4 shows the significance test of the regression model coefficients for the first hypothesis.

**Table 4.** Regression Model Coefficients.

Model	Unstandardized Coefficients		Standardized Coefficients		Significance
	B	Std. Error	Beta	T	
Constant	4.052	1.360		2.980	0.003
Leverage	0.407	0.116	0.074	0.926	0.003
Total Assets	-0.174	0.063	0.222	2.773	0.001
Information Systems	0.827	0.340	0.122	1.522	0.000

Note: a. Dependent Variable: Assets at the rate of return.

Source: Authors' own work

The value of the regression coefficient for the regulatory variable (total assets is negative), i.e., there is a negative relationship between this variable and the dependent variable (financial performance measured by the rate of return on assets), where the regression coefficient was (0.174), and it turns out that it is significant as it was the level of significance (Sig) less than (0.05). The value of the regression coefficient for the regulatory variable (financial leverage) is positive, i.e., there is a positive relationship between this variable and the dependent variable (financial performance measured by the rate of return on assets) as the regression coefficient reached (0.407) and it turns out that it is significant, as the significance level (Sig) was less than (0.05) which indicates the existence of a relationship between the development of the accounting information system and the financial performance expressed

in the rate of return on assets in light of the adoption of big data technology and the acceptance of the alternative hypothesis despite the low strength of the relationship. The accounting and financial performance of companies, measured by the rate of return on assets, is as follows:

$$Y2 = 4.52 + 0.407 (\text{LEV}) + 0.837 (\text{AIS}) - 0.127 (\text{Total Assets}) \quad (1)$$

Based on the previous results, it is possible to reject the first hypothesis and accept the alternative hypothesis that there is a statistically significant relationship between the development of the accounting information system and the improvement of financial performance in light of big data technology using the rate of return on assets. This result agrees with the results of [48, 60, 84].

**(iv). Test the Second Sub-Hypothesis**

The researcher relied on the multiple linear regression

model using the (SPSS) V20 program, and the following is the presentation and analysis of the results of the second hypothesis.

**Table 5.** The Test Second Hypothesis Results.

Model	R	R-Square	Adjusted R-Square	Std. Error of the Estimation
1	0.339 <sup>a</sup>	0.355	0.327	7.803983

Source: Authors' own work

Table 5 shows that the value of the multiple correlation coefficient between the independent variables and the dependent variable is (0.339). The coefficient of determination  $R^2$  of the model was (0.355) and this means that the independent variable, the accounting information system, explains (36%) of the dependent variable, which is the return on equity, which confirms that the explanatory capacity of this model is

less than the return on assets with the validity of the model to test the relationship between the variables, and about the rest of the ratio, it returns the random error in the model as a result of not including other independent variables of the studied model. Table 6 shows the results of the analysis of the variance test for the regression equation as follows:

**(v). Variance Analysis**

**Table 6.** Variance Analysis (ANOVA<sup>a</sup>).

Model	Sum of Squares	DF	Mean Square	F-statistic	Significance
Regression	115.727	3	385.242	6.326	0.000 <sup>b</sup>
Residual	8891.715	146	60.902	-	-
Total	10047.442	149	-	-	-

Note: a. Dependent Variable: Assets at the rate of equity. b. Predictors: (Constant), information systems, - financial leverage, - total assets.

Source: Authors' own work

It is clear that the study finds that the analysis of variance (ANOVA) proved the significance of the F-value of (0.000<sup>b</sup>) which is less than (0.05) which means the significance of the regression model, which in turn confirms the existence of a significant relationship between independent variable (ac-

counting information systems) and the dependent variable performance as measured by the rate of return on equity), and this indicates the significance of the statistical model and its validity to achieve the objectives of the study.

**(vi). Coefficients of the Regression Model**

Table 7 shows the significance test of the regression model coefficients for the second hypothesis.

**Table 7.** Regression Model Coefficients.

Model	Unstandardized Coefficients		Standardized Coefficients		Significance
	B	Std. Error	Beta	T	
Constant	1.527	5.368		0.284	0.004
Leverage	1.035	0.456	0.177	2.268	0.002

Model	Unstandardized Coefficients		Standardized Coefficients		T	Significance
	B	Std. Error	Beta			
Total Assets	0.299	0.247	0.031		0.399	0.001
Information Systems	4.774	1.342	0.280		3.556	0.001

Note: a. Dependent Variable: Assets at the rate of equity

Source: Authors' own work

It is clear that the value of the regression coefficient for the control variable is positive and significant, and the T-value is significant, which indicates the existence of a statistically significant relationship between the development of accounting information system and the improvement of financial performance in light of the big data technology using the rate of return on equity, but the effect of the rate of return on assets is greater as it explains. The independent variable is the ratio of (0.38), while it explains the ratio of (35.5) with rate of return on equity, but the T-values are significant. From the above, a regression model can be formulated for the impact of the relationship between accounting information system and the financial performance of companies, measured by the rate of return on equity, as follows:

$$Y2 = 1.527 + 4.777 (\text{AIS}) + 0.035 (\text{LEV}) + 0.299 (\text{Total Assets}) \quad (2)$$

The researcher will conduct a field study to find out the reasons for the decline and strength of the relationship and whether there are any challenges faced by companies in developing their accounting information systems to confront big

data technology and ways to overcome them to face digital transformation at present. Based on the previous results, it is possible to reject the first hypothesis and accept the alternative hypothesis that there is a statistically significant relationship between the development of the accounting information system and the improvement of financial performance in the light of big data technology using the rate of return on assets and the rate of return on equity. This result agrees with the results of previous studies [24, 82].

#### 4.1.2. Test the Study's Second Hypothesis

There is no statistically significant relationship between the use of big data technology and the improvement of the financial performance of companies, measured by the rate of return on assets and the rate of return on equity, and it is denoted in the program by the symbol (My1y2). Multiple regression analysis was used to test the hypothesis. Table 8 shows  $Y2 = 4.777 + 1.527$  information system accounting + 1.035 financial leverage + 0.299 total assets to 10 analysis results.

Table 8. Model Summary<sup>b</sup>.

Model	R	R-Square	Adjusted Square	Std. Error of the Estimation
1	0.423 <sup>a</sup>	0.534	0.486	4.65176

Note: b. Dependent Variable: MY1Y2. a. Predictors: (Constant), big data technology, - financial leverage, - total assets

Source: Authors' own work

It is clear that the value of the multiple correlation coefficient between the independent variables and the dependent variable is (0.423), and the coefficient of determination  $R^2$  of the model was (534). This means that the independent variable big data technology explains about (53%) of the dependent variable, which is the return on assets and the rate of return on equity together, which confirms that the explanatory abil-

ity of this model is medium and the validity of the model to test the relationship between the variables, and about the rest of the results, the percentage of random error std. error is returned in the model as a result of not including other independent variables of the studied model. The following table 9 shows the results of the analysis of the variance test for the regression equation.



**Table 9.** Variance Analysis (ANOVAa).

Model	Sum of Squares	DF	Mean Square	F-statistic	Significance
Regression	368.178	3	122.726	5.672	0.001 <sup>b</sup>
Residual	3159.268	146	21.639	-	-
Total	3527.447	149	-	-	-

Note: a. Dependent Variable: MY1Y2. b. Predictors: (Constant), big data technology, - financial leverage, - total assets  
Source: Authors' own work

It is clear that the analysis of variance (ANOVA) proved the significance of the F-value. It amounted to (0.001), which is less than (0.05) which means the significance of the regression model, which in turn confirms the existence of a significant relationship between the independent variable (big data technology) and the dependent variable performance as

measured by the rate of return on equity and the rate of return on assets, and this indicates the significance of the statistical model and its validity to achieve the objectives of the study. As for the test of significance of the regression model coefficients. See [table 10](#).

**Table 10.** Regression Model Coefficients.

Model	Unstandardized Coefficients		Standardized Coefficients		T	Significance
	B	Std. Error	Beta			
Constant	1.263	3.200	-		0.395	0.694
Leverage	2.646	0.800	0.262		3.306	0.001
Total Assets	0.571	0.272	0.165		2.099	0.038
Information Systems	-0.038	0.148	-0.020		-0.254	0.799

Note: a. Dependent Variable: MY1Y2.  
Source: Authors' own work

It is clear that the values of the regression coefficients for each of the independent variable, big data technology, and the control variable are positive with financial leverage, meaning that there is a positive relationship between financial leverage and the dependent variable financial performance where the regression coefficient was (0.571) with a significant level less than (0.05). As for the total assets as a control variable, there is an inverse, non-significant relationship between the size of assets as a variable control and financial performance. A regression model can be formulated for the impact of the relationship between the use of big data technology and the financial performance of companies as follows:

$$Y1Y2 = 3.049 + 2.646 (BDT) + 0.571 (LEV) + 0.0038 (\text{Total Assets}) \quad (3)$$

The null hypothesis is rejected that there is no statistically significant relationship between the use of big data technology and the improvement of financial performance of companies, as measured by the rate of return on assets and rate of

return on equity, the alternative hypothesis is accepted that there is a statistically significant relationship between the use of big data technology and improvement of the financial performance of companies, as measured by the rate of return on assets and the rate of return on equity.

## 4.2. The Field Study

Based on the results and to reach an interpretation of the results, the researcher prepared a survey list to answer the research questions, test the remaining hypotheses, and support the applied study.

## 4.3. Data Collection Methods

In obtaining the necessary data for the field study, the researcher relied on the method of the questionnaire list and personal interviews, where the researcher handed over the lists of the five sample items and set a date for the personal interview to answer some inquiries related to the question-

naire list and receive the list.

#### 4.4. Data Analysis Method

After receiving the questionnaire lists and conducting the

personal interviews, the researcher reviewed those lists and encoded the questions contained in them and ran them on the computer using the (SPSS) statistical bag version No. 20, the final number resulted in 87 lists valid for analysis by (54%), see [table 11](#).

**Table 11.** *The Questionnaire Lists and the Personal Interviews.*

Series	Job	Number of Listings Sent	Number of Listings Received	Percentage
1	Accountants	45	20	44%
2	Systems Analysts	50	22	44%
3	System Designers	25	19	42%
4	Academics	20	14	70%
5	Big Data Specialist	20	12	60%
	Total	160	87	54%

Source: Authors' own work

#### 4.5. Design the Survey List and Test Its Credibility

The survey list was designed to include two parts: The first section includes general information about the respondents, including educational qualifications, job status, and years of experience. The second section includes a set of questions addressed to the sample members to test the research hypotheses. The research included three main axes within each axis a set of phrases. To test the hypotheses of the study and to support the applied study, the first axis is related to what are the most important requirements needed by accountants and designers of information systems to benefit from the advantages of big data, while the second axis is related to the fact that the use of big data leads to improving the performance of enterprises by improving the performance of the accounting function, while it is related to third axis deals with the most important problems facing companies and limits the use of big data.

The researcher conducted several personal interviews with the sample members and amended some paragraphs in light of the researcher's conviction of that. The list was designed so that the questions include a set of answers using the five-point (Likert Scale). It ranges from very much agreeing with a degree of (5) to not agreeing at all with a score of (1), and to test the credibility of the survey items and ensure their ability to in testing the hypotheses of the study, the (Cronbach Alpha) credibility test was relied upon to find out the strength of the correlation between the survey questions, and that the survey questions measure what was actually set to measure, and [table 12](#) below shows the results for the total items of the survey.

**Table 12.** *Cronbach's Alpha Credibility Test.*

Cronbach's Alpha	Number of Phrases	Interlocutor
0.938	8	MX1
0.655	8	MX2
0.648	7	MX3
0.747	23	Total

Source: Prepared by the researcher based on the results of the statistical analysis

It is clear from [table 12](#) that the average stability coefficient for the survey phrases and paragraphs was about (75%) which is an acceptable coefficient and was reflected in the coefficients of research axes, which ranged between (93%) for the first axis to (65%) for the third axis, which are good percentages for analysis.

#### 4.6. Testing the Study's Third Hypothesis

To test the special hypothesis, there are no significant differences between the study sample on the elements that must be available in the accounting information system in the big data environment. Descriptive statistical analyzes were conducted to determine the extent of the sample's agreement on these parameters. [Table 13](#) shows the results of the descriptive statistics and the T-test.

**Table 13.** One-Sample Statistics.

Erase Phrases	Mean	Significance	DF	T	Standard Deviation
X1.1 Providing the latest technology in information systems	4.0230	0.000	86	82.12	0.45691
X1.2 Providing information that facilitates measurement methods in the big data environment	3.9310	0.000	86	49.29	0.74386
X1.3 Accounting standards related to the design of information systems in the big data environment	3.5862	0.000	86	32.50	1.02924
X1.4 Include in the curricula methods of designing and analyzing information systems in the big data environment	3.3218	0.000	86	33.18	0.93379
X1.5 Outsourcing of storage and data processing including cloud computing	3.5402	0.000	86	41.06	0.80413
X1.6 Providing material and human resources to adopt modern systems that deal with financial and non-financial information	4.1839	0.000	86	55.15	0.70758
X1.7 The need for information literacy for accountants and designers of accounting systems in the big data environment	4.3333	0.000	86	66.96	0.60361
X1.8 The need to develop methods of producing information so that it has the appropriate characteristics for decision-making, as well as the need to develop methods of interpreting that information	3.8966	0.000	86	40.85	0.88966
Total	3.8520	-	-	-	0.44889

Source: Authors' own work

It is clear that all the respondents agreed on the necessity of having some ingredients in the system accounting information in the big data environment, which is reflected in the development and improvement of accounting performance and increase the value of the establishment, the most important of which is the necessity of eradicating information illiteracy for accountants and designers of accounting systems in the big data environment with an average of (4.33), followed by the necessity of providing material and human capabilities to adopt modern systems that deal with financial and non-financial information with an average of (4.18) and providing modern and technological technologies in information systems with an average of (4.02), then the necessity developing information production methods in order to have the appropriate characteristics for decision-making.

As well as the need to develop methods for interpreting that information and providing information that facilitates measurement methods in the big data environment, with an average of (3.93) and (3.890), respectively, and the rest of the elements are similar in importance, which means that education and training for accountants and system designers information is one of the most important factors that encourage companies to adopt big data technology, with the need to have material and human capabilities to adopt high-tech systems, and this explains the adoption of huge capabilities for high-tech in-

formation systems due to the availability of capabilities and the ability to attract human resources and training.

These results explained to the researcher the justification for the weakness of the relationship between the accounting information system and the improvement of performance in the companies under study due to the lack of capabilities in the big data environment, as shown in the previous table, the significance of all hypothesis expressions is at a significance level of less than (5%) and the calculated value of T is greater than the tabular T (1.9778) for all hypothesis expressions, which means the invalidity of the null hypothesis, and the acceptance of the alternative hypothesis that there is a significant relationship between the development of the accounting information system and the use of big data technology, which is reflected in improving performance and increasing competitiveness.

To measure the extent of existence of significant differences between the opinions of the five study individuals about the elements that must be available in the accounting information system in light of the big data environment and for the establishment to achieve the maximum benefit from that data in improving performance and increasing the value of the establishment according to the (Kruskal-Wallis) test, [table 14](#) shows the test results concerning this hypothesis.

**Table 14.** *Kruskal Wallis Test.*

Job	Chi-Square	Mean Rank	N	Asymptotic Significance
Accountants	-	44.70	20	-
Systems Analysts	4.242	43.68	22	0.374
System Designers	-	45.50	19	-
Academics	-	51.86	14	-
Big Data Specialist	-	31.88	12	-
Total	-	-	87	-

Source: Authors' own work

It is clear from the results of the Kruskal-Wallis test that the results of the hypothesis expressions are not significant, which confirms the validity of the null hypothesis, in the absence of significant differences about these components. The hypothesis is accepted that there are no significant differences between the study sample on the elements that must be available in the accounting information system in the big data environment. This result is consistent with the results of the study [72].

#### 4.7. Test the Study's Fourth Hypothesis

There is no statistically significant relationship between the use of big data and the development of accounting practices, and therefore the quality of financial performance to test this hypothesis by descriptive statistical analysis and the T-test, table 15 shows the results of statistical analysis for hypothesis selection.

**Table 15.** *One-Sample Statistics.*

Erase Phrases	Mean	Significance	DF	T	Standard Deviation
X2.1 Showing the intangible assets in a clearer way, which gives a more comprehensive picture of the performance of the assets	4.1839	0.000	86	61.122	0.63847
X2.2 Reduce information asymmetry among stakeholders through real-time reports instead of periodic reports	4.3333	0.000	86	47.861	0.84450
X2.3 Identify potential problems within the facility and create solutions that increase the value of the facility	4.0460	0.000	86	88.000	0.42885
X2.4 Developing new models to reduce costs, which creates a competitive advantage for the establishment	4.0805	0.000	86	52.948	0.71882
X2.5 The use of analytical models and advanced methods of analysis, which limits fraud and helps control	4.3563	0.000	86	50.375	0.80662
X2.6 Good inventory management by predicting customer behaviour	4.4503	0.000	86	48.682	0.77672
X2.7 Improving the company's reputation on social media, which is reflected in the company's sales and its survival in the market	4.4122	0.000	86	70.759	0.70022
X2.8 Changing the methods of preparing the final accounts, especially the financial position, and showing them at fair value, which increases investor confidence	4.2137	0.000	86	79.909	0.52635
Mean and general deviation	4.2514	-	-	-	0.39962

Source: Authors' own work

It is clear that the sample, with a general average of (4.25) and a deviation of (0.399) indicates that the use of big data



technology in companies necessarily leads to improved performance through the development of different accounting practices. The biggest agreement is that the use of big data leads to good inventory management by predicting customer behaviour, thus increasing the competitiveness of competition with an arithmetic mean of (4.45) and with a deviation of (0.776), followed by improving the reputation of the establishment on social media, which is reflected in the sales of the establishment and its survival in the market, with an average of (4.41), then the use of analytical models and advanced methods of analysis, which limits fraud and helps control, which is one of the most important goals of the establishments at present, with an average of (4.33). The methods of preparing the final accounts, especially the financial position, have been changed and shown at fair value, which increases

investor confidence in previous studies and helps enterprises to survive and compete in the market and poses challenges for accountants that must be faced to improve performance and attract investors. As shown in the previous table, the significance of all hypothesis expressions is at a significant level of less than (5%), and the calculated value of T is greater than the tabular T (1.9778) for all hypothesis expressions, which means that the null hypothesis is invalid. The use of big data and the development of accounting practices, and thus the quality of financial performance. To test the extent to which there are substantial differences between the individuals of the sample about the developments that occur in the science of accounting through the use of big data technology, according to the Kruskal-Wallis test, [table 16](#) shows the results of that test.

**Table 16.** *Kruskal-Wallis Test.*

Job	Chi-Square	Mean Rank	N	Asymptotic Significance
Accountants	-	51.80	20	-
Systems Analysts	5.312	46.43	22	0.257
System Designers	-	38.18	19	-
Academics	-	45.64	14	-
Big Data Specialist	-	33.83	12	-
Total	-	-	87	-

Source: Authors' own work

It is clear from the results of the Kruskal-Wallis test that the results of the hypothesis expressions are not significant (0.257), which confirms the validity of the absence of significant differences between the five sample individuals, that the use of big data technology leads to improving performance through all those factors that were agreed upon by the sample members.

#### 4.8. Test the Study's Fifth Hypothesis

There are no significant differences between the groups surveyed about the problems facing companies and limit the use of big data technology to test this hypothesis. Descriptive statistical analysis and the T-test were conducted. [Table 17](#) shows the results of the statistical analysis to choose the hypothesis.

**Table 17.** *One-Sample Statistics.*

Erase Phrases	Mean	Significance	DF	T	Standard Deviation
X3.1 Lack of accounting standards for how to deal with big data, especially reporting standards	4.1379	0.000	86	45.331	0.85143
X3.2 Unavailability of information systems that can handle various forms of data	3.9540	0.000	86	44.222	0.83399
X3.3 The high cost of big data analytics specialists	4.1839	0.000	86	61.122	0.63847
X3.4 The size, magnitude and diversity of big data make it difficult to deal with it	4.3333	0.000	86	47.861	0.84450

Erase Phrases	Mean	Significance	DF	T	Standard Deviation
X3.5 The difficulty of storing big data in traditional means	4.0460	0.000	86	88.000	0.42885
X3.6 The problem of insecure handling of data, which exposes it to theft	4.0805	0.000	86	52.948	0.71882
X3.7 Slow companies deal with big data technology, although it has become a reality	4.3563	0.000	86	50.375	0.80662
Mean and general deviation	4.1560	-	-	-	0.42892

Source: Authors' own work

It is clear that the sample agreed on the problems that companies face and limit their ability in the use of big data, with an average of (4.16) and a deviation of (0.428) and it is considered the most important problem from the point of view of the sample, the companies' dealings with big data technology, even though it has become a reality, with an average of (4.35) followed directly by the largeness, enormity, and diversity of big data leads to difficulty in dealing with it, with an average of (4.33), then the high cost of specialists in analyzing big data, with an average of (4.18) and the problem of insecure handling of data, which exposes it to theft, and the

difficulty of storing big data, with an average of (4.08) and (4.04) respectively. It is noted that all these problems can be solved and dealt with easily through an advanced information system based on real-time reports and not periodic reports. It is characterized by high technology that can deal with the characteristics of huge data in terms of volume and diversity, and this illustrates the importance of working on developing information systems in the big data environment and testing the hypothesis, (Kruskal-Wallis) test was performed, and [table 18](#) shows the results of the test.

**Table 18.** Kruskal-Wallis Test.

Job	Chi-Square	Mean Rank	N	Asymptotic Significance
Accountants	-	45.88	20	-
Systems Analysts	2.715	45.86	22	0.607
System Designers	-	48.68	19	-
Academics	-	38.43	14	-
Big Data Specialist	-	36.54	12	-
Total	-	-	87	-

Source: Authors' own work

According to the [Table 18](#), it is clear that the paragraphs of the hypothesis (0.607) are not significant, which means that the null hypothesis is accepted, that there are no significant differences between the surveyed groups regarding problems facing companies and limiting the use of big data technology.

## 5. Conclusions and Policy Implications

### 5.1. Conclusions

One of the most important findings of this study is that there is a statistically significant relationship between the development of the accounting information system and the

improvement of financial performance in light of the big data technology using the rate of return on assets with a correlation rate of (0.54), a determination coefficient of (48%) and a significant level of (0.003). There is a statistically significant relationship between the development of the accounting information system and the improvement of financial performance in light of the big data technology using the rate of return on equity with a correlation rate of (0.34), a determination coefficient of (36%) and a significant level of (0.000).

There is a statistically significant relationship between the use of big data technology and the improvement of the financial performance of companies, measured by the rate of return on assets and the rate of return on equity with a correlation rate of (0.53), a determination coefficient of (42%) and

a significant level of (0.001). There are no fundamental differences between the groups surveyed about the problems that companies face and limit the use of big data technology. The sample agreed on the problems that companies face and limit their ability to use big data, with an average of (4.16) and a deviation of (0.428). It was clear from the results of the Kruskal-Wallis test that there were no significant differences between the five sample individuals, stating that the use of big data technology leads to improved performance through all those factors that were agreed upon by the sample members. The average of the sample was (4.25) with a deviation of (0.399), indicating that the use of big data technology in companies necessarily leads to an improvement in performance through the development of different accounting practices.

The use of big data leads to good inventory management by predicting customer behaviour and thus increasing the competitiveness of competition with an arithmetic mean of (4.45) and a deviation of (0.776), and this is consistent with the theoretical results. The use of big data improves the company's reputation on social media, which is reflected in the company's sales and survival in the market with an average of (4.41). The use of big data leads to the use of analytical models and advanced methods of analysis, which limits fraud and helps control, which is one of the goals of establishments' goals at the present average score of (4.33). The use of big data leads to a change in methods of preparing accounts, especially the financial position, and showing them at fair value, which increases investor confidence with an average of (4.21).

The use of huge data leads to an evolution in stock control methods it contributes to the extension of the volume of sales and the disguise of the behaviour of customers and the number of requests to avoid your inventory, moreover, the use of huge data leads to a change in the form and content of the financial statements, especially the financial center by including the list, some of the elements of the unfair assets that it was difficult to include as a result of the availability of sufficient financial and non -financial information, as well as the possibility of showing these lists at a fair value and not at the historical cost, which is reflected in increasing investor confidence, in addition, the use of social communication data contributes to generating new visions for companies and improving the quality of products with a reduction in costs, which contributes to increasing sales and increasing the competitiveness of companies and thus increasing the value of the facility.

The use of huge data contributes to the detection of fraud, and errors and reduces money laundering activities through the provisions of the company's operations, also, one of the benefits that accrue to companies from using huge data is to reduce the risk of supply chain and forecasting problems before it occurs, and the use of huge data contributes to improving profits prediction as a result of dealing with both financial and non -financial data, which increases the quality of information and reduces the insecurity of information be-

tween the relevant framework, which is reflected in the increase in accounting disclosure and thus increasing the value of the facility, furthermore, it leads to companies' resort to the use of huge data to the need to develop accounting information systems to process the vast and varied amount of data and convert it into useful information that has the basic and secondary characteristics of the quality of the information. One of the most important challenges facing accountants in benefiting from huge data technology is the lack of accounting standard that regulates the work of accountants in the huge data environment.

## 5.2. Practical and Theoretical Implications

The researchers formulated the following practical and theoretical implications: The need to hold training courses for accountants regarding technology related to digital transformation and analysis of big data to be used in developing accounting practices. The need for resources to develop accounting information systems in companies to face the big data environment as one of the digital transformation tools and to provide information security. The need to integrate big data and modern technology into the school curricula. The need to work on putting forward a standard on big data that clarify the life cycle of big data into information of high quality. The research's conclusions have ramifications for investors and policymakers, among other groups. Initially for policymakers, a stable financial market must resemble the weak form of efficiency, which is one of the kinds of efficiency.

These small and medium-sized businesses should be assisted and encouraged to go public in order to enhance the number of firms listed and provide investors with more options. Furthermore, it is the responsibility of financial market regulators to educate the public about investing and finance in partnership with academic institutions. Third, drawing in institutional capital lessens the effect of herd mentality by increasing investor diversity, particularly from outside sources. However, this paper also needs to be conscious of the ownership intensity. Because these markets are less efficient than others, they are seen as a favourable chance for investors who aim to generate abnormal profits. However, it is crucial for long-term investors to make selections based on company and financial fundamentals rather than going along with the crowd.

This study aims to contribute to the growing body of literature on the crucial role accounting information systems play as a mediating factor in the relationship between big data technologies and the financial performance of companies listed on the Palestinian Stock Exchange, as well as in driving organizational financial performance. Specifically, this research explains how BDT drives organizational financial performance. Our discovery that technology disruptions have a beneficial impact on financial market disruptions is in line with the earlier theory that market disruptions are a result of

continual technological advancement [79].

In the context of emerging markets like the Palestine Financial Market, the study findings offer theoretical implications that enable us to broaden the application of the notion of the positive association between corporate financial success and big data technologies. It also aids in the explanation of the fundamental steps involved in building the foundational skills required for organizations to employ accounting information systems to boost and enhance their financial performance. The application of big data technology fit theory in the technological field of BDT to improve the financial performance of listed companies and develop the necessary capabilities for this has only recently started to receive academic attention, despite the fact that dynamic capabilities theory has been widely applied in the literature.

Furthermore, by providing an explanation of the underlying mechanism of how BDT through accounting information systems increases organizational financial performance, this research adds to the growing body of literature on the significance of BDT in driving financial performance for organizations [24, 31, 80]. The study also empirically demonstrates the relationship between BDA and organizational financial performance.

In the context of Palestine, this research looks at how crucial it is to comprehend how accounting information systems, acting as a mediator, affect the interaction between big data technologies and the financial performance and competitive capacities of businesses. Enhancing the influence of BDT on the financial performance of organizations involves more than just examining big data and its effects on the financial market. This intriguing finding highlights how crucial it is for an organization to continuously monitor its external environment because it fosters the development of organizational performance in terms of finances and other areas, like selling skills, which can give the business a competitive edge when navigating the marketplace.

By creating catalytic technologies to enhance financial performance and sustain favourable financial outcomes, BDT assists businesses in adapting to fast changes in volatile markets like the Palestine Financial Market. It's interesting to note that the association between BDT and institutional financial performance is not much impacted by market volatility. This result is caused by the fundamental characteristics of BDT, which may actually assist businesses in engaging and serving consumers as best they can, preventing the impact of market disruptions from amplifying the benefits of BDT.

Our paper offers specific recommendations on how businesses might use accounting information systems and BDT to their advantage. Three important management insights are provided by their contributions in our article, which may help organizations improve their financial performance and adapt.

First, this research demonstrates that, as a mediating factor in this relationship, BDT and accounting information systems raise the bar for improving a company's financial performance and developing its selling capabilities, which can be leveraged

to gain a competitive edge and boost the organizational financial performance of listed companies. Second, big data analytics and IT methods and software should be used by organizations, according to our results. As this research demonstrates, the establishment of quality connections, trust, and openness in these organizations is a prerequisite for the engagement of accounting information systems. These may be met by enhancing the BDT's financial and accounting capabilities. Using smart gadgets that are easily accessible to staff members and sales representatives while interacting with investors and linked to internal company procedures is one method to invest in BDT and enhance its impact. This will assist in improving services and offerings not just for managers and front-line staff members. Third, even though this study thoroughly examines the advantages of BDT and the connection between big data technology and BDT. Scholars contend that if these businesses can fully utilize this technology, the advantages of BDT can be fully realized. Therefore, hiring and training staff with knowledge and experience in big data analytics and accounting information systems will benefit from these findings as well. In order to cultivate relationships with investors and stockholders and draw in as many of them as possible which improves the financial performance of these businesses and raises their income and market value companies must hire seasoned workers who are willing to accept and rely on BDT. Fourth, managers have an obligation to coordinate the essential actions to support a culture that welcomes big data for decision-making and to successfully convey BDA results as leaders. Lastly, our results emphasize how crucial market volatility is to comprehending how BDA affects organizational and financial performance.

These findings demonstrate that when managers implement BDA, they will be better able to monitor market movements since it improves organizational and financial performance in extremely unpredictable markets. Therefore, managers also need to make investments in resources that put them in a position to benefit from both anticipated and unforeseen changes in the external environment. It is imperative for managers to view BDT as a valuable asset that they can enhance in the face of heightened market volatility. They have to locate the right BDT tool for the activities and projects that need to be finished. This research emphasizes how crucial it is to choose the ideal BDT tool for an organization's requirements, given the variety of tools in the BDA technology stack with varying functionalities.

### 5.3. Limitations and Future Research Avenues

Despite the contributions this study makes, it has several limits like other research. These restrictions provide potential directions for further investigation. The results' limited applicability to nations other than Palestine is their primary drawback. The results may not be appropriate for comprehending the impact and function of BDT and BDA in nations where the usage of these tools is still in its infancy due to



regional variations in the availability and application of AIS and BDA at the corporate level.

This research thus urges more study that looks at the potential influence of nation-specific factors (such as technical preparedness, innovation ability, and technology absorption, to mention a few) on how big data technology affects the financial performance of organizations. An intriguing subject for future research is examining the difficulties associated with BDA implementation in developing nations and how to get around them.

Based on the conclusions and recommendations of the current study reached the researcher summarized some suggestions for future studies that could be conducted by researchers in this field: The impact of using big data on the quality of financial reports of joint-stock companies. The capabilities of analyzing big data for companies and their impact on companies. The relationship between big data analysis and improving the internal audit function. The importance of using big data in accepting the review client in the digital transformation environment. Measuring the impact of big data on financial reporting standards. A proposed model for inventory control in light of the big data environment.

## Abbreviations

BDT	Big Data Technology
BDA	Big Data Analytics
AIS	Accounting Information Systems
BMI	Body Mass Index
DCT	Dynamic Capabilities Theory
EMH	Efficient Markets Hypothesis
FP	Financial Performance
IT	Information Technology
ROA	Return on Assets
ROE	Return on Equity
PEX	Palestine Stock Exchange

## Author Contributions

**Mustafa Faza:** Conceptualization, Data curation, Formal Analysis, Investigation, Methodology, Resources, Software, Validation, Visualization, Writing – original draft.

**Nemer Badwan:** Conceptualization, Data curation, Formal Analysis, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing.

## Conflicts of Interest

The authors declare no conflicts of interests.

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