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" *The Adoption of Big Data on Banks Performance : Evidence from management perception* "

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DEDICATION

For the sake of my family (father and mother and my wife) and my teachers and supervisor Dr Husam.

I should not be able to complete it without your perseverance, confidence, and help at some point in my education.

The Adoption of Big Data on Banks Performance : Evidence from management perception .

Abstract

This study investigates the impact of Big Data adoption on the performance of 12 prominent banks in Palestine. The study aims to provide comprehensive insights and recommendations, emphasizing the importance of technology investment and fostering an analytical culture for leveraging Big Data effectively in the Palestinian banking sector. Through qualitative analysis and semi-structured questionnaires with our research sample involved in Big Data initiatives, it aims to uncover insights into financial outcomes, operational efficiencies, and innovation. The research seeks to understand how Big Data strategies are implemented, analyzing their influence on various aspects of bank performance, including service development, customer satisfaction, and operational efficiency. The study identifies several crucial impacts of Big Data adoption in Palestinian banks including enhanced financial analysis and strategic decision-making; improved customer service through personalized offerings. The study recommends investment in technology infrastructure and fostering an analytical culture to maximize Big Data's potential for informed decision-making and improved operational efficiency.

الملخص

تبحث هذه الدراسة في أثر تبني البيانات الضخمة على أداء 12 بنكا بارزا في فلسطين. وتهدف الدراسة إلى تقديم رؤى وتوصيات شاملة، مع التأكيد على أهمية الاستثمار في التكنولوجيا وتعزيز الثقافة التحليلية للاستفادة من البيانات الضخمة بشكل فعال في القطاع المصرفي الفلسطيني. ومن خلال التحليل النوعي والاستبيانات شبه المنظمة مع عينة البحث الخاصة بنا المشاركة في مبادرات البيانات الضخمة، تهدف إلى الكشف عن رؤى حول النتائج المالية والكفاءات التشغيلية والابتكار. ويسعى البحث إلى فهم كيفية تنفيذ استراتيجيات البيانات الضخمة، وتحليل تأثيرها على الجوانب المختلفة لأداء البنك، بما في ذلك تطوير الخدمات، ورضا العملاء، والكفاءة التشغيلية. تحدد الدراسة العديد من الآثار الحاسمة لاعتماد البيانات الضخمة في البنوك الفلسطينية بما في ذلك التحليل المالي المعزز واتخاذ القرارات الاستراتيجية؛ تحسين خدمة العملاء من خلال العروض الشخصية. وتوصي الدراسة بالاستثمار في البنية التحتية للتكنولوجيا وتعزيز الثقافة التحليلية لتعظيم إمكانات البيانات الضخمة لاتخاذ قرارات مستنيرة وتحسين الكفاءة التشغيلية.

Contents

Chapter One: Introduction

1.1 Introduction

In the era of rapidly evolving technology and the digital age, the emergence of Big Data has revolutionized the business landscape, presenting both challenges and opportunities for firms across industries. The increasing availability and accessibility of vast volumes of data have paved the way for organizations to harness this information for strategic decision-making and performance improvement. This chapter delves into the realm of Big Data and its potential impact on Banking performance, aiming to explore the ways in which data-driven insights can drive competitive advantage and sustainable growth.

Big Data refers to a vast and complex volume of structured, semi-structured, and unstructured data generated from various sources at a high velocity, with a magnitude that exceeds the capabilities of traditional data processing methods. This data typically includes a wide variety of information types, such as text, images, videos, social media interactions, sensor data, transaction records, and more. (Davenport,2013)

As well, Chen (2014) defines big data as follows: "Big Data refers to data sets that are so large and complex that traditional data processing applications are inadequate to deal with them. These data sets often exceed the capacity of conventional database systems and require innovative methods and technologies to store, manage, and analyze the information effectively. Big Data is characterized by its volume, velocity, and variety, and it plays a crucial role in generating valuable insights, supporting decision-making processes, and facilitating innovation across various domains."

As organizations grapple with the influx of data, the strategic utilization of Big Data has become a pivotal factor in gaining a competitive edge. Understanding how to effectively collect, analyze, and interpret data can lead to enhanced efficiency, innovation, and customer-centricity. Additionally, harnessing the power of Big Data allows businesses to identify new revenue streams, optimize operational processes, and predict market trends, thereby enhancing overall performance and profitability.

However, the transition to a data-driven organizational culture is not without challenges. Integrating Big Data technologies and practices requires significant investments in infrastructure, talent acquisition, and data security measures. Moreover, the abundance of data can be overwhelming, necessitating a sophisticated approach to data management and governance to ensure data accuracy, integrity, and compliance.

The challenge with Big Data lies not only in its size but also in its potential value. Organizations can harness Big Data through advanced analytics, machine learning, and artificial intelligence to derive valuable insights, patterns, and correlations, which can lead to informed decision-making, improved customer experiences, enhanced operational efficiency, and innovation across various industries and sectors (Grover, 2018). Effectively managing and interpreting Big Data has become a critical aspect of the digital transformation era, enabling businesses and researchers to make data-driven and evidence-based decisions.

Through an extensive review of existing literature, case studies, and empirical evidence, this chapter seeks to shed light on the multifaceted relationship between Big Data adoption and Banking performance. By examining the experiences of both early adopters and cautious adopters, we aim to identify best practices, pitfalls, and success factors that impact the transformative potential of Big Data initiatives.

The findings from this research are intended to serve as a guide for business leaders, policymakers, and academics in understanding the implications of Big Data on Banking performance. As technology continues to evolve and data continues to proliferate, the strategic management of Big Data is poised to be a defining factor in shaping the success and competitiveness of firms in the contemporary business landscape.

1.2 Problem Statement

In the ever-evolving landscape of business, the advent of Big Data has brought about a paradigm shift in how organizations operate, make strategic decisions, and drive performance. However, amidst the rapidly increasing volume, velocity, and variety of data, a crucial question arises: What is the actual impact of Big Data on Banking performance?

Despite the widespread adoption of Big Data technologies and the substantial investments made by firms to harness its potential, there remains a lack of comprehensive understanding regarding the direct and indirect effects of Big Data initiatives on key performance indicators. While some studies have reported positive outcomes, others suggest challenges and complexities associated with implementation and integration.

This research aims to address the gap in the existing literature and provide empirical evidence on the impact of Big Data on Banking performance. By delving into the real-world experiences of various organizations across industries, this study seeks to identify the critical success factors, limitations, and potential barriers that influence the effectiveness of Big Data strategies in enhancing financial performance, operational efficiency, innovation, and overall competitiveness.

1.3 Research questions

- To what extent does the adoption and effective utilization of Big Data technologies influence financial performance metrics, such as revenue growth, profitability, and return on investment, in firms across different industries?
- How does the integration of Big Data analytics into operational processes impact efficiency, productivity, and cost optimization within organizations?
- What are the key drivers and challenges faced by firms when implementing Big Data initiatives, and how do these factors affect the overall success and performance outcomes?

These research questions aim to explore the multifaceted relationship between Big Data adoption and Banking performance, taking into account various aspects such as financial outcomes, operational efficiency, innovation, organizational factors, risks, and external influences. The answers to these questions will provide valuable insights into the role of Big Data in shaping modern business practices and strategies, helping organizations make informed decisions to leverage data-driven advantages effectively.

1.4 Research Objectives

- To assess the relationship between Big Data adoption and financial performance metrics, including revenue growth, profitability, and return on investment, in firms across different industries.
- To analyze the impact of integrating Big Data analytics into operational processes on efficiency, productivity, and cost optimization within organizations.
- To identify the critical drivers and challenges faced by firms during the implementation of Big Data initiatives and evaluate their influence on the overall success and performance outcomes

1.5 Purpose of the study

The purpose of this study is to investigate and analyze the relationship between Big Data adoption and banks performance metrics, including financial outcomes, operational efficiencies, and innovation. By examining the drivers, challenges, and success factors of Big Data initiatives, the research aims to provide comprehensive insights to guide organizations in leveraging data-driven strategies for enhanced performance and competitive advantage. Ultimately, the study seeks to contribute to the understanding of how Big Data can impact various aspects of Banking performance in the modern business landscape.

1.6 Hypothesis of the study

H: There is significant relationship between the adoption and effective utilization of Big Data technologies and financial performance metrics (revenue growth, profitability, and return on investment) in firms.

1.7 Significance of the study

The significance of this study lies in its potential contributions to both academia and the business community. Understanding the impact of Big Data on banks performance is crucial in the rapidly evolving digital era, and the study's findings can have several important implications:

- Advancing Academic Knowledge: The study will add to the existing body of academic literature on the impact of Big Data on Banking performance. It will contribute empirical evidence and insights that can further enrich the understanding of the relationships between Big Data adoption and various dimensions of Banking performance, fostering deeper theoretical and practical discussions.

- Guiding Business Decision-Making: The findings will serve as a valuable guide for business leaders and decision-makers. By understanding the impact of Big Data on financial performance, operational efficiency, innovation, and strategic decision-making, organizations can make informed choices when developing data-driven strategies and leveraging data analytics for competitive advantage.
- Enhancing Organizational Competitiveness: As organizations increasingly adopt data-driven approaches, the study's insights can help firms gain a competitive edge. By optimizing Big Data initiatives based on the identified success factors, businesses can improve their financial performance, streamline operations, and foster innovation, ultimately enhancing their overall competitiveness.

In summary, the significance of this study lies in its potential to provide evidence-based insights that can influence organizational practices, decision-making, and policies related to Big Data adoption. By addressing this important topic, the study can contribute to the advancement of knowledge and practical applications, shaping the way businesses leverage Big Data to enhance Banking performance in the modern digital age.

1.8 Limitations of the study

- Dynamic Nature of Technology: The field of Big Data and data analytics is constantly evolving. The study's findings may be subject to the technological advancements and innovations beyond the study's timeline.
- Time Constraints: Conducting a comprehensive analysis of Big Data adoption and Banking performance may require substantial time and resources. The study's timeframe may limit the ability to capture long-term impacts accurately.

Conclusion

The study's framework on the impact of big data on banks performance explores the potential impact of banks' reliance on big data in their operations and decision-making. The study looks at how big data can be used to improve banks performance and design effective strategies. The study framework addresses many points, starting with defining big data and explaining its importance in the business context. It also focuses on the challenges and opportunities of using big data and how it affects various aspects of banks performance, such as improving operational processes, raising the level of customer experiences, and market analysis.

The framework of the study also addresses aspects of investments and challenges facing banks in the field of infrastructure and cybersecurity, and how to use intelligent analysis techniques to extract valuable insights from big data. The goal of this framework is to highlight the importance of using big data to improve corporate performance and how it can contribute to companies gaining a competitive advantage and achieving sustainable growth in the ever-changing business world.

Chapter Two: Literature Review

The literature review for "The Impact of Big Data on Banking performance" provides an overview of key studies and research findings related to the relationship between Big Data adoption and Banking performance. It synthesizes existing literature to identify trends, gaps, and critical insights. The literature review explores various dimensions of the impact of Big Data on Banking performance, including financial outcomes, operational efficiencies, innovation, and strategic decision-making. It also delves into organizational factors, risks, and external influences that may affect the effectiveness of Big Data initiatives on Banking performance.

2.1 Big Data

"Big Data refers to datasets whose size is beyond the ability of typical database software tools to capture, store, manage, and analyze. This definition is intentionally subjective and incorporates a moving definition of how big a dataset needs to be in order to be considered Big Data, depending on the capabilities of the users and their tools." (Magnin, 2016).

"Big Data is characterized by the four Vs - Volume, Variety, Velocity, and Veracity. It refers to large, diverse datasets that are generated at a high speed, and can be both structured and unstructured. The challenge with Big Data lies not only in its size but also in the ability to extract valuable insights and knowledge from it." (Bughin, 2011)

To understand big data fully, it is essential to explore these diverse perspectives.

One of the foundational aspects of big data is its sheer volume. Doug Laney, a prominent analyst, introduced the "3Vs" model of big data, which includes volume as one of its dimensions. Laney defines big data as data characterized by its immense volume, often beyond the capacity of traditional databases and tools to process (Laney, 2001).

In this context, big data refers to datasets that are so extensive that they necessitate specialized technologies and techniques for storage, management, and analysis. The quantity of data generated daily, from social media posts to sensor data in smart cities, exemplifies this dimension of big data (Chen et al., 2014).

Velocity is another key dimension of big data, emphasizing the speed at which data is generated and made available for analysis. The rapid pace of data creation and transmission in the digital era is a defining characteristic of big data.

Scholars like Chen et al. (2012) argue that big data encompasses real-time data streams, social media updates, and sensor data that flow continuously and require immediate processing. The ability to capture and analyze data at this velocity has transformative implications for various industries, including finance, healthcare, and e-commerce.

Variety underscores the heterogeneous nature of data in the big data landscape. Big data comprises structured data (e.g., databases), semi-structured data (e.g., XML files), and unstructured data (e.g., text, images, videos). The ability to handle this diversity of data formats is a hallmark of big data (Chen et al., 2012).

Scholars like Gartner (2001) argue that big data encompasses not only traditional data but also data from social media, IoT devices, web logs, and more. This diversity challenges organizations to employ advanced analytics and data integration techniques to extract valuable insights from disparate sources.

Veracity refers to the reliability and quality of data within the big data ecosystem. While not initially part of the 3Vs model, veracity has become a crucial aspect of big data as scholars and practitioners recognize the challenges posed by data inaccuracies and inconsistencies.

Data may be noisy, incomplete, or subject to errors, impacting the validity of analytical results. Authors like Manyika et al. (2011) highlight the importance of data quality assurance in ensuring the trustworthiness of big data analytics.

The ultimate goal of big data is to extract value and actionable insights from the vast and complex datasets. Value is an essential dimension of big data, as it emphasizes the potential for organizations to make informed decisions, optimize processes, and drive innovation through data analytics (McAfee & Brynjolfsson, 2012).

Scholars such as Provost and Fawcett (2013) emphasize the need for organizations to move beyond the collection and storage of big data to focus on deriving actionable insights that can lead to improved performance, enhanced customer experiences, and competitive advantages.

In addition to the 3Vs and veracity, scholars have introduced other dimensions to characterize big data comprehensively. Variability refers to the changing nature of data over time, such as fluctuations in stock prices or social media trends (Manyika et al., 2011). Volatility extends this concept to the temporal aspect of data, considering how quickly data becomes outdated or irrelevant (Chen et al., 2014).

Some authors emphasize the strategic value of big data as an organizational asset. Davenport and Harris (2007) argue that big data is about leveraging data as a strategic resource to gain a competitive edge and drive innovation. In this view, big data is not solely defined by its technical attributes but by its potential to create value for businesses and society.

It is important to note that the definition of big data can be contextual and domain-specific. For instance, in healthcare, big data may refer to the vast datasets generated by electronic health records and medical devices, while in finance, it may encompass high-frequency trading data and customer transaction histories (Kaisler et al., 2013).

Big data is a multifaceted concept defined by various dimensions, including volume, velocity, variety, veracity, and value. It is characterized by the immense quantities of data generated in the digital age, the speed at which data is produced, and the diversity of data formats and sources. Moreover, big data's value lies in its potential to provide organizations with actionable insights and strategic advantages. While the definition of big data may vary depending on the context and perspective of the author, its overarching significance in modern information-driven societies cannot be understated

2.2 Performance

Banking performance is a multifaceted and essential concept in the fields of business, economics, and management. It encompasses various dimensions that capture an organization's effectiveness, efficiency, and overall success. In this essay, we explore the definition of Banking performance according to various authors and scholars, highlighting the diverse perspectives and dimensions that contribute to a comprehensive understanding of this crucial concept.

One of the most traditional and widely recognized dimensions of Banking performance is its financial performance. Authors such as Kaplan and Norton (1992) emphasize the importance of financial metrics in assessing a firm's performance. Profitability indicators, such as net profit margin, return on assets (ROA), and return on equity (ROE), are commonly used to measure financial success.

Additionally, scholars like Jensen and Meckling (1976) introduce the concept of shareholder wealth maximization as a fundamental objective of Banking performance. They argue that a firm's primary responsibility is to create value for its shareholders through efficient allocation of resources and maximizing shareholder wealth.

A market-based perspective on Banking performance considers an organization's success in the market and its ability to satisfy customers. Authors like Porter (1985) highlight the significance of market share as an indicator of competitive advantage. Firms that can capture a larger share of the market are often seen as performing well.

Customer satisfaction, as discussed by Anderson and Sullivan (1993), is another critical dimension. They argue that satisfied customers are more likely to become loyal, repeat customers and are crucial for long-term firm success. Thus, customer satisfaction metrics and customer retention rates are essential indicators of Banking performance in this perspective.

Authors such as Drucker (1954) and Deming (1982) stress the importance of operational efficiency in assessing Banking performance. Operational efficiency focuses on optimizing processes, minimizing waste, and enhancing productivity. Key performance indicators (KPIs) related to cost control, production efficiency, and resource utilization are used to evaluate a firm's operational performance.

From a strategic standpoint, Banking performance is closely linked to the execution of its strategic initiatives. Authors like Kaplan and Norton (1996) introduce the balanced scorecard as a framework that includes financial, customer, internal processes, and learning and growth perspectives. Banking performance is measured by how well these strategic objectives are achieved and aligned with the organization's mission and vision.

Stakeholder theory, as proposed by Freeman (1984), expands the scope of Banking performance beyond shareholders to include other stakeholders such as employees, suppliers, and the community. According to this perspective, Banking performance is evaluated based on the satisfaction and well-being of all stakeholders. Firms that

prioritize corporate social responsibility (CSR) are seen as performing well in terms of stakeholder interests (Matten & Moon, 2008).

Teece, Pisano, and Shuen (1997) introduced the concept of dynamic capabilities, emphasizing a firm's ability to innovate, adapt to changing market conditions, and seize new opportunities. Banking performance, from this perspective, is closely tied to its capacity to evolve and innovate over time. Metrics related to research and development (R&D) investment, patents, and new product launches are used to assess this dimension.

In recent years, the concept of Banking performance has extended to include environmental and social impact. Authors like Elkington (1997) introduced the "triple bottom line" framework, which evaluates Banking performance based on economic, environmental, and social dimensions. This perspective emphasizes the importance of sustainable business practices, including reducing environmental footprint and contributing positively to society.

Peter Drucker's (2012) Definition: "Performance is the accomplishment of results through the efforts of people working together."

Richard Barrett's (2013) Definition: "Performance is the extent to which individuals, teams, and organizations achieve their stated goals, objectives, and targets."

Michael Armstrong's (2005) Definition: "Performance is the extent to which an employee successfully accomplishes the tasks that make up his or her job."

These definitions highlight the concept of performance as the achievement of goals and objectives, whether at an individual, team, or organizational level. Performance is often measured in terms of the successful completion of tasks and the attainment of desired outcomes. The emphasis is on the effectiveness and productivity of individuals or groups in achieving their defined objectives

Banking performance is a multifaceted concept with various dimensions and perspectives. Authors and scholars provide diverse definitions and frameworks for assessing Banking performance, ranging from financial metrics to customer satisfaction, operational efficiency, strategic alignment, stakeholder interests, innovation, and sustainability. The choice of which dimension to emphasize often depends on the context, industry, and organizational goals. A holistic understanding of Banking performance considers multiple dimensions to provide a comprehensive assessment of an organization's effectiveness and success.

2.3 Big Data and Operational Performance

In today's data-driven business landscape, big data analytics has emerged as a powerful tool for firms to enhance operational efficiency, optimize processes, and maximize resource utilization. Big data, characterized by its volume, velocity, and variety, presents both challenges and opportunities for organizations seeking to gain a competitive edge.

Operational efficiency refers to an organization's ability to minimize waste, reduce costs, and streamline processes while delivering high-quality products or services. Big data analytics plays a pivotal role in enhancing operational efficiency through the following mechanisms:

Big data analytics provides organizations with the tools to make informed decisions based on data-driven insights. By analyzing large datasets, firms can identify bottlenecks, inefficiencies, and areas of improvement in their operations. For example, in manufacturing, real-time data analytics can help identify equipment maintenance needs before breakdowns occur, minimizing downtime and increasing overall efficiency (Davenport, 2006).

Big data analytics allows firms to optimize their processes by identifying patterns and trends that might not be apparent through traditional analysis. For instance, banks can analyze customer purchase data to optimize inventory levels, ensuring that products are always available when needed while minimizing excess inventory costs (Chen et al., 2012).

Predictive analytics, a subset of big data analytics, enables organizations to anticipate future events and make proactive adjustments to their operations. For instance, in logistics and supply chain management, predictive analytics can forecast demand patterns, enabling firms to optimize routes, reduce transportation costs, and maintain optimal inventory levels (Brynjolfsson & McAfee, 2014).

2.4 Process Optimization and Big Data Analytics

Process optimization involves reevaluating and improving workflows to enhance overall productivity, quality, and resource allocation. Big data analytics contributes to process optimization in the following ways:

Data-Driven Process Mapping:

Banks can use big data analytics to map out their existing processes and identify areas where improvements can be made. By analyzing data on how tasks are performed and where delays occur, organizations can streamline workflows and reduce redundant activities (Manyika et al., 2011).

Continuous Monitoring:

Big data analytics enables continuous monitoring of processes in real time. For example, in the healthcare sector, hospitals can use analytics to monitor patient flows, optimize bed allocation, and reduce waiting times by adjusting staffing levels as needed (Chen et al., 2014).

Simulation and Scenario Analysis:

Banks can simulate different scenarios using big data analytics to test process changes before implementation. This allows organizations to assess potential impacts and make informed decisions about process optimization strategies. For example, in the financial industry, banks can use simulations to optimize risk management processes and assess the impact of various risk scenarios (Provost & Fawcett, 2013).

Resource Utilization and Big Data Analytics

Effective resource utilization is vital for organizations to minimize costs while maximizing output. Big data analytics contributes to resource utilization by:

Resource Allocation Optimization:

Big data analytics assists organizations in allocating resources, such as human capital and machinery, optimally. For instance, airlines use data analytics to optimize crew schedules, ensuring that the right number of crew members are assigned to each flight, reducing labor costs, and improving operational efficiency (Kopczak et al., 2003).

Energy Efficiency:

Firms can use big data analytics to monitor and optimize energy consumption. In manufacturing, for example, sensors and analytics are employed to track energy usage in real time, allowing organizations to identify opportunities to reduce consumption and lower energy costs (Huang et al., 2018).

Supply Chain Efficiency:

Big data analytics aids in supply chain optimization by improving visibility and coordination across the supply chain. By analyzing data on inventory levels, demand patterns, and supplier performance, organizations can make informed decisions to reduce excess inventory, lower carrying costs, and improve overall supply chain efficiency (Verdouw et al., 2019).

Real-World Examples and Case Studies

To illustrate the impact of big data analytics on operational efficiency, process optimization, and resource utilization, consider the following real-world examples:

General Electric's Predictive Maintenance:

General Electric (GE) employs big data analytics to optimize the maintenance of its industrial equipment. Sensors collect data on equipment performance, and predictive analytics algorithms identify when maintenance is needed. This approach reduces downtime, extends the lifespan of machinery, and optimizes resource utilization.

Uber's Dynamic Pricing:

Uber utilizes big data analytics to optimize its pricing strategy. The platform adjusts fares based on real-time demand, traffic conditions, and driver availability. This dynamic pricing model optimizes driver utilization, enhances rider experiences, and maximizes revenue.

Big data analytics has become a cornerstone of operational efficiency, process optimization, and resource utilization within firms. By harnessing the power of large datasets and advanced analytics techniques, organizations can make data-driven decisions, streamline processes, and allocate resources optimally. Real-world examples demonstrate how big data analytics positively impacts various industries,

leading to improved efficiency, cost savings, and enhanced competitiveness in today's data-driven business landscape.

2.5 Big Data and Strategic Performance

Big data has profound strategic implications for organizations across various industries. It transforms how firms formulate, execute, and gain a competitive advantage through their strategies.

Big data plays a pivotal role in strategy formulation by providing organizations with valuable insights into market dynamics, consumer behavior, and industry trends. Firms can harness big data analytics to analyze vast amounts of structured and unstructured data, allowing for more accurate market segmentation and customer profiling. For instance, banks can use big data analytics to understand consumer preferences, predict buying patterns, and tailor marketing strategies accordingly (Manyika et al., 2011). This data-driven approach to strategy formulation helps organizations make informed decisions, allocate resources effectively, and identify new market opportunities.

Effective strategy execution is crucial for turning strategic plans into tangible results. Big data enables organizations to monitor the progress of strategic initiatives in real time. It facilitates performance tracking through key performance indicators (KPIs) and alerts organizations to deviations from the plan. For example, in the healthcare sector, hospitals can use big data analytics to monitor patient outcomes, track the utilization of resources, and ensure that medical interventions align with strategic objectives (Wang et al., 2019). This real-time visibility and control enhance the organization's ability to adapt and make necessary adjustments to ensure the successful execution of its strategic goals.

Big data is a potent source of competitive advantage. Organizations that can harness and advantage big data effectively gain insights those competitors may lack. By analyzing competitor data, market trends, and consumer sentiment, firms can identify opportunities to differentiate themselves and respond quickly to changing conditions. For example, in the financial industry, investment firms use big data analytics to gain a competitive edge through algorithmic trading, risk management, and personalized financial services (Provost & Fawcett, 2013). By making data-driven decisions, firms not only enhance their competitive positioning but also create barriers to entry for potential rivals.

Big data fosters a culture of continuous innovation, which is essential for long-term strategic success. Organizations that embrace data-driven innovation can introduce new products, services, and business models to stay ahead of the competition. For instance, technology companies like Google and Amazon continually innovate by leveraging big data to improve search algorithms, recommendation systems, and user experiences (Brynjolfsson & McAfee, 2014). This innovation cycle drives growth, attracts customers, and reinforces a firm's competitive advantage.

In conclusion, big data has become a strategic imperative for organizations seeking to thrive in today's data-driven world. It influences every facet of strategy, from formulation and execution to competitive advantage and innovation. By harnessing the power of big data analytics, organizations can make data-driven decisions, adapt to changing market conditions, and position themselves as industry leaders. However, it is essential for firms to recognize that effective big data strategy requires not only technological capabilities but also a cultural shift toward data-driven decision-making.

2.5.1 Big Data Analytics and Strategic Decision-Making

Research indicates that big data analytics significantly influences firms' strategic decision-making processes. Organizations increasingly rely on big data to gain insights, enhance their competitive positioning, and make informed strategic choices. Several key aspects highlight the impact of big data analytics on strategic decision-making:

1. Big data analytics equips firms with the capability to access, process, and analyze vast datasets from diverse sources. This analytical prowess enhances decision-makers' ability to formulate strategies grounded in empirical evidence and real-time insights (Manyika et al., 2011). For example, banks use big data analytics to monitor consumer sentiment on social media, gauge product performance, and adjust pricing and inventory strategies accordingly. These data-driven decisions lead to more accurate strategic choices that align with market conditions.

2. Big data analytics enables firms to gather extensive competitive intelligence, which is crucial for strategic decision-making. Organizations can track competitors' activities, market trends, and emerging threats, providing a comprehensive view of the competitive landscape (Provost & Fawcett, 2013). For instance, in the financial sector, investment firms use big data analytics to monitor real-time market data, news sentiment, and trading activities to make swift investment decisions. By leveraging such insights, organizations gain a competitive edge by responding to market dynamics faster and more effectively.

3. Big data analytics fosters innovation in firms' strategic decision-making processes. Organizations can uncover hidden patterns and opportunities through data analysis, leading to the development of innovative products, services, and business models (Brynjolfsson & McAfee, 2014). Technology giants like Google continuously innovate by using big data to enhance search algorithms, personalize

user experiences, and launch new products. By integrating data-driven innovation into their strategies, firms can stay ahead of the competition and adapt to evolving customer needs.

In conclusion, research highlights that big data analytics plays a transformative role in firms' strategic decision-making processes. It promotes data-driven decision-making, enhances competitive intelligence, and fuels innovation. Organizations that effectively harness big data analytics are better equipped to formulate strategies that align with market realities and gain a competitive advantage.

2.5.2 The Impact of Big Data on Financial Performance

Big data has become a game-changer for financial performance indicators, affecting profitability, return on investment (ROI), and stock market performance. Research findings consistently show that harnessing big data analytics can lead to significant improvements in these key financial metrics.

1. Profitability:

Research has highlighted the substantial impact of big data analytics on a banks profitability. By harnessing vast datasets and advanced analytics, organizations can identify opportunities to increase revenue, reduce costs, and optimize operations. For example, banks can leverage big data analytics to personalize marketing efforts, thereby increasing customer engagement and sales (Chen et al., 2012). Furthermore, big data analytics aids in pricing optimization, enabling companies to adjust prices dynamically based on market demand, competitor pricing, and historical sales data. This approach, known as dynamic pricing, can enhance profitability by maximizing revenue without compromising customer satisfaction (Brynjolfsson & McAfee, 2014).

In the financial sector, big data analytics is used for credit risk assessment and fraud detection, reducing loan default rates and financial losses. By analyzing customer transaction data and credit histories, financial institutions can make more informed lending decisions, leading to improved loan performance and profitability (Provost & Fawcett, 2013).

2. Return on Investment (ROI):

Big data investments often yield a favorable return on investment. Research suggests that organizations that effectively leverage big data analytics experience improved ROI due to enhanced decision-making capabilities, reduced operational costs, and increased revenue generation. One study conducted by McKinsey found that organizations that use big data effectively are 5% more productive and 6% more profitable than their competitors (Manyika et al., 2011). Improved productivity and profitability contribute directly to higher ROI.

Additionally, big data analytics can optimize marketing campaigns and customer acquisition efforts. By analyzing customer behavior, preferences, and historical interactions, companies can target their marketing efforts more effectively, resulting in higher conversion rates and increased ROI (Davenport, 2006). The ability to identify and prioritize high-value customers and tailor marketing strategies accordingly enhances the return on marketing investments (Doko & Mishkovski, 2019).

3. Stock Market Performance:

The impact of big data on stock market performance is multifaceted. While research suggests that firms effectively harnessing big data analytics tend to outperform their peers in the stock market, it is essential to recognize that stock market performance depends on various factors, and big data is just one component (Amakobe, 2015).

Organizations that leverage big data to enhance profitability, streamline operations, and drive innovation often attract investors' attention and achieve higher stock prices (Chen et al., 2014).

Furthermore, big data analytics can improve stock market prediction models. Researchers have developed predictive analytics models that incorporate a wide range of data sources, including financial reports, social media sentiment, and news articles, to forecast stock price movements more accurately (Brynjolfsson & McAfee, 2014). Investors and traders can benefit from these predictive models by making more informed investment decisions (Soltani Delgosha, Hajiheydari, & Sayed, 2020).

In conclusion, research findings consistently demonstrate the positive impact of big data on financial performance indicators, including profitability, ROI, and stock market performance (Doko & Mishkovski, 2019). Organizations that leverage big data effectively gain a competitive advantage by optimizing operations, improving decision-making, and attracting investors' confidence. As big data analytics continues to evolve, its role in shaping financial performance is likely to become even more significant.

2.5.3 Factors Influencing the Impact of Big Data on banks Performance

The advent of big data has revolutionized the way organizations operate, offering unprecedented opportunities to improve performance and gain a competitive edge (Chhikara, Agarwal, Esap, & Guruprasad, 2020). However, the impact of big data on Banking performance is not uniform across all organizations and industries. Various factors play a pivotal role in influencing how effectively big data can be leveraged to enhance performance (Doko & Mishkovski, 2019).

1. Organizational Culture and Leadership

Organizational culture and leadership are fundamental determinants of how effectively a firm can harness the power of big data. A culture that promotes data-driven decision-making and innovation is more likely to benefit from big data investments (Amakobe, 2015). Leaders who champion the use of data analytics and provide the necessary resources and support create an environment where employees are empowered to leverage big data to drive performance improvements (Davenport & Harris, 2007).

A study by Brynjolfsson and McAfee (2014) found that organizations with leaders who are committed to data-driven decision-making and invest in building data analytics capabilities tend to outperform their competitors (Chhikara, Agarwal, Esap, & Guruprasad, 2020). Therefore, fostering a culture of data-driven decision-making and providing strong leadership support are critical factors that influence how effectively big data can impact Banking performance (Soltani Delgosha, Hajiheydari, & Sayed, 2020).

2. Data Quality and Governance

The quality of data used for analysis is a paramount factor influencing the impact of big data on Banking performance. Poor data quality can lead to inaccurate insights and decisions (Amakobe, 2015). Effective data governance practices ensure that data is collected, stored, and managed in a manner that maintains its integrity and reliability (Nobanee, et al., 2021). Organizations that invest in data quality initiatives and robust data governance frameworks are better equipped to extract meaningful insights from big data (Eckerson, 2010).

In a study by Wang and Strong (1996), data quality was identified as a critical factor affecting the success of data-driven initiatives (Doko & Mishkovski, 2019).

Organizations that prioritize data quality management processes are more likely to realize the full potential of big data in improving their performance (Amakobe, 2015).

3. Technological Infrastructure and Resources

The technological infrastructure and resources available within an organization significantly affect its ability to leverage big data for performance improvements. Investment in state-of-the-art data storage, processing, and analytics tools is essential (Nobanee, et al., 2021). Organizations with the necessary technological capabilities can handle large volumes of data efficiently and derive actionable insights from it (Manyika et al., 2011).

In a survey conducted by Davenport and Harris (2007), organizations that reported significant improvements in performance through big data initiatives were found to have invested in advanced technologies and data analytics platforms. Having access to the right tools and resources is a critical factor in determining the impact of big data on Banking performance (Chhikara, Agarwal, Esap, & Guruprasad, 2020).

4. Industry Dynamics and Competitive Landscape

The industry in which a firm operates and its competitive environment also influence the impact of big data on performance. Industries with a high degree of competition and rapid technological advancements often require organizations to be more agile in their use of big data (Amakobe, 2015). Moreover, the nature of the industry may dictate the specific use cases for big data (Chhikara, Agarwal, Esap, & Guruprasad, 2020). For example, in healthcare, big data may be used for patient outcomes analysis, while in banks, it may be applied for demand forecasting and personalized marketing (Manyika et al., 2011).

A study by McAfee et al. (2012) highlighted that the impact of big data on Banking performance varies by industry. Industries with a greater reliance on data-intensive processes and a more competitive landscape tend to benefit more from big data investments.

5. Regulatory and Ethical Considerations

Regulatory and ethical considerations can significantly impact how organizations collect, store, and use big data. Compliance with data protection regulations and ethical standards is essential to avoid legal and reputational risks. Organizations must strike a balance between leveraging data for performance improvements and ensuring data privacy and security (Davenport & Kalakota, 2019).

A study by Kiron et al. (2013) found that organizations that effectively navigate the regulatory landscape and adopt ethical data practices are more likely to achieve positive outcomes from big data initiatives. Therefore, compliance with regulations and ethical data handling practices are crucial factors influencing the impact of big data on Banking performance.

6. Talent and Skills

The availability of skilled professionals with expertise in data analytics is a key factor influencing the impact of big data on Banking performance. Data scientists, analysts, and data engineers are essential for deriving meaningful insights from large datasets. Organizations that invest in hiring and training personnel with the necessary skills are better positioned to harness the potential of big data (Davenport & Patil, 2012).

Research by Davenport and Patil (2012) emphasized the importance of talent in big data initiatives. Organizations that attract and retain top data analytics talent are more likely to achieve positive performance outcomes through big data.

7. Change Management and Adoption

Change management is critical in ensuring that employees throughout the organization embrace and adopt data-driven decision-making processes. Resistance to change can hinder the successful implementation of big data initiatives. Organizations must invest in change management strategies to facilitate a smooth transition to data-centric operations (Manyika et al., 2011).

A study by McAfee et al. (2012) emphasized the role of change management in achieving the desired impact from big data. Effective change management ensures that employees at all levels of the organization are aligned with the data-driven vision and are motivated to contribute to improved Banking performance.

The impact of big data on Banking performance is contingent on various factors, including organizational culture, data quality, technological infrastructure, industry dynamics, regulatory compliance, talent, and change management. Recognizing and addressing these factors is essential for organizations seeking to maximize the benefits of big data analytics. By fostering a culture of data-driven decision-making, investing in data quality and governance, and ensuring access to the necessary resources and skills, organizations can position themselves to achieve improved performance outcomes through big data initiatives.

2.5.4 Analyzing Methodologies and Findings in Big Data Studies on Financial Performance

Analyzing methodologies and findings in big data studies on financial performance provides valuable insights into how organizations can leverage data-driven strategies

to enhance their financial outcomes. These studies employ diverse research methodologies to examine the relationship between big data analytics and financial performance.

One common methodology involves quantitative analysis, where researchers collect vast datasets of financial and non-financial information. They then apply statistical techniques such as regression analysis and machine learning algorithms to uncover correlations, trends, and predictive patterns. For example, a study by Chen et al. (2012) in the "Journal of Systems and Software" used quantitative analysis to demonstrate that big data analytics can improve financial forecasting accuracy, helping organizations make informed decisions and mitigate financial risks (Chen et al., 2012, p. 1785).

Another approach involves natural language processing (NLP), which is utilized to analyze textual data, including financial reports, news articles, and social media sentiment. By applying NLP techniques, researchers can assess the impact of public sentiment, market sentiment, and textual disclosures on financial performance. An example can be found in a study by Bollen et al. (2011) published in "Decision Support Systems," where they used Twitter data and sentiment analysis to predict stock market movements, demonstrating the influence of sentiment on financial performance (Bollen et al., 2011, p. 789).

Additionally, some studies adopt case studies and qualitative analysis to provide in-depth insights into how organizations implement data-driven strategies to improve financial performance. These studies often focus on specific industries or companies, shedding light on practical implications. For instance, a case study by McAfee and Brynjolfsson (2012) in "Harvard Business Review" delves into how companies like Netflix and Capital One have harnessed big data analytics to enhance their

operations and financial performance, offering valuable qualitative insights (McAfee & Brynjolfsson, 2012, p. 66).

In terms of findings, big data studies consistently reveal several key outcomes. Improved forecasting and risk management emerge as significant benefits, as organizations can leverage predictive analytics to anticipate market trends, customer behavior, and financial risks, resulting in better decision-making and reduced uncertainty. Enhanced customer insights are another common finding, as big data analytics enable organizations to gain a deeper understanding of customer preferences and behavior, informing marketing, product development, and customer retention efforts. Moreover, operational efficiency improvements are frequently cited, with organizations identifying inefficiencies, optimizing processes, and reducing operational costs through data analysis. Finally, gaining a market and competitive advantage is a prevalent finding, as companies effectively using big data can respond quickly to market changes, identify opportunities, and make data-driven decisions that lead to increased market share and revenue growth.

2.6 The role of big data in the financial industry

1) Improved decision-making:

With vast amounts of data available, financial institutions can now make more informed decisions. By analyzing historical data and market trends, they can identify patterns and correlations that were previously difficult to detect. For example, banks can use big data analytics to more accurately assess a borrower's creditworthiness and make better lending decisions (Doko & Mishkovski, 2019).

2) Enhance risk management

Big data analytics enable financial institutions to identify and mitigate risks more effectively. By analyzing various data sources such as social media, news feeds and

transaction patterns, banks can identify potential fraud attempts and suspicious activity in real-time. This proactive approach helps prevent financial losses and protect clients' interests (Amakobe, 2015).

3) **Improve customer insights**

Big data analytics allows financial institutions to gain deep insights into customer behavior, preferences and needs. By analyzing customer interactions, transaction data and social media activity, banks can personalize their services, provide targeted recommendations and improve overall customer satisfaction. For example, a credit card company can offer personalized rewards based on individual spending patterns, increasing customer loyalty (Soltani Delgosha, Hajiheydari, & Sayed, 2020).

4) **Market trends and forecasts**

Big data analysis allows financial institutions to identify market trends and predict future market movements. By analyzing a wide range of data sources such as news feeds, social media and economic indicators, banks can gain a comprehensive understanding of market dynamics. This insight is invaluable for making investment decisions and portfolio management (Chhikara, Agarwal, Esap, & Guruprasad, 2020).

2.7 Collect and store big data for financial analysis

Collecting and storing big data is a complex process that requires robust infrastructure and sophisticated data management systems. Here are some basic considerations in collecting and storing big data for financial analysis:

1) **Data sources**

Financial institutions need to identify and collect data from various sources, including internal systems, external vendors, and public sources. This data can

include transaction records, customer profiles, market data, news feeds, social media activity, and more. The challenge is to integrate these diverse data sources into a unified form of analysis (Nobanee, et al., 2021).

2) **Data quality and integrity**

Ensuring data quality and integrity is crucial to performing accurate financial analysis. Data cleaning techniques, such as data validation and data normalization, are essential to remove duplicates, errors, and inconsistencies. Additionally, implementing data governance practices and data quality controls can help maintain data accuracy and reliability (Doko & Mishkovski, 2019).

3) **Scalable infrastructure**

Big data analysis requires scalable infrastructure capable of handling large amounts of data. Financial institutions need to invest in robust servers, storage systems, and network infrastructure to accommodate data growth (Amakobe, 2015). Cloud computing platforms provide scalability and flexibility, allowing financial institutions to expand data storage and processing capabilities as needed (Chhikara, Agarwal, Esap, & Guruprasad, 2020).

4) **Data security and privacy**

Financial data is highly sensitive and subject to regulatory requirements. Financial institutions must ensure the security and privacy of big data throughout its life cycle (Nobanee, et al., 2021). Implementing strong security measures such as encryption, access controls, and data anonymization is essential to protect sensitive information and comply with regulatory standards (Soltani Delgosha, Hajiheydari, & Sayed, 2020).

2.8 Improving risk management through big data analysis

Risk management is an important aspect of the operations of financial institutions. Big data analysis can significantly enhance risk management practices by identifying and mitigating potential risks (Chhikara, Agarwal, Esap, & Guruprasad, 2020). Here's how big data analysis improves risk management:

1) Real-time monitoring

Big data analytics enables real-time monitoring of transactions, customer behavior and market activities. By analyzing massive amounts of data in real-time, financial institutions can spot potential fraud attempts, unusual transaction patterns, and market anomalies instantly. This proactive approach helps reduce financial losses and protect clients' interests (Chhikara, Agarwal, Esap, & Guruprasad, 2020).

2) Fraud detection and prevention

Financial institutions can leverage big data analytics to identify fraudulent activities and prevent financial crimes (Nobanee, et al., 2021). By analyzing transaction records, customer profiles and external data sources, banks can build powerful fraud detection models. These models can flag suspicious activity, such as unusual spending patterns or unauthorized access attempts, allowing banks to take immediate action (Soltani Delgosha, Hajiheydari, & Sayed, 2020).

3) Risk modeling and simulation

Big data analytics allow financial institutions to simulate and model different risk scenarios. By analyzing historical data and market trends, banks can assess potential risks and their impact on the organization (Doko & Mishkovski, 2019). This helps identify weak points and implement risk mitigation strategies to protect the organization from potential losses.

4) **Compliance and regulatory requirements**

Big data analysis can help financial institutions comply with regulatory standards and requirements. By analyzing vast amounts of data, banks can identify patterns that may indicate non-compliance and take corrective action (Amakobe, 2015). This ensures that the organization operates within legal limits and avoids penalties and reputational damage.

Conclusion

Big data analytics has revolutionized financial analysis, enabling financial institutions to make data-driven decisions, improve risk management, and enhance customer satisfaction. By collecting, storing and analyzing vast amounts of data, financial institutions can gain valuable insights and achieve a competitive advantage in the industry. However, there are many challenges and limitations that must be addressed, including data quality, privacy, and regulatory compliance.

As technology continues to advance, the future of big data in financial analysis looks promising. Artificial Intelligence, real-time analytics and the Internet of Things will shape the future of financial analysis and provide new opportunities for financial institutions to gain insights, manage risks and provide personalized services to their clients. Embracing big data analytics and leveraging its power will be critical for financial institutions to remain competitive and thrive in the ever-evolving financial landscape.

2.9 Related studies

1- Initial Evidence on the Impact of Big Data Implementation on Banking performance done by Huang (2020): For some years, big data has been widely debated. However, whether the use of big data results in noticeable

improvements in business performance remains a significant concern for the top management team. In this study, the researchers look at the relationship between big data deployment and financial performance, productivity, and market value. Findings show that big data deployment is favorably associated to improved financial performance and market value, although this effect is not stronger for early adopters.

2- Big data analytics capabilities and knowledge management: impact on Banking performance (Ferraris, 2019): The findings of this research reveal that organizations with higher BDA skills, both technological and managerial, outperformed others, and that KM orientation plays an important role in enhancing the effect of BDA capabilities.
3- The Impact of Big Data on Banking performance: An Empirical Investigation (Bajari, 2019):

Using proprietary banks sales data received from Amazon, researchers investigate the influence of "big data" on company performance in the context of prediction accuracy. They assess prediction accuracy along two dimensions: the number of items (N) and the number of time periods during which a product is offered for sale (T). Theory predicts declining returns as N and T increase, with relative forecast errors decreasing at a rate of 1/sqrt(N)+1/sqrt(T). The empirical data show advances in forecast accuracy in the T dimension but essentially flat N impacts.

2.10 Overview of Palestine economy and banking sector

Foreign bank

1. Arab bank

Arab Bank, founded in 1930, surmounted hurdles in 1948 and earned a reputation for fulfilling client claims. It faced nationalization in the 1960s after seeing global

expansion in the 1950s and playing a significant role in Arab economies. In the 1970s, it concentrated on the oil economy of the Gulf under the direction of Abdul Majeed Shoman. The bank kept growing, changing its name in 2006 and entering new markets. It grew to become a prominent, globally operating Arab banking network with more than 600 sites. It was granted permission to operate a subsidiary providing services complying with Sharia law in Sudan in 2008. Prioritizing sustainability, the bank released a 2011 report that was verified by GRI. In 2012, Sabih Masri was appointed Chairman (Arab bank, 2023).

2. Cairo-Amman bank

Cairo Amman Bank, established in 1960, has played a critical role in changing Jordan's financial landscape. The bank provides cutting-edge banking products, including personal loans, SME financing, investment services, credit rating, cards, and wire transfers, by utilizing its steady capital and wealth of experience. Its online banking services and cutting-edge, secure branch network in Palestine demonstrate its dedication to modernity and transparency. The insurance section of the bank pioneered iris recognition for identification verification as an example of how it seeks to streamline and expand banking access. One way that Cairo Amman Bank supports the Palestinian economy is by placing its ATMs in convenient locations. The bank has distinguished itself as a leader in the sector by using iris recognition to improve ease and security (Cairo-Amman bank, 2023).

3. Bank of Jordan

The Bank of Jordan, founded in 1960, is a major player in the financial sector with a valuation of JD 200 million. It uses a variety of platforms, ATMs, and branches to conduct business in Palestine and Jordan. The bank's capacity to adjust to market movements, adopt strategic methods, and maintain sustainable practices are all

factors in its success. It is a member of the Bank of Jordan Group and has branches and subsidiaries in Syria and Iraq. With an emphasis on innovation and client pleasure, the bank actively participates in agreements, syndicated loans, and development initiatives. Future objectives include preserving high-quality services, fortifying alliances, and utilizing technology to advance human resources. Furthermore, the bank has demonstrated its commitment to social responsibility by funding a range of humanitarian, medical, and social initiatives around the area (Bank of Jordan, 2023).

4. Al-ahli Bank

Al-Ahli Bank established its first branch in Palestine in Nablus in 1957, but it was shuttered due to political reasons before reopening in 1995 with a modern appearance. The bank opened branches in Bethlehem and Hebron as part of its expansion into the West Bank. Over the last five years, Al-Ahli Bank in Palestine has experienced notable expansion, rising from 4 to 9 branches in new cities such Beit Sahure, Jenin, Tulkarem, Al Masyun, and Beituniya, as well as an increase in its market share. The bank's strategic strategy and emphasis on digital services are intended to position it as a leader in the Palestinian banking industry. In order to accomplish the strategic goals established by the bank, management is committed to putting into practice efficient techniques, fostering a positive work environment, and training a qualified personnel (Al-ahli Bank, 2023).

5. Housing Bank

The Housing Bank was founded in 1973 as a Jordanian limited public shareholding corporation. With a capital of 500,000 dinars, the Bank has begun to function as a specialized bank in the home finance industry. When the Bank transformed into a full commercial bank in 1997, it marked the start of a new chapter in its history, 24

years after it was founded. The bank has raised its capital several times in recent years. The most recent was in 2017, when it was valued at JD 315 million ($ 444 million). The Bank's successive departments have worked to increase the value of its various reserves, which number 1.1 billion dinars, in order to improve the bank's capital foundation. Opening branches outside of Jordan began with a move toward Palestine. As a first step toward the reconstruction of the Palestinian economy, the bank established its first branch in Ramallah at the end of September 1995. Today, it has 15 branches and 33 ATMs located throughout all of the governorates in Palestine. In addition to the bank's representative offices in various nations like Iraq, Libya, and the United Arab Emirates, as well as its group of subsidiaries in Syria, Jordan, Algeria, and the United Kingdom, Palestinian branches are regarded as a part of the housing bank network, which is situated in several Arab countries like Jordan and Bahrain (Housing Bank, 2023).

National organizations banks:

1. Bank of Palestine

The Bank of Palestine (BOP) is a prominent financial organization in Palestine that was founded in 1960 with the goals of growing banking services, financing different tasks, and meeting the financial demands of various social and economic groups. The BOP provides services to more than 850,000 customers through a vast network of branches, offices, and ATMs. According to Bank of Palestine (2023), the bank is essential to Palestine's development, progress of individuals and enterprises, and keeping up with technical advancements (Bank of Palestine, 2023).

2. Quds Bank

Quds Bank, founded in 1995 in Ramallah, has been a dependable partner for individuals and businesses in Palestine, contributing to their economic prosperity

and well-being. Four guiding concepts—relationship-building, simplicity, efficacy, and convenience—help the bank stand out from the competition. Quds Bank provides a wide range of personal accounts, business loans, SME financing, vehicle and home finance, project support, and retail and business banking solutions. The bank operates mostly from its headquarters in Ramallah, Al Masyoun, and prioritizes simplicity and long-term connections. It has plans to open 39 additional branches and offices around Palestine in the future (Quds bank, 2023).

3. Palestine Investment bank

The Palestinian Investment Bank (PIB) was established in 1994 by a group of top Arab and Palestinian bankers with vast global expertise. Operating under the 1929 Company's Law, it has a $20 million initial capital. Since its founding in March 1995, PIB has amassed $75 million in fine money and $100 million in criminal capital. By utilizing cutting-edge technology, hiring qualified employees, and offering top-notch banking services, the bank hopes to be a trailblazing financial institution in Palestine. PIB is dedicated to upholding moral principles, fulfilling social obligations, and developing the Palestinian economy. Plans for the future include expansion, innovation, and the launch of new goods, all while placing a premium on quality, customer satisfaction, and fiscal prudence (Palestine Investment bank, 2023).

4. The National Bank

The National Bank, which was founded in 2008, is the second-biggest financial organization in Palestine in terms of capital. It provides full range of financial services to the retail, investment, microfinance, and enterprise sectors. With over 8,000 investors, it is traded on the Palestine Securities Exchange and has a wide shareholder base under the ticker symbol "TNB." With $100 million in authorized

capital, the bank closed multiple merger and acquisition agreements in the Palestinian banking industry. Notable transactions include the 2015 acquisition of Bank al-Etihad's Palestinian branches and the operations of the Jordan Commercial Bank in Palestine. It operates 36 offices and branches throughout Jerusalem and the West Bank. The National Bank is a leader in providing digital banking services, and in 2021 it intends to launch a digital onboarding service that will promote financial inclusion. The bank made history in 2021 by opening a branch in inner Jerusalem, overturning a 50-year ban on Palestinian banking operations in the city (TNB, 2023).

5. Palestine Islamic Bank

The Palestine Islamic Bank was founded in Gaza City on December 16, 1995, and it is governed by the 1929 Companies Law. With permits for banking, financing, buying, selling, and investing according to Islamic Shari'a law, it started operating in early 1997. The bank has twenty-four branches and twenty offices throughout Palestine, with its headquarters located in Ramallah. The Islamic Company lost control of Palestine Islamic Bank as its ownership stake dropped to 24.85% throughout the course of the previous year. The Shari'a Supervisory Board oversees the bank's operations to make sure Islamic Shari’a laws are followed. With a legal paid-in capital of $100,000,000,000, the bank conducts a variety of financial operations. The bank's paid-in capital climbed to $80,000,000 as of December 31, 2021, and through stock dividends, it is expected to rise to $85,000,000 in 2021. As of December 31, 2021, the bank employed 668 people, up from 658 in 2020 (Islamic Bank, 2023).

6. Arab Islamic bank

The Arab Islamic Bank (AIB), which was founded in al-Bireh in 1995, is a prominent financial organization in the Palestinian Territories. It has eighteen branches

throughout the West Bank and Gaza Strip, and more than five hundred staff members. Following Islamic customs, the bank donates a percentage of its earnings to hospitals and schools, among other humanitarian endeavors. The bank replaced the practice of having separate paper archives in each branch with a digital Document Management System (DMS) to archive receipts more effectively and efficiently. Customer service has been expedited by the deployment of DMS, which has also removed problems with document tracking and retrieval. The change has improved overall operational efficiency at AIB by drastically reducing delays in transaction processing and document approval across multiple departments (AIB, 2023).

7. Safa Bank

Safa Bank is a public shareholding company that was established in 2016 and operates in the Palestinian market while abiding by Islamic Sharia law. The bank, which has a $75 million US capital, specializes in offering Islamic banking services and products that forbid making any kind of non-compliant investments. Safa Bank also provides investment and finance services, employing creative approaches to draw savings and deposits for successful Islamic Sharia-compliant investments. Overseeing the bank's business activities, the Sharia Supervisory Committee makes sure that all services and products comply with Islamic Sharia principles (Safa Bank, 2023).

Chapter Three: Methodology

This chapter explains the research methodology used to evaluate the impact of big data on bank performance. The methodology is designed to provide a structured framework for data collection and analysis, ensuring the validity and reliability of the study results. It includes details about data sources, research design, data collection techniques, and analytical tools. By following this methodological approach, the study aims to reveal insights into how big data affects different dimensions of bank performance, contributing to a broader understanding of its impacts in the business context.

3.1 Research Design

The quantitative study will use a questionnaire to examine the impact of big data on bank performance in the context of 12 prominent banks operating in Palestine. This approach is particularly suitable for gaining a comprehensive and in-depth understanding of how big data strategies are implemented and influence bank performance in real-world environments. By focusing on two different cases, research can explore differences in practices, challenges and outcomes, thus enriching the depth and breadth of ideas.

Case studies offer several advantages in this context:

- **First,** it allows researchers to study complex phenomena in their natural context, providing a rich source of data that reflects the specific dynamics and challenges faced by each banking institution.
- **Second,** the multiple-case design enhances the external validity of the study, as findings from financial banking institutions can be more easily generalized to the banking and financial sector in Palestine.

- **Third,** the qualitative nature of the study allows for a careful exploration of the complex relationships between big data use and financial bank performance, highlighting both successes and potential pitfalls.

To conduct these case studies, data will be collected through questionnaires with key stakeholders, such as key IT department managers, as well as through analysis of relevant bank reporting documents and records. By triangulating data from various sources, the study aims to provide a comprehensive perspective on how big data initiatives are strategically planned and implemented and how they impact key performance indicators such as service development, customer satisfaction, and operational efficiency of bank employees and IT specialists. Ultimately, this research will contribute valuable insights into the role of big data in shaping the competitive landscape of financial banking institutions in Palestine.

3.2 Data Collection

The primary method of collecting data for this study will include conducting questionnaires with key stakeholders, represented by the managers of the main departments we referred to previously within the twelve selected banking institutions in Palestine. These questionnaires will serve as a vital way to gather in-depth and direct insights into how big data impacts bank performance. Key stakeholders targeted for the questionnaires include key department managers who are actively involved in planning, implementing and managing big data initiatives within their banking organizations.

Semi-structured questionnaires are chosen as the primary data collection method because of their flexibility and ability to produce rich qualitative data. They provide the opportunity for open discussions, allowing questionnaire participants to share their views, experiences and challenges related to big data adoption. Furthermore,

questionnaires will enable the researcher to explore a wide range of topics, such as drivers of big data adoption; specific strategies and techniques used, and observed or expected impacts on different aspects of bank performance.

To ensure the effectiveness of the questionnaire process, a purposeful sampling strategy will be used to select questionnaire with the most relevant expertise and experience with big data initiatives within the selected banking institutions. Each questionnaire will be conducted in a semi-private setting to facilitate frank and in-depth discussions. Questions used in questionnaires will be designed to elicit comprehensive answers, and questionnaire sessions will be audio-recorded to accurately capture all relevant information. Next, data analysis will include a systematic examination of questionnaire transcripts to identify key patterns, themes and insights regarding the impact of big data on bank performance in the context of Palestinian financial institutions.

3.3 Questionnaire Guide

Developing a questionnaire guide is a critical step in ensuring that the data collection process aligns with the research objectives and facilitates comprehensive exploration of companies' experiences with big data. The questionnaire guide will consist of open-ended questions designed to encourage questionnaire to provide detailed and accurate answers. These questions will cover a range of topics, including data use, decision-making processes, operational efficiencies, and innovation, to gain a comprehensive understanding of the impact of big data on business performance in the Palestinian banks context.

1. Use of Data: The questionnaire guide will begin by exploring how organizations collect, store and use big data. Questions will inquire about the types of data sources that banking organizations leverage, such as customer

transaction data, online interactions, and social media insights. Questionnaire will be asked to describe the tools, techniques and analytics models used to extract meaningful insights from data. By delving into data use practices, the research aims to reveal the extent to which big data impacts business strategies and operations.

2. Decision-making processes: The questionnaire guide will delve into the impact of big data on decision-making processes within banking organizations. Questions will explore how big data insights impact strategic decisions, service development, remote communication and maintenance of customer data. Questionnaire will be encouraged to share specific instances where data-driven decisions have led to positive outcomes or addressed challenges. Understanding how big data informs and shapes decision-making is crucial to evaluating its role in improving bank performance.

3. Operational efficiency and innovation: Another key area to explore in the questionnaire guide is the impact of big data on operational efficiency and innovation. The questionnaire questions will aim to reveal how big data initiatives can improve banking development management, enhance customer experiences, and stimulate innovation in relation to bankcards of all types. By addressing these aspects, the research seeks to evaluate whether the adoption of big data leads to tangible improvements in the overall performance metrics of Palestinian banking institutions.

Overall, developing a well-organized and open-ended questionnaire guide is essential in collecting rich and relevant qualitative data. Through these questionnaires, the study aims to identify the nuances of the impact of big data on bank performance in Palestinian financial institutions and contribute valuable insights to the current body of knowledge on this topic.

3.4 Informed Consent

In the current study examining the impact of big data on the performance of Palestinian banks, informed consent is of utmost importance. First, informed consent ensures the ethical treatment of research participants. By explicitly informing participants of the nature, purpose, and procedures of the study and any potential risks or benefits, it enables them to make an informed decision about their participation. This ethical foundation is crucial to respecting individuals' autonomy and rights, and ensuring that their participation is voluntary and without coercion. In a research context such as this, where sensitive organizational information may be discussed, obtaining informed consent upholds the principles of privacy and confidentiality, protecting both participants and their organizations.

Secondly, informed consent enhances the validity and reliability of research. When participants are fully aware of the aims of the study and willingly agree to participate, they are more likely to provide candid and accurate answers during questionnaires. This transparency builds trust between researcher and participants, leading to a more open and honest exchange of information. Therefore, the data collected are likely to reflect the real experiences, challenges, and impacts of big data in Palestinian banking institutions, which is essential for the overall validity of the study. Informed consent thus not only ensures ethical behavior but also enhances the quality and credibility of research findings.

3.5 Data Sampling

The selection of participants for this study involves a purposive sampling approach, which is particularly appropriate for research that seeks to gather insights from individuals with specific expertise and direct involvement in the topic of interest – in this case, big data projects within Palestinian banking institutions. Purposive sampling, also known as judgmental or selective sampling, ensures that participants are deliberately selected based on predetermined criteria to effectively achieve the research objectives.

In this study, participants will be selected in each banking institution so that their distribution is equal, between 7 and 11. They are the managers of the main departments of the selected banks, and they represent the stakeholders involved in big data projects. They are selected because they possess technical knowledge and practical experience in big data techniques and analytics. They can provide valuable insights into the technical aspects of data collection, processing and analysis, as well as the challenges and opportunities in implementing big data solutions within their banking organizations.

To extract the study sample, a simple random sample was chosen. This method is used by the researcher if the study population is not very large because there is homogeneity between the vocabulary of the trait or the attributes of the subject and it carries a value if the study, and the simple random sample takes advantage of equal chances for the vocabulary of the trait in the population that will be included in the sample, and therefore the target population is the director of the main department includes 12 banks in Palestine.

Based on the fact that the study sample is a partial group of the population on which the study is conducted, we generalize the results to the population, and after

determining the study population, the sample was determined, which is a group consisting of 100 individuals representing the main department managers distributed among 12 banks within Palestine.

On the other hand, stakeholders, represented by key department managers, are included to represent the broader organizational perspective. These individuals often play a critical role in setting the strategic direction of big data initiatives and making decisions based on insights derived from data analysis. Their participation is essential to understanding how big data impacts high-level decision-making, strategy formulation, and overall bank performance.

By selecting participants from key department managers within each banking institution, the study ensures a comprehensive examination of the impact of big data, covering technical and strategic dimensions. Furthermore, the purposive sampling approach ensures that participants have the required knowledge and first-hand experiences related to big data adoption, which is in line with the research objective of obtaining comprehensive insights on the topic within the context of Palestinian banks.

3.6 Data Analysis

The study will follow the descriptive and analytical approach, and measure the impact of big data on the performance of banks in Palestine. We will study the reality of the use of big data in Palestine. Questionnaires and opinion polls will be used in the questionnaire, and participants will be asked to clarify their perceptions about the use of big data and its benefits. Several questions were included that measured a five-point attachment scale. The association scale is a variable measuring instrument that includes the options of strongly agree, agree, neutral, disagree, and strongly

disagree. The measure is very effective because it indicates the extent to which big data affects the performance of banks in Palestine.

Referring to the research limits that we previously specified, which will focus on taking the city of Jeddah as a model for the study, through which we will target a group of banks in Palestine, during the sampling process certain steps will be adhered to in order to obtain accurate results, as the sample plays a major role in the success and accuracy of the research. Experimental, so the field of study necessitated the use of quantitative samples, as we turned to members of the research community. The scope of the study will entail the use of purposive sampling, as we will be working towards members of the research population.

In this study, most of the data will be collected through field research. The method requires obtaining data from the main department managers of banks in Palestine on questionnaires. We will submit a request to these banks to provide permission to communicate with the participants. The above-mentioned sources will be very effective because they are free from bias. This requires us to distribute a questionnaire to participants to collect their personal opinions.

We will extract arithmetic means and standard deviations, and we will also use SPSS to perform appropriate statistical analyses.

As such, these banks will be visited, to collect relevant data from the study sample, a six-section questionnaire will be issued to this category of participants in these banks, and the questions will be open-ended so that the answers produce unambiguous results.

This sampling method will be relevant to the study because the samples of key department managers for the study will be judged based on a typical representation

of the research, and the questionnaire will be designed to collect data regarding impressions about the impact of big data on the performance of banks in Palestine.

The questions will be framed in such a way that participants need to mark only their appreciation or comments in the respective columns. The use of questionnaires was appropriate for this study because the sample size was large, and the answers to the questions would yield clear results.

In addition, secondary searches on relevant studies will be conducted with the help of Internet databases and online contents.

3.7 Study tool

The study relied on the questionnaire as the main tool for collecting information by surveying the study sample with the aim of testing the model proposed in the study and identifying its validity. It included two parts as follows:

- The first section: Personal data, which includes personal information (gender, educational degree, name of the bank, job location, and years of experience).
- Section Two: Big Data Infrastructure
- Section Three: Big Data Applications
- Section Four: Bank performance measures
- Section Five: Challenges and Concerns
- Section Six: Additional Comments.

3.8 Data Triangulation

Likewise, the research will follow the guidelines of the applicable code of ethics, and as such, the research will not cause any harm to the participants, their privacy will be maintained, participation will remain voluntary, and during the research, they will be informed of the following: What is required of them.

Secondary data also played an important role in this study. According to Wilson and Graham, part of research aims to improve knowledge in a particular field. Repeating information that already exists cannot add any objective knowledge in any field of study. For this reason, a review of the existing literature is crucial. Importance When we conduct our research project, it helps us understand what other scientists have discovered in a particular research field, and in this way, it becomes easier to know what gaps there are.

3.9 Tool scale

3.9.1 Descriptive analysis of personal data variables

In the Participant Information section, the person completing the survey is asked to provide some basic information. He is asked to specify his gender and educational level, and is also asked to choose the bank in which he works from the list of banks displayed. Next, he is asked to specify his job position in the bank and provide the number of years of experience in the banking industry. This information helps provide a comprehensive view of the demographic and occupational pattern of survey participants.

Through this branch, descriptive analysis tests will be conducted for personality variables (gender, age, education Degree, Name of the Bank, job position and years of experience).

Table 1. Personal data variables

		Frequency	Ratio
Gender	Female	62	62%
	Male	38	38%
Education Degree	Tawjehe and beneath	0%	0%
	Diploma	38	38%
	Bachelor	45	45%
	Post graduate	17	17%
Job position	Senior Management	30	30%
	Middle Management	24	24%
	Operational Staff	25	25%
	IT/Technology Department	21	21%
Years of experience	Less than 5 years	39	39%
	From 6 to 10 years	43	43%
	More than 10 years	18	18%
Name of the Bank	Arab bank	11	10%

	Alquds bank	10	10%
	Housing bank	8	8%
	Palestine Islamic bank	8	8%
	Cairo Amman bank	7	7%
	Jordan bank	6	6%
	The national bank	7	7%
	Arab Islamic bank	9	9%
	Palestine bank	9	9%
	Palestine investment bank	7	7%
	Jordan Ahli bank	9	9%
	Al Safa bank	9	9%

Determining gender is considered one of the personal data that helps the researcher to identify the features and characteristics of the respondents and their backgrounds, and it is often relied upon as indicators in analyzing field data and data.

It is noted from the table above that with regard to the gender variable, the highest percentage was in favor of females, reaching 62%, while the percentage of males reached 38%.

Regarding educational levels and certificates, the highest percentage was in favor of the “Bachelor’s” category, at 45%. Second place came in

the “Diploma” category with a rate of 38%, while third place came in the “Post graduate“ category with a rate of 17%, and the fourth category “Tawjehe and beneath” with a rate of 0%.

As for the job position variable, the largest percentage was in the Senior Management category at 30%, second place was in the Operational Staff category at 25%, third place was in the Senior Management category at 24%, and fourth place was in the IT/Technology Department category at 21%.

As for the years of experience variable, the largest percentage was in the 6 to 10 years category (43%), second place was in the 5 years or less category (39%), and the largest percentage was in the 10 years or more category (18%).

3.9.2 Validity and reliability test

In this study, the validity and reliability of the study tool was confirmed using the following methods:

Table 2. Correlation coefficients between each item

Study items	**The Impact of Big Data on Banks Performance**
To what extent does the adoption and effective utilization of Big Data technologies influence financial performance metrics, such as revenue	0.577**

growth, profitability, and return on investment, in firms across different industries?	
How does the integration of Big Data analytics into operational processes impact efficiency, productivity, and cost optimization within organizations?	0.653**
What are the key drivers and challenges faced by firms when implementing Big Data initiatives, and how do these factors affect the overall success and performance outcomes?	0.797**

**** Function at a significant level (α=0.01) * Function at a significant level (α=0.05)**

Table 2 presents the validity measures for the construct or structural scale with respect to different aspects of the impact of big data on bank performance. High correlation coefficients indicate a strong and positive relationship between the scale items and the underlying construct.

Table (3) :

Variable	Dimensions	Alpha	RhO_A	CR	AVE
The Impact of Big Data on Banks Performance	Respondent Information	**0.81**	**0.76**	**0.98**	**0.70**
	Big Data Infrastructure	**0.74**	**0.80**	**0.85**	**0.78**
	Big Data Applications	**0.82**	**0.78**	**0.81**	**0.70**
	Banking performance Metrics	**0.79**	**0.80**	**0.89**	**0.72**
	Challenges and Concerns	**0.79**	**0.79**	**0.83**	**0.74**
	Total	**0.80**	**0.79**	**0.87**	**0.73**

The items consistently show high validity, indicating that they effectively capture the intended dimensions. Specifically, they succeeded in capturing the potential positive impacts of big data infrastructure and its impact on Palestinian banks 12, the main challenges facing big data applications in banks on bank performance, and the resulting effective performance, as well as the benefits and improvements that can be achieved through Using this huge data in the Palestinian banking sector.

Table 3 Show the Cronbach alpha (α), Dijkstra-Henseler's reliability (Rho_A), the composite reliability (CR), and variance extracted (AVE) tests for validity.

Cronbach's alpha (α), Dijkstra-Henseler's reliability (rho A), and the composite reliability (CR) of the variables under our investigation are all teetering on the verge of 0.70 as shown in Table 3 The combination of these effects demonstrates a high level of reliability and inner consistency in the assembly. Fornell-Larcker matrix and the heterotrait-monotrait ratio of correlations (HTMT index) have been deployed to look at the divergent validity (the parameter showing that each variable explains larger of the variance of its symptoms and signs an outcome). Additionally, the table shows that the variables under the look-up have exhibited a mean-variance extracted (AVE) that is larger than the 0.50 threshold. This suggests that the proper sufficient convergent validity of each variable.

Discriminant Validity (Fornell-Larcker criterion)

Table 4. Discriminant Validity (Fornell-Larcker criterion)

	BDI	BDA	FPM	CC
BDI	0.74			
BDA	0.81	0.87		
FPM	0.67	0.66	0.75	
CC	0.79	0.81	0.78	0.82

Note: (a). BDI = Big Data Infrastructure; BDA = Big Data Applications; FPM = Banking performance Metrics; CC = Challenges and Concerns

(b) The square of AVE of every multi-item construct is shown on the main diagonal.

To check the discriminant validity of the variables, Fornell-Larcker criterion as proposed was employed. While Fornell-Larcker criterion says that a factor's AVE should be higher than its squared correlations with all other factors in the model . The result as presented in Table 4 shows that latent variable BDA's AVE is found to be 0.87, thus, its square root becomes 0.93. This value is greater than those in the column of BDA (0.87, 0.66, 0.81), and also greater than those is the row of BDA (0.81). The results for other variables is similar to that of BDA, which shows that our factors discriminant validity is ok and in consistent with Fornell and Larcker

Table 5. Correlation coefficients between each dimension and the total score of the scale

Dimensions of the study	Total marks
Section 1: Respondent Information	0.923**
Section 2: Big Data Infrastructure	0.858**
Section 3: Big Data Applications	0.725**
Section 4: Banking performance Metrics	0.685**
Section 5: Challenges and Concerns	0.627**
Section 6: Additional Comments	0.713**

Table 5 shows the structural validity of the scale, as evidenced by the strong correlation coefficients between each dimension and the overall scale score. A coefficient of 0.923** indicates between respondent information. Likewise, a coefficient of 0.858** indicates between big data infrastructure, a coefficient of 0.725** indicates between big data applications, a coefficient of 0.685** indicates between company performance measures, and a coefficient of 0.627** indicates between challenges and concerns, A coefficient of 0.713** between additional comments and the total score indicates a positive and highly significant relationship, indicating that respondent information plays a critical role in shaping the overall construct being measured.

These high correlation coefficients demonstrate the robustness of the scale and support its structural validity, which confirms the importance and impact of big data on banks performance.

Reliability of the study instrument: Reliability refers to the consistency and stability of the study instrument over time and across different situations. In this study, reliability was measured using Cronbach's alpha coefficient, which is a common indicator of internal consistency. Cronbach's alpha ranges from 0 to 1, with higher values indicating higher reliability, and a value of 0.7 or higher is considered acceptable for social science research.

Table 6. Reality Test

Dimensions Study	N° of items	Cronbach's Alpha
Respondent Information	5	0.812
Big Data Infrastructure	4	0.745
Big Data Applications	7	0.824
Banking performance Metrics	2	0.795
Challenges and Concerns	5	0.792

In this study, Cronbach's alpha coefficient was calculated for each axis of the questionnaire and presented in Table No.(6). The results showed that all axes were highly reliable, with values ranging between 0.812 and 0.745. Therefore, the questionnaire had reliability .

Chapter Four : Discussion

Descriptive analysis of the Big Data Infrastructure

To find out about the big data infrastructure in banks in Palestine, we will calculate the arithmetic means and standard deviations of the study individuals' response to the big data infrastructure items. The results are as shown in the following table:

1. Second axis

In this section, the questionnaire aims to collect information about the bank's big data architecture. Questions are asked that focus on the presence of the bank's big data infrastructure and its scalability, in addition to the bank's investment in training its employees to manage big data technologies. It is also asked about collaborating with external service providers to improve the capabilities of the large data architecture.

Table 7. Descriptive analysis of the big data infrastructure in banks in Palestine

N°	Statement	Arithmetic average	Standard deviation	Acceptance level
• **big data infrastructure**				
1	**Does your bank currently have a dedicated big data infrastructure in place?**	**3.4137**	**1.93592**	
2	**How would you rate the scalability of your bank's current big data infrastructure?**	**3.6821**	**1.97434**	
3	**To what extent does your bank invest in the**	**3.3367**	**1.92342**	

	training and development of personnel for managing big data technologies ?			
4	**Does your bank collaborate with external data service providers for enhancing its big data capabilities?**	**3.2574**	**1.91541**	
Total		**3.3265**	**1.83087**	

Source: Prepared by the student according to the outputs of the spss program

The table above shows the descriptive analysis of the big data infrastructure variable, as the average of all items had an average level of acceptance, as the second item ranked first, with an average of **3.6821**, while item 4 ranked last, with an average of **3.2574**. The overall mean for the axis as a whole for the variable is **3.3265**, which represents a medium degree of agreement.

2. Third axis

In this section, the use of big data in several areas within the bank is surveyed. The participant is asked to provide information on how big data is used in decision making, improving the efficiency of banking operations, managing customer relationships, risk management, fraud detection, product development and marketing strategies, and the extent to which they use big data in other areas.

Table 8. Descriptive analysis of the big data applications

N°	Statement	Arithmetic average	Standard deviation	Acceptance level
• **Big data applications**				
1	How does your bank employ big data for decision-making processes?	**2.8524**	**1.40255**	
2	To what extent do you believe big data has improved the efficiency of your bank's operations?	**3.7241**	**1.97185**	
3	To what extent does your bank currently utilize big data technologies for customer relationship management?	**3.3736**	**1.93274**	
4	In the realm of risk management, how extensively does your bank employ big data applications?	**3.6874**	**1.96574**	
5	Does your bank utilize big data for fraud detection purposes?	**2.9545**	**1.40452**	
6	How does your bank leverage big data for marketing and product development?	**3.3962**	**1.89241**	

7	Beyond the mentioned applications, is big data utilized for other purposes in your bank?	**2.9372**	**1.40235**	
Total		**3.2750**	**1.71030**	

Source: Prepared by the student according to the outputs of the spss program

The table above shows the descriptive analysis of the financial technology variable, as the average of all items had an average level of acceptance, as the second item ranked first, with an average of 3.7241, while first item ranked last, with an average of 2.8524. The overall mean for the axis as a whole for the variable is 3.2750, which represents a medium degree of agreement.

3. Fourth axis

In this section, the participant is asked to evaluate the bank's financial performance over the past fiscal year and whether the implementation of big data had a noticeable impact on the bank's financial performance.

Table 9. Descriptive analysis of the Banking performance Metrics

N°	Statement	Arithmetic average	Standard deviation	Acceptance level
• **Banking performance Metrics**				
1	How would you rate your bank's overall financial performance in the last fiscal year?	**3.6742**	**1.95158**	
2	Has the implementation of big data had a noticeable impact on	**3.2374**	**1.37857**	

	your bank's financial performance?			
Total		**3.4558**	**1.66507**	

Source: Prepared by the student according to the outputs of the spss program

The table above shows the descriptive analysis of the Banking performance metrics variable, as the average of all items had an average level of acceptance, as the item 1 ranked first, with an average of 3.6742, while second item ranked last, with an average of 3.2374. The overall mean for the axis as a whole for the variable is 3.4558, which represents a medium degree of agreement.

4. Fifth axis

In this section, the questionnaire investigates the challenges the bank faces in implementing big data technologies, such as skills shortage, data security concerns, difficulty of integration with existing systems, cost of implementation, and resistance to change among employees.

Table 10. Descriptive analysis of the challenges and concerns

N°	Statement	Arithmetic average	Standard deviation	Acceptance level
• **Challenges and Concerns**				
1	What are the primary challenges your bank faces in implementing big data technologies?	**2.9367**	**1.41783**	

2	How would you rate the effectiveness of your bank's current strategies in addressing challenges related to big data implementation?	**3.2574**	**1.97357**	
3	Does your bank have concerns regarding the ethical implications of utilizing big data for customer insights and decision-making?	**2.5471**	**1.33517**	
4	To what extent does compliance with data protection regulations pose a challenge for your bank's big data initiatives?	**3.3272**	**1.98146**	
5	How proactive is your bank in seeking solutions to mitigate potential risks associated with big data implementation?	**3.6810**	**1.95470**	
Total		**3.1498**	**1.73254**	

Source: Prepared by the student according to the outputs of the spss program

The table above shows the descriptive analysis of the challenges and concerns variable, as the average of all items had an average level of acceptance, as the fifth item ranked first, with an average of 3.6810, while third item ranked last, with an average of 2.5471. The overall mean for the axis as a whole for the variable is 3.1498, which represents a medium degree of agreement.

5. Sixth axis

This section provides the participant with an opportunity to express any additional comments or views regarding the impact of big data on the bank's performance

We asked the participants to share any additional comments or insights regarding the impact of big data on the performance of the bank in which they work. Their answers included several suggestions centered on what the following figure shows:

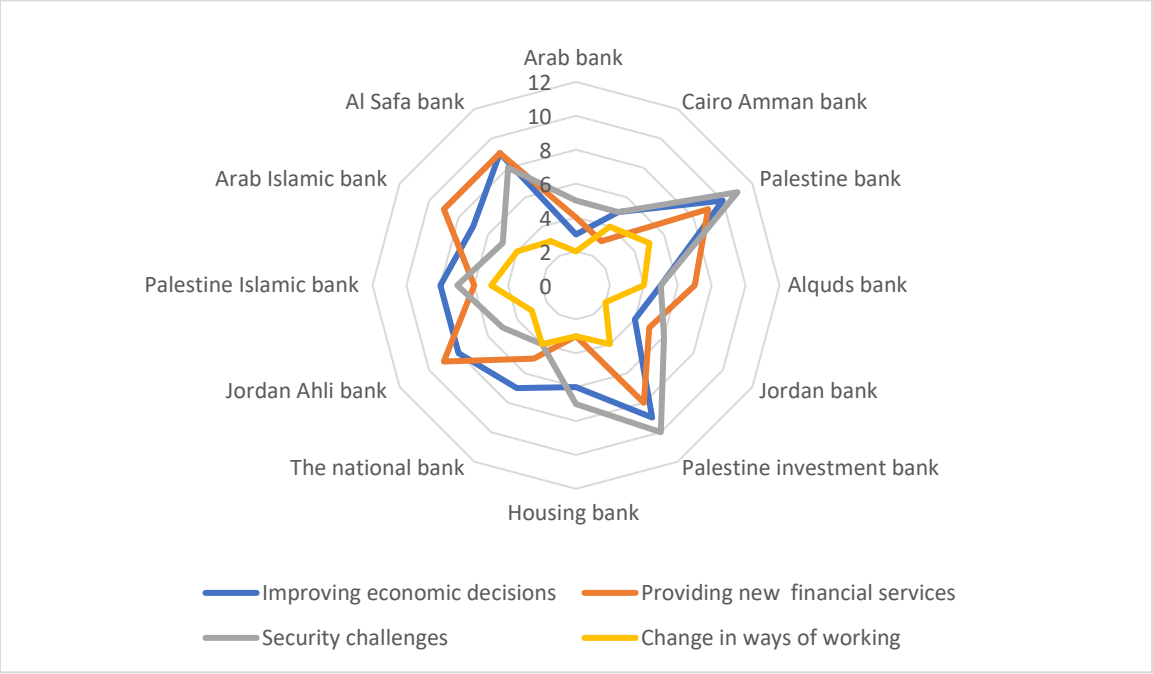

Figure 1. Descriptive analysis of the additional comments variable

Based on the figure shown, we note that the participants had common comments on many points, most of which were based on the following points:

- In first place was the category whose comments centered on security challenges at 78%, as banks may face challenges regarding protecting customers' personal and sensitive data, which requires advanced technology to maintain security and privacy.

- As for the second place, it was for the category whose comments about providing new financial services were represented by 77%, as the use of big data may help banks to better understand customer needs and provide new financial services according to those needs.
- Third place for the category whose comments focused on improving economic decisions by 73%, as big data can improve the ability of banks to make informed decisions thanks to accurate signals and deep analyzes of financial and economic data.
- As for the fourth place, it goes to the category that had a desire to modify and change the way of work, as they expressed suggestions to reshape it, and their percentage constituted 53%. Processing big data may require changes in the current work structures in banks, which requires adaptation and continuous development of employees' skills.

Testing and discussing the hypotheses of the study

In this section, we review the results of the hypotheses related to the selection of the study hypotheses related to the existence of the relationship between the study variables.

We tested the hypotheses of the study, using analysis of variance, to find out the relationship between Big Data adoption and financial performance metrics, including revenue growth, profitability, and return on investment, in Palestinian banks across different industries as a dependent variable, to prove if there was a statistically significant positive effect at a significant level value (0.05), as the study hypothesis stated that: "There is a significant relationship between the adoption and effective use of big data technologies and financial performance measures (revenue growth, profitability, and return on investment) in Palestinian banks."

- **Testing the hypothesis:**

The hypothesis states, “There is significant relationship between the adoption and effective utilization of Big Data technologies and financial performance metrics (revenue growth, profitability, and return on investment) in Palestinian banks.” To test this hypothesis, the table below presents the results of testing the hypothesis as follows:

Table 11. Testing the first sub-hypothesis

Big Data technologies: Arithmetic Average 3.0038; Standard deviation 1.37248						
Arithmetic Average	**Standard deviation**	**R correlation coefficient**	**R^2 banks factor**	**Fisher F coefficient**	**T test value**	**s moral level**
3.0079	**.135244**	**0.832[a]**	**0.715**	**165.920**	**3.136**	**0.003**

Source: Prepared by the student according to the outputs of the spss program

Through the table above, it is clear that the direct impact influence between the adoption and effective use of big data technologies and financial performance measures in terms of revenue growth, profitability, and return on investment in Palestinian banks was positive, estimated at 3.136, at a significant level of 0.003, which is less than the standard significance value sig = 0.05. Therefore, the first hypothesis is accepted, which states, there is a significant relationship between the adoption and effective use of big data technologies and financial performance measures (revenue growth, profitability, and return on investment) in Palestinian banks at a significance level of 0.05.

The value of the Fisher coefficient shown in the above table, which amounted to 165.920 at the level of significance of 0.003, and the decision rule is based on that the regression model is significant and that all coefficients of the model are

significant and follow a linear relationship if the probability value is less than 0.05 and based on the previous results, the model has significant total.

The above table also shows the correlation coefficient between the two variables, which amounted to 0.832, which indicates a strong relationship between them. The R2 coefficient, which is a measure of the quality of fit, indicates that 71.50% of the changes in the dependent variable are explained by the regression relationship, and the remaining 28.50% are due to other factors that were not included in the model.

Table 12. Impact of the various dimensions of Big data on the Banks performance (Regression)

Profitability	Coefficients	Std. Err.	t	P>t	[95% Conf. Interval]	
Big Data Infrastructure	0.8581025	.1256928	4.30	0.004*	.1614746	.6713057
Big Data Applications	0.7252306	.1815654	6.56	0.000*	.5325028	.9536838
Challenges and Concerns	0.6271047	.1335476	1.34	0.000*	.4864451	.0968565
Cons	0.4523025	.3822218	0.29	0.044	.8126683	1.280649
F(6, 18) = 22.400						
Prob > F = 0.0000*						
R-squared = 0.7152						
Adj R-squared = 0.8323						

* means significant at 5% level.

Banks Performance = 0.45 + (0.86 * Big Data Infrastructure) + (0.73 * Big Data Applications) + (0.63 * Challenges and Concerns).

Table 12 reports the impact of the various dimensions of Big data on the Banks performance. According to the table, Big Data Infrastructure, Big Data Applications, Banking performance Metrics, and Challenges and Concerns are significantly and

positively related to the banks performance. A unit change in the Big Data Infrastructure, Big Data Applications, Banking performance Metrics, and Challenges and Concerns will increase the banks performance by 0.86, 0.73, and 0.63 respectively.

The results of this study are consistent with many previous research. In a study (Magnin, 2016), it was emphasized that big data enables banks to better analyze financial information, which contributes to understanding trends and patterns and making strategic decisions. A study (Chen et al., 2014) showed that the use of big data contributes to improving customer services by understanding their needs and providing personalized and more effective services according to their requirements. In addition, a study (Manyika et al., 2011) indicated that big data enables banks to predict financial and economic trends, which helps them make accurate financial decisions. In the context of bank performance, the study (Matten & Moon, 2008) emphasized the importance of banks' performance in achieving their long-term goals, such as profitability and growth, through the efficient and effective use of financial and human resources. The study (Huang et al., 2018) also indicated that there is a noticeable relationship between the adoption of big data technologies and the financial performance of banks, including revenue growth, profitability, and return on investment. It is worth noting that Richard Barrett's (2013) study went on to emphasize the importance of big data technology in reaching large categories of unbanked customers. On the same level, the study (Davenport, 2006) addressed the role of big data in revealing market needs and identifying gaps and new opportunities to meet customer needs.

Chapter Five : Results and Recommandations

Theoretical justification of the results

Based on the theoretical interpretation of the results, it appears that the use of Big Data pipelines has a significant impact on the speed of information processing. This effect allows for improved decision-making efficiency, as data is analyzed and understood faster and more accurately. This acceleration of the process causes systems to become more efficient and improve responsiveness to operational needs. Then, this improvement is reflected in business profitability, as it allows the organization to make more effective decisions based on accurate information, which enhances operational efficiency and contributes to achieving positive results at both the operational and strategic levels.

By investigating the theoretical justification for the results, it is clearly shown that leveraging big data pipelines is a crucial factor in enhancing data processing speed. Thanks to this feature, it allows organizations to analyze huge amounts of data very efficiently, which contributes to improving the effectiveness of decision-making. This ability to quickly and comprehensively analyze data enhances the efficiency of operations and shortens the gap between information generation and decision making. Directly, this impact translates into an increase in operational efficiency, which reflects positively on profitability through informed decision-making based on careful data analysis. This impact can be seen in the form of sustainable improvement in performance and increased competitiveness, as the Big Data analysis strategy allows for the integration of practical efficiency and administrative effectiveness.

Accordingly, the theoretical justification for the results can be limited to the fact that the use of big data represents a crucial factor in accelerating data processing, and thus significantly affects the speed of decision-making and increased profitability.

First, the use of big data allows improving the efficiency of data storage and retrieval operations. Thanks to advanced information storage technologies, a large volume of data can be effectively handled, which reduces response time and contributes to accelerating information processing processes. This means that companies are able to access the required data quickly and effectively.

Second, analyzing data quickly allows for improved effectiveness of decision making. When enterprise decision teams can analyze data quickly, they can understand trends and shifts in the market and adjust their strategies in real time. This reduces the delay time in making decisions, which contributes to enhancing effectiveness and competitiveness.

Third, providing better customer services enhances profitability. Using big data, organizations can better understand customer needs and provide personalized and efficient services. This improved engagement leads to improved customer satisfaction and increased loyalty, which directly contribute to additional profits and improved overall financial performance.

Finally, the impact of these processes on profitability is due to improved efficiency and increased effectiveness of operations. By improving the ability to predict and make accurate decisions quickly, an organization can optimize the use of resources and achieve positive results both financially and operationally, which contributes to enhancing overall profitability.

Results and Recommandations

After the theoretical and field study that we conducted to determine the role and impact of big data on the performance of Palestinian banks, we reached, through the theoretical aspect, a set of results, the most important of which are the following:

- ✓ Big data allows advanced data analysis, as banks can use big data to better analyze financial information, which helps them understand trends and patterns and make strategic decisions.
- ✓ Improving customer services contributions, as banks can use big data to better understand customer needs and provide personalized and more effective services according to their requirements.
- ✓ It allows the prediction of financial trends, and big data enables banks to predict financial and economic changes, which helps them in making accurate financial decisions.
- ✓ It helps uncover market needs. Banks can use big data to examine market behavior and identify gaps and new opportunities to meet customer needs.
- ✓ It contributes to the process of reducing financial risks, as big data enables banks to identify potential financial risks early and take preventive measures.
- ✓ Technology allows big data to reach a large segment of customers who do not deal with the banking system.
- ✓ Performance reflects the bank's ability to achieve its goals, especially long-term ones, such as profit, survival, growth, and adaptation goals, using financial and human resources efficiently and effectively.
- ✓ Performance represents the results resulting from the bank's various activities by aligning its various resources over a specified period.

The results of the practical and field aspects were represented in the following points:

- ✓ Most Palestinian bank employees have a university degree and have good professional competence.
- ✓ The level of performance in Palestinian banks was average according to the standard used in our study.
- ✓ The level of big data adoption in Palestinian banks was also moderate.
- ✓ There is a significant relationship between the adoption and effective use of big data technologies and financial performance measures in terms of revenue growth, profitability, and return on investment in Palestinian banks.

Conclusion

Big data carries with it important potential in improving bank performance. This massive data provides various opportunities to analyze patterns and trends and understand customers better. By deeply analyzing this data, financial institutions can adapt to the changing needs of customers and improve their experience. It also contributes to identifying and predicting potential risks, which enables banks to make informed decisions to manage risks and control potential financial losses. Big data analysis also contributes to improving the efficiency of banks' internal operations, which contributes to reducing costs and increasing efficiency.

Moreover, big data enables banks to discover new opportunities in the financial market and better understand customer trends, enabling them to develop innovative financial products and services that better meet customer aspirations and meet their expectations. The impact of big data on banking performance is also evident in improving strategic decisions, as banks can use this data to improve the services provided and direct greater and better growth and expansion strategies.

Understanding the impact of big data on the performance of Palestinian banks constitutes an important axis in the context of technological and financial development, and through our study of the role of big data in this context, we reached results that indicate the existence of a significant relationship between the adoption of big data technologies and the financial performance of Palestinian banks, and our hypothesis was achieved and confirmed after Statistical analysis and validity testing.

These results show that banks that effectively adopt big data technologies are witnessing remarkable growth in revenues, increased profitability, and achieving greater rates of return on investment. These results enhance understanding about the true ability to benefit from these modern technologies and demonstrate their

importance in improving bank performance and enhancing Sustainability in a changing financial environment.

Ultimately, our study highlights the importance of banks investing in big data as a strategic tool to improve financial performance and enhance their ability to adapt to future financial and technological challenges. These results make an important contribution to understanding the relationship between technical innovation and financial performance, and open doors to further research and practical applications in the field of banking and finance.

Recommendations

Based on the positive results and confirmation of the existence of a significant relationship between the adoption and use of big data technologies and financial performance indicators in Palestinian banks, we suggest some of the following recommendations:

- We recommend enhancing investment in infrastructure and technology, as Palestinian banks must invest in information systems capable of dealing with large amounts of data and analyzing it efficiently. This helps enhance the ability to discover data and transform it into valuable insights.
- We recommend strengthening the analytical culture, and banks need to support a culture of analysis and strategic thinking among employees, as this contributes to improving the analytical and interpretive capabilities to use data more effectively.
- We recommend developing innovative growth strategies based on the insights derived from big data analysis, banks must develop innovative growth strategies that suit customers' needs and achieve their aspirations.

- We aim to improve financial performance. Effective use of big data can lead to increased revenues, improved profitability, and increased return on investment, and strategies should be directed toward achieving these financial goals.
- We recommend strengthening cybersecurity and data protection. Cybersecurity challenges increase with the use of large amounts of data, and improving security and data protection is vital to ensure safe and effective use of data.
- We recommend moving towards predictive analysis, as banks should develop analytical strategies directed towards predictive analysis of data, which contributes to identifying upcoming trends and anticipating future behaviors.

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Appendix:

Questionnaire

Study Title: The Impact of Big Data on Banks Performance

Dear Participant,

Big data stands as one of the key innovations that constitute a qualitative transformation in the modern business world. This survey aims to explore and understand the impact of big data on Banking performance and how this vital technology can be a driver for improving performance and competitive success.

This survey is an integral part of a Master's thesis, predicated on the hypothesis that Big Data exerts a substantial impact on banks performance. The survey aims to scrutinize and assess the depth of this impact from diverse perspectives, with a keen focus on operational and economic dimensions.

Your active participation in this survey is crucial, as it contributes valuable insights that enrich the ongoing Master's research and facilitate a nuanced comprehension of the intricate relationship between Big Data and bank performance..

Thank You:
We appreciate your participation and contribution to this study. Your input will help us gain valuable insights into how to enhance banks performance through the utilization of big data.

Sincerely,
Hammam Bassam Abu Zaineh

Section 1: Respondent Information

1.1 Gender:
Male ( )
Female ( )

1.2 Education Degree:
Tawjehe and beneath ( )
Diploma ( )
Bachelor ( )
Post graduate ( )
1.3 Name of the Bank:
Arab bank ( ) Cairo Amman bank ( ) Palestine bank ( )
Alquds bank ( ) Jordan bank ( ) Palestine investment bank ( )
Housing bank ( ) The national bank ( ) Jordan Ahli bank ( )
Palestine Islamic bank ( ) Arab Islamic bank ( ) Al Safa bank ( )

1.4 Your Position:

- ☐ Senior Management
- ☐ Middle Management
- ☐ Operational Staff
- ☐ IT/Technology Department

1.5 How many years of experience do you have in the banking industry? _____ years

Section 2: Big Data Infrastructure

2.1Does your bank currently have a dedicated big data infrastructure in place?

- ☐ Yes
- ☐ No
- ☐ In the process of implementation
- ☐ Not sure

2.2 How would you rate the scalability of your bank's current big data infrastructure?

- ☐ Not scalable
- ☐ Slightly scalable
- ☐ Moderately scalable
- ☐ Highly scalable

2.3 To what extent does your bank invest in the training and development of personnel for managing big data technologies?

- ☐ Not at all
- ☐ Limited investment
- ☐ Moderate investment
- ☐ Significant investment

2.4 Does your bank collaborate with external data service providers for enhancing its big data capabilities?

- ☐ Yes
- ☐ No
- ☐ Considering collaboration
- ☐ Not sure

Section 3: Big Data Applications

3.1 How does your bank employ big data for decision-making processes?

- ☐ Customer Relationship Management
- ☐ Risk Management
- ☐ Fraud Detection
- ☐ Marketing and Product Development
- ☐ Other (please specify): _____

3.2 To what extent do you believe big data has improved the efficiency of your bank's operations?

- ☐ Not at all
- ☐ Slightly
- ☐ Moderately
- ☐ Significantly

3.3 To what extent does your bank currently utilize big data technologies for customer relationship management?

- ☐ Not at all
- ☐ Limited usage
- ☐ Moderate usage
- ☐ Extensive usage

3.4 In the realm of risk management, how extensively does your bank employ big data applications?

- ☐ Not at all
- ☐ Limited usage
- ☐ Moderate usage
- ☐ Extensive usage

3.5 Does your bank utilize big data for fraud detection purposes?

- ☐ Not at all
- ☐ Limited usage
- ☐ Moderate usage
- ☐ Extensive usage

3.6 How does your bank leverage big data for marketing and product development?

- ☐ Not at all
- ☐ Limited usage
- ☐ Moderate usage
- ☐ Extensive usage

3.7 Beyond the mentioned applications, is big data utilized for other purposes in your bank? If yes, please specify.

- ☐ Yes
- ☐ No

Section 4: Banking performance Metrics

4.1 How would you rate your bank's overall financial performance in the last fiscal year?

- ☐ Excellent
- ☐ Very Good
- ☐ Good
- ☐ Fair
- ☐ Poor

4.2 Has the implementation of big data had a noticeable impact on your bank's financial performance?

- ☐ Yes
- ☐ No
- ☐ Not Sure

Section 5: Challenges and Concerns

5.1 What are the primary challenges your bank faces in implementing big data technologies? (Select all that apply)

- ☐ Lack of skilled personnel
- ☐ Data security concerns
- ☐ Integration with existing systems
- ☐ High implementation costs
- ☐ Resistance to change among staff

5.2 How would you rate the effectiveness of your bank's current strategies in addressing challenges related to big data implementation?

- ☐ Not effective at all
- ☐ Slightly effective
- ☐ Moderately effective
- ☐ Very effective

5.3 Does your bank have concerns regarding the ethical implications of utilizing big data for customer insights and decision-making?

- ☐ Yes
- ☐ No
- ☐ Not sure

5.4 To what extent does compliance with data protection regulations pose a challenge for your bank's big data initiatives?

- ☐ Not a challenge
- ☐ Slightly challenging
- ☐ Moderately challenging
- ☐ Highly challenging

5.5 How proactive is your bank in seeking solutions to mitigate potential risks associated with big data implementation?

- ☐ Not proactive at all
- ☐ Slightly proactive
- ☐ Moderately proactive
- ☐ Highly proactive

Section 6: Additional Comments

Please share any additional comments or insights regarding the impact of big data on your bank's performance.

……....……

…….

Conclusion: Thank you for completing the survey. Your input is invaluable to this

استبيان

عنوان الدراسة: أثر تطبيق نظم البيانات الضخمة على أداء البنوك .

عزيزي المشارك،

تمثل البيانات الضخمة مرحلة هامة من مراحل تطور نظم المعلومات والاتصالات، وهي تعبر في مفهومها المبسط عن كمية هائلة من البيانات المعقدة التي يفوق حجمها قدرة البرمجيات والآليات الحاسوبية التقليدية على تخزينها ومعالجتها وتوزيعها، الأمر الذي أدى إلى وضع حلول بديلة متطورة تمكن من التحكم في تدفقها والسيطرة عليها .

تعتبر البيانات الضخمة واحدة من الابتكارات الرئيسية التي تشكل تحولاً نوعياً في عالم الأعمال الحديث. تهدف هذه الدراسة إلى استكشاف وفهم تأثير البيانات الضخمة على أداء البنوك وكيف يمكن أن تكون هذه التكنولوجيا الحيوية محركاً لتحسين الأداء وتحقيق النجاح التنافسي .

تعتبر هذه الاستبانة جزءً أساسياً من أطروحة ماجستير، مستندة إلى فرضية أن البيانات الضخمة تمارس تأثيراً كبيراً على أداء البنوك . تهدف الاستبانة إلى فحص وتقييم عمق هذا التأثير من منظورات متنوعة، مع التركيز بشكل خاص على الأبعاد التشغيلية والاقتصادية .

مشاركتك الفعّالة في هذه الاستبانة وهذا البحث أمر بالغ للأهمية، حيث تسهم في إثراء الأبحاث الجارية على مستوى ابحاث الماجستير وتسهم في فهم دقيق للعلاقة المعقدة بين البيانات الضخمة وأداء البنوك .

سيتم استخدام البيانات المجمعة لاغراض البحث العلمي فقط . إذا كان لديك أي ملاحظات أو بحاجة إلى مزيد من المعلومات فلا تتردد في الاتصال بالباحث همام ابو زينه :

البريد الإلكتروني : 206018@ppu.edu.ps

الهاتف : 00970566623000

مع خالص الاحترام والتقدير،

همام بسام ابو زينه

القسم الاول: البيانات الشخصية

1.1 الجنس:

ذكر ( )

أنثى ( )

1.2 الدرجة التعليمية:

توجيهي فما دون ( )

شهادة دبلوم ( )

بكالوريوس ( )

دراسات عليا ( )

1.3 اسم البنك:

البنك العربي ( ) بنك القاهرة عمان ( ) بنك فلسطين ( )
بنك القدس ( ) البنك الأردني ( ) بنك الاستثمار الفلسطيني ( )
بنك الإسكان ( ) البنك الوطني ( ) البنك الأهلي الأردني ( )
البنك الإسلامي الفلسطيني ( ) البنك الإسلامي العربي ( ) بنك الصفا ( )

1.4 موقعك الوظيفي:

الإدارة العليا ( )

الإدارة الوسطى ( )

موظف تشغيلي ( )

قسم تكنولوجيا المعلومات ( )

1.5 كم عدد سنوات خبرتك في القطاع المصرفي ؟ _____ سنوات

القسم الثاني: البنية التحتية للبيانات الضخمة

2.1 هل يمتلك البنك الذي تعمل فيه حالياً بنية تحتية مخصصة للبيانات الضخمة ؟

نعم ( )

لا ( )

في طور التنفيذ ( )

غير متأكد ( )

2.2 كيف تقيّم قابلية التوسع في البنية التحتية الحالية للبيانات الضخمة في البنك الذي تعمل فيه ؟

غير قابلة للتطوير ( )

قابلة للتطوير قليلاً ( )

قابلة للتطوير بشكل معتدل ( )

قابلة للتطوير بشكل كبير ( )

2.3 إلى أي مدى يستثمر البنك الذي تعمل فيه في تدريب وتطوير الموظفين لإدارة تقنيات البيانات الضخمة ؟

مُطْلقاً ( )

استثمار محدود ( )

استثمار معتدل ( )

استثمار كبير ( )

2.4 هل يتعاون البنك الذي تعمل فيه مع مقدمي خدمات البيانات الخارجية لتعزيز قدراته في مجال البيانات الضخمة ؟

نعم ( )

لا ( )

يفكر في التعاون ( )

غير متأكد ( )

القسم الثالث: تطبيقات البيانات الضخمة

3.1 كيف يستخدم البنك الذي تعمل فيه البيانات الضخمة في عمليات اتخاذ القرار ؟

إدارة علاقات العملاء ( )

إدارة المخاطر ( )

الكشف عن الغش او الاحتيال ( )

التسويق وتطوير المنتجات ( )

غير ذلك (يرجى التحديد): _____

3.2 إلى أي مدى تعتقد أن البيانات الضخمة قد حسنت كفاءة عمليات البنك الذي تعمل فيه ؟

على الإطلاق ( )

إلى حد ما ( )

بشكل متوسط ( )

بشكل كبير ( )

3.3 إلى أي مدى يستخدم البنك الذي تعمل فيه حالياً تقنيات البيانات الضخمة لإدارة علاقات العملاء ؟

مُطْلقاً ( )

استخدام محدود ( )

استخدام متوسط ( )

استخدام واسع النطاق ( )

3.4 في مجال إدارة المخاطر، ما مدى انتشار استخدام البنك الذي تعمل فيه لتطبيقات البيانات الضخمة ؟

مُطْلقاً ( )

استخدام محدود ( )

استخدام متوسط ( )

استخدام واسع النطاق ( )

3.5 هل يستخدم البنك الذي تعمل فيه البيانات الضخمة لأغراض الكشف عن الاحتيال ؟

مُطْلقاً ( )

استخدام محدود ( )

استخدام متوسط ( )

استخدام واسع النطاق ( )

3.6 كيف يستفيد البنك الذي تعمل فيه من البيانات الضخمة للتسويق وتطوير المنتجات ؟

مُطْلقاً ( )

استخدام محدود ( )

استخدام متوسط ( )

استخدام واسع النطاق ( )

3.7 بخلاف التطبيقات المذكورة، هل يتم استخدام البيانات الضخمة لأغراض أخرى في البنك الذي تعمل فيه ؟ اذا اجبت بنعم، من فضلك وضح .

نعم ( ) .....

لا ( )

القسم الرابع: مقاييس أداء البنك

4.1 كيف تقيّم أداء البنك الذي تعمل فيه من الناحية المالية العامة في السنة المالية الأخيرة ؟

ممتاز ( )

جيد جداً ( )

جيد ( )

مقبول ( )

ضعيف ( )

4.2 هل كان لتطبيق البيانات الضخمة تأثير ملحوظ على الأداء المالي للبنك الذي تعمل فيه ؟

نعم ( )

لا ( )

غير متأكد ( )

القسم الخامس: التحديات والمخاوف

5.1 ما هي التحديات الأساسية التي يواجهها البنك الذي تعمل فيه في تطبيق تقنيات البيانات الضخمة ؟ (اختر كل ما ينطبق)

عدم وجود الموظفين المهرة ( )

مخاوف تتعلق بأمن البيانات ( )

صعوبات التكامل مع الأنظمة الحالية ( )

تكاليف التنفيذ مرتفعة ( )

مقاومة التغيير بين الموظفين ( )

5.2 كيف تقيّم فعالية الاستراتيجيات الحالية للبنك الذي تعمل فيه في مواجهة التحديات المتعلقة بتنفيذ تقنيات البيانات الضخمة ؟

غير فعالة على الإطلاق ( )

فعالة قليلاً ( )

فعالة إلى حد ما ( )

فعالة للغاية ( )

5.3 هل لدى البنك الذي تعمل فيه مخاوف بشأن الآثار الأخلاقية لاستخدام البيانات الضخمة لرؤى العملاء واتخاذ القرارات ؟

نعم ( )

لا ( )

غير متأكد ( )

5.4 إلى أي مدى يشكل الامتثال للوائح حماية البيانات تحدياً لمبادرات البيانات الضخمة الخاصة بالبنك الذي تعمل فيه ؟

ليس تحدياً ( )

صعبة بعض الشيء ( )

تحدي معتدل ( )

تحدي صعب للغاية ( )

5.5 ما مدى استباقية البنك الذي تعمل فيه في البحث عن حلول للتخفيف من المخاطر المحتملة المرتبطة بتنفيذ البيانات الضخمة ؟

ليست استباقية على الإطلاق ( )

استباقية قليلاً ( )

استباقية إلى حد ما ( )

استباقية للغاية ( )

القسم 6: تعليقات إضافية

يرجى مشاركة أي تعليقات أو رؤى إضافية فيما يتعلق بتأثير البيانات الضخمة على أداء البنك الذي تعمل فيه .

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كلمة شكر:

نقدر مشاركتك وإسهامك في هذه الدراسة . ستساعد مدخلاتك في الحصول على رؤى قيمة حول كيفية تعزيز أداء البنوك من خلال استخدام البيانات الضخمة .

شكراً لك على إكمال الاستبيان . مدخلاتك لا تقدر بثمن لهذا البحث .

الملخص (باللغة المقابلة – اللغة العربية) :

تتناول هذه الدراسة تأثير اعتماد البيانات الضخمة على أداء 12 بنكًا بارزًا في فلسطين. وتهدف الدراسة إلى تقديم رؤى وتوصيات شاملة حول الموضوع، مع التأكيد على أهمية الاستثمار في التكنولوجيا وتعزيز الثقافة التحليلية للاستفادة من البيانات الضخمة بشكل فعال في قطاع البنوك الفلسطيني. من خلال التحليل النوعي واستبيانات شبه منظمة مع عينة بحثنا المشاركة في مبادرات البيانات الضخمة، تهدف إلى الكشف عن رؤى حول النتائج المالية والكفاءة التشغيلية والابتكار. يسعى البحث إلى فهم كيفية تنفيذ استراتيجيات البيانات الضخمة، وتحليل تأثيرها على جوانب مختلفة من أداء البنك ، بما في ذلك تطوير الخدمات ورضا العملاء والكفاءة التشغيلية.

تحدد الدراسة العديد من الآثار الحاسمة لاعتماد البيانات الضخمة في البنوك الفلسطينية ، بما في ذلك التحسينات في التحليل المالي واتخاذ القرارات الاستراتيجية؛ تحسين خدمة العملاء من خلال العروض الشخصية. توصي الدراسة بالاستثمار في البنية التحتية التكنولوجية وتعزيز ثقافة تحليلية لتعظيم إمكانات البيانات الضخمة لاتخاذ قرارات مستنيرة وتحسين الكفاءة التشغيلية.