An-Najah National University

Faculty of Graduate Studies

THE IMPACT OF ENTERPRISE RESOURCE PLANNING (ERP) IMPLEMENTATION ON SUSTAINABILITY PERFORMANCE IN HEALTHCARE AND THE MEDIATOR EFFECT OF JCI

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Dedication

"To my parents, whose unwavering support and belief in my dreams have been my greatest motivation."

"For my brother and his family, who have been my lifelong companions and cheerleaders."

My family, whose love and encouragement have shaped my path and inspired me to pursue knowledge.

To my grandfather's soul, whose wisdom and stories have instilled in me a love for learning."

"To my friends, who have shared in the joys and challenges of this journey, thank you for your laughter and support."

To all who have stood by me through thick and thin, your encouragement has meant the world to me.

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I would like to thank An-Najah National University for providing me the resources and environment that made this research possible.

I am deeply grateful to my family and friends for their unwavering support and understanding during the challenges of this journey.

Expressing gratitude is not only a professional courtesy but also a way to recognize the collective effort that contributes to academic success.

Declaration

I, the undersigned, declare that I submitted the thesis entitled:

THE IMPACT OF ENTERPRISE RESOURCE PLANNING (ERP) IMPLEMENTATION ON SUSTAINABILITY PERFORMANCE IN HEALTHCARE AND THE MEDIATOR EFFECT OF JCI

I declare that the work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

Student's Name: Ebaa Maher Abu Al-Haj

Signature: 

Date: 17-4-2025

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Abstract

The integration of Enterprise Resource Planning (ERP) systems in healthcare organizations presents a significant opportunity to enhance operational efficiency and improve accreditation outcomes. However, the relationship between ERP implementation and sustainability performance, particularly through the lens of Joint Commission International (JCI) accreditation, remains underexplored. This study addresses this gap by investigating how various factors, such as clinical error reduction, operational productivity, data analytics, and resource optimization, mediate the effects of JCI accreditation on the relationship between ERP implementation and sustainability performance.

To conduct this research, a sample of 53 administrative staff from two hospitals in Nablus and Jerusalem were surveyed for this research. This approach differs from most prior research, where subjects were normally professionals with long experience in management and technology fields. In this context, the research will employ a more diverse sample to enrich the understanding of ERP systems' capabilities to support sustainability objectives in healthcare organizations. Data were analyzed using descriptive statistics to quantify and summarize key variables within the population. Statistical software was employed to conduct correlation and regression analyses, providing a robust framework for interpreting the relationships among variables, like SPSS, Smart PLS.

The key findings indicate a statistically significant positive relationship between implementing ERP and getting JCI certification. This supports the hypothesis that ERP increases the likelihood of meeting JCI standards. However, contrary to the existing literature, our study found no significant influence of either ERP or JCI on sustainable performance. This suggests that organizations have problems aligning their ERP

systems with sustainable objectives because of fragmented processes and scant integration into strategic goals.

Based on these findings, it is recommended that healthcare organizations align their ERP systems with sustainability goals. This can be done by promoting better coordination between business units on strategic targets and encouraging staff to take part in sustainability ventures. Future studies need to follow up on these dynamics in more detail to discover how they can best influence overall healthcare practice towards sustainability.

Keywords: ERP; JCI; Sustainablity performance; Healthcare in Palestine.

Chapter One

Introduction

1.1 General Background

Technological advancements, policy shifts, and demographic changes have driven significant transformations in the global landscape across several sectors in recent years. One such sector is healthcare, a domain currently experiencing tremendous evolution mainly driven by innovations that improve patient care and operational efficiency. Well into the 21st century, digital health has revolutionized how health care is delivered from India to Bangladesh and Bulgaria to Russia [1].

The healthcare industry is redefining itself with new-age, innovative technologies like Artificial Intelligence (AI), Telehealth, Blockchain, the Internet of Things (IoT), and machine learning. These technologies have transformed healthcare delivery with advances in diagnostic accuracy, treatment smoothing, and patient engagement. This can be seen in the fact that AI algorithms are now being used to detect diseases earlier than ever before, identifying conditions with speed and precision unlike anything seen before and resulting in a paradigm shift in how medical caregivers approach patient treatment [2]. Telehealth services have broadened access to care, especially for remote areas, while Blockchain technology provides a secure and efficient way of managing patient data [3].

In addition, the digitalization of healthcare systems is part of a more extensive globalization toward more efficient, secure and patient-focused services. These technologies improve health outcomes and help to address challenges arising from public health crises in countries where they are implemented. In 2023, the World Health Organization (WHO) gained unprecedented success in eliminating diseases. It demonstrated that innovative technologies supported by forward-thinking measures can make a difference where it matters most [4].

These innovations are a paradigm shift towards a more integrated, data-focused healthcare. In this ever-changing landscape of health care. However, it will be up to the stakeholders to properly embrace new technology and tackle the real challenges that come with them regarding data security, compliance, and ethics to maximize the

potential benefits from these innovations. Such continued integration of technology into healthcare is likely to define how healthcare is delivered worldwide, as it helps ensure that healthcare can remain relevant to the needs of increasingly diverse populations.

1.2 Introduction to Healthcare

Healthcare plays a pivotal role in society by ensuring that individuals receive the medical care they need to maintain their health. It encompasses a range of services and professionals who work together to manage and improve health outcomes. With increasing challenges, such as an aging population and chronic diseases, healthcare continues to evolve, adopting new technologies and approaches to provide better, more accessible care. The following explains the definition and scope of healthcare and the components of healthcare facilities and personnel.

1.2.1 Definition and Scope of Healthcare

The meaning of healthcare encompasses a broad spectrum of activities and services aimed at maintaining and improving the health of individuals and communities. It involves the prevention, diagnosis, treatment, and management of illnesses, injuries, and diseases to promote overall well-being. Healthcare also includes various aspects such as medical care, public health initiatives, mental health services, pharmaceuticals, and the use of Information and Communication Technologies (ICT) to enhance healthcare delivery. Additionally, healthcare involves collaboration among healthcare workers within a community of practice to enhance professional expertise, promote knowledge sharing, and improve patient care outcomes [5].

1.2.2 Components of Healthcare Facilities and Personnel

The components of healthcare facilities such as hospitals and clinics, as well as the staff working within them, play crucial roles in providing quality care to patients. The design of healthcare facilities, including hospitals, is essential for creating a safe, efficient, and patient-friendly environment. Factors such as the layout of patient rooms, waiting areas, operating theaters, and infection control measures are critical components of hospital design [6]. Clinics need to be organized in a way that optimizes patient flow, ensures privacy, and facilitates effective communication between healthcare providers and patients. The layout of examination rooms, waiting areas, and administrative spaces are important components of a well-functioning clinic [7]. The staff working in healthcare

facilities, including doctors, nurses, technicians, and administrative personnel, are vital components of the healthcare system. Proper staffing levels, training, and support are essential for delivering high-quality care to patients. Staffing considerations also include factors like workload management, skill mix, and staff well-being [7]. These components collectively contribute to the overall functioning and effectiveness of healthcare facilities, ensuring that patients receive the care they need in a safe and supportive environment.

1.3 Healthcare in Palestine

The healthcare sector in Palestine operates within a social system that aims to provide universal coverage. However, it faces significant challenges due to political, economic, and infrastructural constraints. Despite improvements in access to health services and general health conditions since 1967, the system still suffers from shortages of medical supplies, limited infrastructure, and difficulties in accessing specialized care, particularly in Gaza and the West Bank. The Ministry of Health, along with international organizations and non-governmental organizations, plays a pivotal role in service provision, but ongoing conflict, poverty, and movement restrictions continue to impact the quality and accessibility of care. Despite these obstacles, Palestinian healthcare workers work tirelessly to serve a young and growing population, with children constituting a large proportion of those in need. The proportions of health sectors in Palestine and the challenges they face are detailed below.

1.3.1 Overview of the Palestinian Healthcare System

According to Palestinian Central Bureau of Statistics (PCBS) in 2023, four main sectors oversee the provision of health services in Palestine: the government health sector (including the Ministry of Health and military medical services), UNRWA, non-governmental organizations, and the private sector. Together, these sectors have contributed to significant improvements in health services and overall health conditions in Palestine over the past decade.The healthcare infrastructure has witnessed significant growth over the past decade. The number of primary healthcare centers increased from 706 in 2010 to 765 in 2021. The Ministry of Health operates the majority of these centers (64%), followed by NGOs (25%), UNRWA (9%), and the Military Medical Services (2%). The number of hospitals increased from 76 in 2010 (51 in the West Bank and 25 in the Gaza Strip) to 89 in 2021 (54 in the West Bank and 35 in the Gaza Strip).

By 2021, the number of hospital beds available across Palestine reached 7,296, including 4,270 in the West Bank and 3,026 in the Gaza Strip [8].

The healthcare sector has also witnessed significant growth. The number of physicians registered with the Medical Association increased from 6,764 in 2010 to 14,054 in 2021 (8,001 in the West Bank and 6,053 in the Gaza Strip). Similarly, the number of nurses increased from 10,520 in 2010 to 22,478 in 2021 (1,1494 in the West Bank and 10,984 in the Gaza Strip)[8].

1.3.2 Challenges Faced by the Palestinian Healthcare System

The healthcare system in Palestine is confronted with numerous challenges that significantly hinder its effectiveness and accessibility. These challenges are deeply rooted in the ongoing conflict, socio-economic conditions, and structural issues within the healthcare framework. The main challenges faced by the healthcare system in Palestine include:

1. Impact of Ongoing Conflict: The conflict in Palestine has a significant impact on the mental health of healthcare workers, affecting their well-being and ability to provide care effectively [9].
2. Use of intermediary in Healthcare Services: The use of intermediary (informal connections) in healthcare services poses challenges, influencing access to care, decision-making processes, and overall healthcare delivery in Palestine [10].
3. Stress and Coping Strategies: Healthcare professionals in Palestine have faced stress due to the COVID-19 pandemic, with the main fear emanating from personal safety, inadequate training and infection risk leading to increased stress among physicians and nurses [11].

These challenges underscore the intricate landscape that characterizes healthcare in Palestine, necessitating tailored interventions and aid to confront these challenges adeptly.

Thus, with rapid technological development and the necessity to overcome many challenges, ERP systems have been increasingly implemented in healthcare organizations.

1.4 Enterprise Resource Planning (ERP)

One technological advancement that has changed our world is how companies have used enterprise resource planning (ERP) systems to handle healthcare situations during the past decade. Material Requirement Planning (MRP) was the first attempt in the 1960s to integrate business operations. Its focus was on optimizing inventory levels and production planning within manufacturing. Manufacturing Resource Planning (MRP II) came along in the 1970s. Unlike previous MRP systems, MRP II expanded the scope of planning to include more resources and planning kinds [12].

It integrates multiple business functionalities such as production planning, inventory management, and purchasing. ERP systems appeared in the 1990s to provide a comprehensive solution that integrated every aspect of a business - finance, human resources and supply chain management. This integration meant real-time data sharing was enabled across the enterprise, and decision-making improved over time without submerging any part. In recent years, ERP systems have been integrating disruptive technologies from Industry 4.0, such as artificial intelligence, business intelligence, the Internet of Things, big data, Blockchain technology and Omni channel strategy [13]. These technologies aim to improve ERP systems' capabilities and address cyber security and data privacy challenges.

The development of ERP systems has arisen from the demands of entrepreneurs to streamline their operations and gain real-time insights into key figures [14]. Integrating these new technologies has further individualized ERP system capabilities, making it even better suited for all different business needs in the digital era.

1.4.1 Definition and Meaning of ERP

Enterprise Resource Planning (ERP) is defined as "Business management software that allows an organization to use a system of integrated applications to manage the business. ERP software integrates all facets of an operation, including development, manufacturing, sales, and marketing, into a single unified system, enabling the seamless flow of information across various business functions" [15].

The evolution of ERP systems has been driven by businesses' need to streamline operations, improve efficiency, and gain real-time insights into their operations. The

integration of newer technologies has further enhanced ERP systems' capabilities, making them more adaptable to the changing needs of businesses in the digital age [16]. An ERP software system can also integrate planning, purchasing inventory, sales, marketing, finance, human resources, and more.

And also From another point of views, the ERP is the software package which can be structured in such a way that it can integrate the information processes, and the fields of operations (duties) [17].

1.4.2 Benefits of ERP Implementation

ERP systems offer a multitude of benefits that can significantly enhance the operational efficiency and effectiveness of organizations. By integrating various business processes into a cohesive system, ERP solutions facilitate improved communication, data accuracy, and overall productivity. Below are some key benefits of ERP systems elaborated upon:

- Improves Accuracy and Productivity: ERP systems streamline operations and provide real-time data access, improving the accuracy and productivity of organizational processes [18].
- Improves Reporting: By centralizing data and offering tools for generating comprehensive reports, ERP systems enable improved reporting capabilities within organizations [18].
- Increases Efficiency: The implementation of ERP systems has been associated with increased operational efficiency, allowing organizations to optimize their processes and resource utilization [19].
- Increases Collaboration: ERP systems facilitate increased collaboration among different departments and stakeholders by providing a centralized platform for data sharing and communication [20].

ERP software can integrate all of the processes needed to run a company. It provides the free flow of communication between business areas, a single source of information, and accurate, real-time data reporting. And can that users can access remotely.

1.4.3 Enterprise Resource Planning Uses

Enterprise resource planning (ERP) systems are widely used across various industries to integrate and streamline core business processes, such as finance, manufacturing, supply chain, sales, and human resources. Organizations in sectors such as manufacturing, retail, healthcare, construction, and services rely on ERP solutions to improve efficiency, enhance data visibility, and support better decision-making. The flexibility and scalability of ERP systems make them indispensable tools for companies of all sizes seeking to optimize their operations and maintain competitiveness in a rapidly changing business environment.

1.4.3.1 Manufacturing Industry

ERP systems are critical in resource planning and integrating different operational activities in manufacturing firms [21]. The ERP implementations of companies from various sectors (manufacturing, mining, oil and gas, information technology, construction) across all major business segments have been studied, focusing on successful implementations in these industries in Indonesia. The research analyzed system quality, service quality, information quality, benefits obtained, satisfaction, and overall ERP system benefits.

1.4.3.2 Business Operations

ERP systems must manage integrated organizational resources, automate department activities, and provide timely information to management to meet their decision-making needs [19]. On the other hand, integrating ERP systems with non-ERP applications is plagued by problems because software development practices and security standards vary. However, it has all the benefits of both types of applications that help organizations achieve optimal usability.

1.4.3.3 Logistics and Supply Chain Management

The integration of ERP systems with components such as Supply Chain Management (SCM) and Customer Relationship Management (CRM), which are vital to improving the competitiveness of companies operating in a globalized business context, is a critical issue [22]. The improvement of logistic systems integration can be facilitated through ERP capabilities by creating a model for the arborescent integration of logistic

processes, defining the parallelism of flows, and optimization. It helps develop logistics performance with these SCM and CRM components integrated into the ERP systems.

1.4.3.4 Healthcare

ERP systems are used in healthcare to integrate and centralize core business processes, such as finance, human resources, supply chain, and patient data management, onto a unified platform. By breaking down data silos, ERP solutions help healthcare organizations streamline operations, improve patient care, reduce operational costs, and enhance decision-making through instant access to and analysis of data. These systems also support better resource management and compliance, making healthcare delivery more efficient and responsive to clinical and administrative needs [23]. It will be discussed in detail in Section 1.6.3.

1.5 Healthcare Quality

Healthcare quality is essential to ensuring that healthcare services effectively improve patient outcomes while ensuring their safety, accuracy, and patient-centeredness. Healthcare quality encompasses multiple dimensions, including effectiveness, safety, patient-centeredness, accuracy, efficiency, and timeliness, which together determine the overall level of care provided to individuals and populations. Understanding these dimensions helps healthcare providers and policymakers focus on aspects that directly impact patient health and system performance. Additionally, various factors influence healthcare quality, such as organizational processes, resource availability, staff competence, and patient interactions. This section explores the definition of healthcare quality and its key dimensions, as well as the factors that influence its delivery and improvement.

1.5.1 Definition and Dimensions of Healthcare Quality

Healthcare quality is a multifaceted concept that encompasses various aspects of healthcare delivery, including patient safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity. In 1990, The Institute of Medicine (IOM) defines healthcare quality as "The degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge" [24].

Previous studies have found dimensions about the quality of health care:

- Physicians' Clinical Experience and Healthcare Quality

There is conflicting evidence on whether physicians' clinical experience affects healthcare quality. A systematic review found that while some evaluations reported a positive association between physicians' clinical experience and healthcare quality, others found no association or even a negative one. Tailoring improvement initiatives based on physicians' clinical experience could help address quality gaps [25].

- Contextual Factors in Healthcare Quality Improvement

Contextual factors play a significant role in healthcare quality improvement initiatives. A realist review highlighted the influence of contextual factors on the success of quality improvement efforts, emphasizing the need to consider the broader context when implementing quality improvement strategies [26].

- Hospital Accreditation and Healthcare Quality

Hospital accreditation has a positive impact on various dimensions of healthcare quality, including efficiency, safety, effectiveness, timeliness, and patient-centeredness. However, there is limited research on its impact on access and equity dimensions. Accreditation can contribute to enhancing different aspects of healthcare quality within hospital settings [27].

- Human Factors Approach to Healthcare Quality and Patient Safety

A systems approach focusing on human factors is crucial for improving healthcare quality and patient safety. Understanding how human factors influence healthcare processes can lead to enhancements in quality and safety outcomes, emphasizing the importance of considering human factors in healthcare delivery [28].

Dimensions are the fundamental aspects or attributes that define "quality" in healthcare and are used to measure or evaluate the quality of care provided. Their role is to serve as criteria or standards by which healthcare quality is assessed and used to evaluate and compare healthcare services and outcomes. Addressing these dimensions together can contribute to improving healthcare quality and patient safety across healthcare settings.

1.5.2 Factors Influencing Healthcare Quality

While factors are the underlying elements or conditions that influence how healthcare is delivered and the level of quality achieved, they represent the drivers or barriers that can improve or hinder the quality of healthcare services. They are not direct measures of quality, but rather the context or mechanisms that shape it.

Factors influencing healthcare quality encompass a range of elements that impact the delivery of healthcare services. These factors include personal aspects of both the healthcare provider and the patient, characteristics of the healthcare organization, the healthcare system, and the broader environment. Additionally, supportive visionary leadership, proper planning, education and training, availability of resources, effective management of resources, employees, and processes, as well as collaboration and cooperation among providers, play crucial roles in enhancing healthcare service quality [29]. Moreover, factors such as procurement planning, business partnerships, and the integration of healthcare factors in cancer survivorship also contribute significantly to the quality of healthcare services provided [30].

1.6 Sustainability Performance

1.6.1 Principles of Sustainable Development

The meaning of sustainability performance refers to the evaluation and measurement of how well an organization or entity is meeting its sustainability goals and commitments. It involves assessing the environmental, social, and governance (ESG) practices of an organization to determine its impact on sustainable development. Sustainability performance can be evaluated through various indicators and metrics that reflect the organization's efforts towards environmental protection, social responsibility, and ethical governance [31].

Sustainability performance involves assessing how well an organization integrates environmental, social, and economic considerations into its operations to promote long-term viability and responsible practices. It encompasses the ability of an organization to balance economic growth with environmental protection and social responsibility, aiming to meet the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable performance indicators may include energy efficiency, waste reduction, carbon footprint, social impact, ethical sourcing, and

community engagement among others. Organizations that prioritize sustainability performance strive to operate in a manner that minimizes negative impacts on the environment, society, and economy while maximizing positive contributions towards a sustainable future.

Boiral & Henri [32] discussed the challenges in comparing sustainability performance among mining organizations due to qualitative aspects, lack of compliance with reporting guidelines, and data heterogeneity. Cavicchi & Vagnoni [33] focused on the implementation of a sustainability performance measurement system in a university, emphasizing the importance of shared meaning of sustainability among stakeholders and the use of outcome indicators. Wiewei [34] explored the relationship between job crafting, work meaning, work engagement, and job performance among teachers, highlighting the importance of job crafting in sustaining performance levels at work.

Miahaiu & Serban [35]examined the impact of mergers and acquisitions and ESG sustainability scores on company performance in the pharmaceutical sector, showing a positive link between sustainability measures and company performance. Hoínková at el. [36] emphasized the need for updated design practices in the construction field to improve sustainability performance, especially in regions like China facing environmental and health challenges due to low sustainable practices.

Sustainability performance refers to what organizations do and achieve toward sustainability, including environmental stewardship, social responsibility, and ethical governance practices that contribute to sustainable development over time.

Various environmental, social, and economic methods and indicators are used to measure sustainability performance.

The Sustainability Tracking, Assessment and Rating System (STARS) is a measure of sustainability performance of higher education institutions [37]. STARS utilize a system that measures attributes of organizations (structure, commitment, culture, planning) to gauge sustainability performance. Community, environment, employees, and governance were another way of measuring Corporate Sustainability Performance. When measuring Concentrated solar power and its influence on corporate value, the study in Iran employed 28 components in those dimensions [38]. Otherwise,

Sustainability performance can be examined by sustainability data, which is the business's exposure to environmental, commercial, and entrepreneurial conduct. The quality of sustainability performance information is improved when sustainability reviews are externally assured [39]. The assurance statement's reliability and extent are two elements of assurance quality in sustainability reporting. The relationship between sustainability achievement and the reliability of the assurance process has been studied in sustainability assurance hires [40].

These approaches give an overview of how organizations evaluate their sustainability performance in various sectors or industries and the necessity of analyzing long-term sustainable performance for environmental, social and economic impacts.

1.6.2 Role of Healthcare in Achieving Sustainable Development Goals (SDGs)

Healthcare sustainability performance is defined as an organization's ability to balance economic, environmental and social components to maintain long-term performance and enhance patient, staff and community wellness. This concept encompasses various aspects, such as:

- Lean healthcare sustainability: Aligning critical success factors with sustainability objectives and business strategies to ensure successful and enduring lean deployment [41].
- Green supply chain management (GSCM): Adopting friendly environmental practices into the healthcare supply chain can improve environmental and social performance [42]. (GSCM) practices increase environmental sustainability performance in the healthcare industry [42].
- Health technology performance assessment (HTpA): "The systematic evaluation of the properties, effects, and/or impact of a health intervention or health technology in the real world to provide information for investment/disinvestment decisions and clinical guideline updates" [43].
- Knowledge management (KM): The creation, sharing, and use of knowledge within healthcare organizations to improve performance and sustainability by generating value and a long-lasting competitive advantage [44].

These aspects are interconnected and contribute to the overall sustainability performance of healthcare organizations.

1.7 Literature Review

This literature review explores current research on the implementation of enterprise resource planning (ERP) systems in healthcare and their impact on sustainability performance and Joint Commission International (JCI) accreditation. As healthcare organizations increasingly adopt digital solutions to improve operational efficiency and patient outcomes, understanding the relationship between ERP systems and healthcare quality has become critical. This review addresses key concepts, theoretical frameworks, and empirical findings related to ERP system adoption, healthcare quality dimensions, and sustainability factors. By synthesizing existing knowledge, the review aims to identify gaps in previous studies and provide a basis for examining how ERP system implementation impacts healthcare sustainability and accreditation outcomes.

1.7.1 Healthcare Systems and Challenges

Healthcare systems around the world are designed to meet the needs of their populations, yet they vary significantly in structure, financing, and performance across regions. The following sections will first outline the key features of healthcare systems in different regions, highlighting their approaches to organization and service delivery. Will then discuss the key challenges these systems face, such as rising costs, workforce shortages, and persistent inequalities, which impact their ability to deliver effective and equitable care.

1.7.1.1 Healthcare Systems in Different Regions

Healthcare systems vary significantly across regions, reflecting differences in economic development, cultural values, political structures, and population needs. In many high-income countries, such as Canada, the United Kingdom, Germany, and France, the healthcare sector is largely publicly funded and aims to provide universal coverage through government or social insurance programs. These systems emphasize accessibility, equity, and comprehensive care, and are often supported by strong regulatory frameworks and established infrastructure [45]. In contrast, countries such as the United States rely heavily on private insurance and market-oriented healthcare, leading to high costs and disparities in access and outcomes [45].

In low- and middle-income regions, healthcare systems often face challenges related to limited resources, workforce shortages, and infrastructure gaps. These regional

differences impact how healthcare is organized, financed, and delivered, shaping the overall effectiveness and equity of health services worldwide.

1.7.1.2 Challenges Faced by Healthcare Systems

The challenges faced by healthcare systems vary across different regions and contexts. In Central and Eastern Europe, challenges include barriers to implementing innovative interventions in e-health, m-health, and personalized medicine (PM), aiming to provide more accurate and tailored healthcare to individual patients [46]. In Pakistan, challenges involve disparities in healthcare quality, insufficient infrastructure, and a shortage of trained staff, particularly in low- and Lower-Middle-Income Countries (LMICs) [47]. During the COVID-19 pandemic in São Paulo, Brazil, challenges included disparities between public and private healthcare systems, such as shortages of personal protective equipment (PPE), beds, and professionals, with public sector workers facing greater hardships [48]. Service design initiatives for healthcare system transformation face challenges like planning SD initiatives effectively, creatively using SD tools, integrating new technologies, and applying Experience-Based Design [49]. Collaborative Online International Learning (COIL) projects, like the one between the University of Minnesota Duluth and Nottingham Trent University, aim to enhance cultural awareness and collaboration among students in the healthcare field, highlighting challenges in implementing such programs [50].

1.7.2 Technological Advancements in Healthcare

The recent years have witnessed significant advancements in healthcare technology globally. These developments have been driven by scientific and technological progress, leading to the introduction of sophisticated treatment and diagnostic methods. Examples include high-tech medical devices Such as genetic engineering, coronary angiography, microprocessors, and 3D-printed implants and prostheses that have radically changed the practice of medicine [51]. These modern technologies have allowed us to achieve better treatment results in patients and have contributed to the introduction of modern sanitary and anti-epidemic measures to prevent in-hospital infections and infectious pathologies [51].

Additionally, nations such as Armenia and Ukraine have made significant efforts towards incorporating Information and Communication Technologies (ICT) in their

healthcare systems to facilitate service delivery and patient management. Although limited successes exist in the eHealth and telemedicine domain, steps to implement ICT tools and applications in routine healthcare-related policies, administration and infrastructure of eHealth are tackled progressively [52].

For example, telemedicine centers such as those in Moscow are helping to provide efficient healthcare through remote medical consultations using telemedicine technologies [52].

This evolution highlights the challenges faced by healthcare systems worldwide as they seek to balance new technologies with the need to provide high-quality services to citizens.

1.7.2.1 Adoption of Information and Communication Technologies (ICT)

The adoption of Information and Communication Technologies (ICT) in healthcare is a crucial aspect that can significantly enhance the quality of service and accessibility in the medical field. A study has shed light on this topic, called Primary Healthcare in Australia. A chapter discusses the use of ICT by medical general practitioners in the Australian eHealth and the Virtual Doctor Program, emphasizing the reasons for adoption or non-adoption of these technologies [53].

And another study called Health Professionals in Ethiopia, conducted at Debretabor Referral Hospital in Northwest Ethiopia focused on investigating the knowledge and utilization of ICT among health professionals. The study revealed that while ICT adoption in the health system can improve service quality and accessibility, health care providers in Ethiopia, like in other developing countries, face challenges with underprivileged ICT utilization [54].

1.7.2.2 Telemedicine and Remote Healthcare Services

Telemedicine and remote healthcare services have become increasingly vital, especially during the COVID-19 pandemic, for managing chronic conditions like Parkinson's disease (PD) and Chronic Obstructive Pulmonary Disease (COPD). Research has shown the effectiveness of machine learning models in predicting PD severity using vocal data, with a focus on remote monitoring and care support [55]. Additionally, the implementation of telemedicine solutions, such as smart glasses, has significantly

improved primary healthcare services and referrals in remote rural areas like Kingandu, DRC, demonstrating the potential benefits of telemedicine in enhancing healthcare accessibility and quality [56].

These advancements highlight the importance of leveraging technology to provide efficient and effective healthcare services remotely, especially in underserved regions.

1.7.3 Enterprise Resource Planning (ERP) in Healthcare

1.7.3.1 Implementation of ERP in Healthcare Organizations

Initially, healthcare systems relied on standalone applications for different functions like billing, patient records, and inventory management. Over time, the healthcare industry has suffered from challenges faced related to inefficiencies in technical procedures and quality care, leading to inaccurate operational data and vulnerability to security breaches.

Among the challenges systems faced, such as, Data breaches in the healthcare industry have been increasing rapidly, despite having security standards such as HIPAA (Health Insurance Portability and Accountability Act)[57]. And also the use of big data in the healthcare sector has further amplified the vulnerability of healthcare data to security threats, including data breaches, data leakage, data tampering, and data theft [58].

Therefore, there is an increasing focus on leveraging technological advancements with strong security measures to address these challenges and ensure the confidentiality and integrity of patient data [59]. Pay-for-performance (P4P) has been implemented in several countries as a payment approach in which healthcare providers receive explicit financial incentives to improve the quality and efficiency of care. However, research suggests that P4P has not been very effective in delivering the desired improvements and has demonstrated several unintended effects [60].

The findings emphasize the need for the healthcare industry to tackle technical inefficiencies and improve the quality of care in the section. In doing so, patient data integrity and confidentiality can be guaranteed. The results also said that technology innovation and challenging security posture, in concert with appropriate payment models used for delivery, may slightly improve the quality and effectiveness of health care.

On the other hand, the requirement for more efficient operation and integrated data management drove healthcare organizations to introduce Enterprise Resource Planning (ERP) systems. However, ERP systems are being integrated slowly into health care. This allows organizations to systemize their procedures, ensure accurate information, and facilitate decision-making. As a result, organizations found that these systems could integrate the financial, supply chain management, and patient management functions of different departments and people in a single unit of work. This had obvious benefits for efficiency and the sharing of data among departments.

ERP systems for hospitals, based on business process management software (hereinafter referred to simply as ERP product), help companies integrate many aspects of their operations in a single database, user interface, and application. These features paralleled only by their ability to provide high-quality patient care at low costs for patients. This is what healthcare companies are fighting for.

Healthcare companies jumping into ERP systems was a big move in digital transformation, allowing organizations to manage resources much more effectively, streamline supervision paths and have more accurate, higher patient rates due to where data directs decisions.

ERP can solve clinical errors, enhance operational productivity, and lay a foundation for data analysis. Ultra-sophisticated Enterprise systems easily meet patient needs for daily care at any time. These clinics also offer support such as medical examination reports that can help keep you in the best possible health condition. In addition, a major benefit of ERP in health care is the ability to make electronic medical records and patient communication systems more efficient.

Among the benefits of enterprise resource planning (ERP) systems in healthcare:

- Eradicating clinical errors and boosting operations: ERP systems can help eliminate clinical errors and boost operations with productivity and aligned data analytics. By integrating key business functions onto a unified platform, ERP software aims to streamline processes and information flows across the enterprise [61].
- Real-time Patient Needs, Data, and Test Reports: ERP systems can help medical enterprises with real-time patient needs, data, and test reports. This allows healthcare providers to make better decisions and, hence, better care of patients [61].

- Streamlining Various Diagnostic Systems, Electronic Medical Records, and Patient Communication Systems: The major benefit of ERP for healthcare is streamlining various diagnostic systems, electronic medical records, and patient communication systems. This can help healthcare providers manage patient data more efficiently and improve the quality of care [61].
- Empowering Benefits of ERP Systems Implementation: ERP systems can lead to numerous benefits for organizations, including informative, communicative, growth and learning, and strategic benefits. The employees and managers are the most important stakeholders of this system that can both affect it and be affected by it [20].
- Improvement in Quality of Services: The implementation of ERP systems in healthcare organizations has the potential to promote significant changes in areas such as finance, human resources, capacity, revenue, and admission resource functions, ultimately leading to improvements in the quality of services [62].
- Enhanced Functionality and Streamlined Business Processes: Recent findings suggest that the widespread adoption of ERP platforms across healthcare facilities promises to augment operational functionality, simplify workflows, and ensure quality patient care. The study revealed that ERP-driven optimization empowered staff to focus primarily on direct care duties instead of administrative tasks, ultimately improving standards [63].
- Maximized Resource Allocation: Resource allocation optimization is paramount for boosting patient care standards and operational efficiency within healthcare infrastructures. ERP-powered digital transformation equips organizations to consolidate disparate systems, secure real-time insights, and dynamically redistribute limited assets based on demand fluctuations. When effectively leveraged, these capabilities can reduce waste and boost access to critical services [64].

Healthcare ERP solutions enhance efficiency by providing comprehensive oversight of both administrative and clinical processes within the healthcare system. These platforms enable administrators to monitor expenditures, establish budget controls, and make more informed decisions based on real-time data. With features like artificial intelligence and centralized reporting, ERP systems provide valuable insights, helping to identify problems and areas for improvement that might otherwise go unnoticed.

1.7.3.2 Uses of Enterprise Resource Planning in Healthcare

ERP systems impact the healthcare industry tremendously by enhancing operational efficiency, improving patient care outcomes, and streamlining administrative tasks. These systems play a pivotal role by consolidating data from separate departments, automating workflows, and providing insights for strategic decision-making. When implemented effectively, ERP systems can transform healthcare organizations.

- Impact on Healthcare Organization Productivity:

Innovative technologies, including sophisticated ERP solutions, significantly influence productivity in healthcare settings. By integrating disparate applications and data silos, an ERP system optimizes resource utilization across clinical and business operations. As redundant tasks are eliminated, Doctors and nurses can dedicate more time to patients. Additionally, administrative personnel gain visibility and control over inventory, purchasing, budgeting and more. Consequently, an ERP system often pays for itself through elevated performance and financial savings realized over its lifetime. However, selecting the right system requires significant research and collaboration between leadership, clinicians, and IT to realize an ERP's benefits for patients, staff, and the bottom line[65].

- Improving Enterprise Strength in Healthcare:

Implementing ERP in the healthcare organization is key to enhancing the overall strength of an enterprise, supply chain management, and all-round unity in flow of funds information and logistics. ERP systems are the bedrock for effective decision-making and competitiveness in domestic and international healthcare markets [64].

- Framework of Benefits Categorization:

This comprehensive framework was structured to assess the business benefits of ERP applications, including those implemented in healthcare settings. It classifies the benefits of implementing ERP systems and provides a sound foundation for planning, justifying, and managing these systems in healthcare organizations such as hospitals [66].

1.7.3.3 Challenges and Barriers to ERP Adoption in Healthcare

Challenges and barriers to ERP adoption in healthcare involve several factors affecting the implementation and use of ERP in healthcare environments. One study highlighted technology-oriented barriers to ERP use in healthcare, suggesting that poor reporting capabilities of ERP systems, ineffective upgrades, and customization were somewhat constraints on ERP adoption [67]. Limited resources, lack of necessary skillsets, and the use of workarounds such as Excel were identified as organizational barriers to the adoption of ERP systems in healthcare.

The initial costs associated with ERP implementation can be a significant barrier, especially for smaller healthcare organizations. Moving from on-premise to cloud-based ERP solutions can help mitigate some of these financial challenges [68].

Resistance to change within healthcare organizations can impede the adoption of new technologies like ERP systems. Overcoming this resistance through effective change management strategies is essential for successful ERP implementation [69].

1.7.4 Healthcare Quality and Its Measurement

Healthcare quality refers to the extent to which healthcare services increase the likelihood of achieving desired health outcomes and are consistent with current professional knowledge. Measuring healthcare quality involves assessing various aspects of care, including effectiveness, safety, patient-centeredness, timeliness, efficiency, and equity. These measures help identify strengths and weaknesses in healthcare delivery and guide improvement.

1.7.4.1 Applications of Quality in Healthcare and Standards

Quality in healthcare, substantially ensures high standards of care, patient safety and operational excellence in healthcare organizations with accredited certificates. All such certificates involve rigorous assessment and refer strictly to compliance with recognized quality standards/best practices in healthcare delivery. This section will explain the most important global and local applications and standards for health care quality.

A. International Organization for Standardization (ISO)

ISO, or the International Organization for Standardization, is a global body that develops and publishes internationally recognized standards designed to improve quality, safety, and efficiency across a range of industries - and healthcare is one such industry. ISO standards represent an essential part of the effort to standardize healthcare systems--particularly where those systems have no boundaries between one jurisdiction and another. In a very important way, information technology is changing all this[70]. This field is now covered by ISO standards as well; the various domains in which standards apply are medical devices, information security, quality management and risk management.

ISO standards are used in healthcare to:

- Ensure the quality and safety of medical devices and equipment.
- Establish protocols for information security and data management in healthcare systems.
- Implement quality management systems to enhance patient care and operational efficiency.
- Provide guidelines for risk management to mitigate potential hazards and ensure patient safety.

By adhering to ISO standards, healthcare organizations can enhance the quality of care provided to patients, streamline processes, improve patient outcomes, and ensure compliance with international best practices. Overall, ISO standards play a vital role in standardizing practices within the healthcare industry to promote quality, safety, and efficiency in healthcare delivery.

ISO 15189: This accreditation is specific to medical laboratories and focuses on ensuring the quality and competence of testing and calibration services. Laboratories that achieve ISO 15189 accreditation demonstrate compliance with international standards for quality management and technical competence in laboratory processes [71, 72].

ISO 9001: This standard pertains to quality management systems and is applicable to various industries, including healthcare. Implementing ISO 9001 standards in healthcare

organizations helps improve overall performance, enhance patient safety, and provide a foundation for continuous development and progress [73].

B. Joint Commission International (JCI)

JCI stands for Joint Commission International, an organization that accredits hospitals worldwide to ensure that their patient care and safety meet international standards [74]. It was established in 1998 and emphasizes continuous quality improvement (CQI) with regard to international patient safety goals (IPSGs). JCI accreditation is among the highest sought by hospitals worldwide. The accreditation process has been found to positively impact various quality outcomes in healthcare organizations, including improvements in length of stay, hand hygiene compliance, infection rates, and other quality indicators. The JCI standards concern themselves with not only patient safety and healthcare quality but also aim to be aligned with standard international traits. A hospital only gets JCI certified if it provides medical services of the same quality and safety as those internationally, and it can be a reliable place where patients are treated according to world standards and regulations [74].

The benefits of Joint Commission International (JCI) accreditation are shown in Table B.1 in Appendix B.

These benefits have been demonstrated in various healthcare organizations across different countries, including academic medical centers, hospitals, and first-line medical units. Also, the JCI standards are consistent with the ISO 15189:2012 ones.

The consequences of not meeting JCI accreditation standards for healthcare organizations can be significant and may include:

1. .Loss of Patient Trust: Failure to meet JCI standards can erode patient trust in the organization's ability to provide safe, high-quality care [78].
2. Reduced Referrals: Healthcare providers may be less likely to refer patients to a non-JCI-accredited organization, perceiving it as not meeting necessary standards [78].
3. Limited Access to Resources: JCI accreditation can provide additional resources, such as funding or partnerships, that may be unavailable to non-accredited organizations [79].
4. Lower Reputation: Not meeting JCI standards can negatively impact an organization's reputation, as JCI accreditation signifies quality and safety [79].

5. Regulatory Issues: In some regions, JCI accreditation may be a requirement for healthcare organizations, and failure to meet these standards could result in regulatory issues or penalties [80].
6. Reduced Competitiveness: In a competitive healthcare market, JCI accreditation can give an organization a competitive edge, and not meeting these standards can make it less competitive [80].
7. Inability to Attract and Retain Talent: High-quality healthcare professionals may be less likely to work at an organization that is not JCI-accredited, as it may not meet their expectations for quality and safety [80].
8. Higher Patient Safety Risks: Non-JCI-accredited organizations may have higher patient safety risks because they do not adhere to the international standards for patient safety and quality of care [80].

C. The National Accreditation Board for Hospitals & Healthcare (NABH) Providers Accreditation

NABH accreditation is an important step for health facilities that want to improve their management practices and gain recognition. It is public recognition given to facilities that meet the standards set forth by NABH through an independent, third-party audit carried out by adequately trained assessors [81].

The NABH accreditation procedure also requires healthcare organizations to demonstrate compliance with the Quality Management System (QMS) requirements. To be accredited by NABH, the organization must provide appropriate evidence showing that it manages and maintains systems for controlling, measuring, and improving performance. Quality systems are an essential factor underlying success in any field of activity [81].

These accredited certificates represent a healthcare organization's dedication to quality, patient safety, and continuous improvement. By conforming to internationally recognized standards and best practices of care delivery abroad, they provide assurance to patients and their caregivers, as well as those who are otherwise involved with stakeholders. While NABH accreditation is primarily focused on Indian healthcare organizations, it is recognized globally as a mark of healthcare excellence [82].

1.7.5 Development of the Healthcare Sector

There are numerous considerations to take into account when developing healthcare infrastructure, including strategic planning, risk management, and human resource development. Most importantly, these essential elements ensure the sustainability and effectiveness of the healthcare sector. The development of healthcare requires comprehensive strategic planning. These break down each stage through internal analysis, an overview of external environments, selecting specific areas we wish to develop, and finally, risk management to address rising challenges [83] Stakeholder engagement is an essential prerequisite for healthcare guidelines to be implanted successfully with stakeholders in healthcare. They will include healthcare providers, policymakers, patients and Innovative and courageous human resources development is crucial to help healthcare professionals equipped with the skills and knowledge needed to ensure quality care community members [84]. Innovative and courageous human resources development is vital in the healthcare sector to ensure that healthcare professionals are equipped with the necessary skills and knowledge to deliver quality care[85].

All of these elements constitute the future of the healthcare industry because, at least within this environment, they create new life. Their demonstrable benefits include sustainable development for each of its many facets and the kind of solutions it can provide, looking ahead and taking on a predictable shape.

1.7.6 Sustainable Development and Healthcare

Sustainable development in healthcare focuses on meeting current health needs without compromising the ability of future generations to meet their own needs. It emphasizes practices that enhance long-term health outcomes while minimizing environmental impact and resource consumption. This section explores sustainable healthcare practices and initiatives, as well as how to integrate sustainable development principles into healthcare systems to create lasting positive change.

1.7.6.1 Sustainable Practices and Initiatives

Foodservice managers in Québec healthcare institutions face barriers like lack of support and political directives in adopting sustainable menu practices. Collaboration and better communication are seen as essential for increased adoption [86].

Sustainable healthcare waste management initiatives are being implemented in Malaysian teaching hospitals, focusing on proper segregation, purchasing eco-friendly supplies, and staff training. Majority of staff are knowledgeable about waste minimization [87]. The convergence of IoT, smart cities, and green healthcare can lead to sustainable and efficient healthcare systems. IoT solutions like remote patient monitoring and waste management can reduce carbon footprint while enhancing patient care in smart cities [88].

Australian general practices are focusing on energy and waste reduction to mitigate climate impact. Leadership, staff engagement, and workplace culture play crucial roles in driving sustainable practices within healthcare settings [89]. Operating rooms in France generate a significant portion of hospital waste, emphasizing the need for environmentally sustainable anesthesiology practices. Waste sorting, avoidance of polluting gases, and staff training are key aspects in promoting sustainability [90].

1.7.6.2 Integrating Sustainable Development Principles into Healthcare Systems

Incorporating ESG principles in healthcare systems will help make the healthcare sector more sustainable and resilient. Healthcare facilities can reduce their ecological footprint by adopting energy-saving measures, producing less garbage, and procuring medical supplies through green channels[91]. Healthcare systems can improve social sustainability by prioritizing equitable access to health services, efforts in the community to promote health, and ensuring fair treatment for employees and patients alike[92]. Good governance of healthcare organizations means making decisions in the open, behaving ethically and being accountable to all involved parties. Sustainable development requires considering ethical factors when developing healthcare policies and practices[93]. When these principles are built into a practical healthcare system, organizations become part of a healthcare sector that is both sustainable over the long term and able to withstand sudden environmental or social downside shocks.

1.7.6.3 Contributions of Healthcare to Sustainable Development Goals (SDGs)

A recent systemic literature review highlights how implementing artificial intelligence (AI) applications in healthcare can help achieve gender equality and health sustainability goals set by the United Nations. According to result of the study AI-

powered innovations may increase efficiency in making informed decisions about health that can serve women in small or less-represented communities [94].

Another study focuses on Lean Healthcare, a management philosophy aimed at improving patient care quality, healthcare professionals' work life, and sustainability. The research demonstrates that Lean Healthcare practices directly or indirectly relate to nine Sustainable Development Goals (SDGs), contributing to the preservation of natural resources, better working conditions, and economic progress within healthcare organizations [95].

1.7.7 Impact of Enterprise Resource Planning on Sustainability Performance

The impact of ERP on sustainability performance in healthcare can be analyzed through the following aspects:

1. Environmental aspect: ERP systems can help healthcare organizations reduce waste, energy consumption, and resource usage, thereby improving their environmental performance [41].
2. Economic aspect: ERP systems can provide operational and business advantages, such as cost reduction and revenue growth, which contribute to economic sustainability [96].
3. Social aspect: ERP systems can improve patient care and safety, as well as employee satisfaction and well-being, which are essential for social sustainability [41].

After extensive research has shown that ERP can be effectively beneficial for sustainability performance in healthcare by:

- Enhancing the impact of knowledge management processes on sustainable performance [97].
- Improving operational process integration, which can affect planning and control integration [98].
- Reducing costs and increasing revenues, thereby providing economic sustainability [96].
- Aligning critical success factors with sustainability objectives and business strategies to ensure successful and enduring lean deployment [41].

The research from Thailand demonstrates that ERP implementation has direct positive influences on logistics management efficiency, particularly in warehouse management and transportation management[99]. These improvements in logistics management efficiency can contribute to enhanced sustainability performance in healthcare, as they lead to better resource utilization and reduced waste.

A study on hospital organizations found that knowledge management processes have a positive medium effect on sustainable performance, and the ERP system has a higher level of effect on the impact of knowledge management processes on sustainable performance [97].

[98] Indicated that ERP sustainability results in improved operational process integration, which can indirectly affect operational performance. However, ERP sustainability has not been found to have a strong enough influence to directly improve planning and control integration or operational performance.

on the other hand, Research in the architecture, engineering, and construction sector suggested that the implementation of ERP systems can positively affect financial results, reduce costs, and increase revenues, thereby contributing to economic sustainability [96].

Nonetheless, not all aspects of sustainability performance are impacted similarly by the ERP system. However, the influence of ERP sustainability is insufficient to enhance planning and control integration [98]. Moreover, ERP systems do not significantly impact firm performance via supplier, internal, and customer integration [100]. Sustainability in healthcare is a prerequisite for improved financial performance and overall outcomes, covering a wide range of matters beyond just the environmental impact of healthcare deliveries, which would be a possible gap.

1.7.8 The Link between Joint commission international and sustainability

The accreditation standards defined by JCI help to drive improvements in patient care and sustainability. Although the direct relationship between JCI and sustainability is not clearly stated, JCI indirectly supports sustainability activities of healthcare organizations by promoting patient safety and quality of care.

JCI accreditation promotes patient safety and quality of care, encouraging practices that can result in more effective resource use, fewer medical errors, and better overall sustainability; saving lives and resources is part and parcel of JCI's mandate. These include waste reduction, energy efficiency initiatives, and eco-initiatives that promote the sustainable delivery of strategic healthcare services and programs over time.

While the interaction between sustainability and JCI accreditation has yet to be fully elucidated, it can be inferred that through more effective operational practices and positive standards of healthcare delivery in JCI-accredited healthcare organizations, achieving a certain level of sustainability within an accredited organization automatically becomes complementary. This alignment with sustainability principles helps improve patient health and the environmental impact of healthcare services, a research gap.

A systematic literature review also confirmed that the quality indicators measured and evaluated by Joint Commission International (JCI) accreditation can be considered to have a positive impact on hospital outcomes, as evidenced by the following strategies: increased staff satisfaction, continuous quality improvement, ensuring medical documentation, reduced rates of hospital-acquired infections, increased adherence to hand hygiene, and other quality indicators [101]. These attributes of hospital performance indirectly contribute to improved healthcare sustainability performance.

Hence, from the available evidence that confirms that ERP implementation leads to increased logistics management efficiency, it is logical to support the hypothesis that ERP implementation positively affects sustainability performance in healthcare. Since JCI accreditations are related to better hospital performance, an indirect positive effect on healthcare sustainability performance can be expected.

1.8 Research Gaps

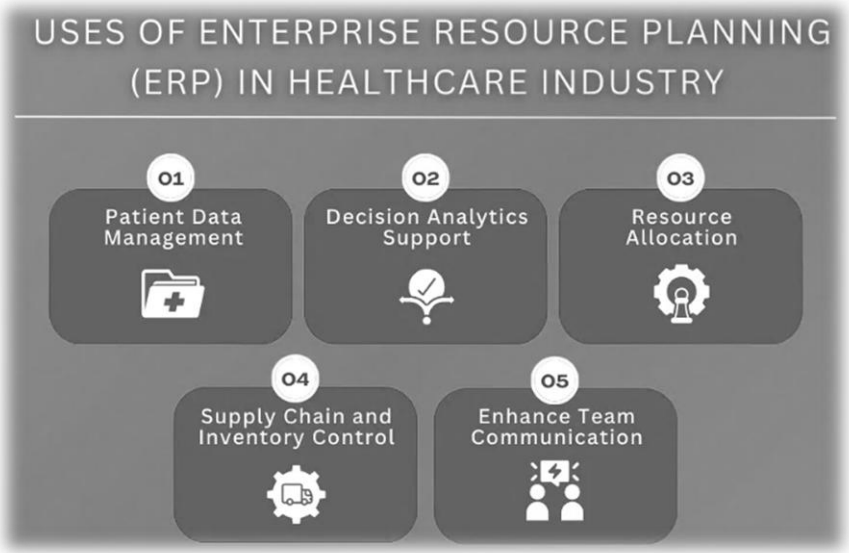
Healthcare ERP systems are integrated software suites for managing and automating back-office and administrative functions within healthcare providers. Such systems are designed for the needs of the healthcare sector and generally include modules for finance, human resources, supply chain management, patient management, and regulatory compliance.

The goal of ERP systems in healthcare is to enhance operational efficiency, streamline processes, and improve decision-making from a holistic standpoint with an integrated platform for data management and communication among all departments that use it. They can help healthcare organizations better manage resources, cut costs, and comply with industry regulations.

As noted by [102], ERP aids professionalism in the healthcare sector by easing the complexities of healthcare operations' ongoing dynamics. ERP integration is a significant catalyst for modernizing how organizations run their functions. Here are the key uses that make ERP a critical component of healthcare management.

Figure 1.1

Uses of ERP in Healthcare industry [103]



This research focuses on how enterprise resource planning (ERP) systems impact healthcare by improving patient data management, resource allocation, and enhancing communication among team members. Patient data management is critical to ensuring accurate records and efficient healthcare delivery. Resource allocation is also vital to maximizing the use of medical equipment and staff. Improved communication among team members enhances coordination and collaboration among healthcare providers, directly impacting patient outcomes. Although ERP systems offer broad benefits, including decision analytics support and supply chain/inventory control, were not prioritized in this research due to our primary focus on factors that directly impact patient care delivery and clinical efficiency.

However, while the research demonstrates the positive influence of JCI accreditation on healthcare quality, it does not specifically address the mediator effect of JCI in the relationship between ERP implementation and sustainability performance in healthcare, which could be a potential gap.

So, after studying the Palestinian health market in the West Bank, I found that ERP in healthcare was implemented in two out of 58 hospitals accredited by Joint Commission International (JCI). The gap was the lack of previous studies in this field containing cases inside Palestine, so I decided to shed light on the matter and explain its benefits and how to raise the hospital to a higher level in many aspects, and studying the mediator effect of JCI in the relationship between ERP implementation and sustainability performance in healthcare.

1.9 Research Objectives

1. Examining the relationship between ERP implementation and sustainability performance
2. Examining whether JCI acts as a mediator between ERP and sustainability performance
3. Highlighting the importance of ERP in healthcare in Palestine to encourage other hospitals.

1.10 Research Questions

1. How does ERP implementation influence sustainability performance in healthcare organizations?
2. How does ERP implementation impact the achievement of Joint Commission International (JCI) accreditation in healthcare?
3. In what ways does JCI accreditation influence sustainability performance in healthcare organizations?
4. How much do governance, social, and environmental aspects make up the sustainability performance elements in healthcare?
5. Does JCI accreditation mediate the relationship between ERP implementation and sustainability performance in healthcare organizations?

1.11 Significance of the Research

This research on the implementation of ERP systems in Palestinian healthcare is significant for addressing a critical gap in existing literature. With only two out of 58 hospitals accredited by the Joint Commission International (JCI) utilizing ERP systems, my study highlights the underutilization of this technology in the region. By providing insights into the benefits of ERP, this work serves as a foundational reference for future studies and implementations, potentially guiding healthcare organizations toward improved operational efficiency and patient care.

Furthermore, the findings offer actionable recommendations that can enhance service delivery and reduce costs associated with medical referrals. By demonstrating how ERP systems can streamline processes such as patient management and supply chain logistics, the research not only supports health sector development but also informs policymakers and healthcare administrators about the advantages of investing in digital health solutions. This contribution is vital for advancing the Palestinian healthcare system, ultimately aiming to improve health outcomes in a region facing significant challenges.

1.12 Study Hypothesis

In light of the previous discussion, the research investigates several hypotheses through previous studies.

H1. ERP implementation positively influences sustainability performance in healthcare

One study found that the use of ERP systems in hospitals is associated with lower supply chain costs [104]. [41] Developed a preliminary framework for measuring lean healthcare sustainability in hospitals, which aligns critical success factors with sustainability objectives and business strategies.

Additionally, [105]investigated the relationships among knowledge management, ERP implementation, and perceived organizational performance in the healthcare sector, and found that ERP implementation mediates the relationship between knowledge management and perceived organizational performance.

[106] reveal positive relationships between the implementation of Sustainable Enterprise Resource Planning)S-ERPs(and economic, environmental and social sustainability performance within the manufacturing sector.

H2. ERP implementation positively influences JCI in healthcare

The implementation of ERP systems and its impact on JCI accreditation, a case study of a public hospital in Italy. Following implementation, the hospital reported substantial patient satisfaction and operational efficiency gains. The hospital further stated that the ERP system enabled efficient data management and optimal processes, resulting in meeting requirements on quality improvement and patient safety. The Conclusion led to that ERP is efficacious in improving compliance against the JCI standards, therefore resulting in the successful accomplishment of JCI accreditation.

In addition, in a Middle Eastern healthcare institution, implementing an ERP system was closely related to success with JCI accreditation. Before ERP adoption, this organization suffered from data silos and inefficient operations. However, after implementation, there was more unified coordination among departments; clinical workflows improved dramatically, and resource allocation improved. This change made operations more efficient and brought the organization closer to JCI standards compliance. Eventually, they were able to pass on this expertise as successfully accredited.

Case studies have shown that ERP systems can significantly impact JCI accreditation, boosting operational efficiency and quality of care while also making it easier to comply with international standards. Successful implementation of an ERP system helps a healthcare organization standardize its work processes, putting it in a good position to win and maintain JCI accreditation. Nevertheless, no clear corollary exists between ERP and JCI in healthcare until recently.

H3. JCI positively influences sustainability performance in healthcare

At Well Care Medical Clinic Hospital in Dubai, a cross-sectional study discovered that following the JCI standards for certification led to better medication safety practices. The study stressed that following these standards correctly could save lives and

introduced the implications of sustainable development goals for avoiding medical errors wherever possible, making patients better off in two ways at once[107].

It is worth noting that, in collaboration with JCI, the Geneva Sustainability Centre will introduce an international Healthcare Sustainability Certification (HSC) programme for healthcare institutions. This new trial program is for public demonstration and will start on January 1, 2025. Yet JCI will integrate in the field and continue its sustainable scale process deployment based on United Nations environmental standards. The credential will be available to every medical facility irrespective of their JCI accreditation standing. It will evaluate sustainability maturity in three domains (globalized challenge imperatives): (1) environmental, (2) health equity, and (3) governance[108].

As a result of this decision, this confirms that JCI standards not only enhances healthcare quality but also aligns with emerging sustainability practices that are increasingly vital in today's healthcare landscape. The ongoing initiatives by JCI to formalize sustainability efforts further reinforce the relationship between accreditation and performance in environmental stewardship within healthcare organizations.

H4. Environmental Factor is one dimensions of sustainability performance

According to [109], Environmental factors influence how efficiently resources are used in production processes. For instance, sustainable practices in agriculture, such as organic farming, demonstrate that evaluating environmental benefits can lead to improved resource management and reduced pollution levels, ultimately enhancing sustainability performance.

In another perspective, Effective management of emissions and waste is essential for maintaining environmental integrity. Organizations that prioritize pollution control not only comply with regulations but also improve their sustainability ratings, which can attract investment and enhance their market position[110].

In summary, environmental factors significantly impact sustainability performance by influencing resource efficiency, pollution management, consumer behavior, corporate governance, innovation, and risk mitigation strategies. Organizations that effectively address these factors are better positioned to achieve long-term sustainability goals while enhancing their competitive advantage.

H5. Social Factor is one dimensions of sustainability performance

Construction organizations implementing sustainable practices are often more socially responsible, as they foster a culture promoting ethical behaviour and community involvement, resulting in enhanced social sustainability performance [111].

To put it another way, the relationship between social responsibility and sustainability performance is also related to CSR-disclosure levels. This suggests a positive correlation between social responsibility and financial performance, as firms communicating their social responsibility generate greater financial metrics such as ROA (return on assets) and ROE (return on equity) than others [112].

Social impact reinforces generic sustainability performance by developing organizations' culture, stakeholder engagement, CSR initiatives, social capital, ethical leadership, and employee happiness. Only those organizations that tackle these social dimensions are in a position to reach targets for sustainable development and gain a competitive edge in the market and in healthcare as well.

H6. Governance Factor is one dimensions of sustainability performance

Given recent research findings, corporate governance structures that include board composition and accountability mechanisms are very important if any sustainability plans are to be implemented. It is imperative for sustainable development, so preconditions as a result of good corporate governance include strong governance because the results point increases profitability and social productivity on top of environmental efficiencies [113].

Governance models that accentuate transparency and accountability produce better sustainability records by encouraging businesses to reveal their social, economic, and environmental performances. This kind of disclosure cements ties between interest groups; for example, with stakeholders the investment community or customers. It strengthens financial performance for businesses. Recent studies have shown that there is a positive correlation between that disclosure on the one hand and corporate sustainability performance on the other [114].

Governance trends have a strong impact on overall sustainability performance. Robust corporate governance practices are an important factor, as is the transparency of companies. Engaging with stakeholders is crucial for good governance and making sure that all those setbacks are counteracted. Compliance cannot be a one-time affair it needs to be ongoing. Moreover, if companies fully participate in CSR initiatives, then they will better serve their stakeholders.

H7. JCI accreditation plays a mediating-effect role between ERP implementation and sustainability performance

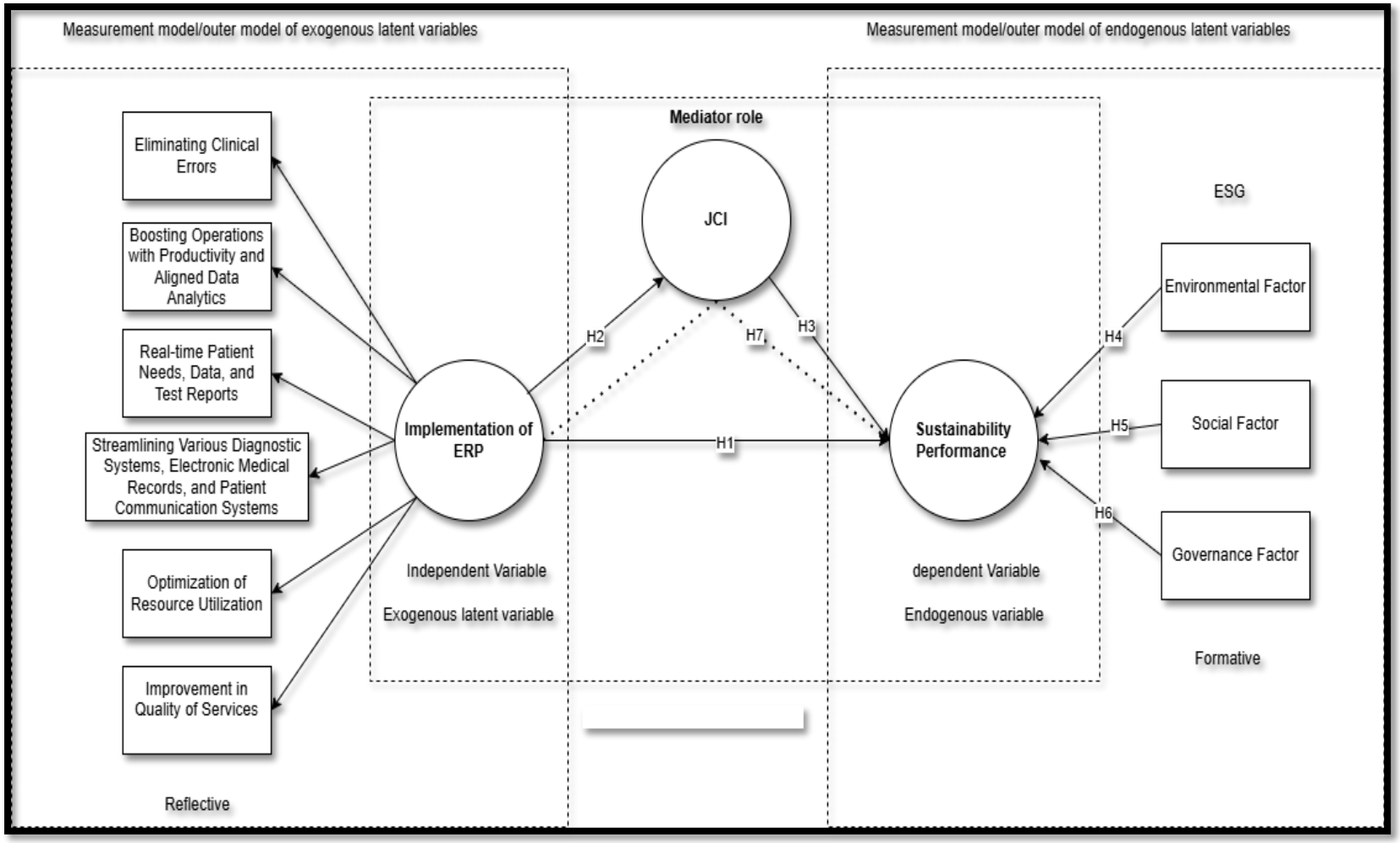
ERP systems are designed to make processes more efficient, help data management, and boost operational efficacy. In healthcare, implementing an ERP system is expected to improve resource utilization and reduce waste. Under these conditions of operation, sustainability is much improved. JCI accreditation means continuously improving quality achievement (CQI) and strictly complying with international patient safety objectives. Organizations undergoing ERP implementation may seek JCI accreditation to ensure that their processes align with global standards for patient safety and quality of care. As a result, the mediator effect of JCI accreditation is expected to link ERP implementation to enhanced sustainability performance by driving improvements in healthcare quality, patient safety, and overall organizational effectiveness.

1.13 Proposed Model

The following is the proposed model which will be examined, modified and analyzed in the following sections in Figure 1.2.

Figure 1.2

Structural model / Inner model



Chapter Two

Research Methodology

2.1 Overview

The chapter introduces the research methodology used in this study. Will outline the overarching strategies and approaches adopted to fulfill the research objectives. Each tool's rationale for use will be elucidated. Furthermore, will elaborate on the selected research type, data collection methods, and the analytical tools and techniques employed in detail.

2.2 Research Type

The study described is a cross-sectional, quantitative, and descriptive-applied study. The researchers' goal of this study is to quantify variables of interest while simultaneously describing their prevalence or frequency in a particular population. Descriptive analytics is concerned with characterizing the population and how its characteristics change over time without manipulating the variables being studied. This is an efficient way for researchers to collect data cheaply, making this an appropriate design to rapidly construct the burden of everyday events within a populace and establish outcomes without exploring causal relationships. This study design selects a sample group that represents the entirety of the population, ensuring that the most essential characteristics are representative. Using descriptive and analytical research methods in collecting and interpreting data offers researchers crucial insights into the population under study [115].

2.3 Research Design

This research design provides a detailed methodological framework for testing the effect of ERP implementation on sustainability performance within the healthcare context whilst accounting for the mediator impact of JCI accreditation. Hence, this design enables a systematic analysis of the association between these variables and essential knowledge for decision-making in healthcare management and sustainability.

These variables can actually be measured using a Likert scale or other statistical tools. Through statistical analysis, the relationship between variables. These relationships can be analyzed using multiple techniques.

Moreover, in this type of research, it is possible to analyze hypotheses based on the data obtained. It enables to assess the key variables where adjustments need to be implemented.

2.4 Study Population

Study population refers to the entire group of individuals or elements that meet the criteria for inclusion in a research study that the researcher wants to investigate and draw conclusions about [116].

The study population is determined based on specific characteristics or criteria relevant to the research question or objectives. In this study, the study population would consist of the administrative staff consisting of the director and department heads in Health care institutions that have implemented ERP systems and have obtained or are seeking to obtain JCI accreditation located in Palestine.

Healthcare institutions that have JCI accreditation located in Palestine are:

- Al-Najah National University Hospital in Nablus
- Istishari Arab Hospital in Ramallah
- Palestinian Red Crescent Society Hospital in Jerusalem
- Al-Makassed Hospital in Jerusalem
- Augusta Victoria Hospital - Al-Mutlaa in Jerusalem

The total will be 5 hospitals out of 58 hospitals in the West Bank and Jerusalem

It is crucial to acknowledge that including the entire study population may not always be feasible or realistic. In such instances, researchers frequently employ sampling methods to choose a representative subset of the study population, referred to as the sample population, for data collection and inference drawing, particularly when dealing with large populations.

The size and makeup of the study population significantly impact the generalizability of research outcomes. Researchers aim to guarantee that the study population effectively mirrors the wider society under investigation, facilitating the derivation of sound conclusions and the application of findings to broader contexts.

After communicating with the five hospitals, Al-Makassed Hospital in Jerusalem apologized for not participating because not having ERP. Both the Palestinian Red Crescent Society Hospital and the Istishari Arab Hospital also apologized for not participating due to the decision to stop scientific research within the hospital. Accordingly, we are left with Augusta Victoria Hospital - Al-Mutlaa in Jerusalem and Al-Najah National University Hospital in Nablus as the study population.

2.5 Sample Size

A "sample of the population" refers to a subset of individuals or items selected from a larger group, known as the population, for the purpose of conducting research or analysis.

By studying a sample population, the challenges, and opportunities related to ERP adoption in Healthcare can be identified and be JCI accredited. This knowledge can help develop strategies, policies and interventions that facilitate successful implementation and maximize the benefits of ERP in the Healthcare sector.

Administrative staff who manage and oversee the non-clinical operations of healthcare facilities. These individuals are responsible for tasks such as developing and implementing policies, managing budgets and finances, hiring and training staff, maintaining medical and staff records, ensuring regulatory compliance, and coordinating communication between medical staff, patients, and external stakeholders.

The sample consists of the administrative staff of hospitals that follow the ERP system and are certified by the JCI, the administrative staff represented by the director, data analysts, and other stakeholders involved in decision-making.

By understanding their views and positions, it is easy to gain insight into the existence of sustainable factors (environmental, social and governance practices) that can affect hospital quality, patient care quality and performance. Thus, the study hypothesis can be confirmed regarding the importance of adopting an ERP system in the rest of the hospitals and striving to obtain The JCI.

Previously, the decision was made to use the Stephen Thompson equation (equation 1 shown) to collect 64 samples out of 190, but after five months of trying to communicate with both hospitals, it was difficult to collect data. Therefore, this study employed a

convenience sampling method, selecting 53 administrative staff members from hospitals that both utilize the ERP system and hold JCI certification. Then should analyze this sample in PLS-SEM.

Convenience sampling involves selecting participants who are easiest to reach or willing to participate. It is widely used in clinical and qualitative research because it is quick and inexpensive but may not represent the entire population well.

Equation 1 Steven Thompson Equation

$$n = \frac{N \times p(1-p)}{\left[\left[N-1 \times \left(d^2 \div z^2\right)\right] + p(1-p)\right]} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

2.6 Data Collection

Quantitative Methods: Surveys/questionnaires to collect data on ERP implementation, sustainability performance metrics, and JCI accreditation status.

Variables: ERP implementation (independent variable), sustainability performance (dependent variable), JCI accreditation (mediator variable).

The primary quantitative data for this research is the responds of survey questions. To complete the data collection, an online link was created to fill out the questionnaire.

2.7 Instruments of study and validation indicators.

The respondent descriptive data was analyzed using the Statistical Package for the Social Sciences Excel, SPSS statistics, and Smart-PLS program to calculate the mean, standard deviation, and degree for all data.

Furthermore, the structural equation modelling (PLS-SEM) technique was used to test the hypothesized relationships among research models. Smart PLS is one of the best PLS-SEM software programs. The program employs it for preparing the study model, connections between the variables, and input of each variable. The constructs are first- and second-order, as shown in the model, where a repeat indicator strategy was used to model each construct's relations and indicators.

The model and the indicators were then confirmed by assessing the validity and reliability through PLS algorithm calculations using tests and threshold values for each test. Then, all associations were validated by bootstrapping to test the hypotheses.

The two methodological components of Smart PLS analyze models. First, the measuring model is assessed, and then reliability tests are performed on the reflective model. Three measures are included in evaluating convergent validity: composite reliability (CR), indicator reliability (item loading), and average variance extracted (AVE).

Additionally, the discriminant validity test, which incorporates cross loadings and the Fornell-Larcker criteria, is part of the validity test. Assessing the formative measurement models by calculating the indicator's collinearity variance inflation factor (VIF). And by assessing the outside weight and outer loading, assuring the importance for each indication.

Moreover, the evaluation of the structural model by looking at the path coefficients (hypotheses test), goodness of fit index (GoF), effect size (F square), and coefficients of determination (R square). The investigation also looked into the mediation analysis.

Ethical approval for the study was obtained from the relevant institutional review committees, and approval was obtained from the Head of the Scientific Research Department and the CEO of the hospital to begin distributing the questionnaires. The confidentiality of the participants and the protection of data were ensured by not taking any personal data that could reveal their identity.

2.8 Research Instruments

Questionnaire Design: Develop a questionnaire with sections focusing on ERP implementation details, sustainability performance indicators, and JCI accreditation status.

Validity and Reliability: Ensure the questionnaire is valid and reliable through pilot testing and statistical analysis.

2.9 Surveys Design

Surveys offer an efficient means to gather data from numerous participants, facilitating the collection of quantifiable data essential for statistical analysis.

First, a brief paragraph was written about what the questionnaire is about, and a brief explanation of the most important abbreviations. Then the first part of the questionnaire was designed about personal information in terms of gender, experience, and educational qualifications to describe the demographic, which consists of five questions. Then the second part was designed to ensure that the person has sufficient knowledge of the terms covered in the research, such as ERP (5 questions), sustainability performance (7 questions), JCI (9 questions), and also whether he has received prior training and if he sees an impact, whether it is recommended or not.

Then, in the last part, people were asked about the impact of ERP in health institutions on sustainability performance, and then whether they believed that JCI has a mediating effect on this relationship (25 questions).

It was then sent to two engineering management program professors to judge the questionnaire. The first professor believed that the questions were clear, but each question in the sustainability performance section should be divided into three questions to include the three axes (environmental, social, and governance) so that the answers are more specific. As for the second professor, he objected to the questions of the second part, which describe the sufficient knowledge of the respondents, for fear of their impact on the analysis, but after clarifying that these questions are not for analysis, but rather to verify the person’s competence to answer, his response was approval. My supervisor's request was to reduce each question to a smaller number of words while trying to keep the meaning clear enough, and to turn most of the questions into conversational sentences.

After taking into account the comments of all reviewers, the questions were reduced to the maximum extent and each question in the sustainability performance section was divided into three questions to include the three axes (environmental, social and governance).And the questions of the second part will not be used in the analysis. Thus, the chosen questionnaire becomes Appendix A, which contains the first part of the questionnaire on personal information, which consists of five questions, the second part

contains ERP (5 questions), sustainability performance (17 questions), and JCI (9 questions),and the third part contains 25 questions. By used the 5-point Likert Scale in every question (Strongly Disagree, Disagree, Neither,Agree,Strongly Agree) to second and third parts.

Chapter Three

Data Analysis and Results

3.1 Chapter Overview

This chapter presents an examination of the data collected from hospitals. Since the majority of the respondents were administrators involved in decision making, Microsoft Excel was used to analyze the descriptive percentages of the subjects and determine their knowledge of ERP system and JCI accreditation. Model validity and reliability tests and questionnaire response analysis were performed using Smart PLS.

3.2 Analysis of Survey Response

3.2.1 Response Rates

After examining the data through the questionnaire as mentioned earlier, it became clear that there was difficulty in reaching the respondents. The 53 respondents out of 64 intended respondents were reached for the survey, with a response rate of 84.4% of the total target. A descriptive statistical analysis of the respondent variables was conducted to study the different characteristics of our statistical sample.

The target population was healthcare organizations that have implemented ERP systems and have obtained or are seeking JCI accreditation in Palestine. The respondents were administrative staff consisting of the director and heads of departments in the selected hospitals. The sample frame is a list of those administrative staff, but the response was very difficult. Conducting a self-administered survey by mail or email often collects very low numbers of responses. Therefore, I relied on contacting the hospitals in person and attending, to fill out the questionnaire electronically.

3.2.2 Descriptive analysis for respondents

In this section, the main categories that describes the respondents is reviewed. The frequency and percent of respondents gender are shown in Table 3.1.

The results of the descriptive analysis of the first part of the survey reveal that in terms of gender, 43.4% of the participants were female and 56.6% were male. While 7.5% of the participants had a diploma and 41.5% had a bachelor’s degree, with the highest share being for postgraduate degree holders at 50.9%.

The results of the descriptive analysis also reveal that the ages of the participants ranged between 20-29 years at a rate of 18.9%, where the largest percentage was for those aged 30-39 years at a rate of 52.8%, while the percentage was 22.6% for those aged 40-49 years, and the smallest percentage was 5.7% for those aged 50-59 years. This indicates that the majority of the respondents are young people, which is close to the extent of their knowledge and awareness of a new system such as the ERP system. This confirms that the percentage of those with professional experience of 10 years or more constituted 54.7%, while those with experience of 7-9 years constituted 20.8%, the percentage of the remaining 4-7 years constituted 17%, and the percentage of 1-3 years constituted 7.5%.

Finally, the results of the descriptive analysis reveal that the participants from An-Najah National Hospital in Nablus were 77.4%, while those from Al-Mutala' Hospital in Jerusalem were 22.6%. Most of the responses were from department heads at 52.8%, while supervisors were 17% and the rest were from others.

Table 3.1

The frequency and percent of respondents

Category	Sub-category	frequency	Percent
Gender	Female	23	43.4%
	Male	30	56.6%
Age (Years)	20-29	10	18.9%
	30-39	28	52.8%
	40-49	12	22.6%
	50-59	3	5.7%
Qualification	Diploma	4	7.5%
	Bachelor	22	41.5%
	Higher education	27	50.9%
Job Position	Head of Department	28	52.8%
	Supervisor	9	17%
	General Manager	2	3.8%
	Other	13	24.5%
Experience (Years)	1-3	4	7.5%
	4-7	9	17%
	7-9	11	20.8%
	10 or more	29	54.7%
Hospital Name	An-Najah National University Hospital	41	77.4%
	Augusta Victoria Hospital - Al-Mutlaa	12	22.6%

3.2.3 Descriptive analysis for responses

Table B.2 in Appendix B for indicators mean responses and standard deviation for each indicator responses, a higher mean of responses indicates a high level of agreement of this indicator, lower standard deviation indicates that there is a lower levels of variance in the respondents answers.

To clarify the MATCH section, there are questions between all indicators of ERP and indicators of sustainability (ESG). While the THIRD section combines the three axes of ERP, JCI and sustainability performance.

3.3 Measurement Model

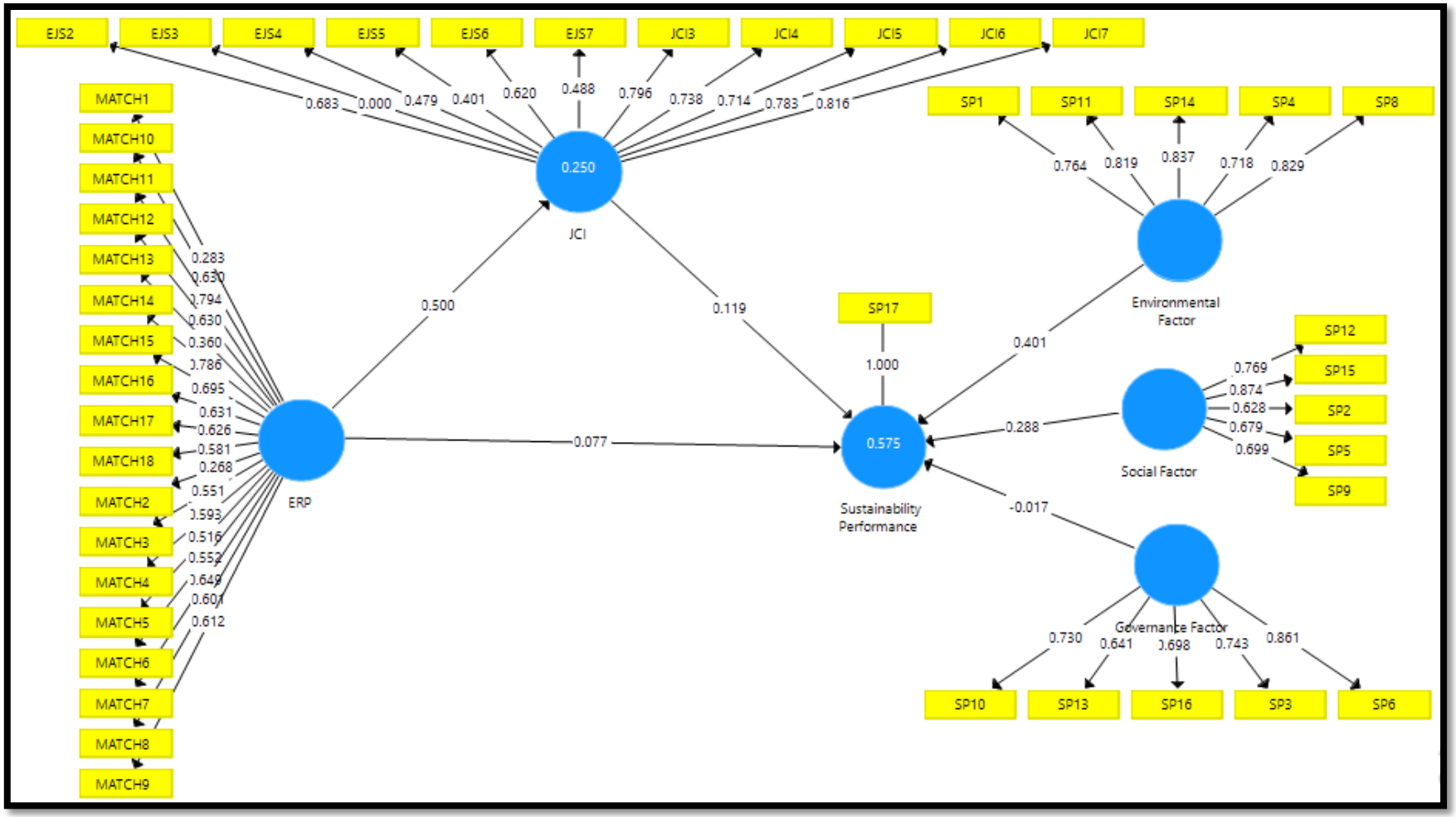
In the context of structural equation modeling (SEM) or partial least squares (PLS) analysis, the measurement model assesses the relationships between indicators and their latent variables which are constructs. It helps ensure that the measurement indicators accurately capture the constructs they are intended to represent [117].

Outer loadings, reliability, validity and overall fit of the model are common check that done by using PLS algorithm button on SmartPLS in addition to outer loadings.

Reliability tests examine the consistency and stability of the measurement indicators (for example, Cronbach alpha, composite reliability). Finally, for the measurement indicators to converge and diverge to establish that they are indeed measuring the same construct, validity checks are performed called Convergence and Discriminant validity. Also, model fit - to assess the fit of the measurement model. Moreover, this is usually quantitated by Standardized Root Mean Squared Residual (SRMR).

Figure 3.1

The Measurement Model



3.4 Assessment of Measurement Models (Outer Model)

Evaluating reflective measurement methods involves testing for the robustness of constructs through their construct validity and reliability. Convergent validity starts with measuring the indicator reliability, then calculating the composite reliability and AVE as steps to convergent validity. The discriminant validity is assessed using the Fornell-Larcker criteria, the Heterotrait-Monotrait ratio (HTMT), and cross-loadings [118].

3.5 Convergent Validity

Convergent validity refers to the extent to which a measure correlates well with other measures of the same concept. Assessing convergent validity in reflective measurement models involves identifying three tests as a part of Assessing convergent validity [119].

3.5.1 Factor Loadings

It is the correlation between observed variables (indicators) and latent variables (constructs). They indicate how much of the variance in an observed variable is explained by the latent variable. Should be 0. 708 or higher, however, it is permitted to reach over 0.60 in exploratory investigations [120]. All of the items loaded meet the requirements and agree with the suggested values, as shown in Figure 3.1.

3.5.2 Composite Reliability (CR)

Composite reliability is assessed for each indication to guarantee internal consistency. The composite reliability ratings range from 0 to 1, with higher CR values denoting better reliability levels. [120]state that a number greater than 0.70 is acceptable. All of the CR values above the criterion of 0.7, as shown in Table 3.2. Consequently, the constructions' dependability was verified.

Table 3.2

Composite reliability (CR)

	Composite reliability
ERP	0.902
JCI	0.866
Sustainability performance	1
Governance Factor	0.856
Social Factor	0.853
Environmental Factor	0.895

3.5.3 Average Variance Extracted (AVE)

AVE is determined by adding the squared loadings of all the indicators on the construct and dividing the result by the total number of indicators. According to Hair et al. (2011), the AVE should be more than 0.50, indicating that the concept accounts for more than half of the variation in its indicators.

But there are studies that have successfully utilized constructs with Average Variance Extracted (AVE) values below 0.5, although this is often viewed as a methodological concern. Like In various applications of the Technology Acceptance Model, researchers have sometimes encountered constructs with AVE values below 0.5. These studies often justify their use by demonstrating strong reliability (e.g., composite reliability above 0.7) and significant relationships with outcome variables, suggesting that the constructs still hold practical relevance.

In evaluating the Sabah Pay e-wallet, researchers used TAM to assess perceived usefulness and ease of use. it highlighted the importance of strong composite reliability (>0.7) and significant path coefficients, indicating that constructs could still be relevant even if initial assessments showed low AVE.[121].

There are many studies illustrate that researchers can justify the use of constructs with AVE values below 0.5 by emphasizing reliability and significant relationships with outcome variables. So using constructs with AVE values below 0.5 is generally discouraged, some studies have successfully navigated this issue by focusing on overall model robustness and theoretical justification.

Authors such as [122]have presented guidelines indicating that while an AVE of 0.5 or higher is ideal, constructs with lower values may still be retained if they demonstrate strong reliability and significant relationships with other variables in the model. This reflects a more nuanced understanding of construct validity, This was confirmed by [123].

This study's AVE values, which range from 0.351 to 1.0, as shown in Table 3.3.

Table 3.3

Average variance extracted

	Average variance extracted
ERP	0.351
JCI	0.404
Sustainability performance	1
Governance Factor	0.545
Social Factor	0.540
Environmental Factor	0.632
Average	0.578

3.5.4 Cronbach's Alpha

It evaluates if items from a scale/questionnaire measure the same construct. It simply indicates that it determines the validity and reliability of the objects with respect to what they should be estimating.

Cronbach's alpha measures the intercorrelation of a set of items in the scale. It is between zero and one, the higher figures showing higher coherence in the questionnaire. A score of one represents highest possible reliability – whereby all the items in a scale are perfectly dependent on each other and measure a similar aspect.

The acceptance of Cronbhach alpha value confirms that the tool utilized by a study, has acceptable internal reliability. This means that the items have an internal consistency and thus measure a single underlying construct. Therefore, such results will be reliable and have consistency because it gives confidence that the scale and results is reliable.

Table 3.4 illustrates the alpha values for research model, all values are above the threshold of 0.7 indicates that constructs are reliable due to alpha method.

Table 3.4

Cronbach's alpha

	Cronbach's Alpha
ERP	0.895
JCI	0.831
Sustainability performance	1
Governance Factor	0.796
Social Factor	0.793
Environmental Factor	0.895

3.6 Discriminant Validity

According to[120], discriminant validity assesses the degree to which a construct differs from other constructs, ensuring that it captures unique aspects not represented by others in the model. To assess discriminant validity, [120] suggests that the cross-loadings (correlations) of construct indicators should be higher on their respective construct than on any other constructs within the model. This is illustrated in Table B.3 in Appendix B.

It is noteworthy that Item SP8 loads 0.829 on Environmental and 0.741 on Social Factor, but only 0.468 on ERP and 0.235 on JCI. The highest loading is on Environmental, which suggests it belongs there, supporting discriminant validity for this item.

Note that Item JCI7 loads 0.816 on JCI, much higher than on other constructs (e.g., 0.38 on ERP, 0.312 on Governance), indicating good discriminant validity for this item. Meanwhile, Item MATCH14 loads 0.786 on ERP but much lower on other factors, supporting ERP's distinctiveness.

3.6.1 The Fornell-Larcker criteria

The Fornell-Larcker criteria, which compares the square root of the (AVE) with latent variable correlations, is a second test to examine the discriminant validity. Additionally, the square root of each construct (AVE) should have a higher correlation with other constructs than the most significant correlation. It may be concluded from Figure 3 data that the Fornell-Larcker discriminant validity criteria were developed. The Fournell-Larcker criterion is shown in Table 3.5.

Table 3.5

The Fornell-Larcker criteria

	ERP	Environmental	Governance Fa	JCI	Social Factor	Sustainability
ERP	0.592					
Environmental	0.559	0.795				
Governance Fa	0.491	0.814	0.738			
JCI	0.5	0.348	0.347	0.636		
Social Factor	0.569	0.883	0.797	0.385	0.735	
Sustainability	0.516	0.726	0.618	0.402	0.718	1

It is noted here that ERP diagonal value is 0.592, and all off-diagonal values in that row are less than 0.592, indicating discriminant validity for this construct.

3.6.2 The Heterotrait-Monotrait ratio of correlations (HTMT) criterion

The Heterotrait-Monotrait ratio of correlations (HTMT) criterion is another approach used to confirm the discriminant validity. An appropriate and reliable HTMT ratio is less than 1, according to [124]. HTMT values can be upward biased if the measurement of latent variables does not meet the assumption of tau-equivalence, particularly when correlations approach 1. In such cases, may consider using a modified version called HTMT2 for a more accurate assessment[125]. The HTMT criterion is shown in Table 3.6.

Table 3.6

The Heterotrait-Monotrait ratio of correlations (HTMT) criterion

	ERP	Environmental	Governance Fa	JCI	Social Factor	Sustainability
ERP						
Environmental	0.6					
Governance Fa	0.6	1				
JCI	0.5	0.4	0.5			
Social Factor	0.6	1.1	1	0.5		
Sustainability	0.4	0.8	0.6	0.4	0.7	

Values below 0.85 or 0.90, such as ERP and Environmental, discriminant validity is established. But due to the small sample size, correlations can be unstable, leading to extreme values. A value of HTMT close to or equal to 1 implies that the constructs share nearly identical variance, indicating a lack of discriminant validity. Therefore, bootstrapping should be used.

3.7 Assessment of the Structural Model (Inner Model)

After confirming the validity and reliability of the measurement model, the next step is to evaluate the structural model by examining the relationships between the constructs. In PLS-SEM, the key aspects of the structural model are evaluated, and these factors combined help understand the strength and significance of the hypothesized relationships within the model. In the realm of statistical analysis and model evaluation, several key metrics play a crucial role in assessing the performance and significance of

a given model. The coefficient of determination (R square) serves as an indicator of how well the model explains the variability in the dependent variable. Also, we report the effect size (F square), a second vital metric to assess the practical significance of the relationships depicted in the model. Blindfolding and predictive relevance Q square determine how well a model will perform when predicting new data. The goodness of fit index (GoF) indicated the model fit of the observed data. Finally, hypotheses testing is used to test the significance and validity of the model's path coefficients or relationships between the variables. Combined, these metrics represent a battery of tests to evaluate and compare the performance and reliability of statistical models.

3.7.1 The Coefficient of Determination (R square)

The most frequently used assessment metric for models is R-square, or the coefficient of determination. The model's predictive precision is a form of expression for the relationship between variables in models and how much these variables can match a particular structure by entering into a specific construct. R square values range from 0 to 1, with higher values indicating higher prediction accuracy. According to Hair et al. [126], R square is subject to the complexity of the research model. As a rule of thumb, endogenous latent variables explained by R square values of 0.75, 0.50 or 0.25 may be described as intense, moderate or weak. Findings reveal in Table 3.7 that endogenous latent variables of the research model get a moderate and weak estimate of 0.5 and 0.2.

Table 3.7

The Coefficient of Determination (R square)

	R square	R square Adjusted	
JCI	0.249	0.235	Weak
Sustainability performance	0.575	0.530	Moderate
Average	0.412	0.3825	

3.7.2 The Effect Size (F^2)

The effect size may be determined as follows in equation (2), and it describes the impact of eliminating a certain external construct on the endogenous constructs.

Equation 2 Equation of The Effect Size (F^2)

$$F^2 = \frac{R^2 included - R^2 excluded}{1 - R^2 included} \quad \ldots\ldots\ldots\ldots (2)$$

According to Cohen 1988, the exogenous latent variable's modest, medium, and large impacts are represented by F square values of 0.02, 0.15, and 0.35, respectively. The effect size of the Sustainability performance and all of its determinants (ERP, JCI, Governance Factor, Social Factor, Environmental Factor) are shown in Table 3.8.

Table 3.8

Effect Size F square

	Effect Size F square
ERP → JCI	0.333
JCI → Sustainability performance	0.025
ERP → Sustainability performance	.008
Governance Factor → Sustainability performance	0.0002
Social Factor → Sustainability performance	0.037
Environmental Factor → Sustainability performance	0.069

3.7.3 Blindfolding and Predictive Relevance Q square

The model's predictive usefulness in the structural model is indicated by the Q square value, also known as the Stone-Geisse's Q square value. A reflecting endogenous latent variable with a Q square value greater than 0 indicates that the construct is relevant for path model prediction. The method of blindfolding was applied to determine Q square's value. All of the components' values for Q square were greater than zero, indicating that the model had enough predictive power as show in Table 3.9.

Table 3.9

Blindfolding and Predictive Relevance Q square

	RMSE	MAE	Q square Predict
JCI	0.935	0.776	0.115
Sustainability performance	0.870	0.614	0.361

The root mean square error (RMSE) is one of the two main metrics used to evaluate the performance of a regression model. The root mean square error measures the average square difference between the predicted values and the observed actual values. RMSE provides an estimate of a model's accuracy by determining how closely the predictions match the actual results. A lower RMSE indicates better predictive performance, with an ideal model, albeit theoretical, having an RMSE of zero, meaning it accurately predicts the values without any error [127].

The average variance between the significant values in the dataset and the predicted values in the same dataset is what is referred to as the mean absolute error (MAE). In general, the model predicts better the lower the MAE [127].

3.7.4 Goodness of Fit Index GoF

The geometric mean of the average variances extracted (AVE) and the average R square o[f] the endogenous variables are used to calculate the goodness of fit for the model (GoF), which assesses the validity of the research model [128]. Equation gives the following as the GoF calculation formula:

Equation 3 Goodness of Fit Index GoF

$$\mathrm{GoF} = \sqrt{\mathrm{avg.}\,\mathrm{R}^2 \times \mathrm{avg.}\,\mathrm{AVE}} \quad \ldots\ldots\ldots\ldots\ldots\ldots (3)$$

In the study, the goodness of fit (GoF) is calculated using the formula $\sqrt{0.412 \times 0.578}$, resulting in a value of 0.488. The evaluation of this GoF value is contextualized according to the criteria established by Wetzels et al [129]. According to their framework, the goodness of fit (GoF) value serves as an important indicator of model fit. Specifically, a GoF value of less than 0.1 indicates no fit, suggesting that the model does not adequately represent the data. When the GoF falls between 0.1 and 0.25, it suggests a small fit, indicating some level of association but still lacking robustness. Values ranging from 0.25 to 0.36 signify a medium fit, reflecting a moderate level of correspondence between the model and the observed data. Finally, GoF values greater than 0.36 are indicative of a large fit, demonstrating a strong alignment between the model and the data it aims to represent.

In the specific model under consideration, the calculated GoF value is 0.488. As per the criteria, this falls into the "large fit" Therefore, based on these guidelines, the model is deemed to have sufficient global Partial Least Squares (PLS) model validity.

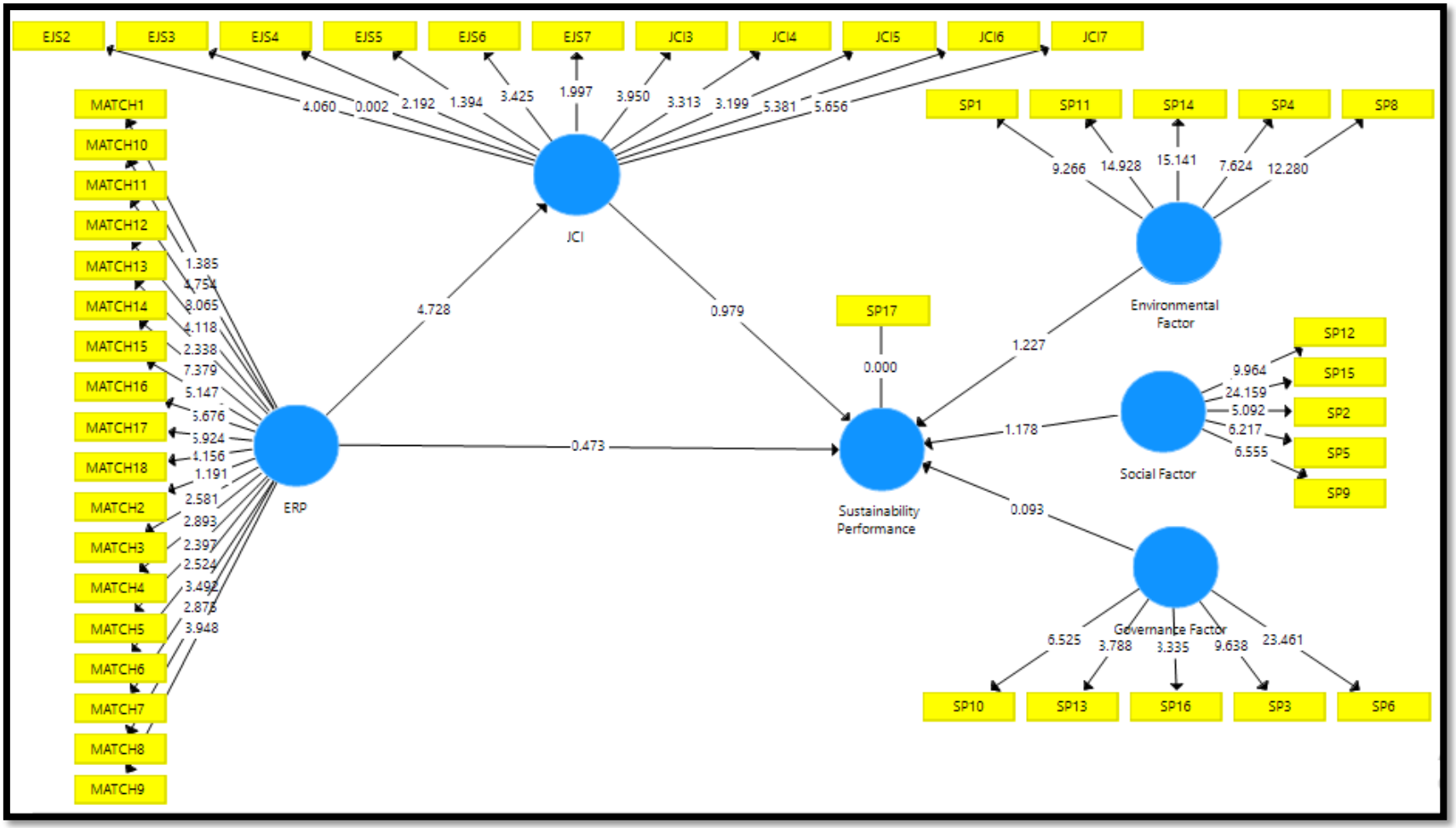
3.8 Testing the Research Hypotheses

After running the PLS-SEM algorithm step, the structural model was assessed to test the relationships hypothesized in the study model. The test used for this analysis was the path coefficient test, with the value of path coefficients ranging from number -1 to

number +1. Values approaching +1 represent strong positive relationships, and values approaching -1 indicate strong negative relationships. Bootstrapping procedures for examining the significance of path coefficients are standard in the Partial Least Squares Structural Equation Modeling (PLS-SEM) context. Notably, these analyses rely on nonparametric bootstrap procedures since PLS-SEM does not assume a normal distribution of data. Following the recommendation of Hair et al. [126], a substantial number of bootstrap samples, specifically 5000 subsamples, were utilized in the analysis. Figure 3.2 provides a visual representation of the outcomes derived from PLS bootstrapping procedures. Furthermore, Table 3.10 details the results, presenting β values, standard deviation values, T-values, P-values for direct relations were observed to should less than 0.05.

Figure 3.2

PLS Bootstrapping Procedures



As presented in Table 3.10, it's clear that there is a significant positive relationship between ERP and JCI. In addition, there is a negative and not significant relationship between ERP and Sustainability performance, between Sustainability performance and Environmental Factor, Governance Factor, Social Factor. As well as negative and not significant relationship of JCI mediator at enterprise resource planning (ERP) implementation on sustainability performance.

Table 3.10

The Results Of Direct Relations

	HYP.	Original sample (β)	T-value	P-value	Result
ERP → Sustainability performance	*H1*	0.076	0.4749	0.635	Not supported
ERP → JCI	*H2*	0.499	4.462	0.000	Support
JCI→Sustainability performance	*H3*	0.119	1.002	0.3168	Not supported
Environmental Factor →Sustainability performance	*H4*	0.401	1.231	0.218	Not supported
Social Factor → Sustainability performance	*H5*	0.287	1.167	0.243	Not supported
Governance Factor → Sustainability performance	*H6*	-0.017	0.095	0.924	Not supported
ERP → JCI→Sustainability performance	*H7*	0.059	0.8145	0.4157	Not supported

The analysis of the proposed hypotheses showed that only hypothesis H2 was supported, with a coefficient (β) of 0.499, a t-value of 4.462, and a highly significant p-value of 0.000. In contrast, hypotheses H1, H3, H4, H5, H6, and H7 were not supported. Specifically, H1 showed $\beta = 0.076$, $t = 0.4749$, and p-value = 0.635; H3 showed $\beta = 0.119$, $t = 1.002$, and p-value = 0.3168; H4 showed $\beta = 0.401$, $t = 1.231$, and p-value = 0.218; and H5 recorded $\beta = 0.287$, $t = 1.167$, and p-value = 0.243; Hypothesis H6 showed values of $\beta = -0.017$, $t = 0.095$, and p-value = 0.924; and hypothesis H7 showed values of $\beta = 0.059$, $t = 0.8145$, and p-value = 0.4157. These results indicate that, except for hypothesis H2, none of the other hypotheses showed statistically significant relationships.

Chapter Four

Discussions and Conclusions

4.1 Chapter Overview

This chapter provides a detailed discussion of the findings of the impact of Enterprise Resource Planning (ERP) implementation on sustainability performance in healthcare, taking into account the mediating role of JCI. The chapter explores the key determinants by analyzing the results of the proposed hypothesis testing and identifies the theoretical and practical implications of the study. Additionally, the chapter provides a summary of the study findings, offers recommendations from the researcher, and insights from real estate development experts. Finally, it addresses the study's limitations and suggests directions for future research.

4.2 Discussion of Results

The study aims to know the determinants of the mediator effect of JCI in the relationship between ERP implementation and sustainability performance in healthcare as was mentioned previously by linking the proposed determinants with hypotheses, all of which are related to the determinant that measures the ERP from Eliminating Clinical Errors, Boosting Operations with Productivity and Aligned Data Analytics, Real-time Patient Needs, Data, and Test Reports, Streamlining Various Diagnostic Systems, Electronic Medical Records, and Patient Communication Systems, Optimization of Resource Utilization, and Improvement in Quality of Services. With sustainability performance factors as Environmental Factor, Social Factor, and Governance Factor.

Based on the hypotheses, these hypotheses (H1, H2, H3, H4, H5, H6, and H7) were studied as proposed in Section 1.12. The results showed that there is a positive relationship between ERP and JCI, which were statistically significant which is matched with the results from other studies. Moreover, the results showed no significant influence on ERP and sustainability performance or JCI and sustainability performance.

4.2.1 Discussion of The Results Of Hypothesis 1

Statistical results do not support H1 since there is no significant impact of ERP on Sustainability performance which is on contradiction with earlier studies [106]. The study investigated a sample of 72 professional accountants enrolled in Master of

Professional Accounting (MPA), Master of Business Administration (MBA), and Doctor of Business Administration (DBA) programs at two prominent universities in Egypt. While this study was on the administrative staff in two JCI accredited hospitals, half of them held advanced degrees while the other half had a bachelor's degree or diploma, and most of their studies were related to nursing and medicine, far from management and technology.

Their research is set against the backdrop of increasing global emphasis on sustainability and the role of technology in facilitating sustainable business practices. The focus is on sustainable enterprise resource planning (S-ERP) systems, which are designed to integrate sustainability into business operations. Their study specifically examines how the implementation of these systems can enhance economic, environmental, and social sustainability performance within the manufacturing sector, especially in emerging markets like Egypt. While their study was conducted on people who had a deep understanding of technology and management and was successful in proving their hypotheses, my study took the opinions of participants who were far from technology and management even if they used it or had experience in their job position.

To conduct their research, they adopted an experimental design of 1×2. This allowed us to study systematically the effect S-ERP had on the organization. The data were analyzed through simple linear regression, and the relationships between S-ERP implementation and various aspects of sustainable development performance were examined. The experimental approach gave a strong framework to determine what causes phenomena and where those sustainable ERP systems impacted organizational sustainability outcome streams. The results showed positive relationships between S-ERP implementation and improvements in sustainable performance at economic, environmental and social levels. For organizations moving to these systems, this carries certain warranties, which leads to continuity in the correct manner.

4.2.2 Discussion of The Results Of Hypothesis 2

Result shows that there is a significant positive influence of ERP toward JCI, thus H2 is supported. Thus, this is the first study to prove this hypothesis, as there are no previous studies that discuss this content, which led to the gap being.

The positive influence of ERP on performance metrics suggests that organizations may benefit from investing in such systems. So The results may encourage organizations to continuously evaluate and enhance their ERP implementations to maximize benefits, reinforcing the idea that research should not only focus on theoretical contributions but also on practical implications. Should highlights the importance of empirical evidence in supporting theoretical claims, identifies gaps in existing literature, and suggests practical applications for organizations considering ERP systems.

4.2.3 Discussion of The Results Of Hypothesis 3

The results reveal that JCI Negatively impact Sustainability performance nonconfirming hypothesis H3. Because while JCI focuses on improving healthcare quality and safety, it may lack consideration of broader sustainability aspects like user-centrality and managerial issues [130]. But it conflicts with [107], because the study emphasized that adherence to these standards is vital for reducing medication errors, which aligns with sustainability goals by minimizing waste and enhancing patient outcomes.

4.2.4 Discussion of The Results Of Hypothesis 4

Surprisingly it was found that relationship between the Environmental Factor and Sustainability performance is insignificant as H4 is not supported and this do not comply with existed literature like [131]. Environmental factors are a crucial dimension of sustainability performance in healthcare. However, the results showed that this relationship is not statistically significant, and this can be justified by several factors, the first of which is the sample that answers the survey questions and who can be understood in a different way due to their job position and prior education. Another factor may be Lack of Integration with Organizational Goals, environmental factors may not be effectively integrated into the broader strategic objectives of an organization. When sustainability goals are not aligned with business strategies, the impact of environmental initiatives can be diluted, leading to a perception of insignificance in their contribution to overall performance. And let's not forget employee awareness and engagement play a crucial role in implementing effective sustainability practices.

Which makes discover after this, the perceived insignificance of the relationship between environmental factors and sustainability performance can stem from

misalignment with organizational goals, insufficient employee engagement, cultural barriers, measurement challenges, external influences, and complex interactions with other variables. Addressing these issues is essential for enhancing the effectiveness of environmental initiatives in achieving meaningful sustainability outcomes.

In such circumstances, there are barriers to adopting the hypothesis, which leads to failure to implement the idea properly.

4.2.5 Discussion o The Results Of Hypothesis 5 &6

It's clearly no longer surprising was found that relationship between the Social Factor and Sustainability performance is insignificant as H5 is not supported and this do not comply with existed literature like [132]. Also, was found that relationship between the Governance Factor and Sustainability performance is insignificant as H6 is not supported which is on contradiction with earlier studies like [133], Which confirms that governance factors affect the implementation of sustainability in hospitals. This is attributed to the interplay between social factors and sustainability is complex. Various external variables, such as economic conditions or regulatory environments, may overshadow the impact of social factors on sustainability outcomes. As for governance factor, different stakeholders may interpret governance practices differently, leading to inconsistencies in how governance is assessed and its perceived impact on sustainability performance. This variability can contribute to the perception that governance factors do not significantly influence sustainability outcomes [134].

4.2.6 Discussion of The Results Of Hypothesis 7

After all these unsupported hypotheses, it is natural that H7 is not supported that there is a mediator effect JCI between ERP and Sustainability performance. Due to the lack of previous studies that confirm or deny the hypothesis. This suggests that the benefits of ERP on Sustainability performance might bypass the need for intermediary variables like JCI.

But it must be noted, unfortunately, when a scientific study does not achieve the required sample size, it can significantly impact the validity and reliability of the research findings. One of the primary consequences is reduced statistical power, which is the ability to detect an effect if it exists in the population. A smaller sample size

increases the risk of Type II errors, where researchers fail to reject a false null hypothesis. As a result, they may incorrectly conclude that there is no effect when one actually exists, leading to potentially misleading interpretations of the data [135].

Moreover, the small sample size further limits the study's results from being generalized. If the sample does not sufficiently reflect the larger population, it also limits the generalizability of the sample beyond the participants included in the study. The lack of representativeness of participants can lead to bias in the findings that will not be generalizable [136].

4.3 Conclusions

The current thesis has delivered extensive insight into ERP adoption in healthcare, highlighting its crucial contribution to enhancing sustainability performance and improving quality of life. The first talk emphasized the importance of Joint Commission International's accreditation and its benefits, stating that this makes healthcare the best place. The literature review served as a foundational step, ensuring a robust understanding of existing research related to the determinants influencing the three-way relationship.

The subsequent empirical analysis, executed within the unique context of Palestine, meticulously identified and scrutinized the determinants shaping sustainability performance factors as Environmental Factor, Social Factor, and Governance Factor. In addition to 6 axes of implementation ERP. The study's focal point was the examination of seven hypotheses designed to elucidate obstacles and facilitators in healthcare. However, the results yielded unexpected outcomes, challenging preconceived notions. Notably, the determinant of social respondents, emerged as a negatively influence in this thesis.

This deviation from expectations highlights the nuanced nature of sustainable performance initiatives, emphasizing the need to design strategies tailored to the systems used in each domain. While six of the seven hypotheses did not meet the expected criteria, this deviation provides a valuable opportunity to reevaluate and improve current approaches in healthcare. The findings of this research not only contribute to academic discourse, but also provide concrete, context-specific insights for policymakers, practitioners, and practitioners to advance JCI-aware practices, deepen

sustainability concepts, and use ERP systems. In conclusion, this study serves as a crucial bridge between theoretical understanding and practical application, providing a deeper understanding of the factors influencing healthcare in Palestine. This study offers a perspective that is part of a more integrative and flexible method to sustainability factors by emphasizing the unique results it revealed. It encourages stakeholders to attribute and incorporate JCI into their work to improve the implementation of enterprise planning resources. With this, this thesis adds to the current discussion about sustainability performance and serves as guidance for future initiatives within other communities.

4.4 Recommendations

4.4.1 Practical Recommendations for Healthcare Organizations

- Improving technological infrastructure

Prioritize investments in technology infrastructure research and development throughout the health sector, including funding to integrate innovative technology solutions that support enterprise resource planning systems. It involves worrying about internet connectivity and maintaining dynamic databases. A successful ERP implementation in a hospital setting requires a firm IT infrastructure base to deal with high demand and complexity.

- Align ERP Systems with Sustainability Goals

Enterprises must ensure that their ERPs explicitly align with sustainability goals. It needs environmental, social, and governance damage patterns embedded in the main functional capabilities of the ERP system so cohesive strategies can happen.

- Implement Comprehensive Sustainability Reporting

By two way:

1. Embrace ESG Reporting by Using Environmental, Social, and Governance (ESG) reporting frameworks to assess and analyze sustainability performance. This allows healthcare organizations to use the data entered into the reporting system to compare their levels of energy efficiency, waste management, and community engagement.

2. Set up KPIs Develop a solid set of sustainability KPIs that help track progress and determine gap areas. They should include environmental impact, resource utilization, and patient care metrics.

- Focus on Continuous Improvement

Foster a Culture of Quality to Foster an organizational culture of continuous improvement in quality and safety. Advocate for Transparency and Accountability for Safety Issues at the Staff Level. Incorporate Feedback Mechanisms: Implement systems for gathering feedback from staff and patients about the care process to guide continuous improvements. This helps in achieving JCI accreditation and is a fundamental milestone for any healthcare organization that thrives on upholding the standards of care and patient safety.

- Focus on training and development

Implement a standardized training program for employees and administrators in all healthcare settings. Engage industry and university partners to teach a curriculum keeping pace with emerging technology capabilities. Create ongoing training initiatives to provide employees with modern technologies and proven methods.

Train all operational staff on ERP's technical implications for relevance and every measure of sustainability performance. This dual focus could help employees harness technology as a force for good and scale sustainability.

- Public-Private Collaboration

It is essential to enhance collaboration between the public and private health sectors, as a strong relationship between the public and private sectors is crucial, and to collect all patient data on a single platform. The two parties can work together on projects and initiatives to leverage each other’s strengths, enhance expertise, and optimize resource utilization for greater effectiveness.

- Facilitating scientific research

There should be a collaborative agreement between universities and ministries, along with their facilities and affiliated institutions. Such as the agreement between the university that conducts scientific research and the Ministry of Health, to facilitate

scientific research without unnecessary obstacles or lengthy official processes. This collaboration will help us build stronger healthcare facilities that care about quality patient care and thus a better country that promotes exceptional scientific progress.

4.4.2 Recommendations for Future Research

- Broader Sample Diversity

Future studies should use a more representative sample of healthcare workers, it must be broader in terms of having representation from different professions, levels of education, and roles within their respective healthcare organizations. This may help understand how the perceptions of ERP and sustainability performance differ at various levels.

- Longitudinal Studies

A longitudinal study will be performed to develop the connections between CSR, JCI, and sustainable development performance. This strategy may allow for detecting long-term effects and trends that cross-sectional studies have not detected.

- Exploration of External Factors

Examine the external factors, including economic conditions, regulatory policies, and technological trends that may affect an ERP system's efficacy in attaining sustainability objectives. Getting to grips with these dynamics might shed some light on the impediments to successful functional implementation.

- Qualitative Research Methods

Utilize qualitative research methods (for example, interviews or focus groups) to provide a more in-depth understanding of HP's perceptions and experiences surrounding ERP systems and sustainability practices. These could reveal insights and subtleties that numbers alone might fail to provide more data.

- Comparative Studies

Compare successful ERP system integration with healthcare organizations that have failed to identify best practices and common challenges. These types of comparative studies could provide insight into how to better plan and execute ERP implementations.

4.5 Limitations

While this study addresses several significant topics across various fields, it encountered several limitations:

- Sample Size Concerns

A limitation is the small sample size in which the research was conducted. Whether or not a study can be considered valid depends mainly on the number of participants in the survey; with too few subjects, it doesn't reflect the wider population, and there goes external validity. To overcome this limitation, future studies should use larger and more diverse samples, which would allow for a more widely applicable generalization of the findings.

- Challenges with Administrative Cooperation

The second limitation was the ineffectiveness and suffering of cooperation between our hospital administrative staff. This made it difficult to collect the necessary information as responses may have taken a long time to obtain, and data collection was generally time-consuming.

- Geographic Limitations

The geographic range was also limited, covering only one Nablus and one Jerusalem hospital. This limitation impacts the generalizability of our findings as it might ignore regional differences in levels of knowledge and opinions. To enhance external validity, future studies should cover a broader geographic reach to include a greater diversity of regions and settings, which will broaden our understanding of the issue.

- Bureaucratic Hurdles

Bureaucracy was another major obstacle whereas so many organizations—including the university that was affiliated with the study, the Ministry of Health and the hospitals themselves—needed to approve access to the data framed by the maze of bureaucracy. Some hospitals refused to grant access to scientific research, even after being told none of their confidential patient or financial information would be sought. Our study, therefore, was limited to only 2 out of 5 hospitals in Palestine.

- Understanding Integrated Systems

The complexity of integrated systems such as ERP (Enterprise Resource Planning) and sustainability themes can also impact research outcomes. Participants or researchers may possess limited knowledge or misconceptions that could skew perceptions and responses, potentially introducing bias into the data. Although we provided explanations before data collection, misunderstandings can still occur.

- Overlooking Key Sustainability Dimensions

The main objective of this research is to apply management technology in healthcare, focusing on sustainability as the underlying intersectoral factor. However, it may not sufficiently capture other sanctions critical dimensions of sustainability, such as economic and human sustainability, that impact ERP implementation success. Other important context factors relevant to JCI (Joint Commission International) accreditation were not considered, which would be appropriate for an in-depth and comprehensive analysis.

- Gap in Existing Research

The lack of studies connecting the three axes was one of the most critical challenges to overcome, leading to a clear gap in the literature. This study provides some valuable insight, but it is not comprehensive. Future research should expand its perspective to include other stakeholders (e.g., investors) to fill this gap. These perspectives emphasize the importance of informed decision-making and illustrate that exploring diverse viewpoints can help researchers understand the multifaceted nature of this field's challenges and opportunities.

List of Abbreviations

Abbreviation	Meaning
CRM	Customer Relationship Management
ERP	Enterprise resource planning
HIPAA	Health Insurance Portability and Accountability Act
ICT	Information and Communication Technologies
IOM	Institute of Medicine
ISO	International Organization for Standardization
JCI	Joint Commission International
CQI	continuous quality improvement
IPSGs	International patient safety goals
SLIPTA	Stepwise Laboratory Improvement Process Towards Accreditation
NABH	National Accreditation Board for Hospitals & Healthcare
ESG	Environmental, social, and governance
STARS	Sustainability Tracking, Assessment and Rating System
CSP	Concentrated solar power
GSCM	Green supply chain management
HTpA	Health technology performance assessment
KM	Knowledge management
MRP	Material Requirement Planning
S-ERP	Sustainable Enterprise Resource Planning
P4P	Pay-for-performance
PCBS	Palestinian Central Bureau of Statistics
SCM	Supply Chain Management
SPs	Standardized patients

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Appendices

Appendix A

Questionnaire Questions and Related Constructs

Dear participant:

Thank you for allocating part of your time to fill out this questionnaire, which aims to study a case of whether the JCI affects the relationship between ERP implementation within the hospital and sustainable performance factors (environmental, social, governance) (ESG), in order to complete the requirements for obtaining a master's degree in engineering management and obtain the best results. To develop work in the health sector in the State of Palestine.

Here is a brief explanation of some of the main titles to bring the idea closer:

- Enterprise resource planning (ERP) is the computerized system that all hospital departments work on in an integrated manner (supporting automation and processes in finance, human resources, supply chain, services, procurement, and more.)

- The Joint Commission International (JCI) is a non-profit, international accreditation organization that certifies healthcare companies, services, and programs. JCI standards are internationally recognized as a leading healthcare accreditation program for patient safety and quality of care.

- Sustainable performance is defined as the integration of Governance benefit, environmental protection, and social responsibility into business operations and management.

Part1: Personal information

NO.	Questions	Responses
1	Gender	o Male
		o Female
2	Educational qualification	o Diploma
		o Bachelor
		o Higher education
3	Age	o 20-29
		o 30-39
		o 40-49
		o 50-59
4	Experience	o 1-3
		o 4-6
		o 7-9
		o 10 or more
5	Job position	o Head of department
		o Supervisor
		o General Manager
		o Other

Part 2: Questionnaire questions

The following are the survey questions, please tick (√) on the appropriate answer, it will not take more than 20 minutes.

Topic	Statement	Answer				
Enterprise Resource Planning (ERP)	I have worked on an ERP system before.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
	The amount of training you have received on the ERP system is sufficient.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
	My overall experience with the ERP system was good.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
	I find the impact of an ERP system on my healthcare organization beneficial.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
	I would advise others to implement ERP in healthcare.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree

Topic	Statement	Answer				
Joint Commission International (JCI)	My knowledge of JCI is adequate.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
	I previously worked in a healthcare organization that was JCI accredited.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
	I believe JCI accreditation is a valuable indicator of a healthcare organization's commitment to quality and patient safety.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
	I believe that JCI accreditation can support and enhance employee performance in healthcare organizations.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
	I believe JCI accreditation can improve patient care and safety in healthcare organizations.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
	I believe that JCI accreditation can enhance community confidence in healthcare institutions.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
	I believe JCI accreditation can benefit healthcare organizations in terms of improving risk management, organizational structure and management.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
	I have previously received no training or education about JCI accreditation and its standards.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
	I advise other hospitals to seek JCI accreditation.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree

Topic	Statement	Answer				
	I am familiar with the concept of sustainability performance in healthcare organizations, especially as it relates to environmental factors.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
	I am familiar with the concept of sustainability performance in healthcare organizations, especially as it relates to social factors.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
	I am familiar with the concept of sustainability performance in healthcare organizations, especially as it relates to governance factors.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
sustainability performance	I see the importance of environmental factors to the sustainability and ethical impact of a healthcare organization.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
	I see the importance of social factors to the sustainability and ethical impact of a healthcare organization.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
	I see the importance of governance factors to the sustainability and ethical impact of a healthcare organization.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
	I previously worked in a healthcare organization that prioritized sustainability performance through ESG factors.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
	I believe environmental performance can support an organization's mission and values in healthcare.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
	I believe social performance can support an organization's mission and values in healthcare.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree

I believe governance performance can support an organization's mission and values in healthcare.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
I believe that environmental performance has an impact in supporting an organization's financial stability and cost savings in healthcare.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
I believe that social performance has an impact in supporting an organization's financial stability and cost savings in healthcare.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
I believe that governance performance has an impact in supporting an organization's financial stability and cost savings in healthcare.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
I believe that environmental performance has an impact in supporting an organization's social responsibility and community engagement in healthcare.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
I believe that social performance has an impact in supporting an organization's social responsibility and community engagement in healthcare.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
I believe that governance performance has an impact in supporting an organization's social responsibility and community engagement in healthcare.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
I believe that adopting environmental, social and governance (ESG) practices can open opportunities in the healthcare sector.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree

Part 3: Questionnaire questions

The following are the survey questions, please tick (√) on the appropriate answer, it will not take more than 25 minutes

No	Statement	Answer				
1	Do you agree with this statement? Eliminating clinical errors can have a significant impact on social issues by improving patient safety, reducing healthcare costs, and enhancing overall healthcare quality.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
2	Eliminating clinical errors can have a positive impact on the environment by reducing the waste and resources used in healthcare by reducing medication errors. Do you agree with this?	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
3	Do you think Eliminating clinical errors can have a significant impact on governance in healthcare organizations, through increased trust and credibility with patients, families, and the community, which can positively impact the organization's reputation and financial stability?	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
4	Using data analytics to optimize supply chain management can lead to more efficient use of resources, reduced transportation emissions, and lower overall environmental impact, so do you think Boosting Operations with Productivity and Aligned Data Analytics can have a negative impact on the environment?	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
5	Do you think that enhancing processes with productivity and consistent data analytics can have a negative impact on the social Factor? Because by using data analytics to improve customer experience, organizations can build stronger relationships with their customers and better meet their needs, which can lead to increased customer satisfaction and loyalty.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree

6	Boosting Operations with Productivity and Aligned Data Analytics can lead to better governance by improving data quality, enabling informed decision-making, ensuring regulatory compliance, increasing operational efficiency, and managing risks. Do you support this idea?	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
7	real-time data can help healthcare organizations reduce waste and resource consumption by identifying signs of a patient's deteriorating condition earlier and freeing up nursing staff time for more strategic resource allocation. This view supports that patient needs and real-time data and test reports influence the environment well. do you think so?	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
8	Can real-time data have social impacts? Real-time data can help health care systems identify and address health disparities, which can lead to more equitable health care delivery.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
9	Can real-time data help healthcare organizations meet regulatory requirements and improve their reputation by demonstrating commitment to patient safety and quality of care? Thus, it has governance impact.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
10	Streamlining various diagnostic systems, electronic medical records, and patient communication systems can impact the environment by reducing paper usage, minimizing energy consumption, and decreasing waste generation, By transitioning to digital systems and streamlining processes. Do you support?	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
11	One study found that electronic health records can simplify the diagnostic process by making information about a patient's history available. So do you agree that Streamlining various diagnostic systems, electronic medical records, and patient communication systems can have a significant impact on social factors in healthcare?	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree

12	Among the benefits of the (ERP) system is Streamlining various Diagnostic Systems, Electronic Medical Records, and Patient Communication Systems. Do you think it positively affects the governance factor at sustainable performance? Because it helps healthcare organizations meet regulatory requirements, improve their reputation, and establish a culture of safety, communication, and collaboration.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
13	By using resources more efficiently, organizations can reduce waste, lower energy consumption, and decrease their carbon footprint. Could improving the use of resources have a significant negative impact on the environment?	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
14	Could Optimization of resource utilization in healthcare can have a significant impact on social factors? by improving access to healthcare services, reducing health disparities, and enhancing the quality of care.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
15	When resources are optimized effectively, organizations can allocate them strategically to meet their objectives, leading to better governance?	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
16	When services are delivered more efficiently and effectively, fewer resources are wasted, leading to a decrease in environmental impact?	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
17	When healthcare services are of high quality, patients experience better health outcomes, leading to improved overall well-being and quality of life. So can Improvement in the quality of services in healthcare can positively impact social factors?	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
18	Could Improvement in the quality of services in healthcare can have a significant impact on governance?	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree

No	Statement	Answer				
1	My healthcare organization is JCI certified for quality management and patient safety.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
2	I believe JCI accreditation helps connect ERP use and sustainable performance in your healthcare organization.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
3	I believe JCI adoption affects the sustainable performance of healthcare organizations that have implemented ERP systems.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
4	In my opinion, the interaction between ERP and JCI together does not contribute to improving the quality of services and utilization of resources in healthcare institutions.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
5	I see JCI accreditation as increasing the role of enhancing patient care, sustainability and the bottom line in healthcare facilities that have implemented ERP systems.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
6	I see it as JCI's reliance on collaboration and social sustainability in healthcare organizations that have implemented ERP systems.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
7	I see JCI on the integration of supply chain management and financial performance in healthcare organizations that have implemented ERP systems.	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree

عزيزي المشارك:

نشكرك على تخصيص جزء من وقتك لملء هذا الاستبيان، والذي يهدف إلى دراسة حالة ما إذا كانت اللجنة المشتركة الدولية تؤثر على العلاقة بين تنفيذ تخطيط موارد المؤسسات داخل المستشفى وعوامل الأداء المستدام (البيئية والاجتماعية والحوكمة(ESG) (، وذلك من أجل لاستكمال متطلبات الحصول على درجة الماجستير في الإدارة الهندسية والحصول على أفضل النتائج. تطوير العمل في القطاع الصحي في دولة فلسطين.

وفيما يلي شرح مختصر لبعض العناوين الرئيسية لتقريب الفكرة:

- تخطيط موارد المؤسسات (ERP) هو النظام المحوسب الذي تعمل عليه جميع أقسام المستشفى بطريقة متكاملة (يدعم الأتمتة والعمليات في مجال المالية، والموارد البشرية، وسلسلة التوريد، والخدمات، والمشتريات، والمزيد).

- اللجنة الدولية المشتركة (JCI) هي منظمة اعتماد دولية غير ربحية تصادق على شركات وخدمات وبرامج الرعاية الصحية. معايير اللجنة الدولية المشتركة (JCI) معترف بها دوليًا باعتبارها برنامجًا رائدًا لاعتماد الرعاية الصحية فيما يتعلق بسلامة المرضى وجودة الرعاية.

- يتم تعريف الأداء المستدام على أنه دمج مزايا الحوكمة وحماية البيئة والمسؤولية الاجتماعية في العمليات التجارية والإدارة.

الجزء الأول: المعلومات الشخصية

الرقم	السؤال	الاجابات
1	الجنس	○ ذكر ○ أنثى
2	المؤهل العلمي	○ دبلوم ○ بكالوريوس ○ دراسات عليا
3	العمر	○ 29-20 ○ 39-30 ○ 49-40 ○ 59-50
4	سنوات العمل (الخبرة)	○ 3-1 ○ 6-4 ○ 9-7 ○ 10 أو أكثر
5	المسمى الوظيفي	○ رئيس قسم ○ مشرف ○ مدير عام ○ غير ذلك

الجزء الثاني: أسئلة الاستبيان

فيما يلي أسئلة الاستطلاع، يرجى وضع علامة (√) على الإجابة المناسبة، ولن يستغرق أكثر من 20 دقيقة.

الموضوع	السؤال	الجواب				
نظام تخطيط موارد المؤسسات	سبق لي العمل على نظام ERP من قبل.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
	حجم التدريب الذي تلقيته على نظام ERP كافٍ.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
	تقيم تجربتي الشاملة مع نظام ERPكانت جيدة.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
	أجد تأثير نظام ERP على مؤسستي الصحية مفيدًا.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
	أنصح الآخرين بتطبيق ERP في مجال الرعاية الصحية.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة

الموضوع	السؤال	الجواب				
اعتماد اللجنة الدولية المشتركة	مدى معرفتي باللجنة الدولية المشتركة (JCI) كافية.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
	سبق لي أن عملت في مؤسسة رعاية صحية حصلت على اعتماد.JCI	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
	أعتقد أن اعتماد JCI يعد مؤشرًا قيمًا لالتزام مؤسسة الرعاية الصحية بالجودة وسلامة المرضى.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
	أعتقد أن اعتماد JCI يمكن أن يدعم ويعزز أداء الموظفين في مؤسسات الرعاية الصحية.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
	أعتقد أن اعتماد JCI يمكن أن يحسن رعاية المرضى وسلامتهم في مؤسسات الرعاية الصحية.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
	أعتقد أن اعتماد JCI يمكن أن يعزز ثقة المجتمع في مؤسسات الرعاية الصحية.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة

	أعتقد أن اعتماد JCI يمكن أن يفيد مؤسسات الرعاية الصحية من حيث تحسين إدارة المخاطر والهيكل التنظيمي والإدارة.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
	سبق لي أن تلقيت أي تدريب أو تعليم حول اعتماد JCI ومعاييره.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
	أنصح المستشفيات الأخرى بالسعي للحصول على اعتماد.(JCI)	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة

الموضوع	السؤال	الجواب				
	أنا على دراية بمفهوم أداء الاستدامة في مؤسسات الرعاية الصحية، خاصة فيما يتعلق بالعوامل البيئية.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
	أنا على دراية بمفهوم أداء الاستدامة في مؤسسات الرعاية الصحية، خاصة فيما يتعلق بالعوامل الاجتماعية.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
	أنا على دراية بمفهوم أداء الاستدامة في مؤسسات الرعاية الصحية، خاصة فيما يتعلق بعوامل الحوكمة.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
أداء الاستدامة	أرى أهمية العوامل البيئية في الاستدامة والتأثير الأخلاقي لمنظمة الرعاية الصحية.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
	أرى أهمية العوامل الاجتماعية للاستدامة والتأثير الأخلاقي لمنظمة الرعاية الصحية.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
	أرى أهمية عوامل الحوكمة في الاستدامة والتأثير الأخلاقي لمنظمة الرعاية الصحية.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
	لقد عملت سابقًا في منظمة للرعاية الصحية أعطت الأولوية لأداء الاستدامة من خلال العوامل البيئية والاجتماعية والحوكمة.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
	أعتقد أن الأداء البيئي يمكن أن يدعم مهمة المنظمة وقيمها في مجال الرعاية الصحية.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة

أعتقد أن الأداء الاجتماعي يمكن أن يدعم مهمة المنظمة وقيمها في مجال الرعاية الصحية.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
أعتقد أن أداء الحوكمة يمكن أن يدعم مهمة المنظمة وقيمها في مجال الرعاية الصحية.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
أعتقد أن الأداء البيئي له تأثير في دعم الاستقرار المالي للمنظمة وتوفير التكاليف في مجال الرعاية الصحية.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
أعتقد أن الأداء الاجتماعي له تأثير في دعم الاستقرار المالي للمنظمة وتوفير تكاليف الرعاية الصحية.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
أعتقد أن أداء الحوكمة له تأثير في دعم الاستقرار المالي للمنظمة وتوفير التكاليف في مجال الرعاية الصحية.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
أعتقد أن الأداء البيئي له تأثير في دعم المسؤولية الاجتماعية للمنظمة والمشاركة المجتمعية في الرعاية الصحية.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
أعتقد أن الأداء الاجتماعي له تأثير في دعم المسؤولية الاجتماعية للمنظمة والمشاركة المجتمعية في الرعاية الصحية.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
أعتقد أن أداء الحوكمة له تأثير في دعم المسؤولية الاجتماعية للمنظمة والمشاركة المجتمعية في الرعاية الصحية.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
أعتقد أن تبني الممارسات البيئية والاجتماعية والحوكمة (ESG) يمكن أن يفتح الفرص في قطاع الرعاية الصحية.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة

الجزء 3: أسئلة الاستبيان

فيما يلي أسئلة الاستطلاع، يرجى وضع علامة (√) على الإجابة المناسبة، ولن يستغرق أكثر من 25 دقيقة.

الرقم	السؤال	الجواب				
1	هل تتفق مع هذا الرأي؟ يمكن أن يكون للقضاء على الأخطاء السريرية تأثير كبير على القضايا الاجتماعية من خلال تحسين سلامة المرضى، وخفض تكاليف الرعاية الصحية، وتعزيز جودة الرعاية الصحية بشكل عام.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
2	يمكن أن يكون للقضاء على الأخطاء السريرية تأثيرًا إيجابيًا على البيئة من خلال تقليل النفايات والموارد المستخدمة في الرعاية الصحية عن طريق تقليل الأخطاء الدوائية. هل توافق مع هذا؟	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
3	هل تعتقد أن القضاء على الأخطاء السريرية يمكن أن يكون له تأثير كبير على الحوكمة في مؤسسات الرعاية الصحية، من خلال زيادة الثقة والمصداقية مع المرضى وأسرهم والمجتمع، مما يمكن أن يؤثر بشكل إيجابي على سمعة المنظمة واستقرارها المالي؟	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
4	يمكن أن يؤدي استخدام تحليلات البيانات لتحسين إدارة سلسلة التوريد إلى استخدام أكثر كفاءة للموارد، وتقليل انبعاثات النقل، وتقليل التأثير البيئي الإجمالي، فهل تعتقد أن تعزيز العمليات بالإنتاجية وتحليلات البيانات المتوافقة يمكن أن يكون له تأثير سلبي على البيئة؟	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
5	هل تعتقد أن تعزيز العمليات بالإنتاجية وتحليلات البيانات المتوافقة يمكن أن يكون له تأثير سلبي على العامل الاجتماعي؟ لأنه من خلال استخدام تحليلات البيانات لتحسين تجربة العملاء، يمكن للمؤسسات بناء علاقات أقوى مع عملائها وتلبية احتياجاتهم بشكل أفضل، مما قد يؤدي إلى زيادة رضا العملاء وولائهم.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
6	يمكن أن يؤدي تعزيز العمليات بالإنتاجية وتحليلات البيانات المتوافقة إلى تحسين الإدارة من خلال تحسين	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة

	جودة البيانات، وتمكين اتخاذ قرارات مستنيرة، وضمان الامتثال التنظيمي، وزيادة الكفاءة التشغيلية، وإدارة المخاطر. هل تؤيد هذه الفكرة؟	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
7	يمكن أن تساعد البيانات في الوقت الفعلي مؤسسات الرعاية الصحية على تقليل استهلاك النفايات والموارد من خلال تحديد علامات تدهور حالة المريض في وقت مبكر وتوفير وقت طاقم التمريض لتخصيص الموارد بشكل أكثر استراتيجية. يدعم هذا الرأي أن احتياجات المريض والبيانات في الوقت الفعلي وتقارير الاختبار تؤثر على البيئة بشكل جيد. هل تعتقد ذلك؟	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
8	هل يمكن أن يكون للبيانات في الوقت الفعلي تأثيرات اجتماعية؟ يمكن أن تساعد البيانات في الوقت الفعلي أنظمة الرعاية الصحية على تحديد الفوارق الصحية ومعالجتها، مما قد يؤدي إلى تقديم رعاية صحية أكثر إنصافاً.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
9	هل يمكن للبيانات في الوقت الفعلي أن تساعد مؤسسات الرعاية الصحية على تلبية المتطلبات التنظيمية وتحسين سمعتها من خلال إظهار الالتزام بسلامة المرضى وجودة الرعاية؟ وبالتالي، فإن لها تأثيرًا على الحوكمة.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
10	يمكن أن يؤثر تبسيط أنظمة التشخيص المختلفة، والسجلات الطبية الإلكترونية، وأنظمة اتصالات المرضى على البيئة من خلال تقليل استخدام الورق، وتقليل استهلاك الطاقة، وتقليل توليد النفايات، من خلال الانتقال إلى الأنظمة الرقمية وتبسيط العمليات. هل تؤيد؟	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
11	وجدت إحدى الدراسات أن السجلات الصحية الإلكترونية يمكن أن تبسط عملية التشخيص من خلال إتاحة معلومات حول تاريخ المريض. هل توافق على أن تبسيط أنظمة التشخيص المختلفة والسجلات الطبية الإلكترونية وأنظمة التواصل مع المرضى يمكن أن يكون له تأثير كبير على العوامل الاجتماعية في الرعاية الصحية؟	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة

12	تبسيط أنظمة التشخيص ERPمن بين فوائد نظام المختلفة والسجلات الطبية الإلكترونية وأنظمة اتصالات المرضى. هل ترى أن ذلك يؤثر إيجاباً على عامل الحوكمة في الأداء المستدام؟ لأنه يساعد مؤسسات الرعاية الصحية على تلبية المتطلبات التنظيمية وتحسين سمعتها وتأسيس ثقافة السلامة والتواصل والتعاون.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
13	ومن خلال استخدام الموارد بشكل أكثر كفاءة، يمكن للمؤسسات تقليل النفايات وتقليل استهلاك الطاقة وتقليل البصمة الكربونية. هل يمكن أن يكون لتحسين استخدام الموارد تأثير سلبي كبير على البيئة؟	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
14	هل يمكن أن يكون لتحسين استخدام الموارد في الرعاية الصحية تأثير كبير على العوامل الاجتماعية؟ من خلال تحسين الوصول إلى خدمات الرعاية الصحية، وتقليل الفوارق الصحية، وتحسين جودة الرعاية.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
15	عندما يتم تحسين الموارد بشكل فعال، يمكن للمؤسسات تخصيصها بشكل استراتيجي لتحقيق أهدافها، مما يؤدي إلى حوكمة أفضل؟	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
16	عندما يتم تقديم الخدمات بشكل أكثر كفاءة وفعالية، يتم إهدار موارد أقل، مما يؤدي إلى انخفاض التأثير البيئي؟	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
17	عندما تكون خدمات الرعاية الصحية ذات جودة عالية، فإن المرضى يحصلون على نتائج صحية أفضل، مما يؤدي إلى تحسين الرفاهية العامة ونوعية الحياة. فهل يمكن لتحسين جودة الخدمات في مجال الرعاية الصحية أن يؤثر بشكل إيجابي على العوامل الاجتماعية؟	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
18	هل يمكن لتحسين جودة الخدمات في مجال الرعاية الصحية أن يكون له تأثير كبير على الحوكمة ؟	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة

الرقم	السؤال	الجواب				
1	مؤسستي للرعاية الصحية (JCI) معتمدة من قبل لإدارة الجودة وسلامة المرضى.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
2	العلاقة بين استخدام JCI واعتقد يساعد اعتماد (ERP) والأداء المستدام في مؤسسة الرعاية الصحية الخاصة بك.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
3	أظن يؤثر اعتماد JCI على الأداء المستدام لمؤسسات الرعاية الصحية التي طبقت أنظمة (ERP).	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
4	معاً في JCI و ERP برأيي لا يساهم التفاعل بين تحسين جودة الخدمات واستغلال الموارد في مؤسسات الرعاية الصحية.	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
5	أرى أنه يزيد اعتماد JCI من دور تعزيز رعاية المرضى والاستدامة والنتيجة النهائية في مرافق الرعاية الصحية التي طبقت أنظمة (ERP).	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
6	أرى أنه اعتماد JCI على التعاون والاستدامة الاجتماعية في مؤسسات الرعاية الصحية التي طبقت أنظمة (ERP).	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة
7	أرى أنه (JCI) على تكامل إدارة سلسلة التوريد والأداء المالي في مؤسسات الرعاية الصحية التي طبقت أنظمة (ERP).	موافق بشدة	موافق	محايد	ارفض	ارفض بشدة

Appendix B

Tables

Table B.1

Benefits of JCI

Benefit	Explanation
Improved patient safety and quality of care	JCI accreditation focuses on continuous quality improvement by meeting international patient safety goals and higher quality of care for all patients [75].
Enhanced reputation and credibility	As a badge of excellence within healthcare, JCI accreditation is widely recognized internationally. It is not only a reflection of the highest praise imaginable for a medical institution, but also means that they can attract even more patients as well. Many medical institutions see establishing such a reputation on their own grounds as an achievable goal [76].
Increased patient satisfaction	JCI accreditation is associated with improved patient outcomes and satisfaction, as evidenced by studies that show positive impacts on various quality indicators [77].
Strengthened management and governance	JCI accreditation requires organizations to demonstrate strong leadership and governance, which can lead to more effective management and decision-making [75].
Improved staff morale and motivation	JCI accreditation can boost staff morale and motivation, as it demonstrates a commitment to quality and safety [77].
Enhanced staff competence	JCI accreditation can lead to improved staff competence, as it requires organizations to demonstrate that their staff are well-trained and competent in their roles [75].
Increased efficiency and effectiveness	Organizations become more efficient and effective because obtaining JCI accreditation requires eliminating processes that do not add value [75].
Improved compliance with regulatory requirements	JCI accreditation status helps to break waste and make organizations more efficient [75].
Access to best practices	JCI accreditation provides organizations with access to best practices and resources, which can help them to improve their performance [75].
Enhanced collaboration and networking	This form of enhanced collaboration and networking requires JCI-accredited organizations to collaborate with other healthcare providers and organization’s to exchange best practices and resources [75].

Table B.2

Results of the descriptive statistic

	Factor	Mean	Std. Deviation	Qualitative Rank
ERP1	worked before	4.0189	1.06501	28
ERP2	Training	3.7925	.96792	52
ERP3	Experience	3.8491	1.02650	44
ERP4	impact	4.1132	.91274	17
ERP5	Advice	4.0943	.96604	20
ERP		3.973	0.987	
JCI1	knowledge	4.1509	.69049	15
JCI2	worked before	4.3019	.82240	8
JCI3	quality and patient safety	4.4528	.72234	3
JCI4	support performance	4.3962	.79275	4
JCI5	improve care and safety	4.5192	.61006	1
JCI6	community confidence	4.3396	.61842	6
JCI7	improve risk management	4.2830	.66151	9
JCI8	Training	4.0755	.67508	22
JCI9	Advice	4.3962	.66041	4
JCI		4.323	0.694	
SP1	familiar environment factor	3.8113	.73528	46
SP2	familiar social factor	3.8302	.69989	45
SP3	familiar governance factor	3.8113	.80995	46
SP4	important environment factor	3.9811	.63520	31
SP5	important social factor	3.8868	.60955	41
SP6	important governance factor	3.8679	.65156	43
SP7	worked before	3.5472	.91075	56
SP8	environment factor support	3.8113	.78585	46
SP9	social factor support	3.9615	.62502	34
SP10	governance factor support	3.9245	.67508	37
SP11	environment factor support financial stability and cost savings	4.0192	.75382	26
SP12	social factor support financial stability and cost savings	3.9434	.86414	35
SP13	governance factor support financial stability and cost savings	3.9623	.80771	33
SP14	environmental performance impact responsibility	3.9245	.82855	37
SP15	social performance impact responsibility	4.0000	.70711	29
SP16	governance performance impact responsibility	3.8868	.64032	41
SP17	believe (ESG) can open opportunities	4.1132	.84718	17
SP		3.8990	0.7404	

MATCH1	Eliminating clinical errors impact on social issues	4.2115	.89303	13
MATCH2	Eliminating clinical errors impact on environment	3.7692	.96234	53
MATCH3	Eliminating clinical errors impact on social governance	4.0385	.81557	25
MATCH4	Using data analytics with environmental impact	3.7115	.99679	54
MATCH5	Using data analytics with social impact	3.8077	.84107	50
MATCH6	Using data analytics with governance impact	4.0192	.67127	26
MATCH7	real-time data influence the environment	4.0962	.69338	19
MATCH8	real-time data have social impacts	4.2115	.66676	13
MATCH9	real-time data have governance impact	4.0000	.74096	29
MATCH10	Streamlining various diagnostic systems impact the environment	4.0577	.77746	24
MATCH11	Streamlining various diagnostic systems impact social factors	4.0769	.73688	21
MATCH12	Streamlining various diagnostic systems affects the governance factor	3.9038	.74780	40
MATCH13	Optimization of resource utilization impact on the environment	3.8113	.85612	46
MATCH14	Optimization of resource utilization impact on social factors	4.0755	.64597	22
MATCH15	Optimization of resource utilization impact on the governance	3.9231	.65218	39
MATCH16	Improvement in the quality of services impact on the environment	3.9423	.75182	36
MATCH17	Improvement in the quality of services impact on social factors	3.9811	.66479	31
MATCH18	Improvement in the quality of services impact on the governance	3.8077	.59536	50
MATCH		3.9692	0.7616	
THIRD1	have JCI	4.4906	.54146	2
THIRD2	JCI helps connect ERP use and sustainable performance	4.3077	.67267	7
THIRD3	JCI affects the sustainable performance	3.6038	1.24560	55
THIRD4	the interaction between ERP and JCI together	4.2453	.58526	10
THIRD5	JCI increasing the role of sustainability	4.1321	.62134	16
THIRD6	JCI's reliance on collaboration and sustainability	4.2453	.64765	10
THIRD7	JCI is integration between sustainability and ERP	4.2453	.61724	10
THIRD		4.1814	0.7045	

Table B.3

Discriminant validity

ID	ERP	Environmental	Governance Fa	JCI	Social Factor	Sustainability
SP9	0.445	0.617	0.548	0.22	0.699	0.412
SP8	0.468	0.829	0.719	0.235	0.741	0.524
SP6	0.459	0.778	0.861	0.295	0.678	0.655
SP5	0.511	0.486	0.557	0.433	0.679	0.435
SP4	0.596	0.718	0.607	0.268	0.725	0.433
SP3	0.374	0.529	0.743	0.476	0.634	0.396
SP2	0.311	0.59	0.618	0.256	0.628	0.228
SP17	0.516	0.726	0.618	0.402	0.718	1
SP16	0.305	0.48	0.698	0.076	0.501	0.379
SP15	0.423	0.702	0.671	0.314	0.874	0.706
SP14	0.371	0.837	0.648	0.163	0.71	0.643
SP13	0.152	0.48	0.641	-0.055	0.495	0.259
SP12	0.421	0.82	0.596	0.231	0.769	0.639
SP11	0.407	0.819	0.61	0.308	0.695	0.696
SP10	0.423	0.645	0.73	0.368	0.613	0.452
SP1	0.448	0.764	0.674	0.43	0.663	0.529
MATCH9	0.612	0.322	0.217	0.418	0.198	0.433
MATCH8	0.601	0.081	0.069	0.262	0.094	0.059
MATCH7	0.649	0.404	0.295	0.177	0.374	0.146
MATCH6	0.552	-0.008	0.056	0.083	0.019	-0.072
MATCH5	0.516	0.223	0.313	0.181	0.253	0.14
MATCH4	0.593	0.328	0.257	0.158	0.327	0.224
MATCH3	0.551	0.341	0.303	0.07	0.333	0.218
MATCH2	0.268	0.233	0.193	-0.104	0.191	-0.134
MATCH18	0.581	0.479	0.581	0.368	0.526	0.391
MATCH17	0.626	0.368	0.329	0.317	0.535	0.414
MATCH16	0.631	0.38	0.238	0.43	0.347	0.437
MATCH15	0.695	0.416	0.488	0.162	0.445	0.37
MATCH14	0.786	0.344	0.321	0.366	0.455	0.371
MATCH13	0.36	0.14	0.234	0.296	0.122	0.136
MATCH12	0.63	0.33	0.274	0.463	0.315	0.171
MATCH11	0.794	0.457	0.332	0.311	0.414	0.359
MATCH10	0.63	0.428	0.261	0.204	0.376	0.344
MATCH1	0.283	0.28	0.176	-0.04	0.198	0.147
JCI7	0.38	0.315	0.312	0.816	0.405	0.388
JCI6	0.394	0.226	0.182	0.783	0.268	0.366
JCI5	0.364	0.184	0.117	0.714	0.133	0.221
JCI4	0.375	0.311	0.119	0.738	0.188	0.304
JCI3	0.281	0.224	0.143	0.796	0.242	0.292
EJS7	0.249	0.058	0.133	0.488	0.185	-0.017
EJS6	0.378	0.308	0.471	0.62	0.402	0.369
EJS5	0.204	0.161	0.33	0.401	0.246	0.044
EJS4	0.155	0.264	0.328	0.479	0.206	0.253
EJS3	0.068	0.068	0.103	0	0.133	0.025
EJS2	0.422	0.163	0.221	0.683	0.226	0.176

جامعة النجاح الوطنية
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الملخص

يتيح دمج أنظمة تخطيط موارد المؤسسات (ERP) في مؤسسات الرعاية الصحية فرصةً هامةً لتعزيز الكفاءة التشغيلية وتحسين نتائج الاعتماد. ومع ذلك، لا تزال العلاقة بين تطبيق أنظمة تخطيط موارد المؤسسات (ERP) وأداء الاستدامة، لا سيما من منظور اعتماد اللجنة الدولية المشتركة (JCI)، غير مستكشفة بالكامل. تعالج هذه الدراسة هذه الفجوة من خلال التحقيق في كيفية تأثير عوامل مختلفة، مثل تقليل الأخطاء السريرية، والإنتاجية التشغيلية، وتحليلات البيانات، وتحسين الموارد، على تأثيرات اعتماد JCI على العلاقة بين تطبيق أنظمة تخطيط موارد المؤسسات (ERP) وأداء الاستدامة. لإجراء هذا البحث، تم استطلاع آراء عينة من 53 موظفاً إدارياً من مستشفيين في نابلس والقدس. يختلف هذا النهج عن معظم الأبحاث السابقة، حيث كان المشاركون عادةً من المهنيين ذوي الخبرة الطويلة في مجالات الإدارة والتكنولوجيا. في هذا السياق، سيستخدم البحث عينة أكثر تنوعاً لإثراء فهم قدرات أنظمة تخطيط موارد المؤسسات (ERP) على دعم أهداف الاستدامة في مؤسسات الرعاية الصحية. تم تحليل البيانات باستخدام الإحصاءات الوصفية لتحديد وتلخيص المتغيرات الرئيسية داخل المجتمع. تم استخدام برامج إحصائية لإجراء تحليلات الارتباط والانحدار، مما يوفر إطاراً قوياً لتفسير العلاقات بين المتغيرات، مثل SPSS وSmart PLS. تشير النتائج الرئيسية إلى وجود علاقة إيجابية ذات دلالة إحصائية بين تطبيق تخطيط موارد المؤسسات (ERP) والحصول على شهادة JCI. وهذا يدعم الفرضية القائلة بأن تخطيط موارد المؤسسات يزيد من احتمالية استيفاء معايير JCI. ومع ذلك، وخلافاً

للأدبيات الحالية، لم تجد دراستنا أي تأثير كبير لأي من تخطيط مـــوارد المؤسســـات (ERP) أو JCI على الأداء المستدام. يشير هذا إلى أن المؤسسات تواجه مشاكل في مواءمة أنظمـــة تخطـــيط مـــوارد المؤسسات (ERP) الخاصة بها مع الأهداف المستدامة بسبب العمليات المجـــزأة وقلـــة التكامـــل فـــي الأهداف الاستراتيجية.

بناءً على هذه النتائج، يوصى بأن تقوم مؤسسات الرعاية الصحية بمواءمـــة أنظمـــة تخطـــيط مـــوارد المؤسسات (ERP) الخاصة بها مع أهداف الاستدامة. يمكن القيام بذلك من خلال تعزيز التنسيق بشـــكل أفضل بين وحدات الأعمال بشأن الأهداف الاستراتيجية وتشجيع الموظفين على المشاركة في مشـــاريع الاستدامة. تحتاج الدراسات المستقبلية إلى متابعة هذه الديناميكيات بمزيد من التفصيل لاكتشاف أفضـــل السبل للتأثير على ممارسة الرعاية الصحية بشكل عام نحو الاستدامة.

الكلمات المفتاحية: تخطيط موارد المؤسسات؛ اللجنه المشتركه الدوليه؛ اداء المستدامة؛ الرعاية الصحية في فلسطين.