

Mediating Impact of Perceived Functional Value of Audit Service on the Relationship between Audit Characteristics and its Effect on Customer Satisfaction with Total Quality Management in Egyptian Hospitals

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Abstract

This research investigates the mediating role of the perceived value of audit services on the relationship between external audit characteristics and Total Quality Management (TQM) effectiveness in Egyptian hospitals. Recognizing the essential function of audit services in ensuring financial accuracy, corporate governance, and accountability, this research assesses how audit perceptions influence TQM practices in a healthcare setting where both financial and human considerations are at stake. A quantitative methodology was employed, distributing questionnaires to 100 healthcare customers across Egypt to capture data on the interplay between audit traits and TQM outcomes. The results highlight the substantial mediating effect of the perceived value of audit services, suggesting that perceptions of audit service value significantly influence the relationship between audit characteristics and TQM efficacy. Specifically, the findings underscore the importance of audit service characteristics—namely independence, thoroughness, and competence—and their perceived value in reinforcing TQM implementation. While revealing the intricate dynamics between external audit attributes and quality management in healthcare, the research acknowledges its limitations due to geographical focus and self-reported measures. This research contributes to the literature on audit services in healthcare by elucidating the mediating influence of perceived value and offering insights for enhancing audit and quality management systems in hospital settings. Future research directions include expanding the scope of the research to incorporate diverse geographical locations and integrating qualitative methods to deepen the understanding of audit service impacts on healthcare quality management.

Key Words: Perceive Functional Value, Audit Service, Audit Characteristics, Customer Satisfaction, Total Quality Management, and Egyptian Hospitals.

Received on 4/4/2024, accepted on 29/6/2024.

الأثر الوسيط للقيمة الوظيفية المدركة لخدمة المراجعة على العلاقة بين خصائص المراجعة وأثرها على رضا العملاء عن إدارة الجودة الشاملة في المستشفيات المصرية

ملخص البحث

يبحث هذا البحث في الدور الوسيط للقيمة المدركة لخدمات المراجعة في العلاقة بين خصائص المراجعة الخارجية وفعالية إدارة الجودة الشاملة في المستشفيات المصرية. وإدراكًا للوظيفة الأساسية لخدمات المراجعة في ضمان الدقة المالية والحوكمة المؤسسية والمساءلة، يقيم هذا البحث كيفية تأثير إدراك قيمة المراجعة على ممارسات إدارة الجودة الشاملة في بيئة الرعاية الصحية لضمان الدقة المالية والمساءلة. وقد تم استخدام منهجية كمية، حيث تم توزيع استبيانات على 100 عميل من عملاء الرعاية الصحية في مصر للحصول على بيانات حول العلاقة بين خصائص المراجعة ونتائج إدارة الجودة الشاملة. وتسلط النتائج الضوء على التأثير الوسيط للقيمة المدركة لخدمات المراجعة، مما يشير إلى أن إدراك قيمة خدمات المراجعة يؤثر بشكل جوهري على العلاقة بين خصائص المراجعة وفعالية إدارة الجودة الشاملة. وعلى وجه التحديد، تؤكد النتائج على أهمية خصائص خدمات المراجعة - وتحديدًا الاستقلالية والشمولية والكفاءة - وقيمتها المدركة في تعزيز تنفيذ إدارة الجودة الشاملة. وبينما يكشف البحث عن الديناميكيات المعقدة بين خصائص المراجعة الخارجية وإدارة الجودة الشاملة في مجال الرعاية الصحية، يقر البحث بمحدوديته بسبب التركيز الجغرافي والمقاييس الذاتية. ويساهم هذا البحث في الأدبيات المتعلقة بخدمات المراجعة في مجال الرعاية الصحية من خلال توضيح التأثير الوسيط للقيمة المدركة لخدمة المراجعة وتقديم رؤى لتعزيز أنظمة المراجعة وإدارة الجودة الشاملة في المستشفيات المصرية. هذا وتشمل الاتجاهات البحثية المستقبلية توسيع نطاق البحث ليشمل مواقع جغرافية متنوعة ودمج الأساليب النوعية لتعميق فهم تأثير خدمات المراجعة على إدارة جودة الرعاية الصحية.

الكلمات المفتاحية: القيمة الوظيفية المدركة، خدمة المراجعة الخارجية، خصائص المراجعة الخارجية، رضا العملاء، إدارة الجودة الشاملة، المستشفيات المصرية.

1-Introduction

A hospital is a complex organization that is difficult to manage through central control (Hamouche, 2023). The hospital is usually run by a professional management team accountable to a governing body (Sendak et al., 2020). Consequently, the governing body requires assurances about the adequacy of internal control and the integrity of financial statements (Semmaila & Nurfadillah, 2022). However, the extent of reliance on internal control systems varies, and governing bodies commonly require independent audit assurances (Barr–Pulliam et al., 2024). Both internal and external auditors hypothesized that audit reports provide organizations and their stakeholders with some assurance about the strength, performance, reliability, and validity of quality management systems (Jost, 2022). The significance and efficiency of audit services have been thoroughly examined in the internal and external audit literature (Al-tae & Flayyih, 2022).

Despite these guarantees, users still have doubts regarding the reliability of the audit function (Landers & Behrend, 2023; Goicoechea et al., 2021). The value of an audit has been extensively discussed, but research on the determinants of the perceived value of the audit function is still in its early stages, particularly with regard to healthcare customers (Tran & Vu, 2021). Healthcare customers may have particular concerns or preferences regarding audit characteristics and perhaps more specific requirements or determinants than other service customers because of the special nature of healthcare services (Nowrozy et al., 2024; Ismail & Mohamed, 2022).

In Egypt, more than 50% of healthcare services are provided by governmental entities; however, the private sector plays an increasingly important role in the provision of healthcare services (Siddiqi et al., 2023). The number of private hospitals has increased dramatically over the past few years. These hospitals are subject to commercial laws and are thus required to prepare financial statements in accordance with relevant accounting standards. Such statements are audited by external auditors to assure both owners and other stakeholders that the statements present a true and fair view of the financial position of the hospital.

Despite the promise that TQM holds for improving healthcare, experience to date suggests that many attempts to implement TQM have not achieved the desired results (Filippi et al., 2024). Zehir & Zehir (2023) stated that hospitals could achieve substantial performance improvements only when they carefully plan and implement TQM as a comprehensive program of continuous improvement. Since the late 1980s, many hospitals have initiated TQM in Egypt (Iskander, 2023). Many Egyptian hospitals have begun to use TQM to improve quality and reduce costs (Nasser et al., 2021; Ishijima et al., 2020). However, few empirical studies have examined TQM in hospitals in Egypt (El Garem et al., 2024). These studies suggest that TQM is in the beginning stages of implementation and that specific factors are associated with more or less successful TQM implementations (Ansari, 2022). Consequently, in Egypt, very little evidence is available on the effectiveness of TQM and its determinants in healthcare organizations.

This research is a step toward contributing to quality management practices by enhancing the understanding of the joint association of audit characteristics and TQM strengths within a TQM framework. Quality management has received increasing attention in the healthcare sector (Wang et al., 2024). Consequently, it enhances patient and staff satisfaction, which in turn reduces staff turnover and increases efficiency (Puthanveetil et al., 2021). Despite these benefits, several studies have found that the actual practice of TQM is less than successful (Ali & Johl, 2022; Benzaquen & Charles, 2022; Kebede & Viridi, 2021; Puthanveetil et al., 2021). Therefore, helping Egyptian hospitals perform TQM is important and, will yield benefits to patients, hospital staff, and management.

Audit services are pivotal in healthcare organizations, particularly hospitals, to enhance transparency, financial integrity. These services ensure accurate financial reporting and foster a culture of accountability and trustworthiness, thereby contributing to good corporate governance. The perceived value of audit services acts as a crucial mediator in the relationship between external audit characteristics and the effectiveness of TQM practices in healthcare (Xie et al., 2024). This research investigates how hospitals in Egypt perceive the value of audit services and how this perception influences external audit characteristics and TQM efficacy.

2- Research Problem

The research problem revolves around understanding the mediating role of perceived functional value in the relationship between external audit characteristics and TQM effectiveness in Egyptian hospitals. This research seeks to address how perceptions of audit service value influence the implementation of TQM practices, given the multifaceted nature of healthcare settings where financial accuracy and human welfare intersect.

3- Research Gap

Previous studies have extensively examined the role of external audits in enhancing financial accuracy and governance in various sectors. However, there is a notable research gap in understanding the specific mediating role of perceived functional value in healthcare context, particularly regarding how it influences the relationship between external audit characteristics and customer satisfaction in TQM effectiveness in hospitals. Moreover, empirical evidence from the healthcare sector in Egypt is scarce, which presents unique challenges and cultural specifics that may affect the generalizability of findings from other regions.

4- Research Questions

First, given the importance of TQM in hospitals, what is the degree of TQM customer satisfaction with the present external audit in verifying TQM activities and their outputs in the hospital? Second, which audit characteristics are perceived as the most important by healthcare customers in ensuring their satisfaction with TQM activities? Third, what is the nature of the relationship (direct and mediating) between the perceived importance of key audit characteristics and TQM customer satisfaction with the overall quality of the audit in the hospital? Fourth, how does the perceived functional value of an audit service mediate the relationship between external audit characteristics and customer satisfaction in Egyptian hospitals?

5-Research Objectives

The overall purpose of this research is to provide an understanding and contribute to knowledge on TQM from an external audit services perspective, and in particular, the impact of key audit characteristics on customer satisfaction with TQM, while exploring the mediating effect of the perceived functional value of audit services in hospitals. This study examines and identifies the "most important" characteristics of an external audit by exploring the direct relationship between the perceived importance of these audit characteristics and TQM customer satisfaction. The research also examines the mediating role of the perceived functional value of audit services on the relationship/perceived expertise, unqualified audit report, and TQM customer satisfaction, as well as on audit duration and TQM customer satisfaction.

The primary objective of this study was to explore the interplay between external audit traits, perceived functional value, and TQM outcomes in Egyptian hospitals. Specifically, the research aims to assess how audit characteristics, such as independence, thoroughness, and competence, interact with perceived value to shape TQM effectiveness.

6-Research Importance (Academic)

Academically, this research contributes to the literature on audit services in healthcare by elucidating the mediating influence of perceived value on the relationship between audit characteristics and TQM outcomes. This study offers insights into the complex dynamics of audit services and quality management systems within hospital settings, thereby enriching theoretical understanding in this field.

7-Research Importance (Practical)

Practically, studies in the area of external audit have predominantly focused on the levels of audit service quality, with the services that auditors provide generally considered to be the main focus in terms of their potential to influence satisfaction. However, customers' needs and preferences for the external audit function in relation to more subjective perceptions and other characteristics of the

auditing profession are also expected to influence audit satisfaction. This omission has led to limited knowledge in the area of auditor performance, and more broadly, in service performance for a credence service, where service quality and customer satisfaction are difficult for customers to evaluate. Such knowledge would contribute to the understanding of the perceived functional value of external audit characteristics and customer satisfaction within a healthcare organization and, more generally, across all industry sectors.

However, despite the increased importance of the external audit function, both in healthcare and other industry sectors, as well as increased research into external audit, there has been little exploration of auditor characteristics and their effect on satisfaction and performance.

This research provides valuable insights for healthcare managers, auditors, and policymakers involved in improving hospital audit procedures and quality management frameworks. By recognizing the significance of perceived value in mediating the effectiveness of TQM practices, stakeholders can make informed decisions to promote better quality management in healthcare organizations.

8-Conceptualization of variables (dependent variables and independent and mediator)

8-1 External audit in the hospital

External auditors play an important role in healthcare organizations. Hut-Mossel et al. (2021) stated that an impartial third party verifies healthcare facilities. Contracts often include this kind of audit to ensure everyone is being forthright and honest (Iriyadi, 2019). An important component of good company governance is regular external audits, which ensure truthful financial reporting (Oppong et al., 2023). Cooperation between internal and external auditors can increase efficiency and, effectiveness and save costs (Hamdallah, 2020). According to Huang et al. (2015), audits may be made more efficient, objective, and error-free if reviewers from varied backgrounds in healthcare are included.

According to the present literature, the benefits of implementing the recommendations of the external audit are the upgrading of hospitals' operating pro-

cesses, which may induce an enhanced public image and an increase in the hospital's reputation (Dion & Evans, 2024; Hut-Mossel et al., 2021). The hospital is striving for continuous improvement of the effectiveness of healthcare, influencing public funding and private sector investment decisions, and community care provider selection, strengthening the hospital's competitive position, thereby enhancing the implementation of organizational objectives, rationalizing the available resources, and minimizing the risk of hospital vulnerabilities (Kourtis et al., 2021).

External auditing has become an accepted means of improving the quality of serious institutional functioning, as well as financial reports (Krasodomska et al., 2021; Venter & Van, 2021). In the health sector, the emphasis of external audit objectives has traditionally been placed on the financial economy, but over the years, the focus has turned to the prudence and effectiveness of the internal control system, as well as the compliance of hospital activities with applicable laws and regulations (Abbas & AL-Tamimi, 2020). Negative aspects such as the high opportunity cost of resources, complexity, and questionable effectiveness cannot ignore the significant benefits that can be derived from responding to the audit's recommendations (Oh & Lee, 2022; Hussein et al., 2021). For hospitals, these benefits extend beyond the rationalization of specific financial procedures and include the expansion of learning prospects and the improvement of their institutional reputation via reliable, homogeneous information that significantly improves the internal governance process and enables external monitoring and supervision. (Hut-Mossel et al., 2021)

8-2 External audit characteristics (Independent variable)

The purpose and importance of external audits have been much debated. Some argue that external audit is part of the corporate governance framework, helping to ensure that the organization is being run properly (Cinaj et al., 2020). Others argue that external audit does not make a significant contribution to corporate governance, not only because audits are retrospective and the information can be out of date, but also because some audit firms rely too much on using junior staff on audit engagements who do not have enough knowledge or expertise to carry

out the audit effectively (Manita et al., 2020; Alzeban, 2020). Consequently, audit firms may arrive at the wrong conclusions. In the worst cases, it is argued that audit firms may be too willing to accept the client's assertions to keep the client satisfy and retain the client as an audit client in the future (Daoust & Malsch, 2020; Hazgui & Brivot, 2020).

Incorporating elements recognized in external audits into an audit is crucial for thoroughness and effectiveness. Ho and Hutchinson (2010) found that external audit costs were lower when internal audit effort was greater across all activities. This adds to the mounting data suggesting a possible relationship between audit features and audit expenses. According to Al-ahdal and Hashim (2022), businesses may enhance their financial performance thorough external audit. Due to their ability to reveal possible default risks, external audit is essential for the early identification of financial issues (Centiarelli et al., 2018).

Auditors have a number of key characteristics: they are independent of the enterprise; they have specialized knowledge; they perform a systematic process involving professional judgment; they act as the agents of shareholders; and they add credibility to the financial statements (Rijal & Bakri, 2023). It is also essential that auditors possess personal integrity (Khaksar et al., 2022).

8-3 Customer satisfaction of total quality management (Dependent variable)

In light of the current challenges facing healthcare, the high cost of medical care, the inequity in access to medical services, and low confidence in healthcare services, the implementation of TQM is critical to the reform of the healthcare system (Tan et al., 2021; Xiong et al., 2021). TQM is a key contributing factor to increasing efficiency, containing costs, and improving all healthcare processes as well as the services provided to patients (Ansari, 2022). While considering the significance of the connection between TQM and external audit in maintaining the quality of work in healthcare organizations, and in spite of the increasing amount of empirical research that has examined the impact of external audit context on quality and efficiency (Puthanveetil et al., 2021; Aburayya et al.,

2020b), little is known about the influence of external audit characteristics on TQM (Zheng et al., 2023). Moreover, there remains a dearth of research and relevant evidence on this issue with respect to professional service organizations, particularly healthcare organizations. As a result, this research examines the external audit characteristics in this context.

TQM has been the benchmark for healthcare quality improvement efforts (Ansari, 2022). Hospitals can keep up with the times, provide inexpensive, high-quality care, and take advantage of medical technology improvements using TQM (Zehir & Zehir, 2023). Healthcare providers may guarantee that their patients receive fast, accurate, and efficient treatment using TQM concepts (Dodwad, 2013). The significance of effective management approaches to achieve performance advantages was emphasized by Samson and Terziovski (1999) who focused on the link between TQM practices and operational performance. According to Noronha et al. (2023), healthcare companies encounter several significant procedural obstacles when attempting to adopt TQM, including difficult procedures and problems with evaluating results. Extensive surveys were emphasized by Sila and Ebrahimpour (2002) in their discussion on TQM assessment in services and suggested that external audit could play a crucial role in improving healthcare quality. Among the difficulties encountered by Indian businesses in implementing TQM, Kumar et al. (2020) focused on operational and human elements. TQM plays a crucial role in determining patient satisfaction and the overall quality of treatment in hospitals, as demonstrated by Alkhalidi and Abdallah (2022) and Aburayya et al. (2020a). According to research by Liang et al. (2021), hospital healthcare quality is mostly determined by patient happiness, which highlights the significance of TQM techniques in enhancing customer satisfaction. In addition, patient satisfaction is directly related to healthcare service quality, highlighting the need for whole quality management to maintain high patient satisfaction (Verma et al., 2020). According to researches on TQM in healthcare facilities, TQM techniques may significantly improve hospital performance, which in turn increases customer satisfaction (Alkhalidi & Abdallah, 2022; Puthanveetil et al., 2021).

8-4 Perceived value of audit services in hospitals (Mediator)

In healthcare settings, the value of audit services should be determined by considering the viewpoints of the persons receiving them. According to studies, clients' perceptions of an audit firm's worth great impact whether they remain or leave (Fontaine et al. 2013). Healthcare quality in healthcare sector contexts, such as hospitals, is linked to audit success (Oppong et al., 2023). This encompasses both internal and external audits. The service benefits from a complex environment of regulations and accounting standards, and the surrounding legislation that is ultimately passed because of the general concern about fraud and the necessity for accountability in the structure of financial reporting (Hegazy & Stafford, 2021). Furthermore, the importance of the audit profession has increased, and the credibility of their work has become problematic (Landers & Behrend, 2023).

For example, Hut-Mossel et al. (2021) emphasized that the implementation of an external hospital audit has an effect on operational efficiency and better allocation of resources in the hospital. Hospital managers, organizational decision-makers, healthcare customers, and other stakeholders have the right to expect that external auditors evaluate financial statements. Furthermore, in a healthcare setting, the external auditor may also provide some other valuable services (Ginanjar et al., 2023). These stakeholders need such services to reduce the isolation that can sometimes be caused by the regulation and examination of hospitals, often by various governmental and non-governmental agencies, and to improve profit and control performance (Hut-Mossel et al., 2021).

Collaboration between auditors and management is critical and can help hospitals' decision-makers achieve the hospital's defined goals (Brand et al., 2023). The external audit services should also provide agreed-upon procedures report review services and financial statement attestation through open communication between the auditors and the hospital's management (Salah, 2023). Additionally, the external auditor utilizes the hospital's internal control system to issue financial statement attestation after reviewing internal controls based on risk assessment and in support of a transparent and consistent financial report (Hegazy & Staf-

ford, 2021). Finally, factors including the reliability and honesty of audit functions, the reputation of audit firms, and the frequency of successful audits in the healthcare sector affect the perceptions of the value of audit services (Glenngård & Anell, 2021). If hospitals can improve operational efficiency, ensure financial integrity, and increase accountability, they may be more open to auditing services (Vian, 2020).

Perceived service quality, comfort, and pricing reasonability are important determinants of patient satisfaction and loyalty (Boakye et al., 2017). Factors that affect patient loyalty to healthcare organizations include functional value, trust, and satisfaction (Yarmen, 2017). The significance of perceived value in improving overall patient happiness has been highlighted by studies that have shown a positive association between perceived value and satisfaction (Sumaedi et al., 2016; Nguyen et al., 2021; Huang et al., 2021; Li et al., 2022). Perceived value and customer loyalty are two important factors in the healthcare industry, which in turn affect customer loyalty (Chahal & Kumari, 2011). Healthcare service evaluations must take patient-perceived service quality aspects into account, underscoring the importance of patients' perspectives (Pai & Chary, 2016).

In summary, perceived functional value can be described as the worth that patients perceive healthcare services to have, necessitating a closer assessment of the quality function of services (Montesinos et al., 2024). This is important because patients make decisions based on this value when consuming health services. Perceived functional value, and perceived benefits, can influence the audit process and audit recommendations (Zeschick et al., 2023).

9-Literature review

This research presents and discusses the literature review regarding the characteristics of external audit (audit purpose, audit initiator, audit scope, audit level (or layer), audit focus (or audit emphasis), and audit standards), perceived functional value of external audit services, and customer satisfaction of TQM to develop hypotheses and a research model. The literature review has shown that there is a research gap in those parts of empirical studies, both in audit and man-

agement disciplines. First, previous studies report contradictory results in terms of the impact of audit characteristics on the perceived functional value of audit services. Second, prior studies have not provided specific audit guidelines regarding the importance of developing an understanding of the perceived functional value of audit services and the mediation effect of value on customer satisfaction to customize external audit services in line with customer needs. Therefore, the aim of this research is to provide the external auditor with insight into which audit characteristics enhance the perceived functional value of audit services and the customer satisfaction of TQM.

9-1 The relation between perceived functional value and audit characteristics

With the growing influence of the functionalism movement within disciplines like supporting healthcare practice, developing an understanding of the perceived functional value has become paramount (Carnegie et al., 2023). An obvious starting point is to review the literature relating to service and audit characteristics and their impact on perceived functional value. In healthcare, some research has considered perceived service value, but there is a lack of research regarding perceived functional value, despite the growing importance of functionalism and the specific nature of the healthcare environment (Zaid et al., 2020; Kuncoro & Kusumawati, 2021). Therefore, this study defines perceived functional value as the perception of the extent of usefulness of functions perceived or received in a particular health service by its users, such as audit recommendations or audit support, and examines the impact of audit- and service-related characteristics in healthcare.

In the literature, audit characteristics are typically treated as presented dimensions reflecting a unidimensional concept (Dickey et al., 2022). However, there seems to be a lack of empirical investigations of the relationships between the perceived dimensions of audit characteristics and antecedents (Hardies et al., 2024). Although there are studies of perceived audit characteristics in healthcare (Hut-Mossel et al., 2021), these studies assessed the perception of a single overall

dimension of audit characteristics (Al-ahdal & Hashim, 2022; Seebeck & Kaya, 2023).

Given that healthcare organizations provide services that can have life or death consequences for patients, it is not surprising that the overall activity of the healthcare sector is supervised. Auditing is a mechanism often used to guarantee such supervision. Healthcare organizations are audited by several different agencies, including government audit offices, external and internal private audit firms, and funding agencies (Oppong et al., 2023). Typically, audits have differing and unique scopes, are undertaken for different purposes, or initiated by different agents (Jost, 2022). The characteristics of audits are developed herein as a multi-dimensional concept reflecting this diversity, which includes audit purpose, audit initiator, audit scope, audit level (or layer), audit focus (or audit emphasis), and audit standards. Previous studies report contradictory results in terms of the relationship between audit characteristics and customer satisfaction with TQM. As a result of these discussions, the following hypothesis was developed:

H1: There is a positive influence of perceived functional value on audit characteristics.

9-2 Relationship between perceived functional value of audit service and customer satisfaction of total quality management

Many well-respected academics in the field of quality management consider customer satisfaction to be the cornerstone and core of TQM. (Ali & Johl, 2022; Kim, 2020; Canbay & Akman, 2023). Furthermore, Puthanveetil et al. (2021) confirmed that It is the primary objective of TQM or the most important outcome. Although the concept of customer satisfaction creates a strong link with the concept of meeting or exceeding customer needs, it confirms the belief that it is not sufficient for enterprises to produce products with zero defects, but it is necessary to design a system handling the whole process for achieving perfection (Jasin & Firmansyah, 2023). Consequently, a growing interest is observed in evaluating customer satisfaction in the context of evaluating TQM practices as a

comprehensive measure of the quality of products and services in various sectors (Verma et al., 2022; Hussain & Khan, 2020).

Customer satisfaction is one of the core concepts in TQM in understanding and satisfying customer needs to achieve quality (Verma et al.2022; Zaid et al., 2020). Customer satisfaction is not only the reaction and result of the quality of products or services but also includes many invisible parts in the concept of customer needs (Wang et al., 2021). Therefore, it has been observed that the perception of customer satisfaction develops progressively from a variable responding to the quality of products or services to a variable reflecting the whole concept of TQM (Aburayya et al., 2020a).

It is widely acknowledged in the literature that perceived audit quality and perceived audit relevance are important characteristics of external audits in relation to stakeholder satisfaction (Hamza & Damak-Ayadi, 2023; El Badlaoui et al., 2021; Peštović et al., 2021). While these studies provide some insight into the impact of these characteristics on overall stakeholder satisfaction, they do not consider the functional value that stakeholders attach to the characteristics. This gap in the literature highlights the need for further research to investigate the relationship between the perceived functional value of external audit characteristics and customer satisfaction in healthcare organizations. This knowledge gap is important to address because it can significantly influence the effectiveness of external audits in healthcare organizations. Therefore, this research examines the relationship between the perceived functional value of external audit characteristics and customer satisfaction in the context of healthcare organizations. The lack of research on perceived functional value in the field of auditing can be attributed to the prevailing focus on product-oriented research. This research differs from traditional approaches in that it examine customer satisfaction with external audits in healthcare organizations from a non-product-centered perspective. The current research also departs from a product-oriented view of audit characteristics to assess customer satisfaction with external audits in healthcare organizations.

Two of the most commonly studied characteristics of external audits in the existing customer satisfaction literature are audit quality and audit relevance (Al-Olimat & Al Shbail, 2021; Qawqzeh et al., 2020). Traditionally, researchers have assessed the quality of an audit in terms of the degree of proficiency, independence, and due professional care displayed by the auditors performing the work (Bassey et al., 2020; La Ode et al., 2020; Putria & Mardijuwonob, 2020). Despite considerable efforts toward increasing auditor independence, the concept remains one of the key attributes incorporated in the assessment of audit quality (Samagaio & Felício, 2022; Rajgopal et al., 2021). The relevance of an external audit stems from the communication of commercially useful information, such as a favorable audit report that enhances the credibility and reliability of financial statements, especially when they contain hidden or complex information (Akther & Xu, 2021). However, different stakeholders require audits to be relevant for different reasons; thereby, implying that audit relevance is a multidimensional construct. Based on previous discussions, the following hypothesis was developed:

H2: There is a positive influence of perceived functional value of audit service on customer satisfaction with TQM.

9-3 Relationship between audit characteristics value and customer satisfaction of total quality management

Maintaining and enhancing trust has become an important issue for auditors (Wijaya et al., 2021). If unrealistic expectations cause dissatisfaction, The Institute of Medicine and the National Academy of Sciences, for example, emphasize the crucial role of improving communication between patients and healthcare professionals to enhance patient-centered care (Liu et al., 2024). Numerous studies have shown that patient satisfaction is directly linked to other measures of healthcare services, including outcomes, adherence, and malpractice suits, indicating its significance as an indicator of quality of care (Aiken et al., 2021; Zaid et al., 2020). Enhancing communication between patients and healthcare providers is essential to support and deliver patient-centered care, as demonstrated by research linking satisfaction to other healthcare indicators (Tran, 2021). Various

studies have shown that satisfaction is linked to other measures of healthcare services, such as outcomes, adherence, and malpractice suits, suggesting that satisfaction serves as an indicator of quality of care (Aljarallah et al., 2023; Ferreira et al., 2023). To address this issue and, demonstrate that satisfaction is an indicator of quality of care, several researchers have shown that satisfaction is highly correlated with other indicators of healthcare services, such as outcomes, adherence, and malpractice suits (Aljarallah et al., 2023; Ferreira et al., 2023; Ai et al., 2022).

Bialkova (2024) revealed that some audit characteristics could enhance customer satisfaction with healthcare services through the audit. In addition, Tuwei and Ondabu (2022) advise using the findings from external audit reports to strengthen internal control and performance in healthcare organizations. According to Contessotto et al. (2021), having more auditors assigned could lead to improved satisfaction with service waiting times, implying that reducing customer wait times could boost customer happiness. This can enhance accountability and transparency within the healthcare sector, ultimately leading to improved patient outcomes and financial stability. Prajogo et al. (2020) also suggested that customer orientation to increase perceived auditor competency, as well as better auditor communication to customers about the audit process, influences perceived auditor competency. Consequently, many audit studies have explored audit characteristics and their impact on customer satisfaction (Alberti et al. 2022; Knechel et al., 2020). However, the audit satisfaction literature has evaluated these dimensions in isolation. Considering these arguments, the following hypothesis was expressed:

H3: There is a positive influence of audit characteristics value on customer satisfaction with TQM.

9-4 Mediating impact of the perceived functional value of audit services in hospitals on characteristics of external audit and customer satisfaction with total quality management

Although the concept of customer satisfaction creates a strong link with the concept of meeting or exceeding customer needs, it confirms the belief that it is not sufficient for enterprises to produce products with zero defects, but it is necessary to design a system handling the whole process for achieving perfection (Jasin & Firmansyah, 2023). Consequently, a growing interest is observed in evaluating customer satisfaction in the context of evaluating TQM practices as a comprehensive measure of the quality of products and services in various sectors (Verma et al., 2022; Hussain and Khan2020).

Furthermore, the perceived functional value of audit service and mediation is essential concept jointly for hospital management and external auditor (Badruzaman, 2023; Udoh & Mohamed, 2023). By focusing on the perceived functional value of audit services, hospitals can enhance customer satisfaction and effectively manage TQM. This approach also considers the preferences of users and the overall quality of the audit services, ultimately resulting in significant benefits for the hospitals (Radu et al., 2022; Giao et al., 2020).

The perceived functional value of external audit services in hospitals is crucial for ensuring customer satisfaction with TQM; this value is influenced by the characteristics of the external audit and plays a mediating role in the overall effectiveness of the audit services (Harris & Williams, 2020). Audit services increase the importance of the characteristics of external audit for customer satisfaction of total quality management in hospitals to be achieved (Abdulkadir, 2023).

Hospitals' use of audit services plays a crucial role in determining the effectiveness of TQM practices and external audit characteristics, as suggested by Yubing et al. (2020). Patient satisfaction and perceived value of treatment are key factors influencing their choice to continue receiving care at private hospitals. Perception of healthcare services can impact how service quality relates to patient loyalty. The role of hospital auditing services may be similar. Placing a higher priority

on audit services may reduce the connection between TQM processes and external audit characteristics. Gaining a better understanding of audit services is essential for improving healthcare quality management, client relationships, and audit efficiency (Puthanveetil et al., 2021). Several studies have show significant positive relationships between perceived service value, perceived functional value, and customer satisfaction (Paulose & Shakeel, 2022; Tuncer et al., 2021; Uzir et al., 2021;). Additionally, perceived functional value is considered to be an important component for increasing perceived value of a service and a strong mediator of its relationship with customer satisfaction (Paulose & Shakeel, 2022; Tuncer et al., 2021; Uzir et al., 2021). Therefore, perceived functional value is critical and must be addressed at all times to increase service customer satisfaction (Uzir et al., 2021).

Based on previous discussions, the following hypothesis was developed:

H4: Perceived functional value mediates the relationship between external audit characteristics and customer satisfaction in Egyptian hospitals.

9-5 Conceptual Framework

Based on the previous literature review, the following conceptual framework was expressed

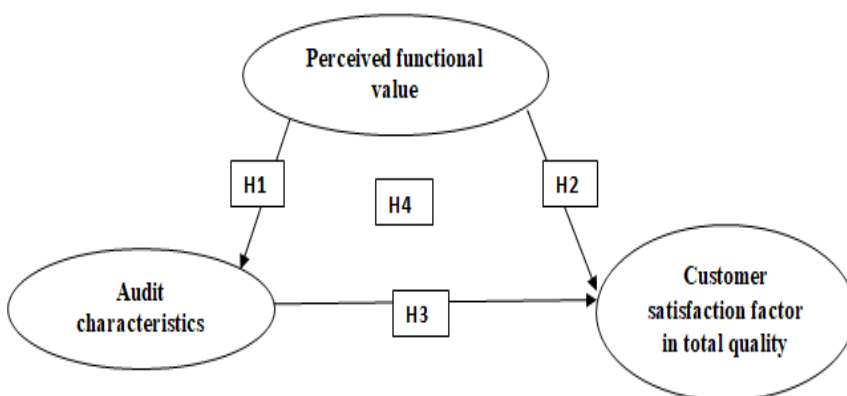


Figure 1: Conceptual Framework

10- Methodology

To better understand how audit features and customer satisfaction on TQM contribute to overall quality management in Egyptian hospitals, this study uses a quantitative research technique to collect data-driven insights into the mediating role of perceived functional value. The data collection method used in this study is a non-probability sampling strategy. This strategy proposes a selection process whereby not all members of the specific population are given an equal opportunity to be chosen, as stated (Taherdoost, 2016). This method is perfect because the research is limited to hospitals in Egypt; a random sample framework would not capture the essence of this population. The data acquired is more reflective because it is concentrated and obtained from relevant individuals, thanks to non-probability sampling. Data collection for this research involves distributing online questionnaires to selected participants. The questionnaire includes socio-demographic (age, gender, relationship status, and highest level of education), in addition to perceived functional value, Audit characteristics, and customer satisfaction factors in TQM items. The research consists of an exploratory approach, proceeded by confirmatory factor analysis where the questionnaires, are tested on a sample of 100 participants who are healthcare customers. The purpose of this phase is to validate the sample distribution, conduct factor analysis, assess the reliability of the questionnaires, and examine the relationship between the mediating role of perceived value between Audit characteristics and customer satisfaction factor in TQM. To achieve this, tests were performed using SPSS and Amos software.

Normality Test:

Table (1) provides descriptive statistics for three variables audit characteristics, Customer satisfaction with TQM, and perceived value. These statistics include measures of central tendency, dispersion, and distribution shape.

Table 1: Descriptive Normality Test

		Statistic	Std. Error	
Audit Characteristics	Mean		2.9933	.09616
	95% Confidence Inter- val for Mean	Lower Bound	2.8025	
		Upper Bound	3.1841	
	5% Trimmed Mean		3.0148	
	Median		3.0000	
	Variance		.925	
	Std. Deviation		.96164	
	Minimum		1.00	
	Maximum		5.00	
	Range		4.00	
	Interquartile Range		1.58	
	Skewness		-.302	.241
	Kurtosis		-.712	.478
Customer satisfac- tion	Mean		2.8667	.10887
	95% Confidence Cus- tomer satisfaction	Lower Bound	2.6507	
		Upper Bound	3.0827	
	5% Trimmed Mean		2.8778	
	Median		3.0000	
	Variance		1.185	
	Std. Deviation		1.08866	
	Minimum		1.00	
	Maximum		4.67	
	Range		3.67	
	Interquartile Range		2.00	
	Skewness		-.313	.241
	Kurtosis		-1.113	.478
Perceived Functional value	Mean		3.2000	.08976
	95% Confidence Inter- val for Mean	Lower Bound	3.0219	
		Upper Bound	3.3781	
	5% Trimmed Mean		3.2333	
	Median		3.4000	
	Variance		.806	
	Std. Deviation		.89758	
	Minimum		1.00	
	Maximum		5.00	

	Range	4.00	
	Interquartile Range	1.20	
	Skewness	-.634	.241
	Kurtosis	-.144	.478

Table (1) provides descriptive statistics for the three variables. These statistics include measures of central tendency, dispersion, and distribution shape.

For audit characteristics: The skewness of the variable is approximately -0.302 , indicating a slight leftward skew. This suggests that the distribution of values is slightly asymmetrical, with a tail extending toward the lower end of the scale. The negative kurtosis value of approximately -0.712 indicates that the distribution is relatively flatter than a normal distribution, implying that the data has lighter tails and lacks extreme values. Overall, the distribution of the audit characteristics variable exhibits a slight tendency toward lower values with a relatively flattened shape compared with a normal distribution.

For the customer satisfaction variable: The skewness of the variable is approximately -0.313 , indicating a slight leftward skew similar to the S variable. This suggests that the distribution is slightly asymmetrical, with a tail extending toward the lower end. The negative kurtosis value of approximately -1.113 further supports this interpretation, indicating a relatively flatter distribution with lighter tails compared with a normal distribution.

For the perceived functional value variable: The skewness of the variable is approximately -0.634 , indicating a slight leftward skew. This suggests that the distribution of values is slightly asymmetrical, with a tail extending toward the lower end. The negative kurtosis value of approximately -0.144 suggests that the distribution is flatter than a normal distribution. Overall, the distribution of the perceived functional value LM variable exhibits a slight leftward skew and a relatively flattened shape compared with a normal distribution.

In summary, all variables exhibit slight Skewness toward the left side, indicating a tendency toward lower values. The negative kurtosis values for all variables suggest relatively flattened distributions with lighter tails compared with a normal distribution.

Factor Analysis and Reliability Test of the Audit Characteristics Variable:

Table 2: Audit Characteristics

Rotated Component Matrix^a	
	Component
	1
A4 A high degree of structure within the audit teams	.893
A5 The CPA firm uses rigorous process for recruiting auditors	.869
A7 Audit team performance is frequently supervised by the audit firm	.866
A1 The CPA firm has been in the audit market for many years	.612
A2 The CPA firm is a subsidiary of a large parent company	.122
A3 The CPA firm is one of the big four accounting firms	.059
A6 The CPA has a significant client base	.329
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.	
a. Rotation converged in three iterations.	

Table 3: Ausit Characteristics Reliability

Reliability Statistics	
Cronbach's Alpha	N of Items
.852	4

Factor analysis is a statistical technique used to uncover underlying structures or dimensions within a set of observed variables. In the context of Audit Characteristics, factor analysis can be employed to understand the latent constructs or factors that contribute to Audit Characteristics. The factor loadings provided for variables such as A4, A5, A7, and A1 indicate the strength of association between these variables and the underlying factor. High factor loadings, such as those observed suggest that these variables are strongly related to the underlying construct, possibly representing dimensions of the audit characteristics. Conversely, variables with lower factor loadings, such as A2, A3, and A6 were discarded as they did not meet the minimum threshold of 0.5, suggesting weaker associations with the underlying factor. A Cronbach's Alpha coefficient of .852 is generally considered very good, as values above .70 are typically acceptable for most re-

search purposes. Therefore, the scale demonstrates good reliability, suggesting that the items work well together to provide consistent and reliable measurements of the construct being assessed.

Factor analysis and Reliability Test for Customer satisfaction factor of TQM:

Table 4: Customer Satisfaction

Component Matrix	
	Component
	1
CS1customersatisfactionincrease	.906
CS4companyretentionofloyalcustomers	.878
CS3customercomplaintsreduction	.701
CS5companyparticipationinsocialactiviies	.525
CS2Increasednumberofcustomers	.386
Extraction Method: Principal Component Analysis.	
a. 1 components extracted.	

Table 5: Customer Satisfaction Reliability

Reliability Statistics	
Cronbach's Alpha	N of Items
.724	5

In the context of Customer satisfaction, factor analysis can be employed to understand the latent constructs or factors that contribute to Customer satisfaction. The factor loadings provided for variables such as CS1, CS4, CS3, and CS5 indicate the strength of association between these variables and the underlying factor. High factor loadings, such as those observed suggest that these variables are strongly related to the underlying construct, possibly representing the dimensions of Customer satisfaction. Conversely, variables with lower factor loadings, such as CS2 were discarded as the item did not meet the minimum threshold of 0.5, suggesting weaker associations with the underlying factor. A Cronbach's Alpha coefficient of .724 is generally considered very well, as values above .70 are typically acceptable for most research purposes. Therefore, the scale demonstrates good reliability, suggesting that the items work well together to provide consistent and reliable measurements of the construct being assessed.

Factor analysis and Reliability Test for Perceived Functional value variable:

Table 6: Perceived Functional Value

Component Matrix^a	
	Component
	1
PFV1 In my opinion, buying a healthcare product is really useful	.879
PVF2 I consider my purchase of a healthcare product practical	.879
Extraction Method: Principal Component Analysis.	
a. 1 component was extracted.	

Table 7: Perceived Functional Value Reliability Test

Reliability Statistics	
Cronbach's Alpha	N of Items
.707	2

The factor loadings provided for perceived Functional value items indicate strong associations with the latent construct of logical-mathematical aptitude. High factor loadings, such as those observed suggest that these variables are closely related to the underlying factor, likely representing dimensions of the perceived functional value. A Cronbach's Alpha coefficient of .707 is generally considered very good, as values above .70 are typically acceptable for most research purposes. Therefore, the scale demonstrates good reliability, suggesting that the items work well together to provide consistent and reliable measurements of the construct being assessed.

Table 8: Correlation Table

Correlations				
		Audit Characteristics	Customer satisfaction	Perceived functional value
Audit Characteristics	Pearson Correlation	1	.862**	.819**
	Sig. (2-tailed)		.000	.000
	N	100	100	100
Customer satisfaction	Pearson Correlation	.862**	1	.841**
	Sig. (2-tailed)	.000		.000
	N	100	100	100
Perceived Functional value	Pearson Correlation	.819**	.841**	1
	Sig. (2-tailed)	.000	.000	
	N	100	100	100

** . Correlation is significant at the 0.01 level (2-tailed).

The correlation matrix provides valuable insights into the relationships among different constructs, such as audit characteristics, customer satisfaction, and perceived functional value. These correlations, measured using Pearson's correlation coefficient, demonstrate significant positive associations at the 0.01 level (2-tailed), indicating robust connections between the constructs.

11- Results, Discussion of Results

11-1 Audit Characteristics and Perceived Functional Value

The strong positive correlation coefficient of 0.819 indicates a robust connection between Audit Characteristics and Perceived Functional Value. This suggests that the perceived effectiveness and utility of audit processes directly impact how stakeholders perceive the functional value derived from this audits. Audits with strong characteristics, such as accuracy, relevance, and timeliness, are likely to be perceived as providing greater functional value to stakeholders, such as management, investors, and regulatory bodies. Thus, accepting H1: There is a positive influence of perceived functional value on audit characteristics.

11-2 Customer Satisfaction and Perceived Functional Value

The correlation coefficient of 0.841 reflects a strong positive association between Customer Satisfaction and Perceived Functional Value. This indicates that stakeholders that are more satisfied with audit services tend to perceive higher functional value from those services. This suggests that meeting or exceeding customer expectations in terms of audit quality, responsiveness, and communication can enhance stakeholders' perceptions of the value delivered by audits. Thus accepting H2: There is a positive influence of perceived functional value on customer satisfaction.

11-3 Audit Characteristics and Customer Satisfaction

The high positive correlation coefficient of 0.862 suggests a strong relationship between Audit Characteristics and Customer Satisfaction. This implies that the characteristics of an audit, such as its thoroughness, reliability, and transparency, significantly influence the level of satisfaction experienced by customers. Organizations that conduct audits with strong characteristics are likely to have more sat-

ified customers, potentially leading to better client retention and positive word-of-mouth referrals. Thus accepting H3: There is a positive influence of the audit characteristics value on customer satisfaction.

The strong correlations among these variables underscore the interdependence between audit characteristics, customer satisfaction, and perceived functional value. Organizations involved in auditing should focus on enhancing the quality, transparency, and effectiveness of their audit processes to positively impact both customer satisfaction and perceived functional value. By prioritizing these aspects, audit firms can strengthen client relationships, foster trust, and enhance the perceived value of their services in the eyes of stakeholders.

11-4 Mediation Analysis

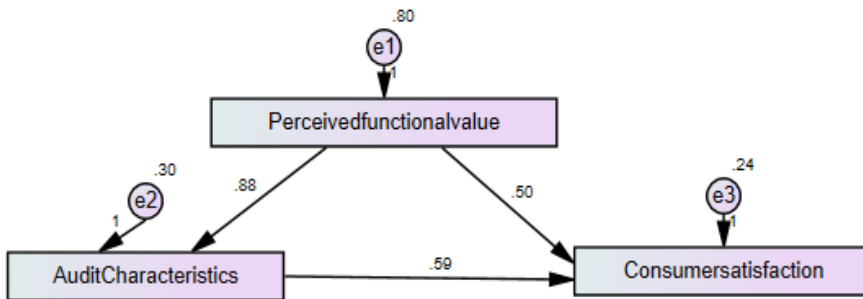


Figure 2: Mediation Analysis

The mediation analysis in the diagram evaluates the role of Perceived Functional Value as a mediator between Audit Characteristics and Customer Satisfaction. Here is how mediation is interpreted:

Direct Effects:

Audit Characteristics to Customer Satisfaction: The path coefficient is .59, indicating a direct positive relationship between Audit Characteristics and Customer Satisfaction. This suggests that changes in Audit Characteristics are associated with changes in Customer Satisfaction.

Indirect Effects (Mediation):

Audit Characteristics to Perceived Functional Value: The coefficient is .88, suggesting a strong positive relationship. This means that higher levels of certain Audit Characteristics are associated with a higher Perceived Functional Value.

Perceived Functional Value to Customer Satisfaction: The coefficient is .50. This suggests that when Perceived Functional Value increases, Customer Satisfaction also tends to increase, although the relationship is not as strong as the relationship between Audit Characteristics and Perceived Functional Value.

Mediation Path:

The indirect effect of audit characteristics on customer satisfaction through perceived functional Value would be calculated by multiplying the path coefficients of the mediating paths ($.88 * .50 = .44$).

The presence of both a significant direct effect (.59) and a significant indirect effect (.44) suggests partial mediation. This means that the perceived functional value partially explains the relationship between Audit Characteristics and Customer Satisfaction, but Audit Characteristics also directly influence Customer Satisfaction independently of the perceived functional value. Thus, accepting H4 Perceived functional value mediates the relationship between external audit characteristics and customer satisfaction in Egyptian hospitals. Overall, the mediation analysis suggests that while audit characteristics have a strong direct impact on customer satisfaction, part of that impact is mediated through the customer's perception of the functional value of the audit. This indicates that how customers perceive the functional value of an audit plays a significant role in their overall satisfaction, but it is not the only factor, as Audit Characteristics also have a direct effect.

12- Conclusion

Audit Characteristics serve as fundamental pillars of audit quality, encompassing attributes such as thoroughness, accuracy, and adherence to professional standards. These characteristics are pivotal for ensuring the reliability and integri-

ty of financial reporting and, instilling confidence among stakeholders, including investors, regulators, and management teams. The strong positive correlation observed between audit characteristics and customer satisfaction underscores the significance of meeting client expectations through robust audit practices. Client satisfaction serves as a vital metric for evaluating the effectiveness of audit services, reflecting the alignment between client needs and the quality of audit deliverables. Satisfied clients are more likely to foster long-term relationships with audit firms, enhancing client retention rates and positive referrals, thereby contributing to the firm's reputation and profitability. The correlation between audit characteristics and perceived functional value highlights the pivotal role of audit quality in shaping stakeholders' perceptions of the value derived from audit services. Stakeholders assess the functional value of audits based on factors such as relevance, timeliness, and the ability to address key business concerns. A well-executed audit, characterized by comprehensive risk assessment, insightful recommendations, and transparent communication, enhances stakeholders' confidence in the audit process and its outcomes, amplifying the perceived functional value of audits. Recognizing the intricate nexus between audit characteristics, customer satisfaction, and perceived functional value, audit firms are prompted to adopt strategic initiatives aimed at optimizing audit quality and client satisfaction. Investing in continuous professional development, leveraging advanced technologies for data analytics and risk assessment, and fostering open communication channels with clients are integral to enhancing audit characteristics and fostering client satisfaction. Moreover, emphasizing transparency, responsiveness, and value-added insights in audit engagements can amplify stakeholders' perceptions of functional value, positioning audit firms as trusted advisors and catalysts for organizational success. In an increasingly competitive business landscape, the ability to deliver high-quality audit services that meet or exceed client expectations is paramount for sustaining long-term success. Firms that prioritize audit quality, client satisfaction, and perceived functional value gain a competitive edge by differentiating themselves in the market, attracting new clients, and cultivating enduring client relationships. By aligning their practices with stakeholder needs and expectations, audit firms can solidify their position as trusted partners

in driving business growth and mitigating risks, thereby enhancing their overall market standing and profitability. In essence, the correlation between Audit Characteristics, Customer Satisfaction, and Perceived Functional Value underscores the pivotal role of audit quality and client-centricity in delivering tangible value to stakeholders. By prioritizing these dimensions, audit firms can fortify their reputation, foster client loyalty, and drive sustainable growth in an evolving business landscape.

This research sheds light on how audit quality affects stakeholder viewpoints, which can be useful for audit firms and healthcare organizations. There are many things to note about the research, such as that it depends on correlation data, the sample size might be small, and the qualities that were analyzed were somewhat general. Regardless of these caveats, the research sheds fresh insight into strategic efforts to improve audit procedures and client contacts and deepens our knowledge of audit engagement dynamics. The results are useful for healthcare providers and auditors because they suggest ways to improve audit quality, which in turn makes patients happy and leads to more effective hospitals in Egypt. Future studies on healthcare auditing services may investigate other elements that affect audit quality and patient happiness. Using qualitative methodologies and conducting longitudinal research might help us understand this better. Healthcare professionals and academics in Egypt have an opportunity to improve auditing procedures and service quality by addressing these limitations and expanding on the research's findings. The country's healthcare system as a whole will benefit from this.

13- Recommendation and limitation

Future research in the field of healthcare auditing services should prioritize several key areas for advancement. First, there is a need to increase the sample size and diversity of participants to enhance the generalizability of findings, allowing for a more comprehensive understanding of the relationship between audit quality, stakeholder viewpoints, and hospital effectiveness. Additionally, future studies should delve deeper into specific attributes of audit quality, such as timeliness, responsiveness, and communication effectiveness, to provide actiona-

ble insights for both audit firms and healthcare organizations. Integrating qualitative methodologies alongside quantitative approaches can offer richer insights into the nuanced dynamics of audit engagement and stakeholder perceptions. Longitudinal research is also essential to track changes over time and understand the sustainability and long-term impact of efforts to improve audit procedures and client contacts. Furthermore, exploring additional factors that influence audit quality and patient satisfaction, conducting comparative analyses across different healthcare systems and cultural contexts, conducting in-depth stakeholder analyses, and evaluating intervention strategies aimed at enhancing audit quality and stakeholder satisfaction are crucial avenues for future investigation. By addressing these areas, researchers can contribute to a deeper understanding of audit service effectiveness in healthcare settings and inform targeted interventions for improvement.

Data Availability

The datasets are available upon reasonable request.

Conflict of interest: The author declares no conflict of interest.

Data availability: On request

Declaration of funding: No funding was received.

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