Influential Dimensions of Healthcare Service Quality on Patient Satisfaction in Public Hospitals of Abu Dhabi, UAE

Amal Helal Mohamed Ahmed Aldarmaki

Faculty of Technology Management and Business

Universiti Tun Hussein Onn Malaysia, Malaysia

Md Asrul Nasid Masrom (Corresponding author)

[1]Faculty of Technology Management and Business

Universiti Tun Hussein Onn Malaysia, Malaysia

E-mail: asruln@uthm.edu.my

Abstract

Enhancing healthcare service quality is crucial for increasing patient satisfaction, fostering loyalty, and improving overall patient outcomes. This study develops and empirically validates a conceptual model of Healthcare Service Quality in Public Hospitals in Abu Dhabi, incorporating four independent constructs: admission, staff behaviour, responsiveness, and laboratory services. These constructs are hypothesized to influence patient satisfaction directly and indirectly through loyalty as a mediating factor. Data were collected from 385 randomly selected patients and analysed using SmartPLS software with a partial least squares structural equation modelling (PLS-SEM) approach. The results indicate that admission, staff behaviour, and responsiveness significantly impact patient satisfaction directly, whereas laboratory services do not. Indirectly, admission, responsiveness, and laboratory services significantly influence satisfaction through loyalty, while staff behaviour does not. Mediation analysis shows that loyalty partially mediates the relationships between admission, responsiveness, laboratory services, and satisfaction, but not for staff behaviour. These findings provide valuable insights for healthcare administrators and policymakers to prioritize key service quality factors, enhance patient satisfaction, and cultivate loyalty in public hospitals.

Keywords: Healthcare Service Quality, Patient Satisfaction, Loyalty Mediator, Abu Dhabi Public Hospitals

1. Introduction

Currently, the quality of health services, particularly in public hospitals, is a pressing issue in the UAE. It has been noted that a significant portion of the population prefers to seek medical care abroad rather than visiting hospitals within the country. As the income of UAE citizens rises, so do patients' expectations and awareness of medical services. An essential aspect to note is that medical services are evolving from a provider-centered service to a patient-centered system that mirrors patients' expectations (Hanefeld et al., 2017). Consequently, patients' feedback, such as satisfaction, must be considered to enhance healthcare services. As a result, public hospitals must make significant contributions to the development of care and satisfaction (Mosadeghrad, 2014). Moreover, healthcare practitioners might offer the best medical services to patients; nonetheless, service quality remains poor when patients are dissatisfied with the services provided (Manzoor et al., 2019). The importance of healthcare service quality is growing and adapting to new customer expectations, as evidenced by ongoing research to identify the factors influencing patients' satisfaction with service quality (Kamra et al., 2016; Swain & Kar, 2018).

In the context of the UAE, the government is actively working to improve healthcare services throughout the country. However, there is substantial evidence indicating the need to improve healthcare services for UAE citizens. The dissatisfaction of citizens can be observed through the travel of UAE nationals to seek medical care abroad. According to Lee and Kim (2017), the number of UAE patients traveling to Korea for medical care is increasing annually. The overall medical expenditure for UAE patients grew by 98% year-on-year to 40.4 billion Korean won, with the cost per patient estimated at 15.37 million Korean won. Such substantial spending on medical treatment outside the UAE highlights the necessity of assessing service quality in UAE hospitals and evaluating whether patients are pleased with the treatments offered by government hospitals.

A study conducted by Aburayya et al. (2020a) in the UAE found that dissatisfaction among citizens is evident in the difficulty of obtaining healthcare services, which is regarded as a major barrier to quality care. This adverse effect on public healthcare providers' service quality potentially leads to the loss of friendly relationships with patients. It has been observed that patients in the UAE make appointments, yet many do not attend. Such attitudes require examination to comprehend patient satisfaction with service quality in public hospitals through empirical data, demonstrating the UAE healthcare industry's need for improvement.

Another issue related to citizens' dissatisfaction in the UAE's healthcare sector, including public hospitals, is highlighted by Aburayya et al. (2020b). They claimed that healthcare administrators and policymakers recognize limited access to hospitals by UAE citizens as a major issue, particularly in primary healthcare centers. This impacts patient flow, leaving many patients not only dissatisfied but also distressed with healthcare services. This is due to patient waiting times when visiting hospitals, which are primarily determined by a first-come, first-served basis. In this regard, healthcare organizations must devise strategies and implement efficient ways to provide easy patient access to services in healthcare facilities,

reducing waiting times and improving patient experience (Aburayya et al., 2020b). As a result, the UAE's primary healthcare industry demands improvement in process efficiency and a reduction in patient waiting times, both of which indicate weaknesses in healthcare service quality.

An important point to note is the limited number of empirical studies confirming the relationship between service quality and patient satisfaction in the Middle East. Aburayya et al. (2020a) stated that no studies have focused on healthcare service quality and patient satisfaction in public healthcare services in the UAE. Despite Aburayya's research in Dubai, no similar empirical investigations have been conducted in Abu Dhabi, the UAE's capital and center of decision-making. Therefore, there is a need to conduct studies in this area to emphasize the influential variables of healthcare service quality and their impact on patient satisfaction through empirical studies.

In a wider global context, past literature has presented numerous models of healthcare service quality linked to improved institutional performance, with many studies focusing on the SERVQUAL model. Despite the limitations associated with using SERVQUAL, most studies in the field of measuring health services have employed it (Al-Neyadi et al., 2018). Almomani et al. (2020) suggested that these challenges are caused by a lack of clarity in patients' expectations and the scale's ambiguity over time. The evaluation of service quality, based on patient expectations and actual outcomes, lacks scientific proof and is not always grounded in scientific theory. This highlights the need for models specifically designed to investigate service quality in the healthcare sector. One model gaining recognition is the PubHosQual scale model developed by Aagja and Garg (as cited in Almomani et al., 2020), which has five dimensions directly related to healthcare service quality: admission, medical service, overall service, hospital discharge process, and social responsibility. However, service quality models might not fit all contexts due to differences among countries. Therefore, the current research aims to fill this gap by designing a service quality model tailored to public health organizations in the UAE.

The healthcare industry is undergoing a paradigm shift, with patient satisfaction becoming a critical criterion for assessing service quality. Despite the growing emphasis on patient satisfaction, there is still limited understanding of the mechanisms contributing to long-term relationships between healthcare providers and patients, including patient loyalty (Ramli, 2019). Loyalty, as a mediator, is critical in this interaction, but its precise impact on patient satisfaction in the healthcare environment is not well understood (Liu et al., 2021). This research problem addresses the need to investigate how loyalty mediates the relationship between healthcare service quality and patient satisfaction, providing insights into the dynamics that influence patient loyalty and, consequently, long-term satisfaction in the healthcare industry. In other words, patients' satisfaction could become higher when they are loyal to healthcare providers.

Based on the above discussion, there is evident dissatisfaction among citizens in the UAE toward healthcare services, as indicated by the travel abroad for medical treatment, issues in attending healthcare appointments, and delays within healthcare organizations. Therefore, the

current study aims to investigate the influential factors of healthcare service quality affecting patients' satisfaction to provide a framework for improving healthcare service quality by identifying the factors that enhance patients' satisfaction.

2. Introduction

2.1 Patients' Admission Dimension

Patients' satisfaction upon admission is regarded as an inpatient's personal appraisal of healthcare services and providers while being admitted. It reflects how the patient is treated and the quality of facilities available during hospitalization (Mosadeghrad, 2014). It is a measure of the quality of care provided to the patient upon admission and serves as a key indicator of an institution's healthcare service delivery quality (Al-Neyadi et al., 2018).

A study in Chicago on the relationship between patients' understanding of their cause for admission and overall patient happiness discovered that effective communication between doctors and patients regarding the reason for admission can be a major predictor of patient satisfaction (Kamra et al., 2016). The admission, stay, and discharge of patients are core hospital administrative processes. Not surprisingly, many studies show that patients are dissatisfied with waiting times regardless of location. The simplicity and efficiency of these procedures are critical in guaranteeing a smooth care experience, which improves perceived service quality. Throughout the admission period, healthcare staff should demonstrate consistent empathy and professionalism toward patients. According to Aburayya et al. (2020b), patients in UAE public hospitals frequently reported dissatisfaction related to waiting times and procedural delays, which negatively affect their overall satisfaction with service quality. Thus, well-structured administrative procedures are required to ensure that patients are satisfied with their inpatient experience.

In addition, Almomani et al. (2020) examined the impact of healthcare service quality on patient satisfaction in public hospitals and identified admission as one of the critical dimensions influencing satisfaction. Their study demonstrated that healthcare service quality accounted for 65.7% of the variation in patient satisfaction, emphasizing the importance of the admission process as a key determinant of overall service quality perception. Similarly, Al-Neyadi et al. (2018) found that efficient administrative processes, staff communication, and cleanliness were the strongest predictors of patient satisfaction in UAE hospitals.

It is therefore evident that patients' admission is one of the major factors influencing their assessment of service quality. Previous studies such as those by Almomani et al. (2020) and Al-Neyadi et al. (2018) support the argument that admission procedures, including timeliness, staff courtesy, and process efficiency, are critical elements that determine patients' overall satisfaction with healthcare organizations' service delivery.

2.2 Staff Behaviour Dimension

Physicians and healthcare professionals are obligated to maintain professional standards, demonstrate honesty in all professional interactions, and report misconduct or incompetence to appropriate authorities. The conduct and behaviour of healthcare staff significantly

influence patient satisfaction, as physician-patient interactions are shaped by providers' interpretations and responses to patients (Mosadeghrad, 2014). Manzoor et al. (2019) assert that patients expect positive relationships and respectful treatment from their providers; when these expectations are met, satisfaction levels rise, and patients are more likely to remain loyal to their physicians. Conversely, when expectations are unmet, patients experience dissatisfaction and are less inclined to comply with treatment, attend follow-up appointments, or cooperate in their care (Hanefeld et al., 2017).

A crucial aspect of service delivery is the clinical care process, which represents the technical quality of healthcare provision. Patients often underestimate this component, yet it is fundamental to service quality. When physicians lack competence or skill, patients perceive the service as substandard, regardless of the staff's politeness or empathy (Kamra et al., 2016). Similarly, Lee and Kim (2017) emphasised that patients' satisfaction among UAE-sponsored individuals receiving treatment in Korea was primarily driven by perceived staff competence, professionalism, and communication skills which key behavioural indicators of service quality.

Personnel quality also denotes the collective calibre of all staff involved in care delivery, including nurses, physicians, and paramedics. Employees must provide prompt, courteous, and reliable services to maintain patients' trust and confidence (Abu-Rumman et al., 2021). Compassionate, empathetic, and responsive personnel enhance service quality and patients' overall perception of the healthcare institution. In their conceptual analysis of hospital service quality, Swain and Kar (2018) underscored that the interpersonal behaviour of hospital staff, specifically doctors and nurses that has the strongest correlation with patient satisfaction compared with other service dimensions.

Empirical studies further demonstrate that satisfaction and adherence are closely tied to the warmth, empathy, and friendliness of healthcare professionals. Kamra et al. (2016) observed that patient satisfaction is positively associated with the physician's willingness to provide information and maintain open, caring communication. Collectively, these findings affirm that the behaviour and interpersonal conduct of healthcare staff are central determinants of perceived service quality and patient satisfaction in healthcare organizations.

2.3 Responsiveness Dimension

Responsiveness has been globally recognised as a core goal of national health systems and a fundamental determinant of patient satisfaction (Valentine et al., 2003). The World Health Organization (WHO, 2000) defines responsiveness as the degree to which health institutions and their relationships are designed to be sensitive to and respectful of individuals' legitimate expectations including the safeguarding of patients' rights to adequate and timely care.

Understanding the adaptability and responsiveness of healthcare systems is particularly crucial for rapidly developing nations such as the United Arab Emirates, where healthcare services must continually evolve to meet changing demographic, economic, and social needs. Responsive health systems are able to anticipate and adjust to patient needs, enhance access to quality treatment, and improve health outcomes through prompt, respectful, and

patient-centred service delivery (Kruk et al., 2018).

Health system responsiveness is a distinct yet underexplored concept, often discussed as a multidimensional construct encompassing respect for dignity, prompt attention, communication, autonomy, confidentiality, and choice (Robone et al., 2011). These elements collectively shape how patients experience and evaluate their healthcare interactions. Conceptually, responsiveness reflects patients' expectations of how they should be treated that an idea influenced by cultural norms, perceptions of quality, and social trust in the health system (Hanefeld et al., 2017).

Responsiveness is not merely an abstract policy principle but an act embodied in the direct interactions between patients and healthcare providers. It represents the immediacy, attentiveness, and empathy displayed during service encounters (Abu-Rumman et al., 2021). The responsiveness of healthcare personnel and systems in addressing patients' needs such as reducing waiting times, providing clear explanations, and ensuring respectful communication whch directly influences patients' satisfaction and trust (Manzoor et al., 2019).

Therefore, health system responsiveness captures the relational and behavioural dimensions of care delivery. It highlights how effectively healthcare institutions respond to patients' expectations, which, in turn, serves as a strong indicator of perceived service quality and overall satisfaction in public hospitals.

2.4 Laboratory Services Dimension

Laboratory services represent a fundamental component of modern healthcare systems, forming the backbone of diagnostic medicine and clinical decision-making. With rapid technological advancement, diagnostic innovations such as magnetic resonance imaging (MRI), ultrasound, and pathology testing have transformed healthcare delivery, contributing to the early detection, prevention, and treatment of diseases (Kruk et al., 2018). These technological tools not only improve diagnostic accuracy but also enhance the efficiency and credibility of healthcare institutions, thereby influencing patients' perceptions of service quality (Lee & Kim, 2017).

Laboratory services play a pivotal role in assisting physicians with accurate diagnosis, clinical assessment, and treatment planning. The quality and reliability of these services are directly linked to patient satisfaction, particularly in specialized areas such as prenatal and neonatal care, where timely and accurate results are critical (Manzoor et al., 2019). Empirical studies affirm that patients' confidence in healthcare providers increases when laboratory tests are conducted promptly, accurately, and communicated effectively (Abera et al., 2017).

Furthermore, laboratory service quality serves as a determinant of overall healthcare performance. Kamra et al. (2016) found that hospital administrators could substantially improve patient satisfaction by strengthening laboratory operations and adopting standardized diagnostic procedures. These findings align with Mosadeghrad's (2014) argument that technical and diagnostic quality are essential elements of healthcare service delivery.

Recognizing their importance, the World Health Organization (WHO, 2011) emphasizes that

effective laboratory systems are essential for disease surveillance, patient management, and the advancement of universal health coverage. The WHO continues to encourage member states to integrate laboratory systems into primary healthcare frameworks to ensure accessibility, reliability, and equity in healthcare provision.

Collectively, laboratory services serve not only as diagnostic instruments but also as indicators of institutional reliability and patient-centred performance. In the context of public hospitals, especially in Abu Dhabi, ensuring high-quality laboratory services is integral to enhancing patient satisfaction and trust in the healthcare system.

2.5 Loyalty Dimension as a Mediator

Satisfaction occurs when a customer is pleased with a product or service; it is commonly defined as a favourable emotional response resulting from comparing expected and perceived performance (Oliver, 2014; Zeithaml, 2000). In healthcare, patient satisfaction reflects the patient's evaluation of whether service delivery met their expectations, and because expectations vary across individuals, measuring satisfaction can be complex (Mosadeghrad, 2014). Nevertheless, patient satisfaction ratings are critical indicators for both patients and healthcare organisations (Manzoor et al., 2019).

Loyalty denotes a patient's sustained preference for and commitment to a particular healthcare provider or facility. Setiawati et al. (2021) define loyalty as a firmly held intention to repurchase or re-engage with a preferred provider in the future despite situational influences or marketing efforts to entice switching. In practice, patient loyalty manifests as repeat visits, positive word-of-mouth, and referrals; behaviours that produce measurable benefits for healthcare institutions (Zeithaml, 2000; Setiawati et al., 2021).

The extant literature indicates a robust relationship among service quality, satisfaction, and loyalty: service quality shapes satisfaction, and satisfaction, in turn, fosters loyalty (Gonçalves & Sampaio, 2012; Swain & Kar, 2018). Empirical studies confirm this chain in multiple contexts. For example, Aburayya et al. (2020a) found that employees' customer orientation increases customer loyalty through the mediating role of satisfaction and perceived service quality. Likewise, Asadpoor and Abolfazli (2017) reported that satisfied customers are significantly more likely to repeat purchases and recommend the service provider to others.

In healthcare specifically, patient satisfaction not only supports continuity of care but also influences patients' choice of provider and adherence to treatment. Satisfied patients are more likely to remain with a provider, comply with medical advice, and exhibit loyalty behaviours that enhance hospital reputation and utilisation (Ramli, 2019; Liu et al., 2021). Manzoor et al. (2019) also emphasise that physician behaviour and communication strengthen the satisfaction→loyalty link by building trust.

Because service quality is multidimensional (responsiveness, assurance, empathy, tangibles, technical or clinical quality), these dimensions jointly shape satisfaction and, ultimately, loyalty (Swain & Kar, 2018; Mosadeghrad, 2014). Consequently, loyalty functions as a mediator explaining how improvements in perceived service quality translate into sustained

patient satisfaction and repeat utilisation. Studies that model these relationships empirically (e.g., Liu et al., 2021; Aburayya et al., 2020a) commonly find that satisfaction partially or fully mediates the effect of service quality on loyalty which demonstrating the importance of including loyalty as a mediating construct when investigating the influence of healthcare service quality on patient outcomes..

2.6 Patients' Satisfaction

Patient satisfaction is a central indicator of healthcare service quality and an essential determinant of hospital performance and competitiveness. In Saudi Arabia, Al-Borie and Damanhouri (2013) explored the SERVQUAL dimensions in public hospitals and their relationship with demographic factors such as age, gender, education, income, and profession. Their study involving 749 respondents confirmed that the SERVQUAL model is a reliable tool for measuring healthcare quality, with education, gender, employment, and income significantly influencing satisfaction levels. However, patient age did not show a statistically significant effect.

Globally, healthcare quality has been conceptualised through two key dimensions: technical quality (the accuracy of clinical and diagnostic processes) and functional quality (the delivery of care and interpersonal interactions). A study conducted in five hospitals in Bangalore, India, using SERVQUAL revealed substantial gaps between patients' expectations and perceptions, with significant differences across the five service quality dimensions which are reliability, responsiveness, assurance, empathy, and tangibility (Yesilada & Direktör, 2010). Such variations highlight that healthcare institutions must balance both the technical and functional dimensions of care to ensure comprehensive patient satisfaction.

In developing countries, patients often face challenges in evaluating service quality due to limited engagement from healthcare providers in capturing patient feedback. Andaleeb (2001) identified five key factors influencing patient satisfaction in Bangladesh that are responsiveness, assurance, communication, discipline, and informal payments ("baksheesh"). Among these, discipline exerted the strongest impact on satisfaction, followed by assurance and responsiveness. These findings underline the critical role of ethical conduct, communication transparency, and professional discipline in improving healthcare experiences.

Further evidence from India reinforces these dynamics. Padma et al. (2010) compared SERVQUAL and SERVPERF models across Indian hospitals and determined that SERVPERF was a better predictor of patient satisfaction. Their results indicated that consistent service quality enhances overall satisfaction and influences behavioural intentions, such as loyalty and willingness to recommend the hospital. Similarly, Duggirala et al. (2008) identified eight determinants of hospital service quality that are personnel quality, clinical care, administrative processes, infrastructure, safety indicators, hospital image, social responsibility, and trustworthiness. Of these, personnel quality and reliability were found to be the most influential in determining both patient and attendant satisfaction.

Additionally, a study by Padma and Rajendran (2015) found that in Chennai hospitals, factors

such as staff competence, safety, infrastructure, and social responsibility significantly contributed to patient satisfaction. This suggests that hospitals must maintain a balance between clinical excellence and patient-centric services to enhance their institutional reputation.

In developed nations, evidence-based performance measurement has further strengthened the link between service quality and satisfaction. The U.S. Veterans Health Administration (VHA) demonstrated that continuous performance monitoring through metrics such as hypertension management, diabetes care, and immunisation that significantly improved patient satisfaction and care quality (Jha et al., 2016). Similarly, a U.S. hospital study by Otani et al. (2010) found that nursing care, medical treatment, and emotional support for patients' families had the strongest influence on patient satisfaction.

Finally, from an East Asian perspective, Kang et al. (2015) examined the relationship between perceived service value, satisfaction, and revisit intention among patients in a large Seoul university hospital. Their results indicated that while cost-benefit perceptions strongly predicted satisfaction and loyalty, tangible facilities had minimal influence. This paradox occurs because patients view such facilities as basic expectations that failure to meet them causes dissatisfaction, but their presence does not significantly increase satisfaction.

Collectively, these studies underscore that patient satisfaction is multidimensional, shaped by the interplay of technical excellence, human interaction, responsiveness, ethics, and institutional reputation. In the context of Abu Dhabi's public hospitals, improving these dimensions holistically is crucial for achieving sustainable healthcare quality and patient trust.

3. Conceptual Model

Various models have been used to investigate healthcare service quality, but each has its limitations, often failing to address contextual and national differences (Almomani, 2018; Aagja & Garg, 2010). The investigation of healthcare service quality and its effect on patient satisfaction can vary depending on specific circumstances and settings (Mosadeghrad, 2014). Therefore, this study designed a model tailored to the Abu Dhabi, UAE context, based on a review of past literature and the particular needs of this healthcare system.

In this research, a conceptual model is used to illustrate the research direction by showing both direct and indirect relationships among variables/constructs. The independent constructs which are admission and staff behaviour that are adapted from the HEALTHQUAL model, while responsiveness and laboratory services are adapted from the SERVQUAL model (Almomani, 2018; Aagja & Garg, 2010). The dependent construct is patient satisfaction, with loyalty acting as a mediator (Setiawati et al., 2021; Swain & Kar, 2018).. The conceptual model is shown in Figure 1.
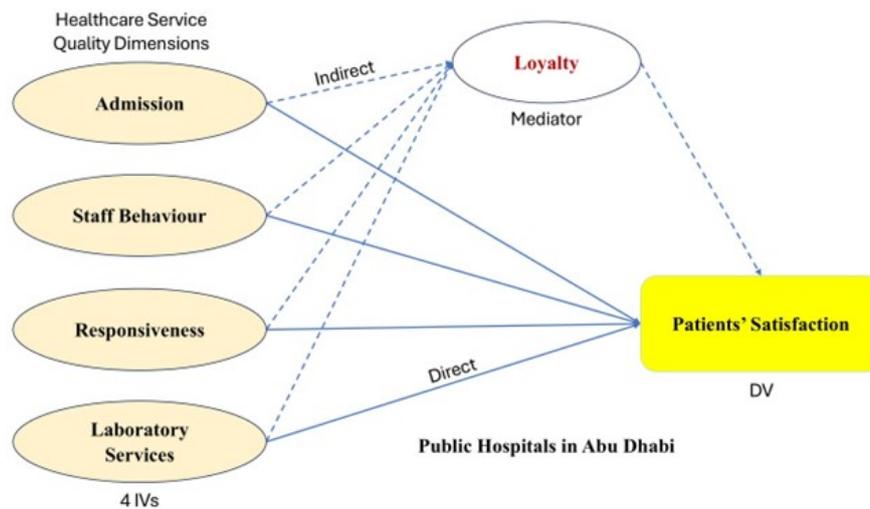
Figure 1. Conceptual model

Figure 1 illustrates the conceptual model for healthcare service quality in public hospitals in Abu Dhabi as proposed by this study. The model includes both direct and indirect relationships. Direct relationships connect healthcare service quality factors with patient satisfaction outcomes, while indirect relationships involve loyalty as a mediator, influencing the strength and nature of the relationship between service quality factors and patient satisfaction attributes (Manzoor et al., 2019; Liu et al., 2021).

To ensure the validity of this conceptual model, it must be empirically evaluated using data collected from patients of public hospitals in Abu Dhabi. The collected data is used to develop and evaluate the model using SmartPLS software through rigorous modelling analysis until the model meets established fitness criteria. Once these criteria are achieved, the model is considered empirically validated (Hair et al., 2019; Mosadeghrad, 2014).

4. Modelling Analysis

This study utilized Partial Least Squares Structural Equation Modelling (PLS-SEM) due to its suitability for exploratory research and theory construction (Hair et al., 2019; Henseler et al., 2016). PLS-SEM is capable of handling large models with multiple constructs and indicators while maximizing the explained variance of the dependent variables (Hair et al., 2019; Henseler et al., 2016). This technique allows for a comprehensive examination of the relationships between various variables in the study, particularly the conceptual model for Healthcare Service Quality in Public Hospitals in Abu Dhabi proposed in this research. By employing PLS-SEM, this study effectively explains the complex interactions between the independent constructs; admission, staff behaviour, responsiveness, and laboratory services; and the dependent construct patient satisfaction, with loyalty acting as a mediator. The model is graphically represented to clarify these relationships (Almomani, 2018; Setiawati et al., 2021).

4.1 Criteria Evaluation Process

The model evaluation comprised two phases: the assessment of measurement and structural components. The assessment of the measurement model encompasses several essential steps to ascertain the model's reliability and validity. Initially, the PLS Algorithm function is implemented to evaluate the measurement model. This involves assessing the R² values of the endogenous constructs to comprehend the explained variance, with values approximately 0.25 deemed weak, 0.50 moderate, and 0.75 substantial (Hair et al., 2019). Thereafter, the outputs are evaluated against measurement fitness criteria. Construct Reliability and Validity (CRV) are evaluated by confirming that Composite Reliability (CR) exceeds 0.7 and Average Variance Extracted (AVE) surpasses 0.5 (Hair et al., 2019; Henseler et al., 2016). Additionally, the Fornell-Larcker Criterion is employed to assess Discriminant Validity, stipulating that the square root of the AVE for each construct must exceed its correlations with other constructs (Fornell & Larcker, 1981). Furthermore, Cross Loadings are analysed to confirm that an indicator's loading on its corresponding construct exceeds its loadings on alternative constructs (Hair et al., 2019).

Secondly, the evaluation of the structural model encompasses several critical steps to ascertain the model's validity and predictive efficacy. The Bootstrapping function is executed to ascertain the path status. This involves assessing the significance of the paths, where a T-value exceeding 1.96 denotes significance at the 5% level ($p \leq 0.05$), and analysing the path coefficients or strength (beta value) (Hair et al., 2019; Henseler et al., 2016). The Blindfolding function is utilised to evaluate the predictive relevance of the model through the Q² value. Q², referred to as Stone-Geisser's Q², is an essential metric in PLS-SEM for assessing the predictive relevance of the model. A Q² value exceeding 0 signifies that the model possesses predictive relevance for a particular endogenous construct. Q² values approximately 0.02 are deemed to possess minimal predictive relevance, values near 0.15 denote moderate predictive relevance, and values around 0.35 represent substantial predictive relevance (Hair et al., 2019).

4.2 Assessment of Measurement Components

For assessing the measurement components, this study primarily focuses on two key evaluations: firstly, the matrix of construct reliability and validity; and secondly, the discriminant validity using the Fornell-Larcker criterion.

4.2.1 Assessing the Matrix of Construct Reliability and Validity

The matrix of construct reliability and validity includes several essential metrics to assess the constructs' reliability and validity. The metrics comprise Cronbach's Alpha, Composite Reliability, and Average Variance Extracted (AVE). Cronbach's Alpha evaluates internal consistency, with values exceeding 0.7 typically deemed acceptable (Hair et al., 2019). Composite Reliability, which assesses the reliability of constructs, necessitates values exceeding 0.7 to signify good reliability (Hair et al., 2019; Henseler et al., 2016). AVE quantifies the variance accounted for by the construct in relation to the variance attributable to measurement error, with values exceeding 0.5 considered favourable, as they signify that

the construct elucidates more than half of the variance of its indicators. By meeting these criteria, the matrix confirms that the constructs used in the study are both reliable and valid, thereby supporting the robustness of the measurement model (Hair et al., 2019).

Table 1. Matrix of Construct reliability and validity

Variables	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Admission	0.804	0.872	0.631
Laboratory Services	0.863	0.902	0.651
Loyalty	0.805	0.873	0.632
Responsiveness	0.806	0.863	0.56
Satisfaction	0.792	0.857	0.547
Staff Behaviour	0.812	0.869	0.572

The matrix of construct reliability and validity presented in Table 1 indicates that Cronbach's Alpha and Composite Reliability values for all factors exceed the minimum threshold of 0.7. Similarly, the Average Variance Extracted (AVE) results for all factors are above 0.5. Consequently, all measurement models satisfy the requirements for convergent validity.

4.2.2 Assessing the Discriminant Validity

Discriminant validity assesses the degree to which measurement models differ from other research constructs. The statement analyses the discrepancy between a specific measurement model and alternative models within the structural framework (Hair et al., 2019). Discriminant validity is typically assessed through the Fornell-Larcker criterion and the cross-loading criterion (Fornell & Larcker, 1981). Fornell and Larcker's criterion for establishing discriminant validity stipulates that the square root of the Average Variance Extracted (AVE) for each measurement model must exceed the correlation between that model and any other model within the structural framework. The present study, adhering to Fornell and Larcker's criterion, stipulates that the square root of the AVE for each outer model must surpass its correlation with any other construct (Hair et al., 2019). Table 2 displays the discriminant validity evaluation established by Fornell and Larcker.

Table 2. Discriminant validity of Fornell-Larcker criterion

	Admission	Laboratory Services	Loyalty	Responsiveness	Satisfaction	Staff Behaviour
Admission	**0.995**					
Laboratory Services	0.687	**0.807**				
Loyalty	0.747	0.766	**0.895**			
Responsiveness	0.759	0.781	0.723	**0.848**		
Satisfaction	0.754	0.645	0.72	0.752	**0.939**	
Staff Behaviour	0.672	0.649	0.69	0.738	0.731	**0.856**

The findings from Table 2, which assesses discriminant validity using the Fornell-Larcker criterion, indicate strong discriminant validity among the constructs. For Admission, the self-correlation value is notably high at 0.995, reflecting strong internal consistency. Laboratory Services demonstrates significant correlations with Admission (0.687) and itself (0.807). Loyalty shows substantial correlations with Admission (0.747), Laboratory Services (0.766), and has a high self-correlation of 0.895. Responsiveness is highly correlated with Admission (0.759), Laboratory Services (0.781), Loyalty (0.723), and has a strong self-correlation value of 0.848. Satisfaction displays significant correlations with Admission (0.754), Laboratory Services (0.645), Loyalty (0.72), Responsiveness (0.752), and has a very high self-correlation of 0.939. Lastly, Staff Behaviour exhibits considerable correlations with Admission (0.672), Laboratory Services (0.649), Loyalty (0.69), Responsiveness (0.738), Satisfaction (0.731), and a solid self-correlation value of 0.856. Overall, the matrix confirms that each construct shares more variance with its own indicators than with other constructs. This demonstrates good discriminant validity, indicating that the constructs are distinct from one another and supporting the reliability and validity of the measurement model.

4.3 Assessment of Structural Components

4.3.1 Quality of the Model Based on R^2 Value

Quality of a structural model in Partial Least Squares Structural Equation Modelling (PLS-SEM) is frequently assessed according to the R^2 values of the endogenous constructs. The R^2 value, or coefficient of determination, signifies the extent of variance in the dependent variable that can be predicted from the independent variables (Hair et al., 2019). Higher R^2 values signify a model with greater explanatory power. According to Chin (1998), R^2 values around 0.19 are considered weak, those around 0.33 are considered moderate, and those around 0.67 are considered substantial. Hair et al. (2019) further emphasize that R^2 values above 0.75 are indicative of a model with high predictive accuracy.

Table 3. Generated R^2 values

Endogenous constructs	R Square
Loyalty – **mediator**	0.929
Satisfaction – **dependent**	0.914

The coefficients of determination (R^2) for the study's structural model are displayed in Table 3. The mediator variable of loyalty has an R^2 value of 0.929, and the dependent variable of satisfaction has an R^2 value of 0.913. These values highlight the significance of the research R^2, demonstrating high explanatory power. Specifically, the R^2 value for patient satisfaction with the quality of services in public hospitals in Abu Dhabi, UAE, is above 0.75. This indicates that the model provides highly accurate predictions (Hair et al., 2019; Chin, 1998).

4.3.2 Hypothesis Testing Through Bootstrapping Procedure

The bootstrapping process involves generating multiple subsamples from the original data to assess the stability and accuracy of the parameter estimates. Once bootstrapping is complete, various criteria are used to evaluate the structural model, including path coefficients, t-values, and p-values (Hair et al., 2022; Henseler et al., 2015). These criteria help determine the significance and strength of the relationships between constructs in the model. Additionally, the coefficient of determination (R^2) is assessed to evaluate the model's explanatory power by testing explained variance (Chin, 1998; Hair et al., 2019). This comprehensive evaluation ensures that the structural model is robust and reliable, providing meaningful insights into the relationships among the variables (Hair et al., 2021). Figure 2 shows the model that has undergone the bootstrapping procedure.
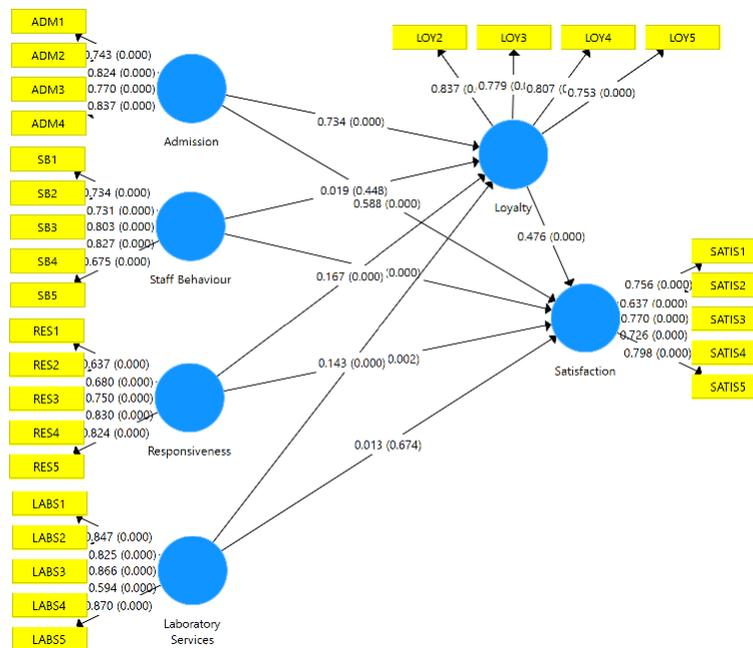

Figure 2. Evaluation of structural model through PLS bootstrapping

Figure 2 illustrates a structural equation model (SEM) following the bootstrapping procedure. In this model, the independent variables are Admission, Staff Behaviour, Responsiveness, and Laboratory Services, while the dependent variable is Satisfaction, with Loyalty serving as the mediator. The figure highlights both direct and indirect relationships, indicating which factors significantly influence these outcomes. The results of the direct and indirect relationships are detailed in Tables 4 and 5, respectively.

Table 4. Results of direct relationships

Direct relationship	Original Sample (O)	T Statistics >1.96	Findings
Admission -> Satisfaction	0.588	10.654	Supported
Staff Behaviour -> Satisfaction	0.767	32.706	Supported
Responsiveness -> Satisfaction	0.121	3.447	Supported
Laboratory Services -> Satisfaction	0.013	0.433	Not Supported

Table 4 presents four direct relationships between the independent variable (IV) and the dependent variable (DV). All relationships are significant except for the relationship between Laboratory Services and Satisfaction, which has a T value less than 1.96. The strongest significant relationship observed is between Staff Behaviour and Satisfaction, with a path strength of 0.767.

Table 5. Results of indirect relationships

Indirect relationship	Original Sample (O)	T Statistics >1.96	Findings
Admission -> Loyalty -> Satisfaction	-0.349	7.871	Supported
Staff Behaviour -> Loyalty -> Satisfaction	0.009	0.726	Not Supported
Responsiveness -> Loyalty -> Satisfaction	-0.080	5.472	Supported
Laboratory Services -> Loyalty -> Satisfaction	-0.068	5.236	Supported

Table 5 depicts four indirect correlations between the independent variable (IV) and the dependent variable (DV), mediated by Loyalty. All relationships are substantial, with the exception of the Staff Behaviour through Loyalty to Satisfaction path, which has a T value less than 1.96. The path strength of -0.349 indicates the strongest significant association from Admission to Satisfaction via Loyalty. Despite the negative value, a path strength of -0.349 suggests a rather strong inverse association, implying that as Admission ratings rise, Loyalty and Satisfaction scores fall. This finding highlights the complex relationships between these factors, emphasising the necessity of understanding both the degree and direction of how they interact.

4.3.3 Predictive Relevance Through Blindfolding Procedure

The predictive significance of the structural model is evaluated using cross-validated redundancy. Stone-Geisser's predictive relevance (Q^2) is employed to examine the effectiveness of predicting the data points of all indicators in the outer model of endogenous constructs (Henseler et al., 2015). This methodology utilizes the sample re-use technique, where a segment of the data matrix is excluded, model parameters are computed, and the excluded portion is then predicted using the estimated model parameters (Hair et al., 2019; Hair et al., 2021). To ensure successful predictive relevance, the cross-validated redundancy (Q^2) value must be a positive integer greater than 0, as stated by Chin (1998). The study's

final models are assessed using the blindfolding technique and SmartPLS software to compute cross-validated redundancy (Q^2), in line with the cited publication (Hair et al., 2022). The findings of the blindfolding approach are displayed in Table 6.

Table 6. Predictive relevance using construct cross validated redundancy (CVR)

Constructs	SSO	SSE	Q^2 (=1-SSE/SSO)
Admission	1516	1516	
Laboratory Services	1895	1895	
Loyalty – mediator	1516	636.007	0.58
Responsiveness	1895	1895	
Satisfaction - dependent	1895	967.876	0.489
Staff Behaviour	1895	1895	

The predictive relevance of the structural model was assessed using construct cross-validated redundancy (CVR) as shown in Table 6. Unlike construct cross-validated communality (CVC), which evaluates all constructs, the CVR assessment focuses on endogenous constructs, specifically the mediator and dependent constructs. For this study model, it was found that the Loyalty (mediator) construct had a Q^2 value of 0.58, indicating significant predictive relevance. Similarly, the Satisfaction (dependent) construct had a Q^2 value of 0.489, also showing predictive relevance. These findings suggest that the model has attained substantial predictive power in predicting key outcomes.

4.4 Determination of Mediation Effect

To determine the mediation effect, this study adopts the approach outlined by Ghasemy et al. (2022). According to their study, full mediation is observed when the indirect relationship is significant, but the direct relationship is not. Partial mediation is identified when both the indirect and direct relationships are significant. No mediation occurs if the indirect relationship is not significant. Therefore, by comparing the significance levels of the direct and indirect relationships, as shown in Table 7, the mediation effect of the mediator is determined.

Table 7. Determination of mediation effect

Direct relationship	Findings	Indirect relationship	Findings	Mediation status
Admission -> Satisfaction	Supported	Admission -> Loyalty -> Satisfaction	Supported	Partial
Staff Behaviour -> Satisfaction	Supported	Staff Behaviour -> Loyalty -> Satisfaction	Not Supported	No effect
Responsiveness -> Satisfaction	Supported	Responsiveness -> Loyalty -> Satisfaction	Supported	Partial
Laboratory Services -> Satisfaction	Not Supported	Laboratory Services -> Loyalty -> Satisfaction	Supported	Partial

Based on the significance of direct and indirect relationships shown in Table 7, it is evident that loyalty acts as a partial mediator for all relationships except for the one involving Staff Behaviour, Loyalty, and Satisfaction. In this specific relationship, loyalty does not mediate the effect. These findings highlight the varying degrees to which loyalty influences the relationships between variables, namely Staff Behaviour, Admission, Responsiveness, Laboratory Services, and Satisfaction.

5. Comparing Study Results with Previous Research

The findings of this study were compared with previous research to highlight the significance and contribution of this work. Previous studies, such as those by Aburayya (2019) and Almomani (2019), have emphasized the importance of admission processes in enhancing patient satisfaction. Consistent with these findings, this study found that the relationship between admission and patient satisfaction is significant, both directly and indirectly through loyalty.

The influence of staff behaviour on patient satisfaction has also been widely documented in earlier studies, like those by Manzoor et al. (2019) and Swain & Kar (2019). The results align with these studies, showing that staff behaviour significantly impacts patient satisfaction directly. However, unlike previous research, this study did not find a significant indirect effect through loyalty, suggesting a unique dynamic in the sample that warrants further investigation.

Responsiveness has been identified as a crucial factor in determining patient satisfaction in many studies, including those by WHO (2000) and de Waard et al. (2013). The findings corroborate these results, demonstrating that responsiveness significantly affects patient satisfaction both directly and indirectly through loyalty.

While laboratory services have been less frequently highlighted in patient satisfaction literature, studies such as those by Abera (2018) and Kamra (2017) suggest they are important but not always primary factors. This study supports this nuanced view, showing that laboratory services do not significantly impact satisfaction directly but do have a significant indirect effect through loyalty.

Loyalty as a mediator has been explored in healthcare settings by researchers like Setiawati (2018) and Goncalves & Sampaio (2020), who argue that loyalty can strengthen the relationship between service quality and satisfaction. This study supports this mediation effect, with loyalty partially mediating the relationships between admission, responsiveness, laboratory services, and patient satisfaction. However, no mediation effect was observed between staff behaviour and satisfaction.

These findings highlight the critical roles of admission, responsiveness, and laboratory services in enhancing patient satisfaction directly and through fostering loyalty. These insights contribute to the broader understanding of healthcare service quality and patient satisfaction, aligning with and expanding upon previous research..

6. Conclusion

This study developed and empirically validated a conceptual model of Healthcare Service Quality in Public Hospitals in Abu Dhabi, focusing on four key dimensions: admission, staff behaviour, responsiveness, and laboratory services. These dimensions were examined for their direct impact on patient satisfaction and their indirect influence through loyalty as a mediating variable. Data collected from 385 randomly selected patients were analysed using SmartPLS software. The findings indicate that admission, staff behaviour, and responsiveness have a significant direct effect on patient satisfaction, whereas laboratory services do not exert a direct influence. Indirectly, through the mediating role of loyalty, admission, responsiveness, and laboratory services significantly enhance patient satisfaction, while staff behaviour does not exhibit a mediation effect. Notably, loyalty partially mediates the relationships between admission, responsiveness, laboratory services, and patient satisfaction, highlighting its role in strengthening the impact of service quality on patients' overall satisfaction. These results underscore the critical importance of admission procedures, responsiveness, and laboratory services in shaping patient satisfaction in Abu Dhabi's public hospitals. The study provides practical insights for healthcare managers and policymakers, emphasizing the need to optimize admission processes, enhance responsiveness, and improve laboratory service efficiency to foster patient loyalty and satisfaction. Overall, the research contributes to a deeper understanding of the interplay between healthcare service quality dimensions, patient satisfaction, and loyalty, offering a robust framework for improving service delivery in public healthcare settings.

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