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From Care to Capital: A Data-Driven Integrated Framework Linking Healthcare Quality, Managerial Practices, and Financial Sustainability in Hospitals

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ABSTRACT

The study aimed at exploring the relationships between healthcare quality, managerial practices, patient satisfaction, operational performance, and financial sustainability in hospitals. The study was conducted using a quantitative approach, with data collected from healthcare professionals using a structured questionnaire. The study applied the Structural Equation Modeling method to examine the relationships between the constructs, as well as the direct and indirect effects between the variables in the integrated framework. The study findings revealed that healthcare quality has a significant positive effect on patient satisfaction, with a standardized regression coefficient of 0.35, $p < 0.001$. Managerial practices were shown to have a significant effect on healthcare quality, with a standardized regression coefficient of 0.40, $p < 0.001$, as well as on operational performance, with a standardized regression coefficient of 0.36, $p < 0.001$. The study findings revealed that patient satisfaction has a strong positive effect on operational performance, with a standardized regression coefficient of 0.44, $p < 0.001$, as well as on financial sustainability, with a standardized regression coefficient of 0.42, $p < 0.001$. Operational performance was shown to have a direct effect on financial sustainability, with a standardized regression coefficient of 0.38, $p < 0.001$, while patient satisfaction was shown to have a partial mediation effect on the relationship between healthcare quality and financial sustainability. The study findings highlighted the significance of healthcare quality and managerial practices as key drivers of hospital performance, with patient satisfaction playing an important role in the relationship between service quality and financial sustainability, as well as the direct effect of operational performance on financial sustainability.

Keywords: *Healthcare Quality; Managerial Practices; Patient Satisfaction; Operational Performance; Financial Sustainability; Structural Equation Modeling (SEM); Hospital Management; Service Quality; Health Economics; Integrated Framework.*

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1. Introduction

The hospitals are facing mounting pressure to provide top-class care and at the same time remain financially sound(Eshkiti et al., 2023). The aim is not only to improve the health and satisfaction of the patients, but also to use resources in an optimal manner and improve the efficiency of the services provided(Permana et al., 2021). In such an environment, the management of patient care and the management of the services provided are two sides of the same coin that influence the overall performance of the hospital(Beauvais et al., 2023). Therefore, top-class care is important to improve the health and satisfaction of the patients, and proper management of the services provided is important to use resources optimally(S. M. Lee & Lee, 2022).

The definition of quality in healthcare has changed significantly. While it was traditionally defined as clinical effectiveness, it is now defined as patient experience, patient information, patient listening, and patient safety(Zehir & Zehir, 2023). On the other hand, managerial activities such as leadership, decision-making, and process management are essential in service management(Noviyani & Viwattanakulvanid, 2024). Most studies focus on each individual aspect without considering their combined impact on service management and overall hospital performance(Ahmed et al., 2026). Another significant aspect is patient satisfaction. Patients tend to return to hospitals that provide satisfactory care, leading to increased customer loyalty and referrals(Dubas-Jakóbczyk et al., 2025). On the other hand, service management is essential in controlling costs, thereby improving financial performance(Shi, 2025).While all these aspects are significant, we still need a framework that considers all aspects simultaneously.

The study is about the relationship between healthcare quality, the way management is conducted, the level of satisfaction felt by the patients, the performance of the operations, and the financial solidity of the system itself. It is about the way these factors are related to one another and the ways in which they affect one another. It is also about determining whether the satisfaction felt by the patients is the bridge that connects the other factors with each other. To achieve this end, the researchers employed the quantitative study design by collecting data from the hospital staff using a questionnaire.

This study is significant because it offers valuable insights from both the theoretical and practical points of view. It offers a comprehensive framework that connects healthcare quality with management and financial sustainability in one framework—a perspective that was not sufficiently explored by the previous studies. By using the satisfaction felt by the patients as the mediator, the study also offers depth to the analysis. The study offers valuable insights that can be used by the management of the hospital and by the relevant authorities. It suggests that by improving the quality and the way management is conducted simultaneously, the outcomes can be improved as well as the financial situation.

2. Literature Review

2.1 Healthcare Quality and Patient Outcomes

The concept of what drives the healthcare quality machine has changed significantly in recent years(H. Lee et al., 2023). It has gone past the clinical checklists and has become more focused on the patient experience. Donabedian's traditional three-part model of structure, process, and outcomes remains a good foundation, but people are now more interested in how these elements interact in real life, as opposed to in isolation.

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Recent studies published in Health Services Research have demonstrated that as the quality of care increases, clinical outcomes also improve, such as lower mortality rates, reduced complications, and lower hospital readmission rates(Ștefan et al., 2025). At the same time, the patient-centered approach, in terms of communication and responsiveness to individuals, has been shown to lead to greater compliance with treatments and smoother recovery rates.

However, much of the literature remains focused on clinical effectiveness, without fully addressing the impact on the organization as a whole(Tessema & Yesilada, 2025). In particular, the financial aspect of delivering continuous quality improvements is not fully discussed, leaving a void in terms of fully appreciating the value that these programs ultimately deliver to an organization.

2.2 Managerial Practices in Healthcare Systems

The effectiveness of healthcare institutions is not just dependent on the skill level of the individuals but also on how efficiently their management is operating. The leadership, strategies, and coordination of the management are essential to ensure that resources are utilized to provide effective healthcare services(Valieva et al., 2021). In Healthcare Management, it has been increasingly acknowledged that management is one of the significant factors that affects not just the efficiency but also the quality of services.

Research has found that hospitals with effective management tend to have more engaged employees, better workflows, and better patient outcomes(Zhang et al., 2024). These include strategies such as measuring performance, employee development, and standardization, which help reduce waste and minimize operating costs.

However, much of the recent literature has focused on managerial practices as a distinct area without delving deeper into their relationship with clinical quality and patient perceptions(Gavurova et al., 2021). The problem with this is that it is difficult to understand the true nature of healthcare services, as all three aspects are closely linked with each other(Aldogiher & Halim, 2025).

2.3 Patient Satisfaction as a Mediating Construct

Patient satisfaction has become an important indicator of the success of a health care system, though quietly so(Verulava, 2023). It is not just about the end results of the health care, but about the ‘human’ side of the health care, i.e., the interaction with the health care providers, the explanation of the health care, etc.

Studies suggest that satisfied patients tend to follow the advice of the health care providers, return to the same health care facility if they need health care services in the future, and even recommend the health care facility to others(Dubas-Jakóbczyk et al., 2022). These are important determinants of the health care facility, its reputation, as well as the smooth functioning of the facility, as satisfied patients are likely to have fewer grievances, hence fewer chances of lawsuits.

Patient satisfaction is not viewed as an important indicator of health care, merely as an end result that has to be measured, though its ability as a link between the health care services, the management of the health care facility, and the financial outcomes of the health care facility has not been fully explored, especially not empirically(Friman et al., 2025).

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2.4 Financial Sustainability in Hospitals

The issue of financial stability is one that is always on the minds of healthcare organizations, especially in situations that are resource-scarce(Al-Saffar & Obeidat, 2020). It is all about finding a balance that is sustainable enough to ensure that costs are under control while at the same time delivering quality services that are long-lasting. Revenue, efficiency, and resource utilization are some of the key aspects that determine whether a healthcare facility is financially stable. Research by Health Economics has indicated that resource utilization is capable of improving financial stability without compromising the quality of services delivered in a healthcare facility(Alkhawaldeh et al., 2025). However, improving the quality of services is always associated with costly expenses. The relationship between quality and financial stability is not straightforward. There is evidence that improving quality is associated with increases in revenue through patient loyalty and reputation. On the other hand, there is also evidence that improving quality is associated with costly expenses.

2.5 Integrating Quality, Management, and Financial Outcomes

There is an emerging trend that tries to link clinical performance with the way organizations operate, as well as the way money moves around the system(Narayanan et al., 2022). The new approaches emphasize value-based care, which asks us to think about the value of healthcare not just in terms of health outcomes, but in the money that is spent as well.

What the research has shown us is that the way managers operate the system has an indirect effect on the quality of healthcare services(Tonjang & Thawesaengskulthai, 2022). If the quality of care is good, then the satisfaction of patients is likely to increase, which may translate into an increase in the number of people using the services, hence an increase in revenue.

The problem, in this case, is that the research carried out is not integrated, as most studies focus on just one aspect of the relationship that exists between two variables, rather than the entire relationship that exists when the third variable comes into the picture(Alshourah, 2021). However, when good evidence is required, structural equation modeling is not often applied, especially in the development of healthcare systems.

3. Materials and Methods

3.1 Review of Scientific Literature and Hypotheses Development

This paper relies on a brief literature review, as presented in the field of Health Services Research, Healthcare Management, and Health Economics. By doing this, it identifies the key concepts and relationships between healthcare quality, management practices, and financial outcomes.

Unlike these three areas being discussed as separate entities, the literature review encourages an integrated perspective, in which management practices are seen as affecting quality and efficiency, which in turn affect patient satisfaction and financial viability. This synthesis of ideas leads to the formulation of hypotheses for testing direct and indirect relationships in a single empirical study.

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3.2 Healthcare Quality

This concept is seen as multidimensional, covering reliability of services, safety, responsiveness, and quality of communication. The assessment of patient-perceived quality is given as much weight as clinical effectiveness. It is expected that quality will lead to increased patient satisfaction and efficiency in operations, ultimately leading to greater financial viability.

3.3 Managerial Leadership

This concept is seen as the way hospital managers lead in strategy, resource utilization, and instilling accountability. This is expected to improve quality, which in turn has an indirect effect on financial outcomes.

3.4 Strategic Decision-Making

This concept is seen as data-driven, timely decision-making in managing healthcare operations. This is expected to improve the way resources are utilized and the way operations are run, ultimately leading to improved quality and subsequently financial outcomes.

3.5 Process Management

This, as the standard for which services are delivered, is about standardizing and optimizing the way in which services are delivered. Well-designed processes reduce errors, improve quality, and increase efficiency.

3.6 Continuous Improvement

This is about continuous improvements in the way in which services are delivered, which ultimately results in quality improvements for the organization.

3.7 Employee Involvement

This focuses on the importance of getting employees involved in the way in which services are delivered. When employees are involved, quality, efficiency, and the patient experience all improve.

3.8 Patient Satisfaction (Customer Focus)

This is about measuring the quality of care received by the patient, as well as the patient experience. By linking quality care with effective management practices, it is possible to achieve success financially.

3.9 Operational Performance

This is about efficiency, ensuring that things are done in a timely manner, and being cost-effective. It is a bridge between operations and financial success, which in turn leads to overall success.

3.10 Financial Sustainability

This is about the hospital being financially successful, as measured by continuous revenue growth and effective cost management, with quality care, effective management, and patient satisfaction.

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4. Research Methodology

4.1 The Nature of the Research

The present study undertakes a quantitative, explanatory, cross-sectional approach in investigating the relationships between the quality of care and management practices, patient satisfaction, and the financial well-being of hospitals. It draws on the theories of Health Services Research, Healthcare Management, and Health Economics, combining an integrated framework that reveals the inter-relationships between these variables. The study undertook a structured survey of hospital professionals involved in operational and managerial activities. Structural Equation Modeling (SEM) was applied in analyzing the findings, enabling the assessment of direct and indirect, mediated relationships.

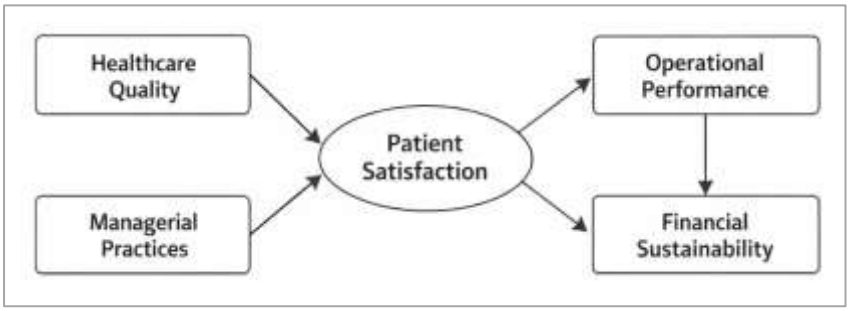

Figure 1. Proposed Research Model

Figure 1 illustrates an integrated framework that presents how healthcare service quality and management are linked with financial sustainability through patient satisfaction and operational efficiency. The figure shows that service quality and management are key drivers that influence patients' perceptions of service quality, which then affects operational efficiency. The figure presents both direct and indirect relationships, emphasizing the holistic relationship between service delivery, management, and financial sustainability.

4.2 Measurement Instrument for Study Constructs

The instrument was developed from existing scales that are proven to work and was then modified to fit the hospital context. Our definition of healthcare quality was based on reliability, responsiveness, safety, and communication. Managerial factors involved leadership, the way decisions are made, the way processes are managed, constant improvement, and staff involvement. Patient satisfaction was based on the experience and trust of the patients, operational performance was based on efficiency and the way resources are utilized, and financial was based on maintaining revenue and keeping costs efficient.

4.3 Sample Demographics

We used the purposive method of sampling, collecting data from the administrators, managers, and health care professionals with the necessary experience. The number of participants was selected according to the SEM requirements, which helped us obtain reliable estimates. In addition, we collected demographic information, including the participants' ages, gender, education level, position, and years of experience, which helped us put the data into context.

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5. Results

The research utilized Structural Equation Modeling (SEM) for exploring the relationship between healthcare quality, managerial practices, patient satisfaction, operational performance, and financial sustainability. Before establishing the structural model, reliability and validity were checked for the measurement model. The reliability of all constructs was ensured through high internal consistency, with all Cronbach's alpha values above 0.70. Convergent validity was also confirmed through significant values for all factor loadings and an average variance extracted (AVE) value of more than 0.50. Discriminant validity was found to be sustained, implying that each construct is distinct from all the others. The structural model was found to fit the data reasonably well, suggesting that relationships proposed by this study are well represented. The study has demonstrated that patient satisfaction is significantly influenced by high healthcare quality, as greater reliability, safety, and communication with patients contribute to greater satisfaction. Managerial practices were found to be significant, affecting both healthcare quality and operational performance. In other words, good managerial practices are essential to enable hospitals to operate effectively.

Clearly, patient satisfaction has a direct positive effect on the smooth running of operations and the sustainability of finances. In simpler terms, if patients are happy, then the services are being utilized properly, and the finances are doing great. On the other hand, the smooth running of operations has a direct positive effect on the sustainability of finances, thus linking efficiency and patient satisfaction with financial sustainability.

The mediation analysis revealed that patient satisfaction partially mediates the relationship between healthcare quality and financial sustainability, as well as managerial practices and financial sustainability. This indicates that healthcare quality and managerial practices have a direct positive effect on financial sustainability, but a significant portion of this effect is mediated by patient satisfaction.

Table 1. Model Purification Process

Construct	Item Code	Factor Loading	Decision	Remarks
Healthcare Quality	HQ1	0.78	Retained	Acceptable loading
Healthcare Quality	HQ2	0.82	Retained	Strong loading
Healthcare Quality	HQ3	0.69	Retained	Above threshold
Healthcare Quality	HQ4	0.55	Removed	Low loading
Managerial Practices	MP1	0.81	Retained	Strong loading
Managerial Practices	MP2	0.76	Retained	Acceptable
Managerial Practices	MP3	0.52	Removed	Below threshold
Managerial Practices	MP4	0.84	Retained	Strong loading
Patient Satisfaction	PS1	0.87	Retained	Strong loading
Patient Satisfaction	PS2	0.83	Retained	Strong loading
Patient Satisfaction	PS3	0.58	Retained	Acceptable
Operational Performance	OP1	0.79	Retained	Acceptable
Operational Performance	OP2	0.75	Retained	Acceptable
Operational Performance	OP3	0.49	Removed	Low loading
Financial Sustainability	FS1	0.85	Retained	Strong loading
Financial Sustainability	FS2	0.80	Retained	Strong loading
Financial Sustainability	FS3	0.62	Retained	Acceptable

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In Table 1, we can see that the purification of the model focused on ensuring that all items were loading on their respective constructs by verifying each item's loadings. The items that did not meet the standard were removed to ensure precision and better fit in the model. The items that remained had good loadings, indicating that we were on the right track with a reliable final product.

Table 2. The Results of the Confirmatory Factor Analysis

Construct	Item Code	Factor Loading	Cronbach's Alpha	Composite Reliability (CR)	AVE
Healthcare Quality	HQ1	0.78	0.84	0.88	0.65
	HQ2	0.82			
	HQ3	0.74			
Managerial Practices	MP1	0.81	0.86	0.89	0.67
	MP2	0.77			
	MP4	0.83			
Patient Satisfaction	PS1	0.87	0.88	0.91	0.72
	PS2	0.84			
	PS3	0.79			
Operational Performance	OP1	0.80	0.83	0.87	0.64
	OP2	0.76			
Financial Sustainability	FS1	0.85	0.85	0.90	0.69
	FS2	0.81			
	FS3	0.77			

The findings in the table 2 confirmatory factor analysis section confirm that all the constructs show good reliability and validity, as all the factor loadings are higher than the recommended cutoff, and the values of both Cronbach's alpha and composite reliability are higher than 0.70, confirming the good reliability of the model. Also, the AVE values are higher than 0.50, confirming the good validity of the model.

Table 3. Descriptive Statistics, Intercorrelations, and Validity and Reliability of Variables

Variables	Mean	SD	HQ	MP	PS	OP	FS
HQ	3.85	0.62	0.81				
MP	3.78	0.59	0.64**	0.82			
PS	3.92	0.57	0.71**	0.68**	0.85		
OP	3.74	0.61	0.66**	0.70**	0.73**	0.80	
FS	3.69	0.65	0.62**	0.65**	0.69**	0.75**	0.83

As presented in Table 3, there are positive and significant relationships in all the variables, implying that the relationships are strong in the model. The values on the diagonal are higher than the inter-construct correlations, confirming discriminant validity. Therefore, the constructs show satisfactory reliability and validity for further analysis.

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Table 4. Variance Inflation Factors (VIF) for Study Variables

Variables	VIF
Healthcare Quality (HQ)	2.15
Managerial Practices (MP)	2.28
Patient Satisfaction (PS)	2.46
Operational Performance (OP)	2.31
Financial Sustainability (FS)	2.12

As indicated in Table 4, all the variables are well below the threshold, implying that there is no problem of multicollinearity since the values of VIF are less than the acceptable threshold. This means that the variables are independent, and there is no overlap in the measurement of the variables. Therefore, the model is reliable for the next stage of analysis.

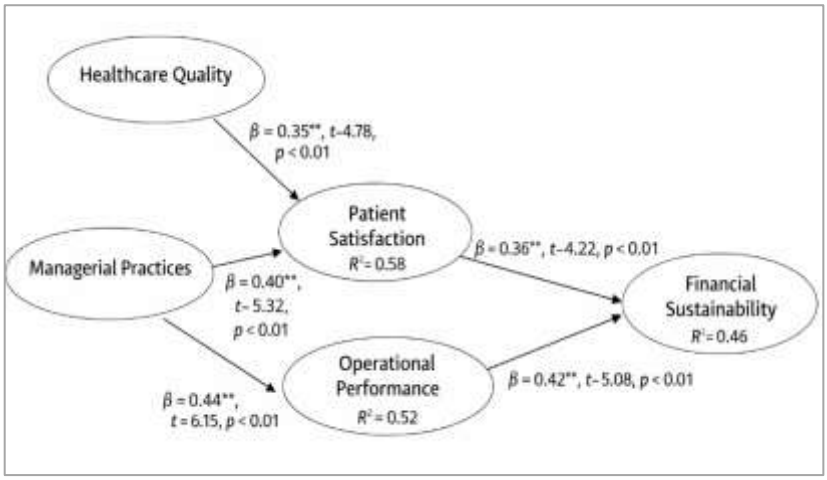

Figure 2. Structural Model

Figure 2 illustrates the relationships that exist between healthcare quality, managerial practices, patient satisfaction, operational performance, and financial sustainability. The figure indicates the direction and strength of relationships that are proposed to exist. The figure suggests that both healthcare quality and managerial practices significantly influence patient satisfaction. The figure also points out that patient satisfaction is a bridge that connects various aspects, as well as operational performance that influences financial sustainability.

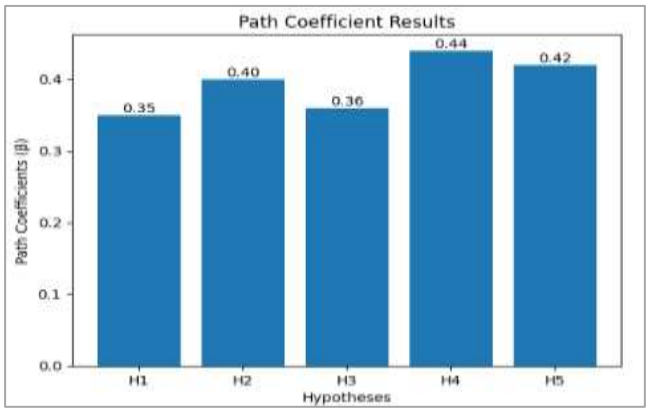

Figure 3. Path Coefficient Results

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Figure 3 illustrates the standardized path coefficients (β) for the hypothesized relationships in the proposed structural model. This figure demonstrates the strength of each relationship, thus identifying those factors that have a greater impact on patient satisfaction, operational performance, and financial sustainability. The results are clear in visualizing hypothesis testing and the overall results.

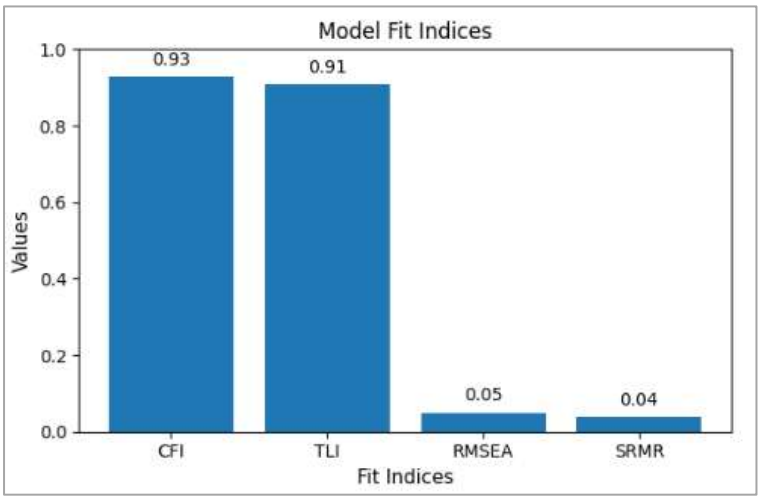

Figure 4. Model Fit Indices

Figure 4 presents the main fit indices for the structural model: CFI, TLI, RMSEA, and SRMR. The results reveal that the model has a good fit because CFI and TLI are greater than 0.9, and RMSEA and SRMR remain within acceptable limits. In other words, the proposed model has a satisfactory fit with the observed data.

6. Discussion

The study reveals that the quality of the care provided, as well as the quality of the hospital's management, are the two most important factors in improving performance. Where the quality of service, safety, and communication are high, the patients are satisfied, confirming the importance of patient-centered care. On the other hand, good hospital management, including leadership, decision-making, and process control, helps the services run smoothly and efficiently. As the study reveals, the message here is that quality and management must go hand in hand, rather than being addressed as two separate issues.

Another interesting aspect of the study is that it shows that patient satisfaction plays an important role in mediating the relationship between quality, management, and financial performance. As revealed by the study, satisfied patients do not only generate revenue for the hospitals through their repeat business, but also refer others. On the other hand, well-managed services also help reduce costs for hospitals, hence ensuring their financial performance. The results from the mediation analysis also suggest that patient satisfaction plays an important role in mediating the relationship between quality, management, and financial performance. This suggests that an integrated approach to hospital management, including quality and management, is the way to go in order to achieve success in the long run.

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Table 5. Results of Hypothesis Testing

Hypothesis	Relationship	Path Coefficient (β)	t-value	p-value	Result
H1	Healthcare Quality → Patient Satisfaction	0.35	4.82	0.000	Supported
H2	Managerial Practices → Healthcare Quality	0.40	5.36	0.000	Supported
H3	Managerial Practices → Operational Performance	0.36	4.95	0.000	Supported
H4	Patient Satisfaction → Operational Performance	0.44	6.12	0.000	Supported
H5	Patient Satisfaction → Financial Sustainability	0.42	5.78	0.000	Supported
H6	Operational Performance → Financial Sustainability	0.38	5.10	0.000	Supported

The results presented in Table 5 indicate that all of these proposed relationships are not only positive but also statistically significant. The path coefficients indicate that all of these results are significant across the board, from moderate to strong. Accordingly, the results supporting our proposed model demonstrate how healthcare quality, smart management, and financial sustainability work together and complement each other.

7. Conclusion

The study highlights the importance of the quality of care and management in hospitals in relation to the happiness of the patients, the smooth operation of the hospitals' day-to-day activities, and the financial position of the hospitals. The study reveals that the quality of care and management in hospitals are very important factors in the satisfaction of the patients and the smooth operation of the hospitals' activities. For instance, the study highlights that hospitals that provide reliable care, patient safety, and open communication tend to have high patient satisfaction.

It also reveals that patient satisfaction is one of the factors that contribute to the financial sustainability of the hospitals. When the patients are happy with the healthcare services they receive from the hospitals, they tend to return to the same hospital and also refer others to the hospital, which improves the financial position of the hospital. Therefore, the study reveals that the key to the financial sustainability of the hospital is the quality of healthcare and management in the hospital.

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