



Mediating Role of Information Flow in Enhancing Nursing Service Quality and Patient Satisfaction

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Abstract

Patient satisfaction is a key factor in the success of hospitals worldwide, making it an important focus for contemporary research. This study aims to examine the impact of service quality, employee satisfaction, and the organizational environment on patient satisfaction in Chinese hospitals. Additionally, it investigates the mediating role of information flow in the relationships between service quality, employee satisfaction, the organizational environment, and patient satisfaction in Chinese hospitals. Data for the study was collected through survey questionnaires administered to patients in government hospitals in China. The reliability of the data and the relationships among the constructs were analyzed using Smart-PLS software. The findings revealed that service quality, employee satisfaction, and the organizational environment positively influence patient satisfaction in Chinese hospitals. Moreover, the results indicated that information flow significantly mediates the relationships between service quality, employee satisfaction, the organizational environment, and patient satisfaction. These findings provide valuable insights for policymakers, offering guidance on strategies to enhance patient satisfaction by focusing on improving service quality, ensuring effective information flow, and fostering a positive organizational environment.

Keywords:

Services Quality;
Employee Satisfaction;
Information Flow; Firm Environment;
Patient Satisfaction; Chinese Hospitals.

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1- Introduction

Business is evolving rapidly on a global scale. Both developed and developing economies are striving to establish a strong presence in the business world. Developing economies are increasingly entering developed markets to showcase the quality of their products and compete on a global stage. Ultimately, the goal of any competition is to achieve customer satisfaction, as satisfied customers are the cornerstone of business success [1]. Businesses make significant efforts to ensure customer satisfaction, which reflects how effectively a product meets or exceeds the buyer's value expectations during use [2]. Customer satisfaction begins with the anticipation experienced by both the consumer and the vendor before acquiring and using goods or services [3]. Since customer experience directly influences satisfaction, businesses are expected to go beyond merely meeting basic value expectations. Instead, they must exceed customer expectations by addressing their needs and desires. Customer expectations can be categorized into the following key areas: a) Intangible value: The added value customers perceive beyond the tangible aspects of a product or service [4]. b) Quality: The extent to which customers believe a company's goods or services meet their expectations [5]. c) Image: The customer's perception of the company or business, shaped by interactions with customer service representatives, waitstaff, airline personnel, or hotline agents [6]. d) Price: The cost of goods and services, which must align with what customers are willing to pay [7]. The significance of customer satisfaction lies in its ability to enhance a business's value and establish its importance in the global marketplace.

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Patients' expectations for value and quality are ever-growing and insatiable [8]. Consumers are often demanding, value-driven, budget-conscious, and seek exceptional service, superior quality, image enhancement, and reasonably priced products and services. In the 21st century, research and development (R&D), product quality, and innovation are critical components of organizational strategies designed to meet and exceed client expectations. Patient satisfaction is particularly important for businesses as it leads to: i) Reduced customer attrition [9], ii) Enhanced patient loyalty, iii) Recurring revenue, iv) Improved operational efficiency [10], v) Higher productivity [11], vi) Increased employee satisfaction [1], vii) Encouraged brand advocacy and cross-selling opportunities. China, often referred to as the "world's factory," is a hub for business and trade. Economies worldwide turn to China for business and products. With its high volume of trade, patient expectations are also elevated [12]. Consequently, the significance of patient satisfaction is even more pronounced in China compared to other economies [13]. The present study investigates patient satisfaction in the Chinese context.

This study addresses existing gaps in the literature by examining a model that includes factors such as patient satisfaction, service quality, employee satisfaction, and the firm environment. Additionally, it tests the mediating role of information flow. Specifically: Asnawi et al. (2019) [14] and Ali et al. (2021) [15] explored the impact of service quality on patient satisfaction. While this study also examines that relationship, it incorporates additional variables like the firm environment and employee satisfaction, and tests them in the Chinese context. Kurdi et al. (2020) [1] and Wolter et al. (2019) [11] investigated the link between employee satisfaction and patient satisfaction. This study builds on their work by adding service quality and testing the mediating role of information flow using a Chinese sample. Ram et al. (2011) [16] and Vermeeren et al. (2011) [17] studied the relationship between firm environment and patient satisfaction. This research expands on their findings by including service quality and employee satisfaction in the Chinese context. Mirani et al. (2021) [18], Chavez et al. (2015) [19], and Marinagi et al. (2015) [20] examined the mediating role of information flow with various variables. The current study explores the interplay between patient satisfaction, service quality, employee satisfaction, and firm environment in China. This research is significant because: It emphasizes the importance of patient satisfaction as a cornerstone for business success. It contributes to the existing literature on patient satisfaction, offering valuable insights for future researchers. It provides practical guidance for individuals working on patient satisfaction, service quality, employee satisfaction, and firm environment across different regions. The study begins with an introduction in the first chapter, followed by a literature review, research methodology, findings, and a discussion of results. It concludes with insights, limitations, and recommendations for future research directions.

2- Literature Review

Enhancing the experience of patrons in university libraries has been a persistent goal for academic institutions. Providing high-quality service in academic libraries is critical to ensuring user satisfaction and fostering loyalty among patrons. Afthanorhan et al. (2019) [21] conducted a study using the LibQual framework to analyze the gap between patrons' perceptions and expectations. The study focused on six key areas of service quality: general services, material search, library collection, personnel, environment, and facilities. The two main objectives were:

1. To identify the aspects of service quality that patrons find satisfactory.
2. To assess how service quality impacts user satisfaction.

A questionnaire-based survey was utilized to collect data, targeting a sample size of 170 respondents through simple random sampling. The collected data was analyzed using importance-performance analysis and covariance-based structural equation modeling. The findings revealed that service quality significantly influences user satisfaction. Meeting patron demands has become a greater challenge for businesses now than ever before.

In the hospitality sector, patrons often come with predetermined expectations regarding the quality and level of service they will receive. Modern patrons are increasingly time-constrained, informed, and selective. In this context, a study by Ali et al. (2021) [15] explored the relationship between user satisfaction and service quality. Their quantitative analysis was based on data collected from 111 participants using a simple random sampling approach. The findings indicated that four dimensions of service quality—empathy, responsiveness, assurance, and tangibility—positively correlate with user satisfaction, whereas reliability exhibited a negative relationship.

Similarly, Gong and Yi (2018) [22] examined the connection between service quality and user satisfaction. They concluded that service quality positively impacts user satisfaction, which, in turn, promotes user happiness and loyalty. Their study, conducted across five countries, demonstrated that the fundamental structural relationships held consistent across different nations. Furthermore, comparative analysis revealed that the majority of pathways did not differ significantly across these countries.

Four key conclusions emerged from the study:

1. The quality of services provided was the primary driver of user satisfaction.
2. Service quality fostered consumer loyalty in all five Asian countries, suggesting that these nations could economically benefit from adopting the same service quality principles as North American and European nations.

3. Service excellence was a critical determinant of user satisfaction.
4. Service quality had a positive and significant impact on user satisfaction [23].

The hypothesis derived from this analysis is presented as follows.

H1: Service quality significantly influences patient satisfaction.

Employee satisfaction plays a crucial role in defining organizational performance, particularly in the service sector. In this context, Kurdi et al. (2020) [1] conducted a study to explore the relationship between employee satisfaction and patient satisfaction. The research addressed five key staff-related variables—communication, incentives, retention, commitment, and employee loyalty—that influence patient satisfaction. The findings revealed a causal link between employee and patient satisfaction, emphasizing the importance of prioritizing employee satisfaction in such scenarios.

Wolter et al. (2019) [11] investigated whether employee satisfaction impacts service quality. Their study demonstrated that in organizations with significant employee-patient interactions, employee satisfaction trajectories strongly influence patient satisfaction. However, this effect was not observed in organizations with minimal employee-patient engagement. From a micro perspective, regular patients' intentions to return were influenced by employee satisfaction trajectories, whereas occasional patients were not affected. These effects remained robust even when factoring in current employee and consumer reviews.

Additionally, Jeon and Choi (2012) [9] examined the relationship between employee satisfaction (ES) and patient satisfaction (PS) using structural equation modeling. Their findings indicated a significant and positive association between employee and patient satisfaction. Despite this, prior research has largely overlooked the role of patients as a driver of employee satisfaction and retention. This is notable because professional service organizations rely heavily on retaining highly skilled staff in a competitive environment.

Frey et al. (2013) [10] conducted a study that concluded patient satisfaction is a key determinant of employee satisfaction, which in turn enhances employee retention. This finding suggests that the traditional view in relationship marketing—that employee and patient satisfaction are positively correlated—may also work in reverse for professional service organizations. According to balancing theory, when both employees and patients share a similar perspective on their relationship, there is a stronger attitudinal transfer from the patient to the employee. Moreover, job satisfaction plays a positive role in improving patient satisfaction [24]. The derived hypothesis is as follows.

H2: Job satisfaction significantly influences patient satisfaction.

Employees tend to leave the work environment rather than the firm itself, highlighting the critical role of the work environment in employee satisfaction. To enhance employee satisfaction and achieve maximum productivity, firms must prioritize creating the best possible work environment [25]. In this context, Lam & Lau (2008) [26] explored the relationship between the work environment, service climate, and patient satisfaction. Their study addressed both theoretical and empirical concerns, using a sample of 369 individuals from the Indian service industry. The findings revealed that the work environment influences the service climate, which subsequently impacts patient satisfaction, employee engagement, and job satisfaction. Using hierarchical regression and other statistical techniques, the study emphasized that the effectiveness of public organizations has gained significance over the past three decades. However, scholarly research on public administration has given limited attention to the relationship between organizational performance, the work environment, and human resources.

In response, Ram et al. (2011) [16] investigated the connection between the work environment, job satisfaction, and patient satisfaction. Their findings showed that job satisfaction influences patient satisfaction in two ways: employees' empathy improves patient happiness, but this often correlates with longer service wait times. Additionally, the study highlighted that aspects of the work environment significantly affect job satisfaction. Similarly, Vermeeren et al. (2011) [17] explored the effect of the work environment on patient satisfaction, revealing a strong positive association between the two. The research concluded that satisfied employees perform better, leading to higher patient satisfaction. It was recommended that firms prioritize enhancing their work environment to improve overall performance. Furthermore, the firm environment significantly and positively influences patient satisfaction [27].

H3: Firm environment significantly influences patient satisfaction.

Every system in the world operates in its own unique way, but one universal factor influencing success is the flow of information and communication. The simplicity and clarity of information and its communication significantly increase the chances of success. Conversely, complex information often results in communication challenges, which can lead to project failure [28]. The importance of information and communication is even greater in the context of service quality and patient satisfaction [29]. Patients prefer simple and easily understandable products, and the way a product communicates its information through written content directly impacts patient satisfaction.

In this regard, information and communication flow act as a mediator, connecting service quality with patient satisfaction. Mirani et al. (2021) [18] examined this mediating role of information flow and found that it serves as a significant mediator, particularly in selecting the right supplier from the supply chain baseline. Similarly, Chavez et al. (2015) [19] investigated the mediating role of information in the relationship between patient integration and operational performance. Their results confirmed that information acts as a key mediator in this nexus. Ultimately, information communication and flow significantly mediate the relationship between service quality and patient satisfaction [30].

H4: *Information communication and flow significantly mediate the nexus between service quality and patient satisfaction.*

Firms worldwide establish effective information and communication systems to ensure the smooth and timely execution of their objectives. The design of these systems prioritizes simplicity to facilitate seamless information flow. A well-structured flow of information and communication is a critical factor in a system's success. The likelihood of project success increases when information is straightforward and easily transmitted. Conversely, complex information complicates communication, often leading to project failure. Employees, as the primary custodians of product information, play a crucial role in this process. When information and communication flows are easy for employees to understand, it positively impacts how they present the product, thereby enhancing patient satisfaction [31].

Thus, effective information and communication flow contribute to both employee and patient satisfaction. Satisfied employees are better equipped to present products in a way that is easy for patients to comprehend, ultimately leading to improved patient satisfaction [32]. Therefore, information and communication flow act as mediators between employee and patient satisfaction. In this context, Marinagi et al. (2015) [20] investigated the mediating role of information flow in the supply chain. Their findings demonstrated that information flow serves as a significant mediator, particularly within supply chain processes.

H5: *Information communication and flow significantly mediate the nexus between employee satisfaction and patient satisfaction.*

The simpler the information and communication flow within a firm, the higher the chances of success. One key reason for this is that information and communication flow connect every segment of a project, whether it involves manufacturing or services [33]. This flow ensures the seamless progression of product or service development from one stage to another, ultimately reaching the patients. Any disruption in this flow can negatively impact the entire project.

In the context of a firm's environment, this flow is highly valued as it reflects the firm's operational efficiency and helps foster patient satisfaction through the presentation of the final product [34]. Here, information and communication flow mediate the relationship between the firm's environment and patient satisfaction. Wu (2008) [35] examined the mediating role of information in the relationship between social capital and firm competitiveness. The study concluded that information serves as a significant mediator in this dynamic.

H6: *Information communication and flow significantly mediate the nexus between firm environment and patient satisfaction.*

3- Research Methods

The study explores the impact of service quality, employee satisfaction, and the firm environment on patient satisfaction while also examining the mediating role of information flow between service quality, employee satisfaction, firm environment, and patient satisfaction in Chinese hospitals. A flow chart outlining the study's research design is presented in Figure 1.

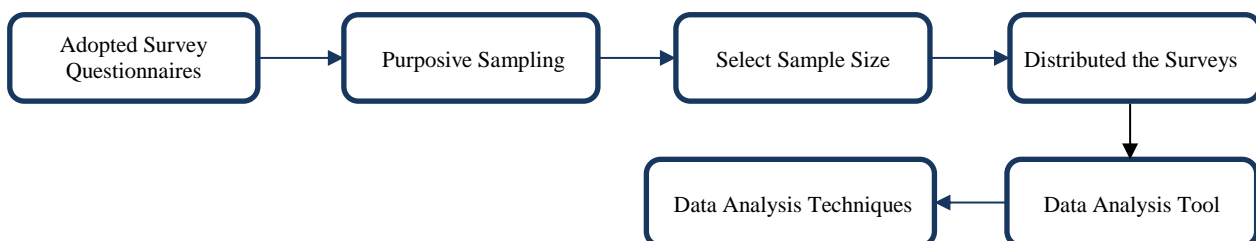


Figure 1. Flowchart of the methodology

Data for the study was collected using survey questionnaires administered to patients at government hospitals in China. The constructs were measured using validated items adapted from previous research. Specifically, service quality was assessed with six items [36], employee satisfaction with five items [37], firm environment with six items [38], information flow with four items [39], and patient satisfaction with five items [40]. The complete list of questions used for these constructs is provided in Table 1.

Table 1. Items and variables

Items	Statements	Sources
<i>Services Quality</i>		
SQ1	The promise of service is fulfilled.	Tešić [36]
SQ2	Customer problems are being addressed.	
SQ3	The service is good "from the first".	
SQ4	The service was delivered on time.	
SQ5	Employees are ready to help the customer.	
SQ6	Employees are ready to respond to requests.	
<i>Employee Satisfaction</i>		
ES1	Payroll at this company is in accordance with the rules.	Soenanta et al. [37]
ES2	There is health insurance for employees and their families in the company.	
ES3	There is a bonus every year that employees receive from the company.	
ES4	Employees receive a large religious day allowance.	
ES5	There are annual leave entitlements for employees.	
<i>Firm Environment</i>		
FE1	Ethical issues are taken into consideration when decisions are made.	Kuenzi et al. [38]
FE2	Ethics training is consistent with how employees actually perform their jobs.	
FE3	Employees strictly follow the written code of ethics.	
FE4	An effort is made to search for applicants of a high moral standard.	
FE5	A good effort is made to measure and track ethical behaviors.	
FE6	When an unethical act occurs, employees take responsibility for their actions.	
<i>Information Flow</i>		
IF1	They contribute to my knowledge about the services.	Erkan & Evans [39]
IF2	They make easier for me to make treatment decision.	
IF3	They enhance my effectiveness in making treatment decision.	
IF4	They motivate me to make treatment decision.	
<i>Patient Satisfaction</i>		
PS1	I think my doctors' office has everything needed to provide complete medical care.	Banstola [40]
PS2	The medical care I have been receiving is just about perfect.	
PS3	Sometimes doctors make me wonder if their diagnosis is correct.	
PS4	I feel confident that I can get the medical care I need without being set back financially	
PS5	When I go for medical care, they are careful to check everything when treating and examining me.	

The respondents for this study were patients from government hospitals in China. A cross-sectional research design was employed, as the respondents' perceptions were assumed to remain stable and not influence the results. Five top government hospitals were selected based on their high patient volumes, with each hospital serving more than 500 patients daily. This brought the total population across the five hospitals to approximately 2,500 patients.

The study focused on patients who visited the hospitals frequently, resulting in a pool of 1,133 patients. Using sample size criteria, a sample size of 352 was finalized. Surveys were distributed personally at the hospitals, with 543 questionnaires initially distributed. Of these, 357 responses were received, yielding a response rate of approximately 65.75%.

The study assessed data reliability and analyzed the relationships between constructs using Smart-PLS, a robust tool for primary data analysis, particularly for handling complex models [41]. The research included three predictors: service quality (SQ), employee satisfaction (ES), and firm environment (FE). Additionally, information flow (IF) was used as a mediating variable, while patient satisfaction (PS) served as the dependent variable. These relationships are illustrated in Figure 2.

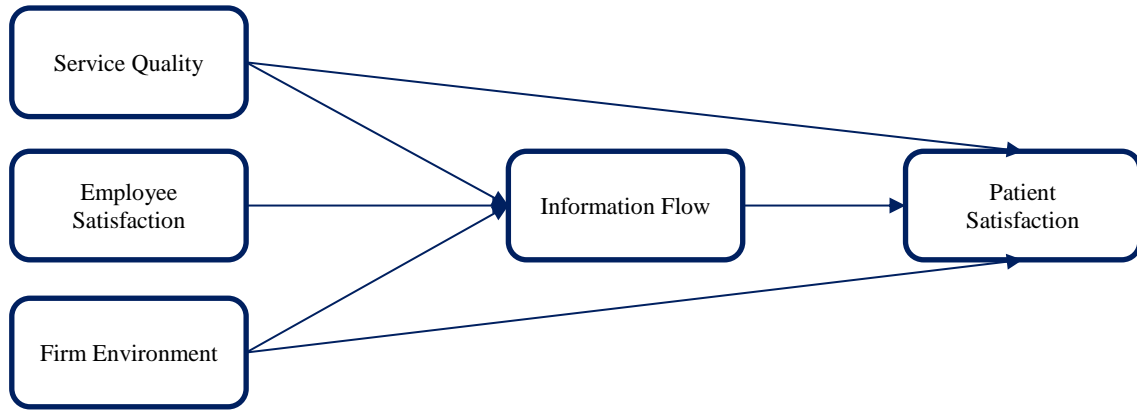


Figure 2. Research model

4- Research Findings

The article evaluates convergent validity to determine the correlation among items, which should ideally be high. Convergent validity was assessed using Cronbach's Alpha and Composite Reliability (CR), with both metrics showing values greater than 0.70. Additionally, it was examined using factor loadings and Average Variance Extracted (AVE), both of which yielded values greater than 0.50. These results indicate a strong correlation among items, which is essential for assessing the measurement model. The corresponding data is presented in Table 2.

Table 2. Convergent validity

Constructs	Items	Loadings	Alpha	CR	AVE
Employee Satisfaction	ES1	0.801	0.901	0.927	0.718
	ES2	0.877			
	ES3	0.854			
	ES4	0.891			
	ES5	0.810			
Firm Environment	FE1	0.887	0.879	0.909	0.627
	FE2	0.836			
	FE3	0.748			
	FE4	0.684			
	FE5	0.752			
	FE6	0.828			
Information Flow	IF1	0.898	0.818	0.882	0.653
	IF2	0.792			
	IF3	0.679			
	IF4	0.848			
Patient Satisfaction	PS1	0.742	0.809	0.868	0.568
	PS2	0.751			
	PS3	0.785			
	PS4	0.791			
	PS5	0.693			
Services Quality	SQ1	0.882	0.922	0.939	0.720
	SQ2	0.799			
	SQ3	0.806			
	SQ4	0.875			
	SQ5	0.865			
	SQ6	0.861			

The article also evaluates discriminant validity to assess the correlation among variables, which should ideally be low. Discriminant validity was assessed using cross-loadings and the Fornell-Larcker criterion. The results revealed that the correlations of variables with themselves were higher than their correlations with other variables. This indicates a low level of inter-variable correlation, which is critical for validating the measurement model. The relevant data is provided in Tables 3 and 4.

Table 3. Fornell Larcker

	ES	FE	IF	PS	SQ
ES	0.847				
FE	0.617	0.792			
IF	0.482	0.539	0.808		
PS	0.685	0.712	0.654	0.754	
SQ	0.537	0.477	0.466	0.604	0.848

Table 4. Cross-loadings

	ES	FE	IF	PS	SQ
ES1	0.801	0.507	0.317	0.511	0.457
ES2	0.877	0.553	0.401	0.608	0.449
ES3	0.854	0.547	0.400	0.628	0.456
ES4	0.891	0.531	0.478	0.598	0.494
ES5	0.810	0.476	0.431	0.549	0.421
FE1	0.602	0.887	0.454	0.627	0.428
FE2	0.510	0.836	0.398	0.565	0.433
FE3	0.379	0.748	0.473	0.463	0.309
FE4	0.384	0.684	0.404	0.523	0.327
FE5	0.505	0.752	0.458	0.629	0.393
FE6	0.524	0.828	0.362	0.549	0.358
IF1	0.443	0.489	0.898	0.579	0.374
IF2	0.318	0.366	0.792	0.512	0.373
IF3	0.418	0.450	0.679	0.519	0.452
IF4	0.358	0.417	0.848	0.483	0.289
PS1	0.541	0.527	0.554	0.742	0.444
PS2	0.541	0.430	0.675	0.751	0.459
PS3	0.462	0.557	0.447	0.785	0.522
PS4	0.489	0.555	0.428	0.791	0.464
PS5	0.545	0.621	0.338	0.693	0.384
SQ1	0.481	0.405	0.425	0.552	0.882
SQ2	0.432	0.393	0.399	0.525	0.799
SQ3	0.457	0.448	0.344	0.473	0.806
SQ4	0.466	0.398	0.385	0.503	0.875
SQ5	0.457	0.403	0.438	0.538	0.865
SQ6	0.442	0.384	0.368	0.476	0.861

The article also checks the discriminant validity that exposed the variables' correlation. The variables should not be highly correlated. The study checked the discriminant validity using Heterotrait Monotrait (HTMT) ratio and test exposed that the values are less than 0.85. These figures indicated a low correlation between variables that is necessary for the measurement model assessment (Table 5 and Figure 5).

Table 5. Heterotrait Monotrait ratio

	ES	FE	IF	PS	SQ
ES					
FE	0.689				
IF	0.553	0.631			
PS	0.800	0.844	0.794		
SQ	0.590	0.528	0.530	0.697	

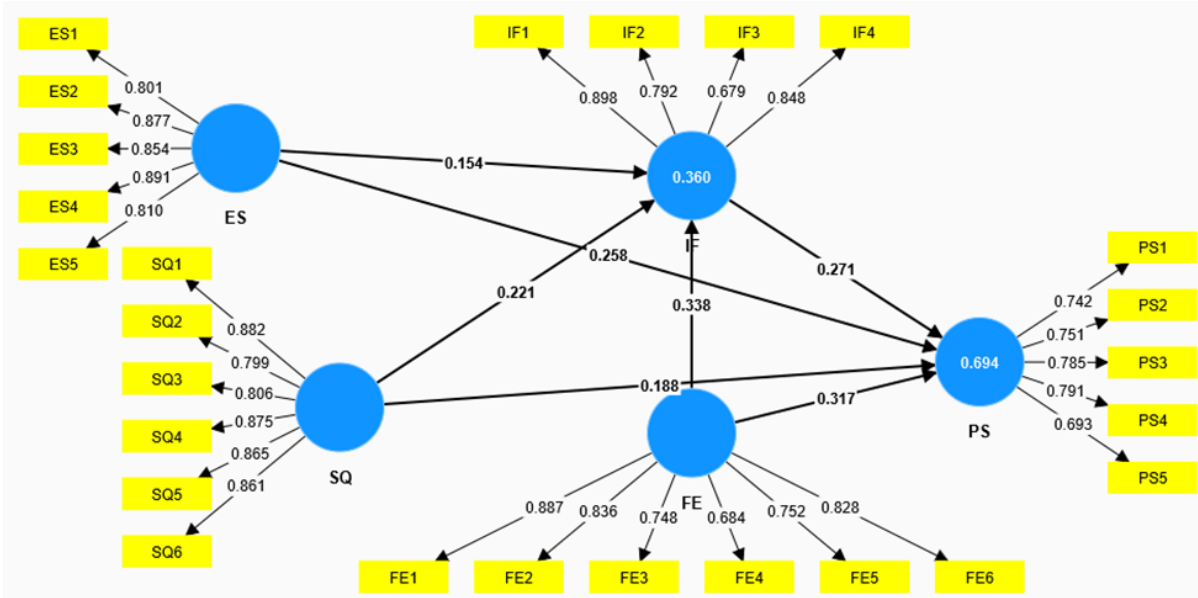


Figure 3. Measurement Assessment Model

The results revealed that service quality, employee satisfaction, and firm environment have a positive relationship with patient satisfaction in Chinese hospitals, thereby supporting H1, H2, and H3. Furthermore, the findings showed that information flow significantly mediates the relationships among service quality, employee satisfaction, firm environment, and patient satisfaction in Chinese hospitals, supporting H4, H5, and H6 (see Table 6 and Figure 6).

Table 6. Path analysis

Relationships	Beta	Standard deviation	T statistics	P values
ES → IF	0.154	0.062	2.493	0.013
ES → PS	0.258	0.047	5.459	0.000
FE → IF	0.338	0.069	4.928	0.000
FE → PS	0.317	0.052	6.077	0.000
IF → PS	0.271	0.047	5.713	0.000
SQ → IF	0.221	0.058	3.816	0.000
SQ → PS	0.188	0.038	4.927	0.000
ES → IF → PS	0.042	0.019	2.156	0.032
FE → IF → PS	0.092	0.027	3.379	0.001
SQ → IF → PS	0.060	0.019	3.218	0.001

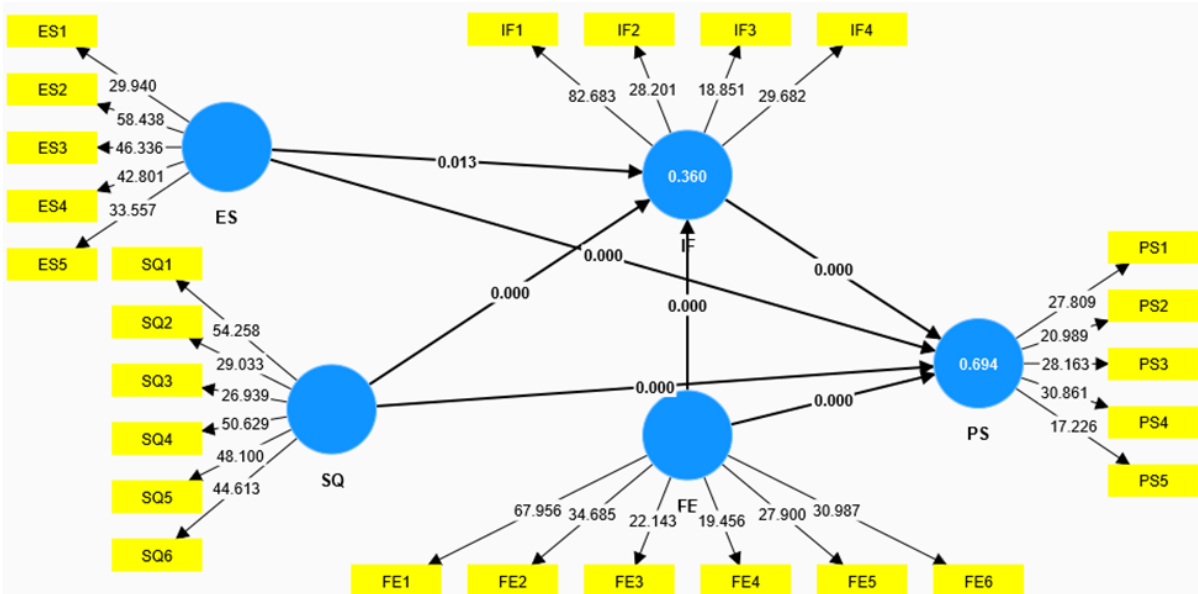


Figure 4. Structural Assessment Model

5- Discussions

The study results indicated a positive association between service quality and patient satisfaction. These findings are consistent with Tan et al. (2019) [42], which emphasize that when medical institutions, such as hospitals, train their staff, manage the infrastructure, and apply innovative resources to provide high-quality services, patients are assured of positive treatment outcomes and, consequently, feel satisfied. These results are further supported by Asnawi et al. (2019) [14], who suggest that in clinics or hospitals where service quality is maintained, patients find it easier to interact with doctors and staff, leading to greater satisfaction with the treatment they receive.

The study also found that employee satisfaction positively correlates with patient satisfaction. This aligns with Huhtala et al. (2021) [43], who argue that satisfied employees—such as those working in institutional management, nursing, and patient care—are more efficient in their roles and provide better service to patients, which ultimately enhances patient satisfaction. These results are corroborated by Ogbonnaya et al. (2018) [44], who claim that when employees are satisfied with their work environment, job, and salary, they are more effective in serving patients, leading to higher patient satisfaction. Additionally, the study revealed that the firm environment has a positive association with patient satisfaction. This finding aligns with Abekah-Nkrumah et al. (2021) [45], who assert that in the medical field, a clean and supportive firm environment leads to committed, efficient employees who work cooperatively with patients, contributing to patient satisfaction. This is further supported by Addo et al. (2020) [46], who suggest that a pollution-free and comfortable environment enhances patient satisfaction.

The study also found that information flow significantly mediates the relationship between service quality and patient satisfaction. These results are supported by Zaid et al. (2020) [43], who state that improved service quality leads to better information flow, thereby increasing patient satisfaction. Similarly, Swain & Kar (2018) [48] indicate that efforts to improve service quality also enhance information flow, which in turn boosts patient satisfaction. Furthermore, the study results demonstrated that information flow significantly mediates the relationship between employee satisfaction and patient satisfaction. This aligns with Kurdi et al. (2020) [1], who claim that higher employee satisfaction enhances information flow, thereby leading to greater patient satisfaction. The findings are consistent with those of Gavurova et al. (2021) [49], who suggest that as employee satisfaction increases, so does information flow, resulting in higher patient satisfaction.

Finally, the study indicated that information flow acts as a significant mediator between firm environment and patient satisfaction. This is supported by Asamrew et al. (2020) [50], who state that improvements in environmental quality within firms enhance information flow, leading to higher patient satisfaction. These results are also consistent with Dobrzykowski & McFadden (2020) [51], who suggest that an improved firm environment fosters better information flow, which ultimately increases patient satisfaction.

5-1- Implication

The medical sector plays a crucial role in any country as it directly impacts human well-being and drives human capital development. The current study, which focuses on enhancing patient satisfaction, holds significant relevance for all nations. It offers a set of guidelines to the management and regulators of medical institutions on how to improve patient satisfaction. The study advises that hospital management should prioritize service quality when developing policies, ensuring that patients who seek treatment at the hospital experience high levels of satisfaction. Additionally, the study suggests that policies should be designed to improve employee satisfaction with their jobs in order to achieve better outcomes in patient satisfaction. It also recommends that administrators in the medical field develop policies aimed at improving the firm environment, which would contribute to higher patient satisfaction. Furthermore, the study highlights that managers in medical institutions should focus on enhancing service quality, which will facilitate smoother information flow and, in turn, increase patient satisfaction. The study further suggests that the owners of medical institutions should implement policies that improve employee satisfaction, as this will enhance information flow and lead to greater patient satisfaction. Moreover, the study emphasizes that medical institutions must improve their firm environment, as a well-maintained environment enhances information flow and contributes to increased patient satisfaction. The study provides valuable guidance to policymakers in crafting policies that aim to enhance patient satisfaction through high service quality, effective information flow, and a conducive firm environment.

6- Conclusion

The objective of the study was to examine the impact of service quality, employee satisfaction, and firm environment on patient satisfaction. One of the research objectives was to explore the mediating role of information flow between service quality, employee satisfaction, firm environment, and patient satisfaction. Data for empirical analysis were collected from hospitals in China. The results of the study showed a positive association between service quality, employee satisfaction, firm environment, and patient satisfaction. The findings indicated that when medical institutions—such as hospitals, clinics, laboratories, pharmacies, and other healthcare facilities—ensure high-quality services for patients and their companions, it makes it easier for patients to receive effective treatment, leaving a positive

impression and increasing patient satisfaction. The study also concluded that when employees in medical firms are satisfied with their work, they perform their roles with happiness and commitment. The improvement in employees' efficiency and their courteous behavior contributes to higher patient satisfaction. Additionally, the study found that in the medical field, if a firm's environment is clean, breathable, and does not negatively affect human health, patients feel secure and are more likely to expect a swift recovery, leading to increased satisfaction. The results also revealed that information flow plays a significant mediating role between service quality, employee satisfaction, firm environment, and patient satisfaction. Higher service quality, employee satisfaction, and a pollution-free firm environment improve information flow, which in turn increases patient satisfaction.

6-1-Limitations

However, the current study has several limitations, which could be addressed in future research. The study primarily discusses the association between service quality, employee satisfaction, and firm environment with patient satisfaction. Future research should also explore the role of financial resources, technological innovation, and doctors' professional experience in shaping patient satisfaction. Additionally, the study focuses on the medical sector in China, which provides limited data and may not be applicable to other countries' medical sectors. Therefore, future studies should consider conducting surveys in other countries to gather more reliable data from the medical field. Expanding the study scope to include other sectors would also provide a more comprehensive understanding.

7- Declarations

7-1-Author Contributions

Conceptualization, D.A.A. and S.W.; methodology, Y.H.; validation, D.A.A. and R.Z.; formal analysis, Y.H.; writing—original draft preparation, Y.H.; writing—review and editing, Y.H. and S.W.; supervision, D.A.A. and R.Z. All authors have read and agreed to the published version of the manuscript

7-2-Data Availability Statement

The data presented in this study are available on request from the corresponding author.

7-3-Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

7-4-Institutional Review Board Statement

Not applicable.

7-5-Informed Consent Statement

Not applicable.

7-6-Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely observed by the authors.

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