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Hospital Accreditation and Patient Satisfaction as Dimensions of Health System Quality

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Abstract

Purpose: This study examines whether hospital accreditation, leadership style, managerial decision-making models, and managerial educational background are associated with patient satisfaction in Romanian public hospitals. The research further explores the extent to which formal governance and quality assurance mechanisms function as meaningful indicators of patient-centered healthcare quality within a transitional healthcare system.

Methods: A cross-sectional quantitative research design was employed using data from 78 Romanian public hospitals. Data were obtained from national accreditation records, the Ministry of Health patient feedback system, and managerial surveys. Patient satisfaction was measured using a multidimensional Patient Satisfaction Index (PSI). The analytical framework combined descriptive analytics, Spearman and Pearson correlation analyses, independent-samples t-tests, one-way ANOVA, Kruskal–Wallis tests, linear regression, and ordinal logistic regression to evaluate relationships between organizational governance characteristics and patient satisfaction outcomes.

Results: Patient satisfaction remained consistently high across hospitals, with Global PSI values generally exceeding 0.85. Accreditation category was not significantly associated with patient satisfaction, and only weak, non-significant relationships were identified between satisfaction and leadership style, Administrative Decision-Making Model (ADM) adoption, or managerial educational background. Multiple regression analyses demonstrated limited explanatory power for managerial and institutional variables overall ($\boldsymbol{R^2 = 0.105}$, $\boldsymbol{p = 0.150}$). Hospitals characterized by participatory leadership and higher ADM adoption showed marginally higher satisfaction levels; however, these differences did not achieve statistical significance. Institutional factors such as hospital size and organizational context demonstrated greater influence than formal governance structures alone.

Conclusion: The findings suggest that patient satisfaction in Romanian public hospitals is influenced less by accreditation status or formal managerial structures and more by broader relational and organizational dynamics, including communication quality, teamwork, institutional responsiveness, and organizational culture. The study contributes to international discussions regarding the limitations of accreditation and managerial frameworks as standalone indicators of patient-centered healthcare quality, particularly within Central and Eastern European and other transitional healthcare systems.

Keywords: Public hospital management, Patient satisfaction, Hospital accreditation , Leadership style, Decision-making model

1 Introduction

Patient satisfaction has become a central indicator of healthcare quality, reflecting both the clinical and experiential dimensions of care. It encapsulates patients' perceptions of accessibility, communication, empathy, and trust, and is increasingly used worldwide as a performance metric for hospitals and health systems. Beyond its intrinsic value as an ethical and accountability measure, patient satisfaction is associated with improved adherence to treatment, lower readmission rates, and stronger institutional reputation. Consequently, many healthcare systems have sought to enhance satisfaction through structural reforms such as accreditation, managerial professionalization, and leadership development.

The evolution of the Romanian healthcare system must be interpreted within its broader historical and institutional trajectory. Vlădescu et al. [1] describe how, under the communist regime, healthcare delivery was organized through a highly centralized and hierarchical model characterized by strict state control, uniform service provision, and limited institutional autonomy. Within this system, patient experience and accountability were largely absent from governance priorities, as the emphasis was placed on equity of access rather than responsiveness or quality differentiation.

Following the post-1989 transition period, Romania initiated a series of structural reforms aimed at decentralizing governance, strengthening managerial autonomy, and aligning healthcare institutions with European standards of quality and safety. Shaw et al. [2] note that comparable reforms across European health systems facilitated the development of accreditation mechanisms intended to promote transparency, standardization, and institutional accountability. Within this evolving governance context, accreditation has assumed a central regulatory role, functioning both as a signal of quality and as a driver of organizational improvement.

However, despite its growing institutional importance, the extent to which accreditation translates into improved patient experience remains contested. Greenfield and Braithwaite [3] argue that this reflects a broader debate in European health systems regarding whether formal quality assurance mechanisms function as effective drivers of patient-centered outcomes or primarily as instruments of administrative compliance.

Greenfield et al. [4] demonstrate that hospital performance and patient satisfaction are shaped not only by clinical competence but also by broader organizational factors. Complementing this perspective, Shaw et al. [2] further show that managerial structures and governance frameworks play a critical role in influencing institutional performance. Greenfield et al. [4] highlight the importance of distributed leadership in mobilizing institutional capacity for accreditation, emphasizing that governance dynamics are central to organizational transformation. Braithwaite et al. [5] identify accreditation status as a predictor of certain clinical and organizational performance indicators, while also noting variability in its measurable impact across institutions. Pomey et al. [6] conceptualize accreditation as a catalyst for organizational change, particularly in strengthening internal processes and professional accountability. However, Braithwaite et al. [5] note that accreditation contributes to improved documentation practices and safety culture, its direct association with patient-perceived quality remains inconsistent in the international literature [7]. Within the Romanian healthcare context, accreditation has been associated with enhanced

institutional accountability and regulatory compliance [8]. Nevertheless, empirical evidence establishing a clear relationship between accreditation category and patient satisfaction remains limited and warrants further investigation.

Leadership is widely recognized as a fundamental determinant of healthcare quality and organizational performance. Cummings et al. [9] demonstrate that leadership styles exert a significant influence on workforce outcomes and the overall care environment, while Bass and Avolio [10] highlight the contribution of transformational leadership to enhanced organizational effectiveness. Characterized by vision, support, and empowerment, transformational leadership has been consistently associated with improved staff satisfaction and patient safety outcomes. In this regard, Boamah et al. [11] report that such leadership practices are linked to higher levels of nurse job satisfaction and more favorable patient safety indicators. Similarly, Wong et al. [12], in a systematic review, identify a positive association between relational and supportive leadership approaches and improved patient outcomes, including reduced adverse events and stronger quality indicators. Sfantou et al. [13] further underscore the close relationship between leadership style and measurable care quality, noting that participative and team-oriented approaches foster robust safety cultures and collaborative work environments.

Building on this evidence, leadership may be understood as a key mechanism through which organizational processes are translated into patient experience. Participative and transformational leadership styles, in particular, enhance staff motivation, strengthen teamwork, and promote a culture of safety, thereby indirectly improving patient-centered outcomes [11]. Consistent with this perspective, Wong et al. [12] demonstrate that relational and participative leadership practices are associated with improved clinical outcomes and reduced incidence of adverse events. In contrast, authoritarian or highly centralized management approaches tend to constrain communication, limit professional autonomy, and weaken staff engagement, ultimately undermining organizational performance. Within the Romanian healthcare system, historically shaped by hierarchical governance structures, these leadership dynamics may be especially salient, influencing patients' perceptions of responsiveness, communication quality, and interpersonal trust, in line with the findings of Cummings et al. [9].

These organizational dynamics indirectly shape patient experience by enhancing communication, coordination, and staff engagement. In contrast, authoritarian or highly centralized management models may limit open communication, constrain professional autonomy, and weaken team cohesion, thereby diminishing staff engagement and negatively affecting patient perceptions of responsiveness and trust [13]. Within the Romanian healthcare system, which shares structural similarities with other Central and Eastern European systems characterized by hierarchical administrative traditions [1], leadership style may play a decisive role in shaping patients' evaluations of care quality, interpersonal respect, and institutional credibility.

Decision-making frameworks further define how hospital leaders address complexity, allocate resources, and engage staff. The Administrative Decision-Making Model (ADM) proposed by [14] offers a structured and iterative approach that integrates

rational, evidence-based, and participatory principles. By emphasizing clarity, interdepartmental coordination, and data-informed decisions, the ADM is particularly relevant to hospital environments where time constraints and information asymmetry challenge managerial consistency. Nonetheless, empirical validation of such models in relation to patient satisfaction, especially in Central and Eastern European healthcare systems, remains scarce.

Despite substantial advances in hospital accreditation and managerial reform, empirical studies examining how these processes affect patient satisfaction in Romania remain limited [15]. Most available evaluations focus primarily on compliance indicators and institutional performance rather than patient-centered outcomes [6]. Moreover, the international literature presents mixed results: while some studies report modest associations between accreditation or participative management and patient experience, others find no direct relationship once contextual variables are considered [16]. The limited availability of country-specific evidence constrains the ability of policymakers and hospital administrators to design interventions that effectively translate structural quality improvements into enhanced patient experiences. Addressing this gap, the present research systematically examines the interplay between accreditation, leadership style, decision-making models, and managerial educational background in shaping patient satisfaction in Romanian hospitals.

While this study focuses on Romania, it is conceptually situated within the broader context of Central and Eastern European healthcare systems, many of which share similar historical legacies of centralized governance and ongoing transitions toward performance-based accountability and accreditation. By examining the relationship between accreditation, patient satisfaction, and hospital utilization, this research contributes to international discussions on whether formal quality assurance mechanisms function as reliable signals of healthcare performance. The Romanian healthcare system can therefore be understood as broadly comparable to other accreditation-based systems, including those in Western Europe and North America, where formal quality assurance mechanisms coexist with persistent gaps in patient-perceived quality.

2 Literature Review

A pivotal component of the accreditation process is the systematic assessment of patient satisfaction. Conceptually, patient satisfaction may be understood as the discrepancy between patients' prior expectations and their subsequent perception of the actual experience within the healthcare system [17]. Beyond its technical utility, this assessment embodies the ethical obligation of healthcare management toward its stakeholders [18], serving not only as a reflection of patients' evaluations of the clinical encounter but also as a critical source of information for the enhancement of both clinical and administrative processes.

2.1 Hospital Accreditation in Romania

The accreditation of healthcare facilities constitutes a formal, external evaluation mechanism designed to ascertain the extent to which healthcare organizations conform to nationally established standards [19]. This periodic assessment primarily seeks

to ensure the quality of medical services, enhance patient safety and satisfaction, and furnish an objective appraisal of organizational performance, thereby facilitating the identification of areas in need of improvement [4].

Donabedian's framework for assessing healthcare quality includes the analysis of structure, processes, and outcomes, and accreditation plays a crucial role in influencing all three of these dimensions [20]. Research indicates that hospitals aiming for accreditation often implement policies aligned with standardized patient safety protocols and organizational performance goals [4].

Institutions such as the Joint Commission International (JCI), and in Romania, the National Authority for Quality Management in Healthcare (ANMCS) [19], classify healthcare facilities into distinct accreditation categories, reflecting varying degrees of compliance with these prescribed standards. Empirical evidence indicates that accredited hospitals are more likely to adopt coherent patient safety policies, standardized clinical protocols, and organizational cultures oriented toward continuous quality improvement [4].

However, some healthcare institutions may approach accreditation as a formal or bureaucratic process without enacting substantive changes in organizational culture or professional practice [6]. Accreditation does not inherently guarantee a positive patient experience if implemented solely as a compliance mechanism [5].

While the Romanian accreditation system shares structural similarities with other European frameworks, its operational emphasis remains more centrally regulated and compliance-oriented. This reflects the legacy of hierarchical governance structures in post-communist healthcare systems and highlights the importance of situating ANMCS within a broader international context.

2.2 International Accreditation Systems

Hospital accreditation systems differ significantly across countries in their governance structures, evaluation mechanisms, and policy objectives. Despite these differences, they share a common goal of improving healthcare quality, patient safety, and institutional accountability.

Joint Commission International (JCI) represents one of the most globally recognized accreditation systems, emphasizing patient safety goals, clinical governance, and continuous quality improvement through standardized external evaluation [21]. Its model is widely adopted in private and internationally oriented healthcare systems.

Within the United Kingdom, the National Health Service (NHS) employs a performance-based regulatory framework, as reported by the Care Quality Commission (CQC) [22].

France's Haute Autorité de Santé (HAS) operates a mandatory accreditation system combining external audits with internal quality improvement processes. The HAS model emphasizes clinical pathways, patient safety indicators, and professional evaluation [23].

Germany's KTQ system is characterized by self-assessment supported by peer review, focusing on transparency, staff engagement, and organizational learning rather than strict external compliance [24].

Within this international ecosystem, Romania's ANMCS aligns with global accreditation objectives but remains more compliance-driven and less integrated with continuous performance monitoring compared to systems such as the NHS or HAS.

Despite shared goals, international evidence regarding accreditation effectiveness remains inconsistent. Some studies report improvements in clinical processes, safety culture, and organizational performance, while others identify limited or no direct impact on patient satisfaction [2]. [16]. These discrepancies suggest that accreditation outcomes are context-dependent and mediated by organizational culture, leadership, and implementation quality.

2.3 Patient Satisfaction and Hospital Accreditation

In Romania, the Ministry of Health has implemented a standardized patient satisfaction questionnaire administered electronically at discharge [25]. This instrument supports transparency and continuous feedback within the healthcare system.

Although national empirical evidence remains limited, emerging studies indicate that higher accreditation categories may be associated with improved communication and respect for patient rights [8]. However, patient awareness of accreditation status is often limited, potentially weakening its influence on perceived quality [15]. Sack et al. [7] report moderate associations between accreditation and patient satisfaction, while Alkhenizan [26] highlight substantial methodological variability across studies.

These findings suggest that accreditation influences patient satisfaction primarily through indirect mechanisms, such as improvements in clinical processes and organizational culture, rather than direct perceptual effects [4]. Consequently, patient satisfaction outcomes depend not only on accreditation status but also on leadership, communication, and institutional responsiveness.

2.4 Managerial Decision-Making Models

Effective hospital management depends on structured decision-making frameworks that enable leaders to operate under conditions of uncertainty, complexity, and resource constraints. Among the various models proposed in the literature, the Administrative Decision-Making Model (ADM) remains particularly relevant to healthcare settings due to its integration of bounded rationality, stakeholder collaboration, and iterative evaluation [14].

The Administrative Decision-Making Model (ADM) emphasizes structured problem definition, multi-criteria evaluation, evidence-informed selection of alternatives, and continuous monitoring of outcomes [14]. Its design aligns with the complexity of healthcare environments, where clinical and administrative decisions must be coordinated under time and information constraints [27]. By promoting collaborative decision-making between clinical and managerial actors, the model enhances organizational coherence and supports patient-centered outcomes [16].

In parallel, evidence-based decision-making models highlight the importance of integrating scientific research, organizational data, and professional expertise into managerial processes [28]. These approaches strengthen transparency and analytical

rigor, although their implementation may be constrained by data availability and institutional capacity.

Rather than treating these frameworks as mutually exclusive, recent literature suggests that effective hospital governance emerges from hybrid approaches that combine administrative structure with evidence-based reasoning and adaptive learning [16]. In this context, the ADM serves as the primary analytical reference for the present study, given its widespread use in Romanian hospital management and its alignment with the study's focus on decision-making processes.

2.5 Managerial Decision-Making Style

Leadership style is a critical determinant of healthcare quality, shaping communication, teamwork, and patient satisfaction [10]. Participatory leadership, characterized by shared decision-making and staff involvement, has been consistently associated with improved team dynamics and higher patient satisfaction [11].

In contrast, authoritarian leadership, based on centralized control and limited interaction, tends to reduce staff engagement and hinder communication, negatively affecting patient perceptions of care [13].

Leadership influences patient satisfaction primarily through its impact on organizational culture and collaboration. Healthcare units that promote participatory practices are more likely to achieve better patient experiences and support the effective implementation of quality initiatives, including accreditation processes [16].

2.6 Managerial Educational Background

A substantial body of research indicates that advanced education in healthcare management, health policy, or public administration is associated with improved organizational outcomes, including higher patient satisfaction [29]. Managers with strong academic preparation tend to demonstrate enhanced analytical capacity, greater ability to integrate quantitative evidence into decision-making, and improved implementation of evidence-based strategies [30]. Formal education also supports effective policy development, standardized performance measurement, and multidisciplinary coordination, contributing to more efficient patient pathways and improved clinical safety [31].

Empirical studies further suggest that managerial training strengthens patient-centered practices through the use of feedback systems, continuous improvement initiatives, and effective resource management [32]. At the same time, formal education alone does not guarantee managerial effectiveness. Interpersonal competencies, including emotional intelligence, empathy, and staff engagement, play a critical role in shaping patient experience [29].

Accordingly, academic preparation should be complemented by practical experience and leadership skills. Overly technocratic approaches that prioritize metrics over human interaction may negatively affect patient perceptions of care quality [33]. As emphasized by [34], the absence of empathy and authentic communication can undermine patient satisfaction, even in otherwise well-structured healthcare organizations.

This study is grounded in theoretical perspectives that integrate decision-making rationality, organizational behavior, and patient-centered outcomes. Hospital performance is shaped by the degree of alignment between strategic decision processes, leadership practices, and the organizational culture in which they are embedded. In this context, effective decision-making extends beyond formalized procedures to include adaptive capacity and relational competence, enabling managerial intentions to translate into meaningful patient experiences. Evidence from the Romanian context underscores the importance of managerial integrity, transparent communication, and collaborative practices in fostering both employee engagement and patient trust, as demonstrated by Popescu et al. [8] and Agheorghiesei and Copoeru [18]. From this perspective, leadership styles and decision-making models are expected to influence patient satisfaction primarily through their impact on internal coordination, organizational responsiveness, and the quality of staff–patient interactions.

3 Research Questions

Accreditation serves as an external mechanism for evaluating healthcare quality, influencing both organizational processes and patient outcomes, as conceptualized in Donabedian's framework [20]. While higher accreditation levels are generally associated with improved performance, evidence linking accreditation to patient satisfaction remains inconsistent [5].

The overarching aim of this study is to investigate how leadership styles and managerial characteristics influence healthcare quality outcomes, as reflected in accreditation categories and patient satisfaction levels in Romanian public hospitals. The study seeks to clarify the relationships between decision-making models, organizational governance, and patient-centered performance indicators.

To achieve this aim, the research is guided by the following questions:

RQ1: How is hospital accreditation category associated with patient satisfaction levels?
RQ2: How do authoritarian versus participatory leadership styles influence accreditation outcomes and patient satisfaction?
RQ3: To what extent is the adoption of the Administrative Decision-Making Model (ADM) associated with achieving high patient satisfaction levels ($\geq$75%)?
RQ4: Does the managerial educational background influence patient satisfaction outcomes?

Leadership influences patient satisfaction primarily through its impact on communication, teamwork, and organizational culture. Participatory leadership is typically associated with improved staff engagement and patient experience, whereas authoritarian approaches may hinder collaboration and responsiveness [12].

Decision-making processes further shape organizational performance. The Administrative Decision-Making Model (ADM) provides a structured framework for coordinating complex clinical and managerial decisions, particularly in resource-constrained environments [14]. However, its direct relationship with patient satisfaction remains underexplored.

Lastly, managerial educational background may influence outcomes through differences in analytical capacity and decision-making approaches. Nevertheless, patient satisfaction also depends on interpersonal competencies such as communication and empathy, suggesting that formal training alone is insufficient to ensure effective management [29].

4 Methodology

4.1 Research Design

This study employs a cross-sectional quantitative design to examine the relationship between hospital management style, patient satisfaction, and accreditation outcomes in the Romanian public healthcare system. Hospitals are classified into accreditation categories by the National Authority for Quality Management in Healthcare (ANMCS) [35], reflecting compliance with national quality standards.

The final analytical sample includes 78 hospitals, representing approximately 21% of all public hospitals in Romania (368 institutions) [36]. This proportion ensures a meaningful level of national coverage and supports the representativeness of the findings across diverse institutional contexts.

4.2 Data Sources and Collection

Data were compiled from three primary sources: (1) hospital accreditation records obtained from the National Authority for Quality Management in Healthcare (ANMCS) [35], which provided institutional accreditation classifications and quality compliance indicators; (2) patient satisfaction data collected through the Ministry of Health's national feedback system [37], including standardized measures of perceived quality of care, communication, staff involvement, cleanliness, institutional trust, and accessibility of medical resources; and (3) a managerial survey designed to capture organizational and governance characteristics, including managers' educational and professional backgrounds, leadership style, years of managerial experience, decision-making practices, participatory governance approaches, communication processes, strategic planning practices, and institutional collaboration dynamics.

The survey was distributed to hospital managers between May and June 2022. Of the 122 completed responses, cases with missing accreditation or patient satisfaction data were excluded, resulting in a final sample of 78 hospitals.

4.3 Variables and Measurement

Patient satisfaction was assessed using a composite index derived from ten indicators reflecting multiple dimensions of the patient experience, including perceived quality of medical services, physician and nurse involvement, communication clarity, hospital cleanliness, access to medical supplies, perceived health improvement, institutional trust, and perceptions of ethical conduct within the hospital environment (Table 1).

The questionnaire combined Likert-scale satisfaction items coded from 1 ("Very dissatisfied") to 4 ("Very satisfied") with dichotomous indicators related to recommendation intentions, post-discharge health improvement, informal payment experiences,

and reporting behavior. All variables were coded so that higher values consistently represented more favorable patient experiences and perceptions of care quality.

Following data collection, item responses were aggregated at the hospital level and transformed into a standardized Patient Satisfaction Index (PSI) ranging from 0 to 1, where higher values indicate greater overall patient satisfaction. This multidimensional approach was designed to capture both the clinical and relational dimensions of patient experience, while also incorporating institutional and ethical aspects relevant to the Romanian public healthcare system.

Question	Variable Name	Measure
1. How satisfied are you with the medical services provided by the hospital?	Medical Services	Very dissatisfied = 1, Dissatisfied = 2, Satisfied = 3, Very satisfied = 4
2. How satisfied are you with the activity and involvement of the doctor?	Doctor Involvement	Very dissatisfied = 1, Dissatisfied = 2, Satisfied = 3, Very satisfied = 4
3. How satisfied are you with the cleanliness of the hospital?	Cleanliness Satisfaction	Very dissatisfied = 1, Dissatisfied = 2, Satisfied = 3, Very satisfied = 4
4. Did you need to buy medicines or other medical supplies?	Medical Supply	Yes = 1, No = 4
5. How satisfied are you with the activity of the nurses?	Nurse Involvement	Very dissatisfied = 1, Dissatisfied = 2, Satisfied = 3, Very satisfied = 4
6. Did you receive clear explanations regarding the diagnosis and treatment?	Explanation Clarity	Very dissatisfied = 1, Dissatisfied = 2, Satisfied = 3, Very satisfied = 4
7. Would you recommend a close person to be treated at this hospital?	Recommendation	Yes = 4, No = 1
8. Is your health better after discharge?	Health Improvement	Yes = 4, No = 1
9. Have you been asked for money or other compensation by doctors or nurses?	Informal Payment	Yes = 1, No = 4
10. Do you want to report to the anti-corruption officer that you have been asked for money or attention?	Reporting Intent	Yes = 1, No = 4

Table 1: Patient satisfaction indicators, corresponding survey questions, and response measurement scales used for the Patient Satisfaction Index (PSI)

Patient satisfaction was analyzed using two complementary representations of the Patient Satisfaction Index (PSI). The first, referred to as the Global Patient Satisfaction Index (Global PSI), was derived from the aggregation of all ten survey indicators and was intended to capture the multidimensional nature of patient experience across clinical, organizational, relational, and ethical domains. The second representation, the Relational Patient Satisfaction Index (Relational PSI), was used specifically in analyses examining leadership style and managerial interaction. In this context, the index emphasizes dimensions more directly associated with communication quality, staff involvement, interpersonal interaction, and organizational responsiveness.

Managerial variables included leadership style, decision-making model usage, and educational background. Decision-making practices were assessed using a Likert scale (1-5) measuring the extent to which different models were applied (Table 2). Accreditation category was treated as the primary institutional-level predictor.

Model	Description
Administrative Model	Focuses on bounded rationality; emphasizes problem definition, development of criteria, limited information collection, and satisficing.
DECIDE Model	A structured, step-wise approach: Define the problem, Establish criteria, Consider alternatives, Identify best option, Develop and implement solution, and Evaluate the outcome.
Evidence-Based Model	Emphasizes the systematic and judicious use of empirical evidence in each stage of the decision-making process.
Adaptive Model	Involves iterative learning and adjustment; includes problem recognition, environmental scanning, and flexible choice among evolving alternatives.
Incremental Model	Advocates small-scale, conservative changes based on negotiation, limited comparison of alternatives, and gradual implementation.

Table 2: Descriptions of Managerial Decision-Making Models used for Strategic Decision-Making

To contextualize leadership dynamics within the studied healthcare units, the dataset includes self-reported assessments of managerial style based on seven key attributes. These attributes, outlined in Table 3, capture both cognitive and participatory dimensions of leadership, such as reliance on team consultation, delegation of authority, goal alignment between team and organization, and the presence of conflict in collaborative decision-making. Each item is measured on a six-point Likert-type scale ranging from 1 = "to a very small extent" to 6 = "to a very large extent."

Indicator	Description
ConsultEmployee	Consulting employees in decision-making
TeamDependance	A better result depends on team members
ManagerInfoSufficiency	Enough information to make own decision
TeamInvolvementAcceptance	Team motivated to accept manager's decisions
GoalAlignment	Team goals align with organization
DecisionConflict	Decision made with team generates conflicts
TeamInfoSufficiency	Team and external parties have enough information

Table 3: Managerial Style Indicators

4.4 Analytical Methods

Data analysis was performed using Python (version 3.12.3). Data management and preprocessing were conducted using pandas, while numerical computations were performed with NumPy. Statistical analyses were carried out using SciPy and StatsModels. Descriptive statistics were used to summarize hospital characteristics, managerial variables, and patient satisfaction scores.

Associations between variables were examined using Spearman's rank correlation and Pearson's correlation, as appropriate. Group differences were assessed using independent-samples t-tests, one-way analysis of variance (ANOVA), and Kruskal–Wallis tests. To examine the relationship between managerial factors and patient satisfaction, linear regression models were estimated.

Model assumptions were assessed using standard diagnostic procedures, including tests for normality and homogeneity of variance. Multicollinearity was evaluated using variance inflation factors (VIF). As a robustness check, ordinal logistic regression was conducted for categorical outcome specifications.

All statistical tests were two-tailed, and a p-value of ¡0.05 was considered statistically significant.

5 Results

5.1 Descriptive Analytics

The dataset employed in this study is structured around four analytically distinct components. The first pertains to the hospital accreditation status, which functions as an authoritative benchmark of institutional compliance with nationally codified standards of quality and performance. The second component captures a range of managerial characteristics, including the educational and professional background of hospital administrators (e.g., medical versus non-medical training), field of specialization, years of experience, and demographic attributes. The third component encompasses managerial decision-making practices through a series of items that assess the extent to which formalized approaches, such as strategic planning, participative leadership, and benchmarking, are integrated into the governance and administrative routines of the institution. Finally, the fourth component comprises measures of

patient satisfaction, elicited through structured Likert-scale items assessing key dimensions of the patient experience, including perceived quality of care, staff engagement, environmental cleanliness, and accessibility of medical and sanitary resources.

5.1.1 RQ1

The distribution of the Patient Satisfaction Index across all hospitals, illustrated in Figure 1, exhibits a near-normal pattern centered around a mean value of approximately 0.87. The histogram demonstrates a moderate degree of symmetry, with most hospitals clustering between 0.83 and 0.90, indicating generally high and consistent satisfaction levels among patients. The relatively narrow dispersion suggests limited variability in perceived quality of care, while the slight right-hand taper implies that a few hospitals achieved exceptionally high satisfaction scores approaching 0.95. Conversely, very few institutions reported satisfaction levels below 0.80, underscoring the overall positive patient experiences across the surveyed facilities. Collectively, this distribution reflects a healthcare system characterized by uniformly strong performance, with only marginal deviations from the central trend.

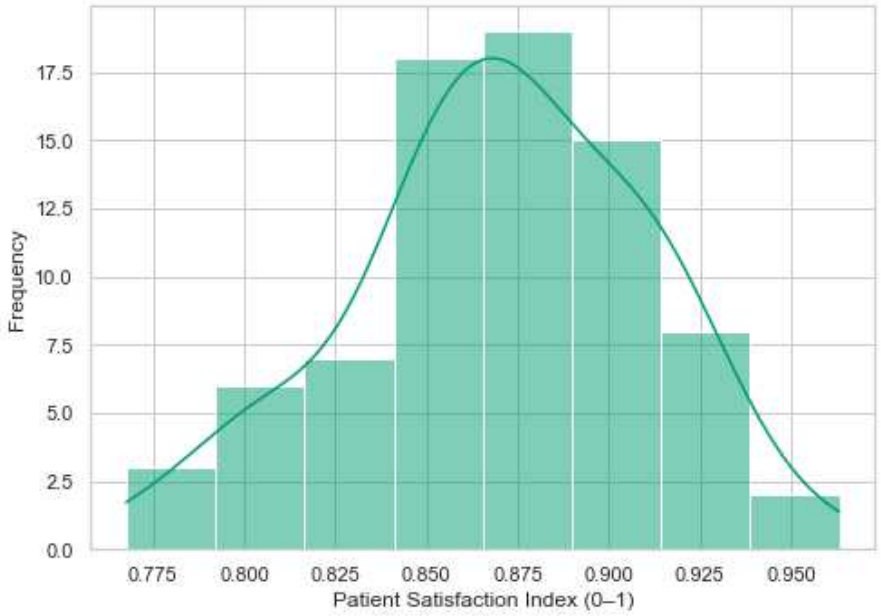


Fig. 1: Distribution of Patient Satisfaction Index

Most hospitals were concentrated within Accreditation Categories II ($n = 28$) and III ($n = 27$), while only a small number of institutions were classified as provisionally accredited or unaccredited. Patient satisfaction levels remained consistently high across most accreditation categories, with mean Patient Satisfaction Index (PSI) values ranging from 0.8715 to 0.8730 among Categories II–IV. Lower satisfaction

scores were observed primarily among unaccredited hospitals, where the mean PSI decreased to 0.8058. Additional descriptive statistics for each accreditation category are presented in Table 4.

Accreditation Categories	N	SD	Mean	Median	Min	Max
I	-	-	-	-	-	-
II	28	0.0409	0.8730	0.8756	0.7880	0.9331
III	27	0.0396	0.8715	0.8822	0.7677	0.9393
IV	17	0.0474	0.8720	0.8679	0.7786	0.9631
V	4	0.0189	0.8649	0.8656	0.8550	0.8735
VI	2	0.0131	0.8058	0.8058	0.8005	0.8112

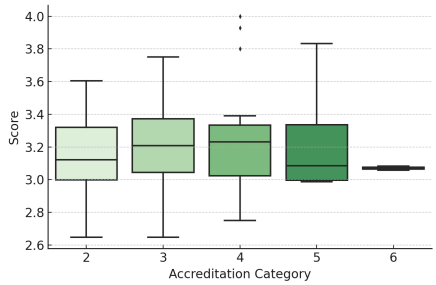
Table 4: Patient Satisfaction Index by Accreditation Category

To examine the relationship between institutional accreditation and patient experience, we analyzed ten distinct indicators of satisfaction and perception, each plotted as a boxplot across accreditation categories as shown in Figure 2. The indicators included core domains of clinical service delivery, such as satisfaction with medical services, physician and nurse involvement, hospital cleanliness, and clarity of diagnosis and treatment explanations, as well as evaluative responses related to institutional trust and ethical climate, including perceived health improvement, the need to purchase external medical supplies, experience with informal payments, willingness to recommend the hospital, and intent to report unethical behavior.

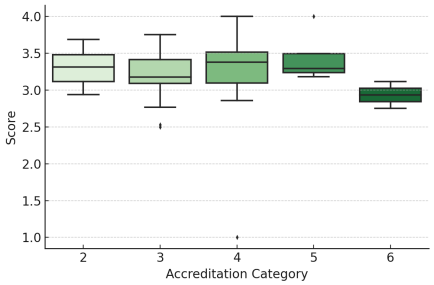
Overall, the analysis reveals a consistent pattern: higher accreditation categories are associated with more favorable patient experiences across nearly all evaluated domains. Specifically, units with higher accreditation (e.g., Category II or III) tend to exhibit higher median satisfaction scores and narrower interquartile ranges, indicating both improved service delivery and reduced variability in patient experience. For instance, satisfaction with cleanliness and involvement of medical staff, both doctors and nurses, demonstrated a pronounced upward trend in better-accredited institutions. Similarly, patients from higher-accredited hospitals were more likely to report clear medical communication and health improvement following discharge.

Conversely, lower-accredited units (e.g., Category V or VI) consistently presented lower median satisfaction scores, broader interquartile ranges, and in some cases, significant outliers indicating severe dissatisfaction. Particularly concerning is the elevated incidence of informal payment experiences and the greater likelihood of patients indicating a desire to report misconduct to anti-corruption authorities in these institutions. These findings suggest that accreditation not only reflects technical and procedural compliance but may also serve as a proxy for organizational integrity and patient-centered culture.

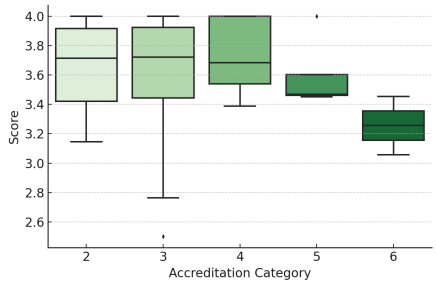
Taken together, the descriptive analytics support the hypothesis that accreditation status is positively associated with patient satisfaction and trust, and that deficiencies in accreditation may signal deeper systemic challenges in both clinical and ethical dimensions of hospital care.



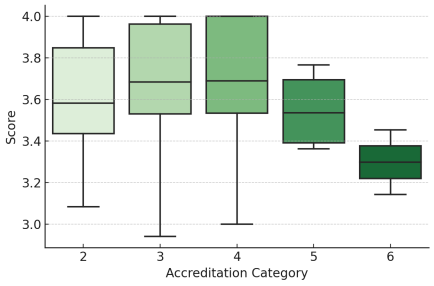
(a) Hospital cleanliness



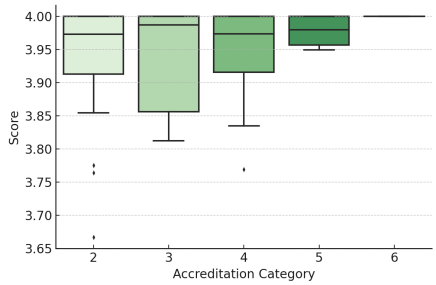
(b) Doctor involvement



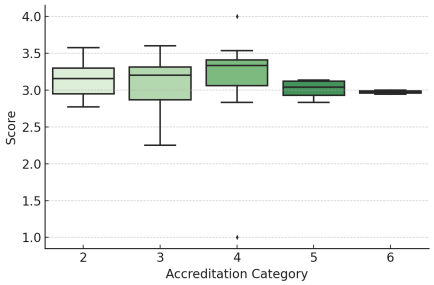
(c) Explanation clarity



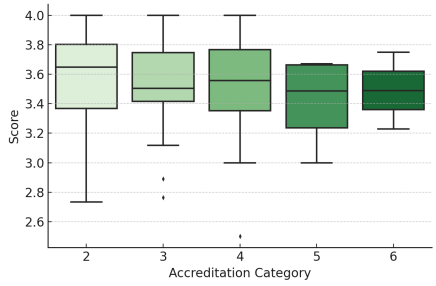
(d) Health improvement



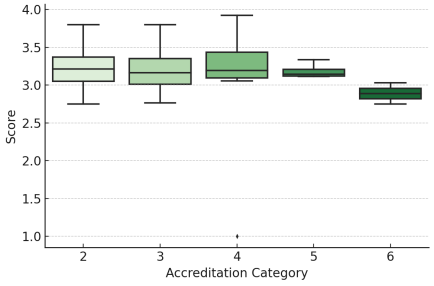
(e) Informal payments



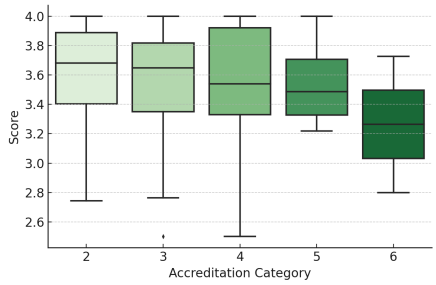
(f) Medical services



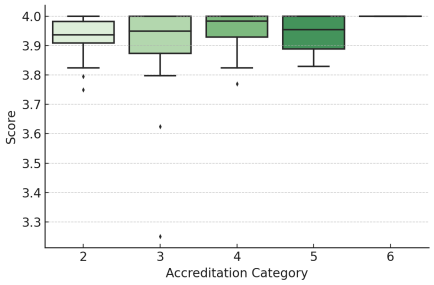
(g) Medical supplies



(h) Nurse involvement



(i) Recommendation



(j) Reporting intent

Fig. 2: Patient experience and satisfaction indicators across accreditation categories

To gain a granular understanding of how patients experience care across various dimensions, ten patient satisfaction indicators were assessed and visualized using frequency histograms shown in Figure 3. These indicators capture a broad range of experiential dimensions, from clinical care (e.g., satisfaction with medical services, doctor and nurse involvement, and hospital cleanliness) to aspects of communication, institutional integrity, and systemic trust.

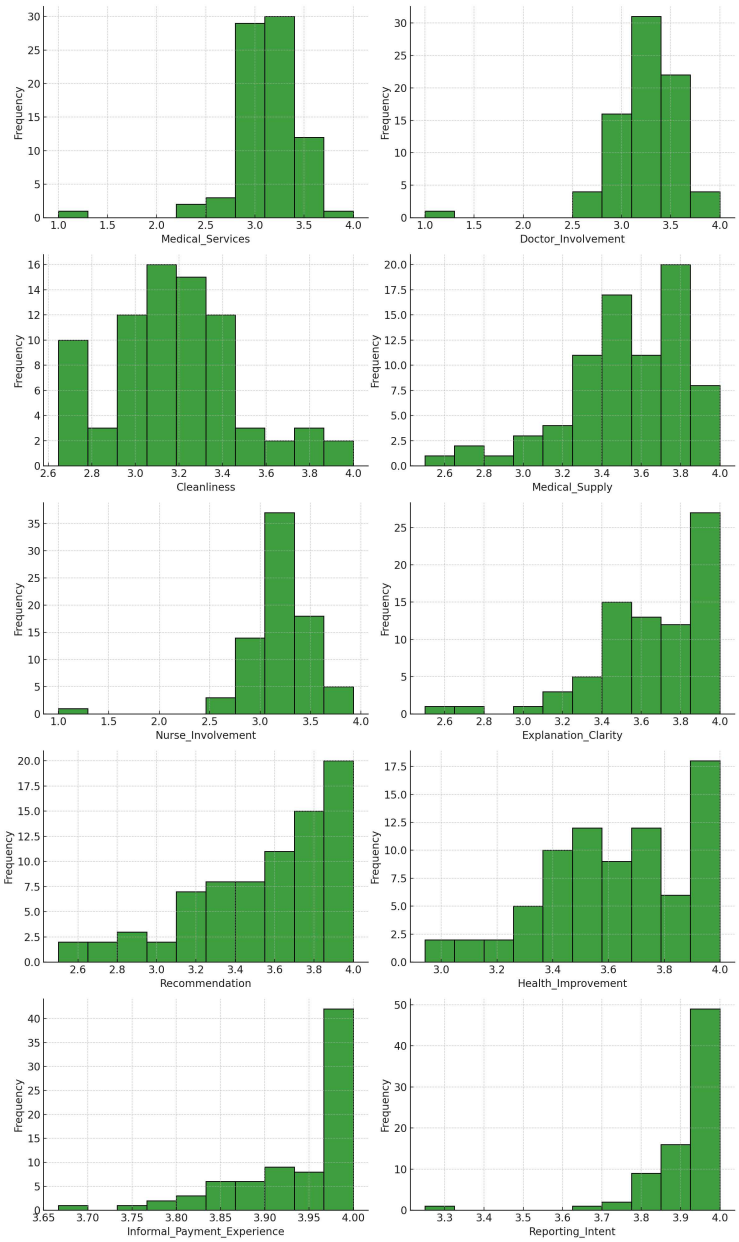


Fig. 3: Distribution of Patient Satisfaction Answers

The distributions for core satisfaction domains such as Medical Services, Doctor Involvement, and Nurse Involvement are notably right-skewed, with the majority of responses clustered between 3.0 and 3.8 on a 4-point scale. This indicates generally

high satisfaction levels, though mild variability persists. The Cleanliness histogram displays a more uniform spread, with a visible tail at the lower end, suggesting greater divergence in patient perceptions regarding hygiene standards.

Indicators related to Medical Supply availability and Explanation Clarity also demonstrate right-skewed distributions, reinforcing the trend of moderate to high satisfaction but with notable inter-patient variation, potentially linked to unit-level supply chain constraints or communication inconsistencies.

Measures of institutional trust and perceived outcomes reveal particularly concentrated distributions. Recommendation Likelihood, Health Improvement, Informal Payment Experience, and Reporting Intent all show a strong ceiling effect, with scores tightly clustered around the highest possible value (4.0). While this suggests overwhelmingly positive feedback in these domains, such distributions may also reflect social desirability bias or hesitancy to report negative experiences, particularly in sensitive areas such as corruption and post-discharge recovery.

Overall, the histogram cluster reveals a generally favorable evaluation of the patient experience but also uncovers subtle distributional differences across satisfaction domains. These differences may help identify areas for targeted quality improvement and signal deeper organizational challenges that merit further inferential analysis in relation to leadership styles and accreditation levels.

5.1.2 RQ2

To identify authoritarian tendencies, each manager's responses were examined for low engagement and limited collaboration. A manager was classified as authoritarian if they scored ≤ 3 on at least four of the seven indicators, signifying limited consultation, restricted information sharing, and higher perceived conflict. Managers exceeding this threshold were classified as participatory, reflecting a decision-making approach grounded in consultation, goal alignment, and shared information. Applying this rule to the dataset yielded a pronounced predominance of participatory leadership: 71 of 78 managers (91.0%) were participatory, while 7 (9.0%) met the threshold for an authoritarian style.

Figure 4 illustrates the distribution of manager responses across six gradations of agreement, ranging from "to a very large extent" to "to a very small extent." Notably, a substantial proportion of managers reported that they consult employees in the decision-making process to a very or fairly large extent. Similarly high levels of agreement were observed for items such as "A better result depends on the team members" and "To achieve a better result, the team's goals are consistent with the organization's goals."

In contrast, items indicating potential friction, such as "The decision made together with the team generates conflicts", exhibited a more varied distribution, with fewer respondents endorsing them to a large extent. This asymmetry in response patterns suggests a predominant orientation toward participative and goal-aligned leadership, albeit with some reservations around collaborative complexity.

The frequency distribution analysis presented in Figure 5 reveals a clear divergence between participatory and authoritarian leadership profiles across all seven managerial decision-making indicators. Participatory leaders consistently cluster toward the

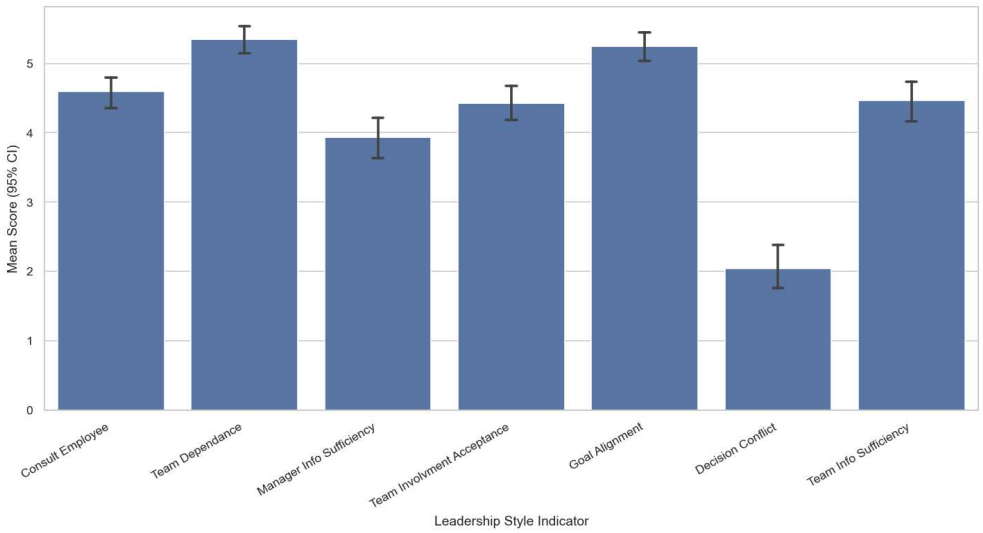


Fig. 4: Distribution of Managers' Responses to the Leadership Style Indicators

upper end of the rating scale (scores 4–6), reflecting higher levels of consultation, team involvement, goal alignment, and informational sufficiency. This pattern suggests a leadership culture characterized by open communication, collaborative engagement, and alignment between managerial and organizational objectives. By contrast, authoritarian leaders display pronounced concentration at the lower end of the scale (scores 1–3), particularly within the dimensions of Manager Information Sufficiency and Decision Conflict, indicating restricted information exchange, minimal participatory input, and elevated internal tension during decision processes.

Table 5 highlights notable differences in patient satisfaction between hospitals led through participatory management approaches and those governed by authoritarian leadership styles. Healthcare units led by participatory managers (n = 71) demonstrated a slightly higher mean Patient Satisfaction Index ($M = 0.8716, SD = 0.0408$) compared with those directed by authoritarian leaders ($n = 7, M = 0.8553, SD = 0.0369$). The range of satisfaction scores was also broader among participatory managers ($0.7677 - 0.9631$) than among authoritarian ones ($0.8005 - 0.9030$), suggesting greater variability in perceived service quality under collaborative leadership.

Mang Ind	No Hsp	SD	Mean	Median	Min	Max
Participatory	71	0.0408	0.8716	0.8734	0.7677	0.9631
Authoritarian	7	0.0369	0.8553	0.8525	0.8005	0.9030

Table 5: Patient Satisfaction Index by Managerial Type

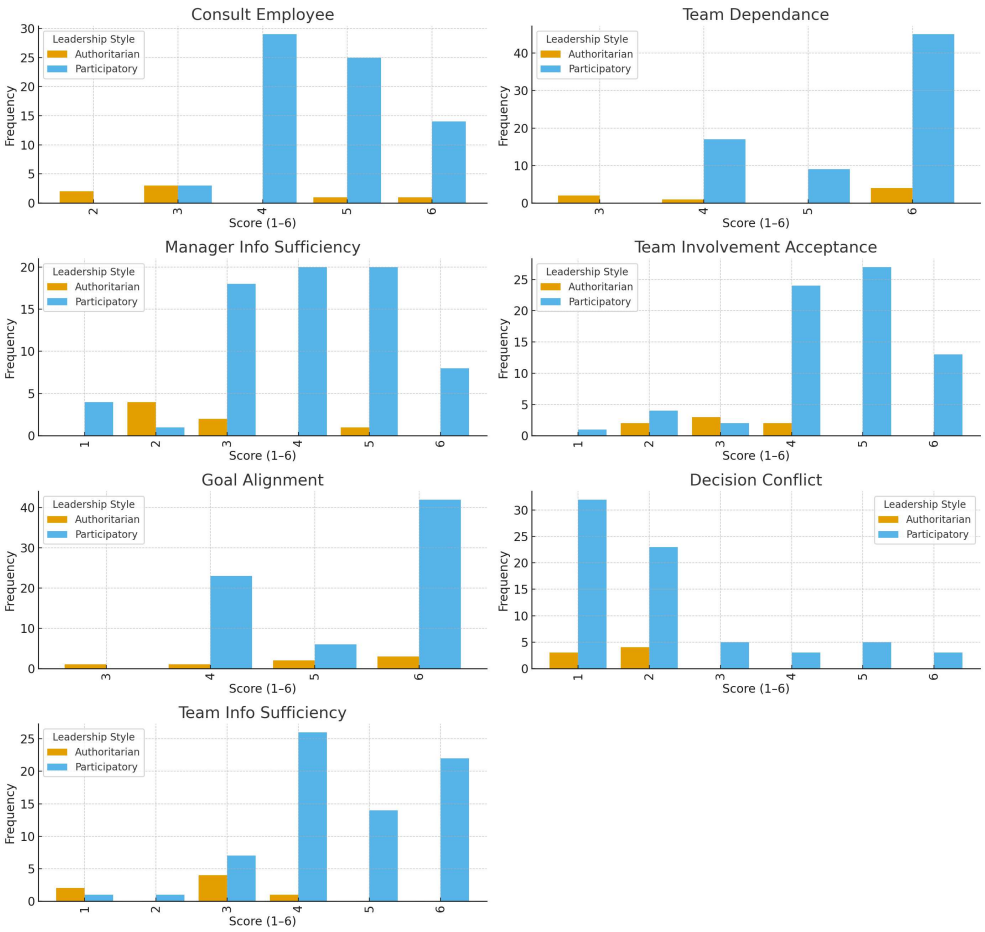


Fig. 5: Frequency Distribution By Leadership Style Across All Indicators

5.1.3 RQ3

To examine the relationship between managerial decision-making models and patient satisfaction, descriptive statistics were computed for all variables included in the analysis. Table 6 summarizes the central tendency, dispersion, and distributional shape for each model and for the overall Patient Satisfaction Index (PSI).

As shown in Table 6, the mean usage scores for the four systematic models, Administrative, DECIDE, Evidence-Based, and Adaptive, are clustered at the upper end of the five-point scale, indicating a consistently high level of reported application across hospitals. In contrast, the Incremental Model displays the lowest mean (2.74) and the largest variability ($SD = 0.96$), suggesting that incremental or ad-hoc decision-making approaches are less common. The Patient Satisfaction Index (PSI) exhibits a

Variable	N	Mean	SD	Min	Max	Skewness	Kurtosis
Administrative Model	78	4.91	0.41	3.60	5.00	−0.12	−1.55
Decide Model	78	4.73	0.54	3.00	5.00	−0.49	0.00
Evidence-Based Model	78	4.63	0.54	3.00	5.00	−0.46	−0.42
Adaptive Model	78	4.46	0.59	3.00	5.00	−0.47	−0.08
Incremental Model	78	2.74	0.96	1.00	5.00	0.63	−0.92
Patient Satisfaction Index	78	0.87	0.07	0.68	0.98	−0.29	−0.15

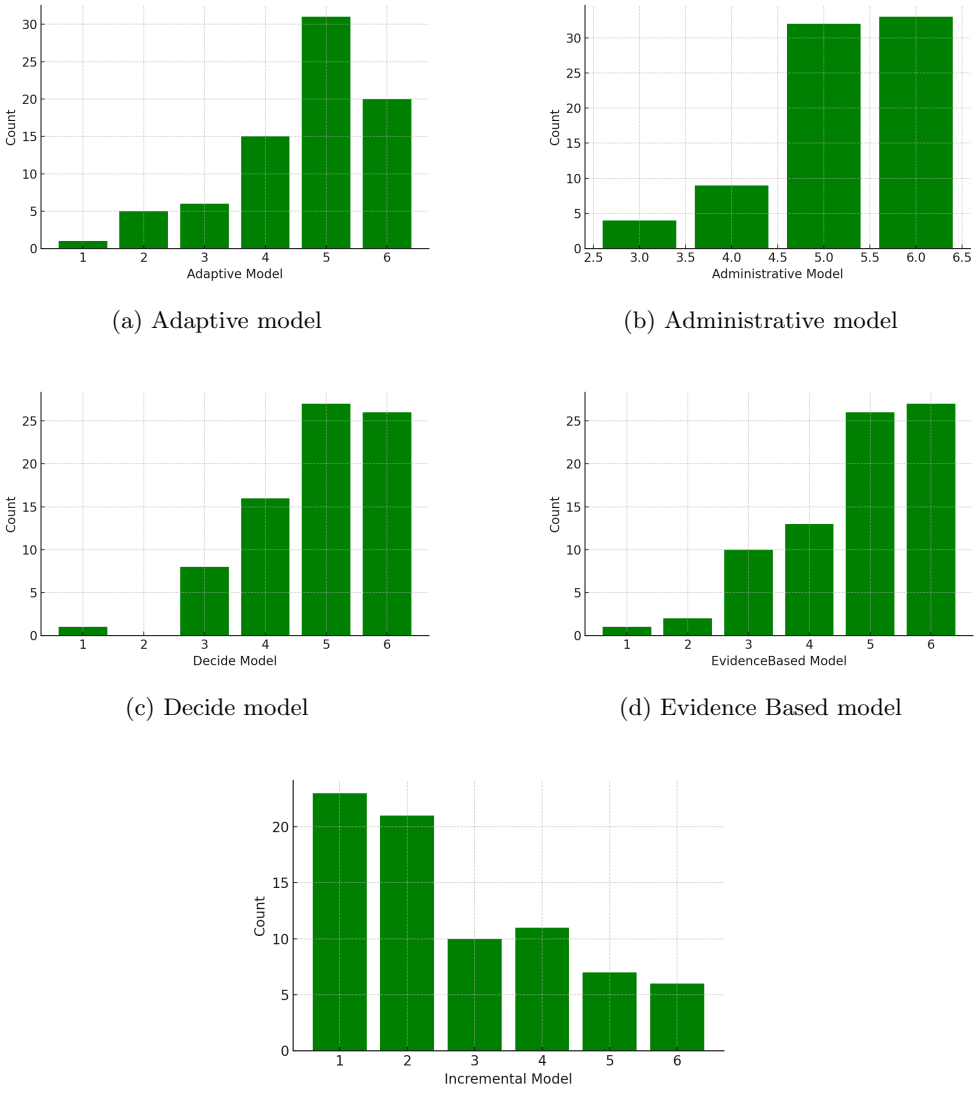
Table 6: Descriptive Statistics for Decision-Making Models and Patient Satisfaction Index

high overall mean of 0.87 ($SD = 0.07$), indicating that most institutions report satisfaction levels above 75%, the benchmark established for this study. The consistently high satisfaction scores and limited dispersion suggest the presence of a ceiling effect, which constrains variability and reduces the ability to detect statistically significant relationships between managerial variables and patient satisfaction.

The decision to focus on the Administrative decision-making model is empirically substantiated by the distributional patterns observed in both its technical and strategic applications, as illustrated in Figure 6. Among all decision-making frameworks analyzed, the ADM exhibits the highest concentration of responses at the upper end of the Likert scale (scores 4, 5 and 6), indicating frequent and confident utilization by hospital managers. Specifically, over 90% of respondents reported employing the model to a "largely", "fairly large" or "very large" extent for strategic domains as shown in Table 7. This consistency across organizational levels suggests that the ADM is not only prevalent but also deeply embedded in managerial practice. Its prominence makes it a theoretically and methodologically appropriate focal point for evaluating its potential impact on patient satisfaction outcomes, as articulated in RQ3.

Extend of Use	Likert Score	Administrative Model	Decide Model	Evidence-Based Model	Adaptive Model	Incremental Model
to a very small extent	1	0	1	1	1	23
to a small extent	2	0	0	2	5	21
to a fairly small extent	3	4	7	10	6	11
largely	4	32	27	26	31	7
to a fairly large extent	5	7	16	11	15	9
to a very large extent	6	35	27	28	20	7

Table 7: Decision Model Usage Among Hospital's Managers



(a) Adaptive model

(b) Administrative model

(c) Decide model

(d) Evidence Based model

(e) Incremental model

Fig. 6: Distribution of Decision Model Used for Strategic Planning

5.1.4 RQ4

Hospitals managed by non-medical professionals (N = 45) reported a mean Patient Satisfaction Index of 0.8666 (SD = 0.0424), with individual scores ranging from 0.7677 to 0.9393 and a median of 0.8652. By contrast, hospitals led by medical professionals (N = 33) achieved a slightly higher mean satisfaction level of 0.8746 ($SD = 0.0382$), a median of 0.8804, and a range extending from 0.8026 to 0.9631. Although the difference

in mean satisfaction values is modest, the narrower standard deviation among medical managers indicates more consistent patient experiences within this group. This relative uniformity suggests that leadership grounded in medical expertise may contribute to steadier quality standards and reduced variability in patient satisfaction outcomes.

The distribution of managerial educational backgrounds across the analyzed healthcare units revealed that the majority of managers possessed qualifications in medical or economic fields, with 33 and 31 representatives respectively. A smaller proportion of managers held degrees in law (n = 12), while only two managers had an engineering background.

5.2 Research Questions Analysis Results

5.2.1 Accreditation and Patient Satisfaction

RQ1 examines the association between hospital accreditation category and patient satisfaction levels. To assess this relationship, a Spearman's rank-order correlation analysis was conducted. Accreditation categories were coded from 2 (highest level of accreditation confidence) to 6 (lowest level), while patient satisfaction was represented as the mean satisfaction index for each hospital, derived from multiple service quality indicators.

The correlation analysis conducted to examine the association between accreditation category and patient satisfaction revealed no statistically significant relationship. The results of Spearman's rank correlation ($\rho = -0.1174$, p = 0.3059) indicate the absence of a monotonic association between the two variables, suggesting that changes in accreditation level are not systematically accompanied by corresponding variations in patient satisfaction scores. Similarly, Pearson's correlation coefficient yielded a weak, non-significant negative relationship ($r = -0.1494$, p = 0.1918; 95% CI [-0.3599, 0.0757]), implying that accreditation category does not exert a measurable linear influence on satisfaction outcomes. The negative direction of both coefficients, though small and non-significant, suggests a slight tendency for hospitals with lower accreditation standing to report marginally reduced satisfaction values; however, this pattern does not reach statistical reliability.

As illustrated in Figure 7, the distribution of patient satisfaction scores appears broadly similar across accreditation categories, with median values clustering near 0.87 for Categories II-IV. The interquartile ranges overlap substantially, indicating limited variation in satisfaction among hospitals holding different levels of accreditation. Although Category IV displays slightly greater dispersion, reflecting heterogeneity in reported experiences, the overall pattern does not suggest systematic differences across accreditation tiers. Descriptive patterns suggest modestly higher satisfaction in better-accredited hospitals; however, these differences are not statistically significant, indicating that accreditation does not systematically influence patient satisfaction.

This visual impression is corroborated by the inferential results. After excluding the unaccredited group (Category VI; n = 2) due to its insufficient sample size, the Shapiro–Wilk tests confirmed approximate normality for most categories except Category V ($W = 0.7286, p = 0.0239$). Both the one-way ANOVA ($F = 0.0379, p = 0.9901$)

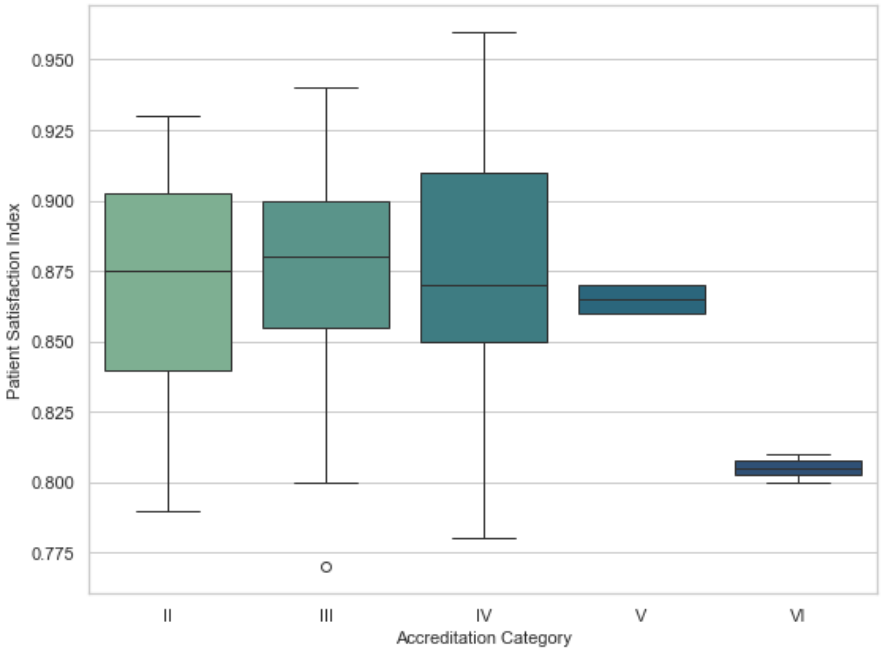


Fig. 7: Relationship Between Accreditation Level And Patient Satisfaction

and the Kruskal-Wallis test ($H = 0.4170, p = 0.9367$) revealed no statistically significant differences in either mean or median satisfaction levels across accreditation categories.

While hospitals adopting the ADM consistently achieve satisfaction levels above the benchmark, the model does not explain variation between institutions, suggesting that its effect is uniform rather than differentiating. The estimated regression equation, $Satisfaction = 0.8874 - 0.0059 \times Accreditation\ Category$, suggests a slight negative association, whereby satisfaction tends to decline marginally as accreditation level decreases in rigor. However, this relationship is weak and statistically non-significant ($\beta_1 = -0.0059, p = 0.1918$), with the model explaining only about 2.2% of the variance in satisfaction scores ($R^2 = 0.0223$).

The internal consistency analysis for the Global PSI yielded a Cronbach's α of 0.3052. Rather than indicating measurement deficiency, this relatively low coefficient reflects the inherently multidimensional structure of the patient satisfaction construct employed in this study. The composite index integrates heterogeneous domains, including clinical care, communication, environmental conditions, and institutional trust, which are not expected to exhibit high inter-item homogeneity as a single latent scale. In this context, Cronbach's α serves to highlight the breadth of the construct rather than its internal cohesion. Supporting this interpretation, Bartlett's Test of Sphericity was highly significant ($\chi^2 = 5410.92,\ \text{df} = 153,\ p < 0.001$), confirming that the correlation matrix is suitable for factor-based exploration. Exploratory factor analysis

further supports this interpretation, indicating that the patient satisfaction instrument is composed of multiple latent dimensions rather than a single unified construct, consistent with the conceptualization of patient experience as a multidomain outcome. Collectively, these findings indicate that patient satisfaction in this dataset is best understood as a multifactorial construct, comprising several interrelated yet distinct dimensions of patient experience, including staff interaction, service quality, and the healthcare environment.

The findings do not provide empirical support for RQ1, which examines the association between hospital accreditation category and patient satisfaction. Both Spearman's and Pearson's correlation analyses revealed weak and non-significant relationships, indicating that accreditation level is not meaningfully related to satisfaction outcomes. This conclusion is further reinforced by group comparison tests (ANOVA and Kruskal-Wallis) and regression analysis, all of which failed to identify significant differences or predictive effects. Although visual inspection suggests a slight tendency for higher satisfaction in better-accredited hospitals, these differences are statistically negligible. Overall, the evidence indicate that accreditation category does not significantly influence patient satisfaction in this dataset.

5.2.2 Leadership Style and Patient Satisfaction

RQ2 examines the relationship between leadership style and patient satisfaction, specifically whether authoritarian decision-making is associated with lower satisfaction levels. To investigate this relationship, a sequence of complementary statistical analyses was conducted, including bivariate association tests as well as multivariate and ordinal modeling approaches. This layered analytical strategy was adopted to ensure the robustness and consistency of the findings across different methodological frameworks.

Before testing the hypothesis, the internal consistency of the ten patient satisfaction indicators (Q1-Q10) was assessed within the context of the leadership-focused analysis. In this setting, the Relational PSI demonstrated high internal consistency (Cronbach's $\alpha = 0.866$), exceeding the conventional threshold of 0.70. This indicates that the satisfaction indicators form a coherent latent construct when examined in relation to leadership dynamics. In particular, the items align closely around interpersonal and communication-related dimensions of care, which are more directly influenced by managerial behavior. Consequently, within this analytical context, the satisfaction scale can be interpreted as a unified measure of perceived service quality.

Importantly, when stratified by leadership style, reliability remained stable ($\alpha = 0.866$ for authoritarian and $\alpha = 0.868$ for participatory leaders), demonstrating that the internal structure of the satisfaction scale is invariant across managerial orientations. This invariance indicates that any observed differences (or lack thereof) in patient satisfaction between leadership styles are not attributable to measurement instability. Within this analytical framework, the strong psychometric properties of the scale justify the use of the Patient Satisfaction Index as the primary dependent variable in subsequent analyses examining the relationship between leadership style and patient experience.

A Chi-Square Test of Independence was first conducted to examine whether leadership style (Authoritarian vs. Participatory) was significantly associated with the dichotomized levels of patient satisfaction (High vs. Low). The test revealed no significant relationship between the two variables ($\chi^2 = 0.012$, $df = 1$, $p = 0.913$), and the effect size was negligible (Cramer's $V = 0.012$). These results indicate that patient satisfaction and leadership style are statistically independent. In practical terms, patients managed by authoritarian leaders, defined as those scoring ≤ 3 on at least four of the seven managerial decision indicators, did not report systematically lower satisfaction compared with those under participatory leadership.

The inferential analysis was conducted to determine whether patient satisfaction levels differed significantly between hospitals led by participative and autocratic managers. Prior to hypothesis testing, assumption checks confirmed that the data met the criteria for parametric analysis. The Shapiro–Wilk test indicated no significant deviation from normality for either the participative group ($W = 0.9844, p = 0.5243$) or the autocratic group ($W = 0.9715, p = 0.9089$), while the Levene's test demonstrated homogeneity of variances across groups ($F = 0.0922, p = 0.7623$).

Given that both assumptions were satisfied, an independent-samples t-test was employed. The results revealed no statistically significant difference in mean patient satisfaction between hospitals managed by participative leaders ($M = 0.8716$) and those managed by autocratic leaders ($M = 0.8553$), $t(76) = 1.0161, p = 0.3128$. Although the effect size (Cohen's $d = 0.403$) suggested a moderate magnitude of difference, the lack of statistical significance indicates that leadership style did not exert a measurable impact on patient satisfaction within this sample.

The correlation analysis examined the association between leadership style and patient satisfaction as shown in Figure 8. The Shapiro-Wilk test confirmed that the Relational PSI followed an approximately normal distribution ($W = 0.9869$, $p = 0.6092$), indicating suitability for parametric correlation testing. The *point-biserial correlation* between binary leadership type (0 = autocratic, 1 = participative) and PSI yielded a weak, positive relationship ($r_{pb} = 0.1158$, $p = 0.3128$). Although the direction of association suggests that participative leadership is modestly linked to higher patient satisfaction, the relationship did not reach statistical significance ($p > 0.05$). Consequently, no evidence was found to support a meaningful linear association between leadership style and satisfaction levels, and given the normal distribution of PSI, computation of Spearman's ρ was not required.

To further assess the robustness of the relationship between leadership style and patient satisfaction, a series of linear regression models were estimated. The simple linear regression model examined whether the binary leadership style variable (0 = autocratic, 1 = participative) significantly predicted the Relational PSI. As shown in Table 8, the model yielded a non-significant coefficient for leadership style ($\beta = 0.0163$, $p = 0.313$; $R^2 = 0.013$), indicating that participative leadership was associated with only a marginal, statistically insignificant increase in patient satisfaction.

The model explained a small proportion of the variance in Relational PSI ($R^2 = 0.013$, Adjusted $R^2 = 0.000$), suggesting that leadership style alone accounted for approximately 1.3% of the variation in patient satisfaction scores (see Figure 9).

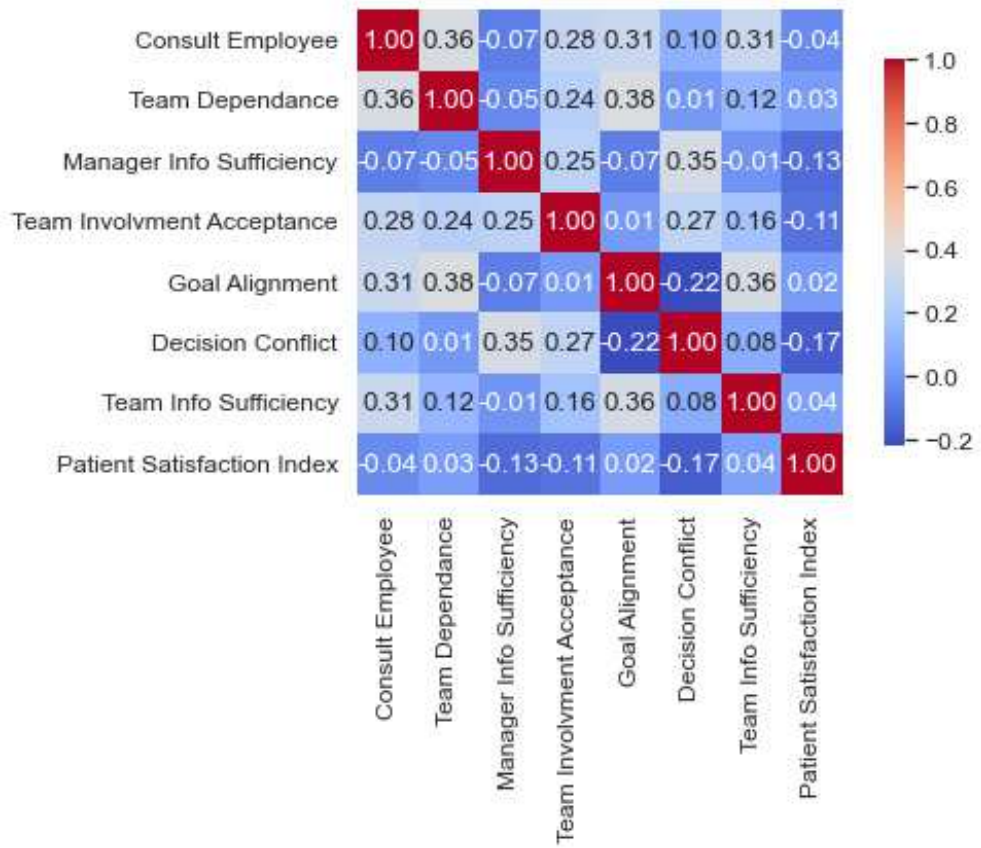


Fig. 8: Correlation Heatmap: Managerial Indicators + PSI

Variable	Coefficient	Std. Error	t	p-value
Intercept	0.8553	0.015	55.810	0.000
Leadership Style (Participative = 1)	0.0163	0.016	1.016	0.313
Model Fit: $R^2 = 0.013$, Adjusted $R^2 = 0.000$, $F(1, 76) = 1.032$, $p = 0.313$				

Table 8: Simple Linear Regression: Patient Satisfaction Index by Leadership Style

A multiple regression analysis was conducted to test whether specific managerial indicators (Consult Employee, Team Dependence, Manager Information Sufficiency, Team Involvement Acceptance, Goal Alignment, Decision Conflict, and Team Information Sufficiency) could predict patient satisfaction.

As shown in Table 9, none of these indicators were statistically significant predictors ($p > 0.05$). The model as a whole was not significant ($F(7, 70) = 0.480$, $p = 0.846$), and its explanatory power was low ($R^2 = 0.046$, Adjusted $R^2 = -0.050$), indicating

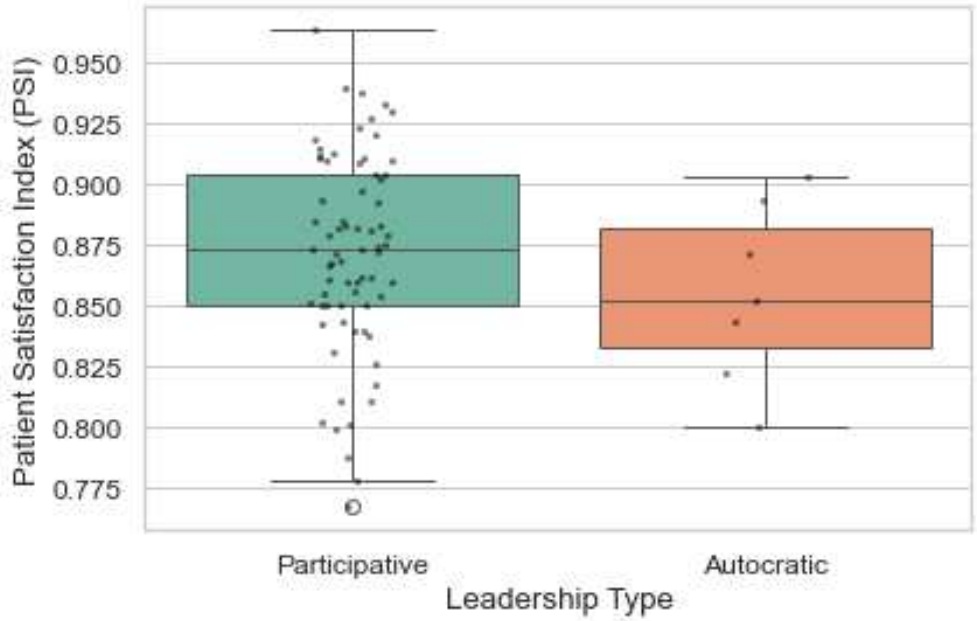


Fig. 9: Patient Satisfaction Index by Leadership Type

that these factors together accounted for less than 5% of the variation in patient satisfaction.

Predictor	**Coefficient**	**Std. Error**	**t**	**p-value**
Intercept	0.8909	0.039	22.707	0.000
Consult Employee	-0.0017	0.006	-0.292	0.771
Team Dependance	0.0031	0.006	0.526	0.600
Manager Info Sufficiency	-0.0019	0.004	-0.472	0.639
Team Involvement Acceptance	-0.0024	0.005	-0.525	0.601
Goal Alignment	-0.0028	0.006	-0.463	0.645
Decision Conflict	-0.0044	0.004	-1.113	0.270
Team Info Sufficiency	0.0028	0.004	0.667	0.507
Model Fit: $R^2 = 0.046$, Adjusted $R^2 = -0.050$, $F(7, 70) = 0.480$, $p = 0.846$				

Table 9: Multiple Linear Regression: Patient Satisfaction Index by Managerial Indicators

To evaluate potential multicollinearity among predictors, Variance Inflation Factors (VIFs) were computed (see Table 10). All VIF values were below the conservative threshold of 5, confirming the absence of problematic multicollinearity and indicating that the predictors were sufficiently independent of one another.

To account for potential confounding institutional characteristics, a multiple linear regression model was estimated with the Patient Satisfaction Index as the dependent

Variable	VIF
Consult Employee	1.367
Team Dependance	1.338
Manager Info Sufficiency	1.226
Team Involvement Acceptance	1.279
Goal Alignment	1.492
Decision Conflict	1.300
Team Info Sufficiency	1.257

Table 10: Variance Inflation Factor (VIF) for Managerial Indicators

variable and leadership style as the principal predictor. Control variables included hospital size, region, manager's educational background, and years in a managerial role as shown in Table 11. The model was statistically significant overall ($F(5, 75) = 4.03, p = 0.003$), explaining approximately 18% of the variance in patient satisfaction ($R^2 = 0.182$).

Predictor Variable	Coefficient (β)	Standard Error	t Value	p Value
Intercept	3.98	0.18	22.11	< 0.001
Authoritarian Style (1 = Yes)	-0.04	0.10	-0.42	0.676
Hospital Size	-0.09	0.04	-2.31	0.024
Region	0.05	0.03	1.68	0.097
Manager Education (ref. = Medicine)	0.08	0.05	1.58	0.119
Years in Role	0.03	0.01	2.44	0.018

Table 11: Multiple Linear Regression Model Predicting Patient Satisfaction

The coefficient for Authoritarian Leadership was negative but non-significant ($\beta = -0.04, p = 0.676$), corroborating the earlier findings that leadership orientation exerts no measurable effect on satisfaction levels. Among the control variables, hospital size showed a modest but significant negative association ($\beta = -0.09, p = 0.024$), implying that larger institutions may encounter structural difficulties in maintaining patient-centred responsiveness. Conversely, managerial tenure displayed a positive relationship ($\beta = 0.03, p = 0.018$), suggesting that accumulated managerial experience enhances organizational coordination and patient experience. No other predictors reached statistical significance. These results reinforce the interpretation that contextual and institutional factors, rather than leadership orientation alone, are the principal determinants of patient satisfaction outcomes.

Given the ordinal nature of satisfaction responses, an additional ordinal logistic regression (OLR) was conducted as a robustness check, with the Patient Satisfaction Category serving as the dependent variable and leadership style as the predictor. The coefficient for Authoritarian Style was again negative but statistically non-significant ($\beta = -0.31, SE = 0.68, p > 0.05$), corresponding to an odds ratio (OR) = 0.74 (95%

CI: 0.20–2.79). The Nagelkerke pseudo-$R^2 = 0.003$, indicating that leadership style explains a negligible portion of the variation in satisfaction categories.

These findings do not provide empirical support for RQ2, which examines the relationship between leadership style and patient satisfaction. Across all analytical approaches, including group comparisons, correlation analysis, and regression modeling, leadership orientation did not exhibit a statistically significant effect on satisfaction outcomes. Although participative leadership was associated with slightly higher mean satisfaction scores, the differences were not statistically meaningful. Instead, the results indicate that institutional and contextual factors, particularly hospital size and managerial tenure, play a more substantial role in shaping patient evaluations. This pattern suggests that leadership influences patient satisfaction indirectly, through organizational processes such as communication, coordination, and staff engagement, rather than directly affecting patient perceptions. Overall, patient satisfaction appears largely consistent across leadership styles, highlighting the importance of organizational capacity, staff competence, and communication quality as the primary determinants of perceived healthcare quality in Romanian public hospitals.

5.2.3 Administrative Decision-Making Model and Patient satisfaction

RQ3 examines whether the adoption of the Administrative Decision-Making Model (ADM) is associated with patient satisfaction levels exceeding the 75% benchmark. To assess this, a one-sample t-test was conducted comparing the observed mean satisfaction score with the established threshold. The results indicated a mean satisfaction score of 3.50, which falls below the benchmark value of 3.6. The test statistic ($t = -4.15$) and corresponding one-tailed p-value ($p = 0.00005$) confirm that the observed satisfaction levels are significantly lower than the expected threshold.

The results presented in Table 12 indicates that none of the decision-making models exhibit a statistically significant relationship with the Satisfaction Index ($p \geq 0.05$ for all), thereby offering no empirical support for RQ3. The Administrative Decision-Making Model (ADM) shows a weak positive correlation ($\rho = 0.155$, $p = 0.174$), suggesting a slight, though statistically non-significant, tendency for hospitals that rely more extensively on this model to report higher levels of patient satisfaction. While this directional pattern is consistent with the expectation underlying RQ3, the strength and non-significance of the association preclude any substantive inference. In contrast, the Decide, Evidence-Based, Adaptive, and Incremental models display weak or negligible negative correlations with satisfaction, indicating that increased reliance on these decision-making approaches is not associated with improved patient satisfaction outcomes within the analyzed sample.

The Kruskal-Wallis H test examined whether patient satisfaction levels significantly differ across hospitals with varying degrees of ADM adoption. The obtained result (H=6.09, p=0.107) indicates no statistically significant difference in satisfaction across ADM usage levels at the 0.05 threshold. Although the data exhibit a weak positive trend consistent with the Spearman correlation result, $\rho = 0.155$, the variability within groups remains large enough to obscure a clear statistical effect as shown in Figure 10. These findings suggest that, while hospitals employing the Administrative Decision

Decision-Making Model	Spearman's ρ	p-value
Administrative Model	0.155	0.174
Decide Model	-0.067	0.561
Evidence-Based Model	-0.128	0.265
Adaptive Model	-0.031	0.787
Incremental Model	-0.157	0.170

Table 12: Spearman's Rank Correlation Results per Decisional Model

Model to a greater extent may show slightly higher mean satisfaction, the difference is not strong enough to conclude that ADM adoption independently predicts satisfaction outcomes.

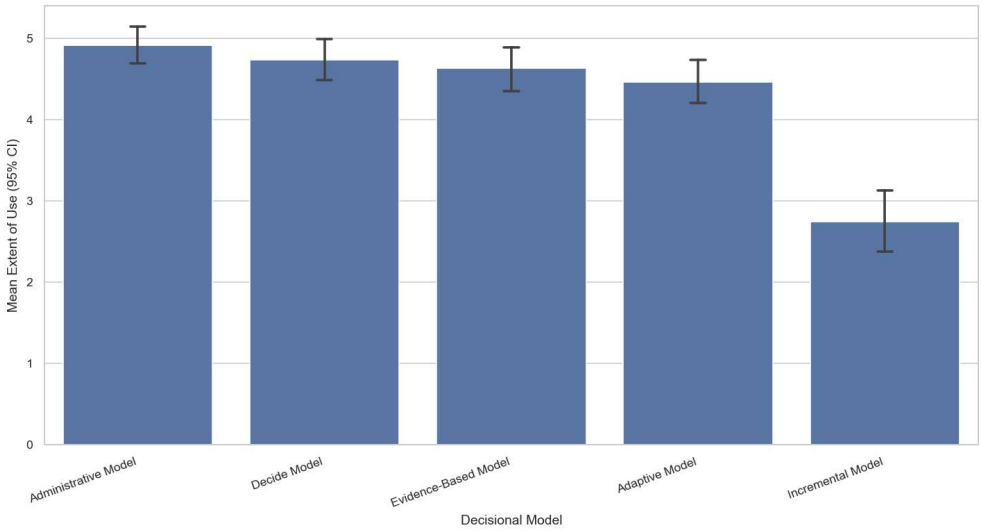


Fig. 10: Satisfaction Index by Administrative Model Level of Use

The one-sample t-test was performed on a subset of 74 hospitals characterized by high adoption of the Administrative Decision-Making Model (ADM), defined as scores of at least 4 on a five-point scale. Prior to conducting the hypothesis test, the normality of the Global PSI within this subgroup was assessed using the Shapiro-Wilk test. The results ($W = 0.8694, p = 0.6639$) indicate no significant deviation from normality, thereby supporting the appropriateness of a parametric testing approach. To complement the regression analysis, hospitals were further stratified based on their level of ADM adoption into two groups: High adoption ($scores \geq 4$, n = 74) and Low adoption ($scores \leq 3$, n = 4). Descriptive statistics, along with the results of the Shapiro–Wilk normality tests for each group, are summarized in Table 13.

The results of the one-sample t-test demonstrated a statistically significant difference between the observed mean Global PSI and the reference threshold of 0.75

ADM Group	N	Mean PSI	SD	W	p-value (Shapiro–Wilk)
High (≥ 4)	74	0.8694	0.0410	0.9872	0.6639
Low (≤ 3)	4	0.8835	0.0319	0.9274	0.5792

Table 13: Descriptive Statistics and Normality by ADM Usage Group

($t = 25.0391, p < 0.001$). The mean PSI among hospitals utilizing the ADM was 0.869, indicating that, on average, institutions applying this structured decision-making framework achieved patient satisfaction levels approximately 12% above the benchmark.

To assess whether increasing adoption of the ADM predicts higher levels of patient satisfaction, a simple linear regression was estimated with the Global PSI as the dependent variable and ADM usage score as the independent variable. The results confirm that the model did not achieve statistical significance ($F(1, 76) = 0.477, p = 0.492$), with an R^2 value of 0.006, suggesting that ADM usage explains less than 1% of the variance in patient satisfaction scores.

The estimated regression coefficients further confirm the absence of a meaningful linear association between ADM use and Global PSI. The intercept ($\beta_0 = 0.8547, p < 0.001$) represents the expected average patient satisfaction level when ADM usage is minimal, while the slope coefficient for the Administrative Model ($\beta_1 = 0.0031, p = 0.492$) is positive but non-significant. This indicates that increases in ADM adoption are not systematically accompanied by higher patient satisfaction scores.

The regression model did not yield a statistically significant slope coefficient ($\beta_1 = 0.0031, p = 0.492$), indicating that variation in ADM usage scores does not systematically predict patient satisfaction levels. The extremely low coefficient of determination ($R^2 = 0.006$) further suggests that the ADM alone explains less than one percent of the variance in Global PSI scores.

Both groups satisfied the normality assumption ($p > 0.05$), permitting a parametric comparison using an independent-samples t-test. Results revealed no significant mean difference in Global PSI between the two groups ($t = -0.676, p = 0.750$).

An independent-samples t-test was conducted to determine whether patient satisfaction differed significantly between hospitals with high adoption of the Administrative Decision-Making Model ($scores \geq 4$) and those with low adoption ($scores \leq 3$). The results indicate no statistically significant difference in the Global PSI between the two groups ($t = -0.6764, p = 0.7496$).

Although hospitals with low ADM usage displayed a marginally higher mean PSI (0.8835) compared to those with high ADM reliance (0.8694), this difference was not large enough to reach statistical significance. Both groups reported consistently high levels of satisfaction, exceeding the 0.75 benchmark established for this study.

To assess whether the ADM remains a significant predictor of patient satisfaction when controlling for alternative managerial frameworks, a multiple linear regression was estimated with the Global PSI as the dependent variable and all five decision-making models (Administrative, DECIDE, Evidence-Based, Adaptive, and Incremental) as predictors. The results, summarized in Table 14, indicate that the

overall model was not statistically significant ($F(5, 72) = 1.683, p = 0.150$), explaining approximately 10.5% of the total variance in PSI ($R^2 = 0.105$; Adjusted $R^2 = 0.042$).

Variable	Coefficient	Std. Error	t-value	p-value	95%CI
Intercept (β_0)	0.8650	0.027	31.751	0.000	[0.811, 0.919]
Administrative Model (β_1)	0.0013	0.005	0.254	0.800	[–0.009, 0.011]
Decide Model (β_2)	0.0060	0.006	1.019	0.312	[–0.006, 0.018]
Evidence-Based Model (β_3)	−0.0039	0.004	−0.886	0.378	[–0.013, 0.005]
Adaptive Model (β_4)	0.0014	0.005	0.280	0.780	[–0.009, 0.011]
Incremental Model (β_5)	−0.0064	0.003	−2.171	0.033	[–0.012, –0.001]
Model Fit: $R^2 = 0.105$, Adjusted $R^2 = 0.042$, $F(5, 72) = 1.683$, $p = 0.150$					

Table 14: Multiple Regression: Patient Satisfaction as a Function of Decision-Making Models

The regression coefficients reveal that, when all models are considered simultaneously, none of the structured frameworks, Administrative, DECIDE, Evidence-Based, or Adaptive, exert a statistically significant influence on patient satisfaction ($p > 0.05$ for all). The Administrative Model specifically shows a negligible coefficient ($\beta_1 = 0.0013, p = 0.800$), indicating that higher ADM adoption does not predict increased satisfaction once other managerial approaches are taken into account.

In contrast, the Incremental Model displays a small but statistically significant negative coefficient ($\beta_5 = -0.0064, p = 0.033$), suggesting that reliance on less formalized, ad-hoc decision-making processes is associated with a slight decrease in patient satisfaction levels. This inverse relationship supports the notion that inconsistency or reactive managerial strategies may undermine perceived care quality.

The findings do not provide empirical support for RQ3, which examines whether the adoption of the Administrative Decision-Making Model is associated with higher patient satisfaction. Although hospitals reporting greater use of the ADM tend to maintain satisfaction levels above the 75% benchmark, the results do not indicate that ADM adoption alone accounts for these outcomes. Rather, patient satisfaction appears to reflect a complex interaction of managerial competence, team collaboration, and institutional culture, with administrative planning representing only one contributing factor.

5.2.4 Managerial Educational Background and Patient Satisfaction

RQ4 examines whether the educational background of hospital managers, specifically medical versus non-medical training, is associated with differences in patient satisfaction levels. To address this question, the analysis compares satisfaction outcomes between healthcare units led by managers with medical qualifications and those managed by professionals from non-medical disciplines.

The dataset comprised two independent groups of healthcare units: those managed by individuals with a medical background (n = 33) and those led by non-medical managers (n = 45). Prior to conducting the inferential analysis, assumption testing was performed to determine the suitability of a parametric approach.

The Shapiro-Wilk test confirmed that the distribution of patient satisfaction scores did not significantly deviate from normality for the Medical ($W = 0.9877, p = 0.9648$), Economics ($W = 0.9588, p = 0.2710$), and Law ($W = 0.9301, p = 0.3809$) groups as shown in Table 15. The Engineering subgroup contained fewer than three valid observations and was therefore excluded from the normality test. Results of Levene's test indicated no significant differences in variance among the groups ($W = 0.9093, p = 0.4408$), supporting the assumption of homogeneity. Collectively, these findings confirm that the data meet the statistical prerequisites for a parametric one-way ANOVA, allowing for reliable comparison of patient satisfaction levels across fields of study.

Field of Studies	Shapiro–Wilk W	p-value	Interpretation
Economics	0.9588	0.2710	Normal distribution
Engineering	—	—	Not enough data (¡3 cases)
Law	0.9301	0.3809	Normal distribution
Medical	0.9877	0.9648	Normal distribution

Table 15: Normality and Homogeneity of Variance for Patient Satisfaction Index

The Shapiro-Wilk test confirmed that the distribution of patient satisfaction scores did not deviate significantly from normality across the Medical, Economics, and Law groups ($p > 0.27 for all$). Although the Engineering subgroup contained an insufficient number of cases for a normality test, Levene's test verified homogeneity of variances among all groups ($W = 0.9093, p = 0.4408$). Consequently, the data satisfied the conditions required for parametric testing, allowing the use of a one-way ANOVA to evaluate the hypothesis.

Source of Variation	Sum of Squares	df	F	p-value
Between Groups (Field of Studies)	0.003768	3	0.757	0.522
Within Groups (Residual)	0.122863	74	—	—

Table 16: One-Way ANOVA

The results of the ANOVA, summarized in Table 16, indicated that differences in patient satisfaction across fields of study were not statistically significant, $F(3, 74) = 0.757, p = 0.522$. As shown in Table 17 the model accounted for only 3.0% of the variance in patient satisfaction ($R^2 = 0.030, Adjusted R^2 = -0.010$), suggesting that managerial academic background did not meaningfully explain variation in satisfaction levels.

Examination of the regression coefficients (see Table 18) revealed that, relative to medical managers, the mean satisfaction index was slightly higher among Economics managers ($+0.0033, p = 0.748$) and slightly lower among Law ($-0.0170, p = 0.228$) and Engineering ($-0.0079, p = 0.793$) managers; however, all differences were small and statistically non-significant.

Statistic	Value	Interpretation
R^2	0.030	3.0% of variance in satisfaction explained by field of study
Adjusted R^2	–0.010	No improvement in model fit after adjusting for predictors
$F(3, 74)$	0.7565	Not statistically significant ($p = 0.522$)

Table 17: Model Fit Summary

Field of Study	Coefficient	Std. Error	95% CI (Lower, Upper)	p-value
Intercept (Medical)	0.8716	0.007	[0.861, 0.886]	¡0.001
Economics vs Medical	+0.0033	0.010	[–0.017, 0.024]	0.748
Law vs Medical	–0.0170	0.014	[–0.045, 0.010]	0.228
Engineering vs Medical	–0.0079	0.030	[–0.070, 0.051]	0.793

Table 18: Coefficients by Field of Studies

Consistent with these findings, the Tukey HSD post-hoc analysis (Table 19) revealed that none of the pairwise comparisons with the Medical group reached significance (p ¿ 0.60 for all). The observed mean differences were minimal, ranging from –0.0033 (Economics vs. Medical) to +0.0170 (Law vs. Medical), and their 95% confidence intervals all crossed zero.

Group 1	Group 2	Mean Difference	p-adj	95% CI (Lower, Upper)	Significant?
Economics	**Medical**	–0.0033	0.988	[–0.0301, 0.0235]	No
Engineering	**Medical**	0.0079	0.993	[–0.0701, 0.0859]	No
Law	**Medical**	0.0170	0.603	[–0.0191, 0.0531]	No

Table 19: Tukey HSD Post-Hoc Comparisons

As shown in Table 20, assumption testing confirmed that the data met the requirements for parametric testing. Both medical ($W = 0.9877, p = 0.9648$) and non-medical ($W = 0.9667, p = 0.2196$) groups exhibited normally distributed satisfaction scores, while Levene's test confirmed equality of variances ($W = 0.5139, p = 0.4756$). These results permitted the use of an independent-samples t-test to compare group means.

The test results presented in Table 21 revealed no statistically significant difference in patient satisfaction between medical and non-medical managers, $t(76) = 0.2811, p = 0.7794$. The mean difference (Medical – Non-Medical) was only 0.0026, with a 95% confidence interval $[-0.0160, 0.0213]$, indicating that any observed difference was trivial and statistically indistinguishable from zero. The calculated Cohen's $d = 0.0638$ (Hedges' correction applied) reflects a negligible effect size, far below the conventional threshold for a small effect ($d \approx 0.2$).

A bootstrap estimation of the mean difference (5,000 iterations) was conducted, yielding nearly identical results: mean difference = 0.0026, 95% CI [-0.0157, 0.0207], confirming the stability of the parametric estimates.

Group	Shapiro–Wilk W	p-value	Interpretation
Medical (n = 33)	0.9877	0.9648	Normally distributed
Non-Medical (n = 45)	0.9667	0.2196	Normally distributed

Table 20: Assumption Testing for Medical vs. Non-Medical Managers

Statistic	Value	Interpretation
$t(76)$	0.2811	Not significant ($p = 0.7794$)
Mean difference	0.0026	Minimal difference
95% CI for mean difference	$[-0.0160, 0.0213]$	No difference
Cohen's d	0.0638	Negligible effect (< 0.2)

Table 21: Independent-Samples t-Test Results and Effect Size (Medical vs. Non-Medical Managers)

Further validation through a linear regression model (see Table 22) reinforced the absence of a statistically significant effect of managerial background on satisfaction levels. After adjusting for potential variance using heteroscedasticity, robust standard errors, the coefficient for Manager Background (Medical = 1, Non-Medical = 0) remained nonsignificant ($\beta = 0.0026, p = 0.780$), with a 95% confidence interval $[-0.0158, 0.0211]$. The model explained less than 1% of the total variance ($R^2 = 0.001$), confirming the negligible influence of this variable.

Parameter	Coefficient (β)	SE	t	p-value	95% CI
Intercept	0.8690	0.006	138.48	< 0.001	$[0.857, 0.881]$
Manager Background	0.0026	0.0094	0.279	0.780	$[-0.0158, 0.0211]$

Table 22: Adjusted Linear Regression Model for Managerial Background

These findings do not provide empirical support for RQ4, which examines whether managerial educational background is associated with differences in patient satisfaction. The analysis demonstrate that hospitals led by individuals with medical training do not achieve higher satisfaction levels than those managed by non-medical professionals. Across all analytical approaches, no statistically significant differences were observed between the two groups. Furthermore, robustness checks suggest that the satisfaction construct may exhibit limited internal coherence, potentially constraining the detection of subtle group differences.

6 Discussion

The findings point to a structural decoupling between formal governance mechanisms and patient-perceived quality, suggesting that accreditation and managerial frameworks function primarily as institutional signals rather than effective determinants of patient experience. This pattern is consistent with institutional theory, where formal

structures serve symbolic or compliance functions without necessarily translating into observable performance outcomes.

A central contribution of this study is the empirical demonstration that managerial and organizational variables do not significantly explain variation in patient satisfaction. Firstly, policymakers may reconsider the current criteria used for the selection and evaluation of hospital managers by eliminating those based on the manager's educational background or previous administrative experience. The findings suggest that managerial performance and patient satisfaction are not directly determined by such background characteristics, but rather by actual managerial competencies and a strong patient-oriented approach. Secondly, the ANMCS standards could be revised and improved by including dimensions that more accurately reflect patient satisfaction levels. This would allow for a more patient-oriented approach and contribute to the overall improvement of healthcare quality. Developing a national strategy focused on patient satisfaction could become a core element of the accreditation and evaluation process for hospitals. Finally, hospital managers can use the findings of this study to align their priorities toward identifying and implementing measures aimed at improving patient satisfaction. By integrating patient feedback and aligning internal processes with patient expectations, managers can enhance the institution's reputation and strengthen organizational performance.

The findings reveal that none of the proposed predictors exerted a statistically significant influence on satisfaction outcomes. First, accreditation level showed no significant correlation with patient satisfaction. Both Spearman and Pearson coefficients indicated weak, non-significant associations, suggesting that higher accreditation status does not necessarily translate into superior patient experience. This finding aligns with Greenfield et al. [4] and Pomey et al. [6], who show that accreditation primarily improves procedural compliance rather than directly influencing patient perceptions.

Second, leadership style was not a decisive determinant of satisfaction. Although participative leaders reported slightly higher satisfaction scores than authoritarian ones, the difference was not statistically significant. This finding mirrors international literature indicating that leadership exerts its strongest influence on staff motivation and teamwork, which only indirectly affect patient experience [11–13].

Third, although hospitals adopting the Administrative Decision-Making Model achieved satisfaction levels above the 75% benchmark, statistical analyses indicated that the relationship between ADM use and patient satisfaction remained weak and non-significant. While this model emphasizes structured collaboration and evidence-informed decision-making [14], its widespread institutionalization across Romanian hospitals may have reduced inter-organizational variability, thereby limiting its explanatory capacity.

Finally, managerial educational background did not significantly predict patient satisfaction. Hospitals led by medical professionals exhibited only marginally higher mean satisfaction than those managed by individuals from economics, law, or engineering backgrounds. This suggests that while medical training may enhance understanding of clinical processes, it does not guarantee higher satisfaction unless complemented by communication, empathy, and leadership skills [29, 38].

Across all models, patient satisfaction levels were consistently high and stable, with average indices exceeding 0.85. This uniformity suggests that satisfaction in Romanian hospitals is primarily sustained by systemic factors, such as service accessibility, patient safety policies, and staff professionalism, rather than by individual managerial characteristics. More specifically, patient satisfaction appears to be shaped by relational and organizational dynamics, including communication quality, teamwork, institutional culture, and staff–patient interactions. These findings indicate that patient experience is less sensitive to formal governance structures and more responsive to the quality of interpersonal and organizational processes within healthcare institutions.

The absence of significant associations across all four hypotheses highlights the complexity of linking managerial structures to subjective patient experiences. The finding that accreditation category did not predict satisfaction supports prior conclusions that accreditation's influence on patient experience is largely indirect, operating through improvements in processes and safety culture rather than direct patient-level outcomes [4, 5, 39].

Similarly, the lack of measurable impact from leadership style corroborates the view that participative and transformational leadership primarily enhance internal work climates, communication, and staff engagement, which may not immediately translate into perceptible differences for patients [11, 12]. In the Romanian context, hierarchical management traditions and limited managerial autonomy may further constrain the expression of participative practices within public hospitals.

The weak predictive power of the ADM underscores the limitations of procedural rationality in complex healthcare environments. As [14] observed, the ADM's success depends on iterative collaboration between clinical and administrative actors. However, in practice, institutional rigidity and communication barriers may hinder its full implementation, muting its expected impact on patient outcomes.

The results concerning managerial educational background align with studies showing that technical expertise alone does not ensure effective leadership or patient satisfaction. High-performing managers balance analytical competence with emotional intelligence, empathy, and communication, competencies often acquired through experience rather than academic specialization [29].

These findings are consistent with evidence from European healthcare systems, where accreditation has been shown to improve organizational processes and safety culture without consistently translating into higher patient satisfaction [8, 18].

Similarly, studies conducted in North American contexts, including the United States and Canada, report that accreditation and formal governance structures exhibit only modest or indirect associations with patient experience, with greater influence attributed to organizational culture and communication practices [39].

In Middle Eastern healthcare systems, comparable patterns have been observed, where accreditation improves compliance and standardization but does not uniformly enhance patient satisfaction outcomes [16].

Theoretically, this study reinforces the argument that healthcare performance emerges from dynamic interactions among structure, culture, and human behavior rather than from formalized models alone. Effective governance requires integrating

administrative rationality with participative and evidence-based decision processes that enable responsiveness and learning [9].

Practically, these findings advocate for a shift from rigid model adherence toward cross-functional collaboration and adaptive leadership. Training programs should prioritize participative, evidence-informed, and context-sensitive strategies that empower managers to engage clinical teams in shared decision-making. Policymakers and accreditation authorities should also integrate managerial quality indicators, such as transparency, communication, and staff engagement, into accreditation frameworks to better capture the human dimensions of organizational effectiveness.

This research benefited from a nationwide sample of 78 hospitals, combining data from managerial surveys, accreditation registries, and the Ministry of Health's patient satisfaction dataset. The use of multiple analytical methods, correlations, t-tests, non-parametric comparisons, and regression models, enhanced robustness and triangulation.

However, several limitations must be acknowledged. The cross-sectional design restricts causal inference; observed associations may evolve differently over time. The study also relied on self-reported managerial data, potentially introducing social desirability bias. Additionally, contextual heterogeneity across hospitals, differences in region, size, and organizational culture, may have attenuated effect sizes.

Future studies should employ longitudinal or mixed-methods designs, integrating patient-level variables (e.g., demographics, case complexity) and qualitative insights from staff and patients. Such designs would elucidate the mechanisms linking managerial decision models to patient-centered outcomes and better capture the evolving dynamics of post-accreditation hospital governance.

Future investigations should integrate multi-level data combining patient demographics, institutional performance metrics, and longitudinal satisfaction trends. Comparative research across European healthcare systems would clarify whether the weak associations observed here reflect Romanian system-specific factors or broader regional patterns in post-accreditation management. Moreover, testing hybrid decision frameworks that blend administrative, participative, and evidence-based principles could reveal how different decision logics interact to sustain quality and patient trust [14, 28].

In summary, patient satisfaction within Romanian public hospitals remains consistently high but only weakly associated with accreditation, leadership style, or managerial models. The results suggest that patient experience is sustained less by formal structures than by the interplay of leadership effectiveness, communication transparency, and teamwork. These findings reaffirm that healthcare management must evolve from procedural compliance toward evidence-based, adaptive, and relational governance. By linking empirical evidence with managerial theory, this study contributes to a more nuanced understanding of post-accreditation healthcare leadership and provides a foundation for policy and training initiatives that promote sustainable, patient-centered quality improvement.

This study contributes to the literature in three ways. First, it provides empirical evidence from a national sample demonstrating the limited explanatory power

of accreditation and managerial variables for patient satisfaction. Second, it introduces a dual representation of patient satisfaction, distinguishing between system-level and relational dimensions. Third, it advances the concept of structural decoupling between governance mechanisms and patient-perceived quality in transitional healthcare systems.

7 Conclusion

This study examined how managerial and organizational factors, specifically accreditation category, leadership style, decision-making models, and managerial educational background, affect patient satisfaction in Romanian public hospitals. By testing four interrelated hypotheses, the analysis explored whether accreditation status, participative or authoritarian leadership, the adoption of structured decision-making frameworks such as the ADM, and the manager's professional training significantly predict variations in patient satisfaction.

Across all statistical analyses, patient satisfaction levels were consistently high but showed no significant association with the managerial factors examined. Accreditation level did not predict higher satisfaction, supporting evidence that accreditation primarily enhances internal processes, documentation, and safety culture rather than directly influencing patient-perceived quality [4]. Braithwaite et al. [5] similarly report that accreditation improves organizational performance without guaranteeing better patient experience, while Pomey et al. [6] emphasize its role as a driver of internal organizational change.

Leadership style was also not a significant determinant of patient satisfaction. Boamah et al. [11] show that leadership primarily influences staff motivation and work environment, whereas Wong et al. [12] demonstrate that its effects on patient outcomes are largely indirect. In a similar vein, Sfantou et al. [13] highlight that leadership contributes more strongly to safety culture and organizational climate than to direct patient perceptions.

Hospitals employing the Administrative Decision-Making Model achieved satisfaction rates above the 75% benchmark; however, regression and correlation analyses confirmed that ADM usage did not significantly predict patient satisfaction. This finding suggests that while structured decision-making enhances organizational consistency, it does not, in isolation, translate into measurable improvements in patient experience [14].

The educational background of hospital managers, whether medical or non-medical, did not significantly influence satisfaction outcomes, indicating that effective management depends more on leadership capabilities and communication skills than on formal disciplinary training.

These findings reinforce international evidence suggesting that patient satisfaction is shaped primarily by organizational culture and communication rather than formal governance structures. This conclusion aligns with broader theoretical perspectives emphasizing that healthcare performance depends on the interaction of organizational culture, communication, and professional collaboration rather than procedural formalism [8, 18].

From a practical standpoint, the results highlight the importance of strengthening leadership capacities that promote participation, transparency, and adaptability. Leadership training programs should move beyond procedural compliance to cultivate relational and evidence-informed decision-making skills. Moreover, accreditation and evaluation frameworks should integrate managerial quality indicators, such as team engagement, communication openness, and staff involvement, to better capture the organizational behaviors that underpin patient-centered care [4, 5]. Developing monitoring tools that link managerial decisions with real-time patient feedback could also enhance accountability and learning across hospital departments [8, 18].

Several limitations must be acknowledged. The cross-sectional design restricts causal interpretation, while the reliance on self-reported managerial data introduces potential reporting bias. Regional and institutional heterogeneity may further attenuate the strength of observed relationships. Future research should adopt longitudinal or mixed-methods designs incorporating patient-level data (e.g., demographics, case complexity) and institutional performance metrics, complemented by qualitative insights from managers, clinicians, and patients. Comparative analyses across European healthcare systems would also help contextualize these results and determine whether the weak associations observed here are specific to Romania's post-accreditation environment or reflect broader continental patterns of managerial influence [4].

From an international perspective, the findings suggest that the misalignment between accreditation outcomes and patient-perceived quality may not be unique to Romania, but reflective of broader structural tensions present in multiple healthcare systems. Similar patterns have been observed in both European and North American contexts, where formal quality metrics do not consistently translate into improved patient experience. As such, the present study provides transferable insights into the limitations of accreditation as a standalone governance instrument, highlighting the need for more integrative approaches that incorporate patient-centered and organizational dimensions of quality across diverse health system settings.

In conclusion, while patient satisfaction in Romanian public hospitals remains robust, it is not significantly shaped by accreditation category, leadership style, decision-making model, or managerial background. Sustained improvements in satisfaction are more likely to arise from fostering effective leadership, open communication, and collaborative organizational cultures than from adherence to formal administrative frameworks. These findings underscore the need for healthcare governance models that integrate structural accountability with adaptive, evidence-based management, ultimately strengthening the relational foundations of patient-centered care within Romania's evolving health system.

Declarations

Some journals require declarations to be submitted in a standardised format. Please check the Instructions for Authors of the journal to which you are submitting to see if you need to complete this section. If yes, your manuscript must contain the following sections under the heading 'Declarations':

- Funding
  This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.
- Conflict of interest/Competing interests
  The authors declare that they have no competing interests.
- Ethics approval and consent to participate
  Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board (or Ethics Committee) of Clinical Rehabilitation Hospital Iaşi (certificate of approval dated 25 November 2020).
  Informed Consent Statement: Informed consent was obtained from all subjects involved in the study. Written informed consent has been obtained from the participants to publish this paper.
- Consent for publication
  Not applicable.
- Data availability
  The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.
- Materials availability
  Not applicable.
- Code availability
  Not applicable.
- Declaration of generative AI and AI-assisted technologies in the manuscript preparation process.
  During the preparation of this work, the author(s) used ChatGPT to obtain suggestions regarding the appropriate statistical tests for data analysis and to refine the written language. After using this tool, the author(s) thoroughly reviewed and edited the content and take full responsibility for the integrity and accuracy of the final manuscript.
- Author contribution.
  Carmen Cumpăt conceived the study, analyzed the data, and drafted the manuscript. Muthana Zouri completed the statistical analysis. Andreea Grădinaru and Anca Elena Lungu contributed to data collection. Nicoleta Zouri, Daniela Tatiana Agheorghiesei, Robert Negru, and Bogdan Gabriel Zugravu provided critical revisions and approved the final manuscript. Bogdan Ionel Tamba provided project administration. All authors read and approved the final manuscript.

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