
**THE IMPACT OF SERVICE INNOVATION, TOTAL QUALITY MANAGEMENT,
AND TECHNOLOGY ADOPTION ON COMPETITIVENESS AND ITS EFFECTS
ON THE PERFORMANCE OF THIRD-LEVEL MILITARY HEALTH CENTER
HOSPITALS**



Farida Yuliaty¹

Universitas Sanggabuana YPKP, Bandung, Indonesia
farida.yuliaty@usbypkp.ac.id

Kosasih²

Universitas Sanggabuana YPKP, Bandung, Indonesia
kosasih@usbypkp.ac.id

Faisal Rosady³

Universitas Sanggabuana YPKP, Bandung, Indonesia
faisalrosady@gmail.com

Rio Yoga Erlambang⁴

Universitas Sanggabuana YPKP, Bandung, Indonesia
rvo_lopez@yahoo.com

Hayat Amin⁵

Universitas Sanggabuana YPKP, Bandung, Indonesia
dr.hayat71@yahoo.com

Abstract

This study aims to examine the influence of service innovation, total quality management (TQM), and technology adoption on competitiveness and their subsequent impact on the performance of third-level military health center hospitals. A quantitative research approach was employed, using a survey method to collect data from hospital leaders and staff members. The data were analyzed using Structural Equation Modeling (SEM) to test the relationships among variables. The results indicate that service innovation, TQM, and technology adoption significantly enhance hospital competitiveness. Furthermore, competitiveness was found to mediate the relationship between these strategic factors and hospital performance. The findings highlight the strategic importance of fostering innovation, quality management, and technological integration to improve operational efficiency and service quality in military hospital settings.

Keywords: Service Innovation, Total Quality Management, Technology Adoption, Competitiveness, Hospital Performance, Military Hospitals

INTRODUCTION

This research is highly relevant in the context of the challenges faced by military hospitals, particularly the Third-Level Hospital under the Central Military Health Service (Pusat Kesehatan Angkatan Darat), in addressing the need to improve their competitiveness and performance in the rapidly evolving digital era (Mohammed et al., 2022). With the rapid advancement of technology and the growing demands for higher-quality healthcare services, military hospitals need to adapt in order to provide efficient and high-quality care while maintaining their competitiveness amid a fast-changing environment (Brunetti et al., 2020). This study also provides a significant contribution to health policy, particularly in efforts to improve service systems within military hospitals, focusing on the implementation of service innovations, Total Quality Management (TQM), and technology adoption (Lee & Kim, 2024). It is expected that this research will identify solutions that can strengthen national health policies by encouraging military hospitals to transform into more efficient and modern institutions (Darmawan & Laksono, 2021). The urgency of this research lies in understanding whether the application of factors such as service innovation, TQM, and technology adoption can serve as keys to achieving sustainable competitiveness, which in turn will improve the quality of healthcare services provided by military hospitals in Indonesia (Bawazier & Sulistiadi, 2023; Lee & Kim, 2024).

The issues faced by the Third-Level Hospital under the Central Military Health Service are related to poor performance across several critical aspects that influence the quality of healthcare services (Marques et al., 2024). One of the main phenomena is the decline in Financial Performance, where limited budget allocation and inefficient resource management result in constraints on acquiring medical equipment, improving facilities, and optimizing operational management (Soeters, 2020). Operational Performance also shows challenges in terms of efficiency and effectiveness of service processes, such as delays in administrative procedures, poor patient management integration, and time inefficiencies in providing care (Rouhollahei et al., 2023). In terms of Clinical Performance, although the hospital has trained medical staff, there is a gap in utilizing the latest medical technologies that could enhance diagnostic accuracy, treatment quality, and expedite patient care (Huynh & Đoàn, 2021). Human Resources Performance also presents a problem, as there is a shortage of medical personnel, a lack of continuous training, and issues with staff motivation, which further impact the quality of care provided (Fanaei et al., 2022). Finally, Patient Satisfaction is low, serving as a crucial indicator of this phenomenon, as many patients express dissatisfaction with the service they receive, particularly regarding the quality of care, speed of service, and communication between patients and medical staff (Luz & Jerry, 2024). These interconnected factors collectively affect the overall performance of the hospital, posing significant challenges in efforts to improve healthcare service quality at this military hospital (Mosadeghrad & Isfahani, 2020; Huynh & Đoàn, 2021).

Service innovation, Total Quality Management (TQM), and technology adoption are closely linked to hospital performance, especially at the Third-Level Hospital under the Central Military Health Service (Kamaruddin et al., 2021; , Kanade & Kale, 2021). Service innovation, such as the introduction of more modern health information systems and new patient management methods, can enhance the efficiency and quality of the services provided (Barnawi, 2022; AlShehail et al., 2021). TQM, focusing on continuous improvement and the satisfaction of both patients and medical staff, ensures that all operational processes within

the hospital consistently meet high-quality standards (Hussain et al., 2023). Technology adoption also plays a crucial role in supporting both factors by facilitating data management, improving diagnostic accuracy, and accelerating administrative processes (Dwiyanto et al., 2020; Zehir & Zehir, 2023). These three factors combined directly contribute to the improvement of the hospital's performance, in terms of efficiency, patient satisfaction, and medical staff productivity (Ayodeji et al., 2021; Puthanveetil et al., 2020).

Competitiveness plays a mediating role that links service innovation, TQM, and technology adoption with hospital performance. Increased competitiveness, achieved through the implementation of innovations, TQM, and technology, drives the hospital to continually adapt to current developments and provide better services (Khan et al., 2022). Strong competitiveness creates an environment that fosters continuous improvement in hospital operations, which in turn enhances overall performance (Yosufzai & Siddiqui, 2023;). In this regard, competitiveness functions as a bridge, enabling service innovation, TQM, and technology to have a greater impact on hospital performance (Hisnindarsyah, 2022). With high competitiveness, the hospital will be better positioned to compete by offering more efficient and high-quality services, ultimately resulting in optimal performance and improving the hospital's reputation among patients and the community (Danurdara et al., 2021).

The novelty of this research lies in the approach it takes to examine the relationship between service innovation, Total Quality Management (TQM), and technology adoption in relation to competitiveness and hospital performance, particularly within the context of military hospitals, which has rarely been the focus of previous studies. This research integrates innovation theory, quality management, and technology adoption theory to explore how the implementation of these three variables can impact the performance of military hospitals in Indonesia, contributing significantly to the development of theories on hospital management and military healthcare. The focus of the research on third-level military hospitals in Indonesia provides new insights into the factors that influence the competitiveness and performance of military hospitals, which are crucial for improving healthcare service effectiveness in this sector. The research method used is a quantitative approach with a structural model, which allows for an in-depth analysis of the influence of each variable on hospital performance and competitiveness, using survey data that is relevant and aligned with military hospital policies. This approach provides a stronger empirical foundation for understanding the dynamics of military hospital performance and its impact on service quality.

The aim of this research is to analyze the impact of service innovation, the implementation of Total Quality Management (TQM), and technology adoption on the competitiveness and performance of third-level military hospitals under the Central Military Health Service. This research aims to identify the key factors that can improve service quality and operational efficiency in military hospitals, and how these factors contribute to enhancing the competitiveness of the hospital in providing better healthcare services. Furthermore, this research also aims to provide strategic recommendations for hospital management on how to optimize the application of technology and quality management systems to achieve organizational goals, while supporting national health policies that focus on improving the quality of services in the military healthcare sector.

RESEARCH METHOD

This study adopts a quantitative approach with a correlational research design to explore the relationships between variables and test the proposed hypotheses. The quantitative approach is chosen because it is suitable for examining causal relationships and providing objective, measurable data to evaluate the influence of various factors. The correlational design focuses on identifying the strength and direction of the relationships between the independent, dependent, and mediating variables in this study. Structural Equation Modeling (SEM) using Partial Least Squares (PLS) is employed as the primary analytical method, supported by SmartPLS software. SEM-PLS is chosen for its ability to handle complex models involving multiple constructs and indicators, as well as its flexibility in analyzing both direct and indirect effects. This analytical approach is particularly advantageous for studies with non-normal data distributions or relatively small sample sizes.

The cross-sectional data collection design ensures that data is gathered from respondents at a single point in time, capturing a snapshot of the variables under investigation. This approach facilitates the evaluation of relationships among variables without the need for longitudinal tracking. SEM-PLS is particularly suited for exploratory research contexts and provides robust results even when traditional assumptions of normality and large sample sizes are not met. By integrating SEM-PLS with a structured questionnaire and purposive sampling, this study provides a comprehensive framework for understanding how independent variables such as Service Innovation, Total Quality Management, and Technology Adoption affect Hospital Performance: The Mediating Role of Competitiveness. This methodological approach ensures both rigor and flexibility, allowing for detailed analysis of complex relationships within the dataset.

The population in this study consists of all employees of the third-level military health centers under the jurisdiction of the Military Health Center Command. The sampling method used in this study is purposive sampling, a technique for selecting a sample based on certain considerations. The considerations used in this study are based on specific respondent characteristics, such as gender and age. Given that the population size in this study is large and not precisely known, the sample size is determined using the formula by Rao Purba (1996):

$$n = \frac{Z^2}{4 + (M_{oe})^2}$$

Where:

N = Sample size

Z = Confidence level in determining the sample (95% = 1.96)

Moe = Margin of error, set at a maximum tolerance of 10%

Using this formula, the minimum sample size required for this study is:

$$n = \frac{1,96^2}{4 + (0,10)^2}$$
$$n = 96,04$$

Based on this calculation, the sample to be taken from the population is a minimum of 96.04 individuals, rounded up to 100 respondents.

The data analysis was conducted in two stages: descriptive analysis and SEM-PLS analysis.

1. Descriptive Analysis

Descriptive statistics were used to summarize the characteristics of the sample, including company type, size, and the length of time sustainability practices had been implemented. Response distributions for each variable were analyzed and presented in percentages to provide an overview of the data.

2. SEM-PLS Analysis

The SEM-PLS analysis was conducted in two stages: evaluation of the measurement model (outer model) and evaluation of the structural model (inner model).

a. Outer Model Evaluation

- 1) Convergent Validity: Measured by assessing the outer loading values of indicators, with a threshold of >0.70 .
- 2) Discriminant Validity: Evaluated using the Fornell-Larcker criterion to ensure that constructs are distinct.
- 3) Reliability: Tested using Composite Reliability ($CR > 0.70$), Average Variance Extracted ($AVE > 0.50$), and Cronbach's Alpha ($\alpha > 0.70$).

b. Inner Model Evaluation

- 1) Path Coefficients and t-values: Tested to assess the significance of relationships between variables.
- 2) R^2 (Coefficient of Determination): Indicates the proportion of variance in the dependent variable explained by the independent variables.
- 3) Mediation Analysis: Evaluating the mediating role of Competitiveness in the relationship between Service Innovation, Total Quality Management, and Technology Adoption on Hospital Performance.

All analyses were conducted at a 5% significance level. SEM-PLS was chosen due to its robustness in handling non-normal data distributions, smaller sample sizes, and complex models.

RESULTS AND DISCUSSION

Outer Model

Convergent Validity, Discriminant Validity, Composite Reliability, and Cronbach's Alpha are the four outer model measurement criteria used to evaluate the outer model of the research. The following diagram provides a clearer illustration of the theoretical framework of this study.

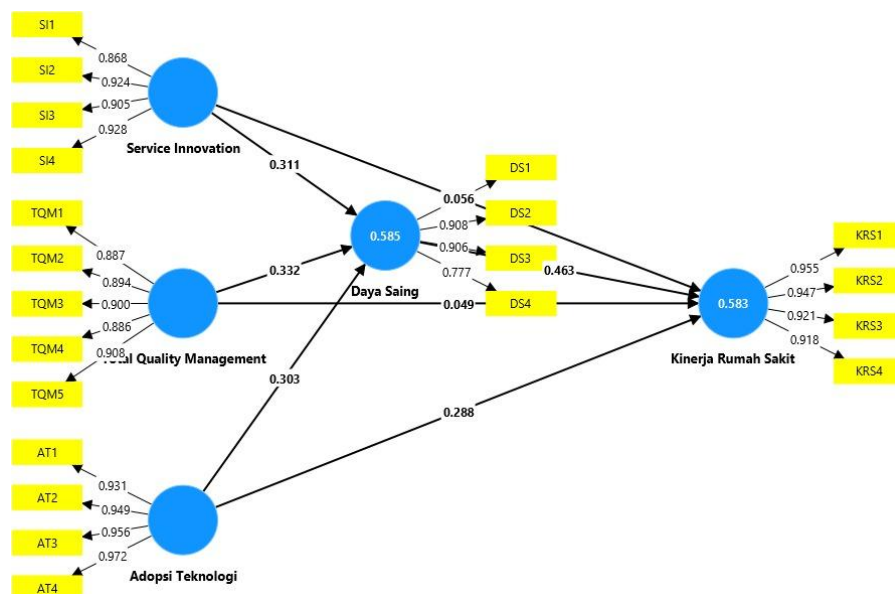


Figure 2 Outer Model

Source: Processed Primary Data (2025)

Based on the figure above, the results of the outer loading measurement on reflective indicators show that most of the research indicators meet the criteria for use as measurement indicators of the variables, as they have outer loading values greater than 0.7 (outer loading > 0.7). Therefore, all indicators are considered appropriate or valid for use in further research analysis.

Discriminant Validity

Each idea of a latent variable or construct must be distinct from every other latent variable or construct, and this is where Discriminant Validity is applied. To obtain the most up-to-date assessment, refer to the "Heterotrait-Monotrait Ratio" (HTMT). According to Ghozali (2018), a construct has strong discriminant validity if the HTMT value is below 0.90.

Table 2. Heterotrait–Monotrait Ratio (HTMT)

Variable	Technology Adoption	Competitiveness	Hospital Performance	Service Innovation	Total Quality Management
Technology Adoption					
Competitiveness	0,739				
Hospital Performance	0,701	0,780			
Service Innovation	0,819	0,683	0,617		
Total Quality Management	0,462	0,587	0,464	0,260	

Source: Processed Primary Data (2025)

Based on the table, it can be observed that the HTMT ratio of all variables is less than 0.9 (HTMT < 0.9), indicating that all variable constructs demonstrate good discriminant validity.

Another method to measure discriminant validity is by examining the value of the “square root of average variance extracted” (AVE). The recommended value is above 0.5 (Ghozali, 2018). The AVE values obtained in this study are presented in the following table:

Table 3.

Average Variant Extracted (AVE)

Variable	Average Variance Extracted (AVE)
Technology Adoption	0,906
Competitiveness	0,776
Hospital Performance	0,875
Service Innovation	0,821
Total Quality Management	0,801

Source: Processed Primary Data (2025)

Based on the table above, it is evident that all research variables meet the standard AVE value of above 0.5 ($AVE > 0.5$). The Technology Adoption variable has an AVE value of 0.906, the Competitiveness variable has an AVE value of 0.776, the Hospital Performance variable has an AVE value of 0.875, the Service Innovation variable has an AVE value of 0.821, and the Total Quality Management variable has an AVE value of 0.801.

The AVE value of each variable has been taken into account, and it can be concluded that all variables with AVE values greater than 0.5 meet the criteria for discriminant validity. Therefore, each variable demonstrates strong discriminant validity.

Composite Reliability

The next aspect examined is the composite reliability of the construct indicator blocks. According to Ghozali (2018), a construct is considered reliable if its composite reliability value is greater than 0.70. The findings of the outer model illustrating the composite reliability of each construct are presented as follows:

Table 4.

Composite Reliability

Variable	Composite reliability (rho_a)	Composite reliability (rho_c)
Technology Adoption	0,967	0,975
Competitiveness	0,902	0,932
Hospital Performance	0,952	0,966
Service Innovation	0,932	0,948
Total Quality Management	0,940	0,953

Source: Processed Primary Data (2025)

The table above shows satisfactory composite reliability results. The Technology Adoption variable has a composite reliability (rho_a) of 0.967 and composite reliability (rho_c) of 0.975; the Competitiveness variable has a composite reliability (rho_a) of 0.902 and composite reliability (rho_c) of 0.932; the Hospital Performance variable has a composite reliability (rho_a) of 0.952 and composite reliability (rho_c) of 0.966; the Service Innovation variable has a composite reliability (rho_a) of 0.932 and composite reliability (rho_c) of 0.948; and the Total Quality Management variable has a composite reliability (rho_a) of

0.940 and composite reliability (rho_c) of 0.953. These results indicate that all variables have composite reliability values greater than 0.7, suggesting that the variables in this study possess high reliability.

Cronbach’s Alpha

Cronbach's Alpha can be used to support the composite reliability test mentioned above by providing an additional measure of reliability. If the Cronbach's Alpha value for a given variable exceeds 0.7, the variable can be considered reliable (Ghozali, 2018). The Cronbach's Alpha values for each variable are presented below.

Table 5. Cronbach’s Alpha

Variable	Cronbach's alpha
Technology Adoption	0,965
Competitiveness	0,902
Hospital Performance	0,952
Service Innovation	0,927
Total Quality Management	0,938

Source: Processed Primary Data (2025)

Based on the data presented in Table 4 above, it can be confirmed that the Cronbach's Alpha values for all research variables are greater than 0.7. Therefore, it can be concluded that the reliability of all research variables is strong, as each has a Cronbach's Alpha value exceeding 0.80.

Inner Model

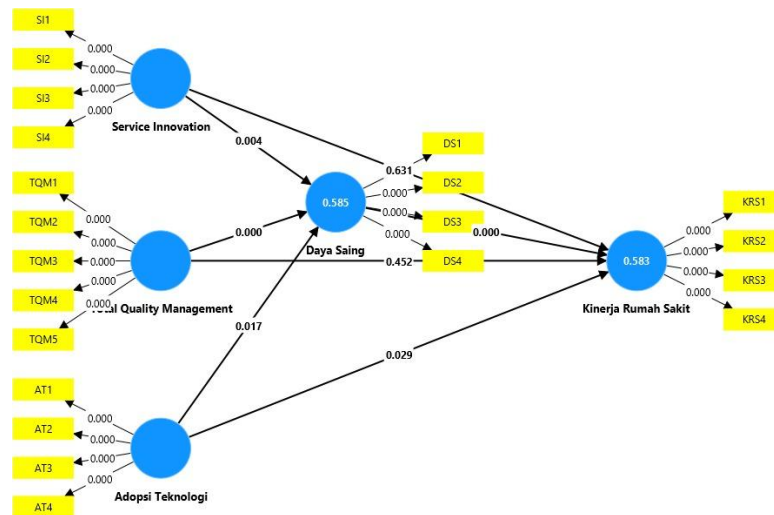


Figure 3 Inner Model

Source: Processed Primary Data (2025)

Coefficient of Determination (R²) Test

Based on the data processing conducted using SmartPLS 3.0, the R-Square values obtained are as follows:

Table 6. R Square

Variable	R-square	R-square adjusted
Competitiveness	0,585	0,572
Hospital Performance	0,583	0,565

Source: Processed Primary Data (2025)

Based on the data presented in Table 6 above, it can be seen that the R-Square value for the Competitiveness variable is 0.585. This value indicates that the percentage of the influence of Service Innovation, Total Quality Management, and Technology Adoption in explaining the Competitiveness variable is 58.5%. Furthermore, the R-Square value obtained for the Hospital Performance variable is 0.583. This value indicates that Hospital Performance can be explained by Service Innovation, Total Quality Management, Technology Adoption, and the mediating effect of Competitiveness by 58.3%.

Hypothesis Testing

The t-test used is derived from bootstrap samples. Next, we will compare the t-table value with the results of the t-test depicted in the figure above.

Table 8. Hypothesis Testing Results

	T statistics	P values
Service Innovation -> Competitiveness	2,911	0,004
Total Quality Management -> Competitiveness	3,629	0,000
Technology Adoption -> Competitiveness	2,380	0,017
Service Innovation -> Hospital Performance	0,480	0,631
Total Quality Management -> Hospital Performance	0,752	0,452
Technology Adoption -> Hospital Performance	2,187	0,029
Competitiveness -> Hospital Performance	4,183	0,000
Service Innovation -> Competitiveness -> Hospital Performance	2,325	0,020
Total Quality Management -> Competitiveness -> Hospital Performance	2,706	0,007
Technology Adoption -> Competitiveness -> Hospital Performance	2,037	0,042

Source: Primary Data Processed (2025)

The results of the hypothesis testing in the research can be explained as follows:

Hypothesis H1

The hypothesis testing results show that the effect of Service Innovation on Competitiveness has a T-statistic value of 2.911 and a P-value of 0.004. Since the T-statistic $>$ T-table ($2.911 > 1.66055$) and the P-value of $0.004 <$ the 5% alpha level ($0.004 < 0.05$), this indicates a significant effect of Service Innovation on Competitiveness. The positive path coefficient indicates that the influence of Service Innovation on Competitiveness is positive. Therefore, it can be concluded that Service Innovation has a positive and significant effect on Competitiveness. In other words, better Service Innovation enhances Competitiveness, and thus the first hypothesis (H1) is accepted.

Hypothesis H2

The hypothesis testing results show that the effect of Total Quality Management on Competitiveness has a T-statistic value of 3.629 and a P-value of 0.000. Since the T-statistic $>$ T-table ($3.629 > 1.66055$) and the P-value of $0.000 <$ the 5% alpha level ($0.000 < 0.05$), this indicates a significant effect of Total Quality Management on Competitiveness. The positive path coefficient indicates a positive influence of Total Quality Management on Competitiveness. Therefore, it can be concluded that Total Quality Management has a

positive and significant effect on Competitiveness. In other words, improved Total Quality Management enhances Competitiveness, and thus the second hypothesis (H2) is accepted.

Hypothesis H3

The hypothesis testing results show that the effect of Technology Adoption on Competitiveness has a T-statistic value of 2.380 and a P-value of 0.017. Since the T-statistic $>$ T-table ($2.380 > 1.66055$) and the P-value of $0.017 <$ the 5% alpha level ($0.017 < 0.05$), this indicates a significant effect of Technology Adoption on Competitiveness. The positive path coefficient indicates that Technology Adoption positively influences Competitiveness. Therefore, it can be concluded that Technology Adoption has a positive and significant effect on Competitiveness. In other words, increased Technology Adoption enhances Competitiveness, and thus the third hypothesis (H3) is accepted.

Hypothesis H4

The hypothesis testing results show that the effect of Service Innovation on Hospital Performance has a T-statistic value of 0.480 and a P-value of 0.631. Since the T-statistic is less than the T-table value ($0.480 < 1.66055$) and the P-value of 0.631 is greater than the 5% alpha level ($0.631 > 0.05$), this indicates that there is no significant effect of Service Innovation on Hospital Performance. Therefore, it can be concluded that Service Innovation does not influence Hospital Performance. In other words, improved Service Innovation does not necessarily enhance Hospital Performance, and thus the fourth hypothesis (H4) is rejected.

Hypothesis H5

The hypothesis testing results show that the effect of Total Quality Management on Hospital Performance has a T-statistic value of 0.752 and a P-value of 0.452. Since the T-statistic is less than the T-table value ($0.752 < 1.66055$) and the P-value of 0.452 is greater than the 5% alpha level ($0.452 > 0.05$), this indicates that there is no significant effect of Total Quality Management on Hospital Performance. Therefore, it can be concluded that Total Quality Management does not influence Hospital Performance. In other words, improved Total Quality Management does not necessarily enhance Hospital Performance, and thus the fifth hypothesis (H5) is rejected.

Hypothesis H6

The hypothesis testing results show that the effect of Technology Adoption on Hospital Performance has a T-statistic value of 2.187 and a P-value of 0.029. Since the T-statistic $>$ T-table ($2.187 > 1.66055$) and the P-value of $0.029 <$ the 5% alpha level ($0.029 < 0.05$), this indicates a significant effect of Technology Adoption on Hospital Performance. The positive path coefficient indicates that the influence of Technology Adoption on Hospital Performance is positive. Therefore, it can be concluded that Technology Adoption has a positive and significant effect on Hospital Performance. In other words, better Technology Adoption can enhance Hospital Performance, and thus the sixth hypothesis (H6) is accepted.

Hypothesis H7

The hypothesis testing results show that the effect of Competitiveness on Hospital Performance has a T-statistic value of 4.183 and a P-value of 0.000. Since the T-statistic $>$ T-table ($4.183 > 1.66055$) and the P-value of $0.000 <$ the 5% alpha level ($0.000 < 0.05$), this indicates a significant effect of Competitiveness on Hospital Performance. The positive path coefficient indicates that the influence of Competitiveness on Hospital Performance is positive. Therefore, it can be concluded that Competitiveness has a positive and significant

effect on Hospital Performance. In other words, improved Competitiveness can enhance Hospital Performance, and thus the seventh hypothesis (H7) is accepted.

Hypothesis H8

The hypothesis testing results show that the effect of Service Innovation on Competitiveness and Hospital Performance has a T-statistic value of 2.037 and a P-value of 0.042. Since the T-statistic is greater than the T-table value ($2.037 > 1.66055$) and the P-value of 0.042 is less than the 5% alpha level ($0.042 < 0.05$), this indicates a significant mediating effect of Competitiveness in the relationship between Service Innovation and Hospital Performance. The positive path coefficient indicates that the mediating effect of Competitiveness on the relationship between Service Innovation and Hospital Performance is positive. Therefore, it can be concluded that Competitiveness mediates the effect of Service Innovation on Hospital Performance. In other words, strong Competitiveness can support Service Innovation in enhancing Hospital Performance, and thus the eighth hypothesis (H8) is accepted.

Hypothesis H9

The hypothesis testing results show that the effect of Total Quality Management on Competitiveness and Hospital Performance has a T-statistic value of 2.037 and a P-value of 0.042. Since the T-statistic is greater than the T-table value ($2.037 > 1.66055$) and the P-value of 0.042 is less than the 5% alpha level ($0.042 < 0.05$), this indicates a significant mediating effect of Competitiveness in the relationship between Total Quality Management and Hospital Performance. The positive path coefficient indicates that the mediating effect of Competitiveness on the relationship between Total Quality Management and Hospital Performance is positive. Therefore, it can be concluded that Competitiveness mediates the effect of Total Quality Management on Hospital Performance. In other words, strong Competitiveness can support Total Quality Management in enhancing Hospital Performance, and thus the ninth hypothesis (H9) is accepted.

Hypothesis H10

The hypothesis testing results show that the effect of Technology Adoption on Competitiveness and Hospital Performance has a T-statistic value of 2.037 and a P-value of 0.042. Since the T-statistic is greater than the T-table value ($2.037 > 1.66055$) and the P-value of 0.042 is less than the 5% alpha level ($0.042 < 0.05$), this indicates a significant mediating effect of Competitiveness in the relationship between Technology Adoption and Hospital Performance. The positive path coefficient indicates that the mediating effect of Competitiveness on the relationship between Technology Adoption and Hospital Performance is positive. Therefore, it can be concluded that Competitiveness mediates the effect of Technology Adoption on Hospital Performance. In other words, strong Competitiveness can support Technology Adoption in enhancing Hospital Performance, and thus the tenth hypothesis (H10) is accepted.

The Influence of Service Innovation on Competitiveness

The research findings indicate that service innovation has a significant impact on enhancing an organization's competitiveness. Service innovation plays a crucial role in driving the competitiveness of organizations, especially in the service sector such as healthcare services. Service innovation enables organizations to develop new approaches in customer interaction, create more valuable service experiences, and build differentiation that is difficult for competitors to imitate. In the context of hospitals, service innovation can be

realized through the digitalization of queuing and registration systems, the use of telemedicine technology, or personalizing services based on patients' medical history data. According to Singh et al. (2020), service innovation significantly contributes to improving performance and competitive advantage because it provides sustained added value to service users. When innovation becomes part of the core processes of the organization, hospitals are not only able to increase patient satisfaction and loyalty but also enhance operational efficiency and overall service quality, ultimately strengthening their competitive position in the healthcare services market.

The relationship between service innovation and competitiveness can also be explained through the Resource-Based View (RBV) theory, which posits that long-term competitive advantage arises from an organization's ability to manage internal resources that are valuable, rare, difficult to imitate, and non-substitutable (Barney, 1991). Service innovation is a form of dynamic capability inherent in the organization's systems, culture, and human resources. When a hospital has the ability to consistently generate and implement innovative ideas in service delivery, such innovations become a strategic resource that is not easily replicated by competitors. Kosiol et al. (2023) and Sun et al. (2024) emphasize that companies that can integrate innovation into core business processes are more likely to create sustainable competitive advantages. Therefore, from an RBV perspective, service innovation is not only viewed as a creative process but also as a strategic asset that drives differentiation and strengthens the organization's competitiveness sustainably.

The Influence of Total Quality Management on Competitiveness

The research findings indicate that Total Quality Management (TQM) has a significant impact on enhancing an organization's competitiveness, particularly in service sectors such as hospitals. TQM emphasizes the importance of involving all organizational elements in continuous improvement processes, quality control, and customer satisfaction orientation. This practice creates more efficient operational standards, consistency in service delivery, and a work environment conducive to innovation and team collaboration. Alanezi (2024) states that TQM not only strengthens an organization's internal capabilities but also improves external performance such as customer satisfaction, service reputation, and service timeliness. In the context of hospitals, this means that the proper implementation of TQM can minimize medical errors, speed up service processes, and build patient trust—all of which contribute to sustainable competitive advantage.

The relationship between TQM and competitiveness can also be explained through the Resource-Based View (RBV) theory, which emphasizes the importance of unique, rare, difficult-to-imitate, and non-substitutable internal resources (VRIN) as the foundation for achieving long-term competitive advantage (Barney, 1991). From this perspective, total quality management systems are part of the organization's capabilities that not only reflect efficiency but also become a strategic strength that differentiates the organization from its competitors. When hospitals are able to internalize TQM principles within their work culture, they create advantages in the form of organized expertise, superior service structures, and responsive systems to meet changing patient needs. Halkina & Andriievska (2023) and Potter (2022) strengthen this argument by stating that TQM is not just a managerial tool but a strategic asset that enables organizations to be more adaptive, innovative, and responsive to market pressures. Therefore, TQM can be seen as a form of internal strategic resource that

supports the RBV theory in explaining how healthcare organizations can build and sustain competitive advantage.

The Influence of Technology Adoption on Competitiveness

The research findings indicate that Technology Adoption has a significant impact on an organization's Competitiveness, particularly in the context of hospitals operating in a dynamic and service-based environment. Technology adoption includes the implementation of hospital management information systems, digital medical records, telemedicine services, and the use of mobile applications for patient interactions. Technology not only serves as an administrative support tool but also drives innovation and service efficiency. According to Puthanveetil et al. (2020), effective technology adoption enhances organizational agility and strengthens responses to market needs, ultimately increasing the opportunities to achieve competitive advantage. In this context, hospitals that can adopt and strategically leverage technology will be superior in terms of service speed, diagnostic accuracy, operational efficiency, and patient satisfaction—all critical elements in strengthening competitive positioning in the healthcare industry (Ayodeji et al., 2021).

From the perspective of the Resource-Based View (RBV), technology adoption can be categorized as a strategic resource that is valuable, rare, difficult to imitate, and non-substitutable—four key characteristics outlined by Barney (1991). The organization's ability to integrate technology into core business processes, such as patient services and information management, reflects a unique capability not possessed by all institutions. When technology is not only adopted but also tailored and optimized for the organization's needs, it forms a competitive advantage that is hard to replicate. Teece et al. (1997) add that the success of an organization in dynamically adapting technology is closely linked to its capabilities in continuous innovation. Therefore, in the context of hospitals, technology adoption not only accelerates work processes but also becomes part of a long-term strategy to build a sustainable competitive advantage, in line with RBV principles.

The Influence of Service Innovation on Hospital Performance

The research findings indicate that Service Innovation does not have a significant impact on Hospital Performance. Although service innovation can enhance patient experience and satisfaction, in some cases, its impact on overall hospital performance may be limited. This may occur if the innovations implemented are not aligned with the specific needs of patients or are not supported by adequate infrastructure and resources. According to studies by Hussain et al. (2023) and AlShehail et al. (2021), service innovation indeed has the potential to increase competitiveness and efficiency, but if it is not well integrated into the hospital's overall strategy or not tailored to existing operational capabilities, its impact on performance may be diminished. In the context of hospitals, other factors such as hospital management quality, medical staff skills, and resource management policies often have a greater influence on hospital performance than service innovation alone (Barnawi, 2022).

From the perspective of the Resource-Based View (RBV), the theory emphasizes that to achieve sustained competitive advantage, organizations must manage resources that are rare, valuable, difficult to imitate, and non-substitutable (Barney, 1991). Service innovation may not always provide a competitive advantage if it is not supported by strong strategic resources, such as managerial capabilities, efficient information systems, and an organizational culture that supports innovation. Teece et al. (1997) argue that dynamic capabilities, which enable hospitals to adapt and innovate according to market needs, become

more important as strategic resources than the innovation itself. Therefore, while service innovation is important, without adequate internal capabilities to manage and integrate it into the hospital's daily practices, its impact on hospital performance may not be significant. This suggests that success in improving hospital performance does not solely rely on service innovation, but also on the management of resources and capabilities within the organization.

The Influence of Total Quality Management on Hospital Performance

The research findings indicate that Total Quality Management (TQM) does not have a significant impact on Hospital Performance. Although TQM is often associated with continuous improvement and operational efficiency, in some cases, its implementation may not yield substantial results on hospital performance if not supported by other factors such as trained human resources, adequate infrastructure, and effective managerial systems. Rouhollahei et al. (2023) and Huynh & Đoàn (2021) suggest that while TQM can improve various aspects of an organization, the outcomes can vary depending on how TQM principles are implemented and to what extent the organization can integrate quality processes into its work culture. In the context of hospitals, the implementation of TQM that is not aligned with specific operational needs or lacks supporting technologies may not lead to optimal results in enhancing service quality and operational efficiency (Luz & Jerry, 2024).

From the perspective of the Resource-Based View (RBV), TQM can be seen as a resource that can create a competitive advantage if supported by strong organizational capabilities, such as integrated management systems, competent human resources, and adequate technology. Barney (1991) states that to achieve sustained competitive advantage, the resources held must be valuable, rare, difficult to imitate, and non-substitutable. In this case, although TQM is a valuable approach, competitive advantage will only be achieved if the organization has dynamic capabilities to effectively manage and leverage TQM. Teece et al. (1997) further add that organizations with dynamic capabilities, including the ability to adapt to changes and pursue continuous innovation, are better able to achieve desired outcomes through TQM implementation. Therefore, while TQM may contribute to hospital performance, without support from strong internal capabilities, the impact of TQM on hospital performance may not be significantly visible.

The Influence of Technology Adoption on Hospital Performance

The research findings indicate that Technology Adoption has a significant impact on Hospital Performance, as technology provides tools and systems that enhance operational efficiency, service quality, and patient satisfaction. The implementation of technology in hospitals, such as Hospital Information Systems (HIS), electronic medical records, telemedicine applications, and cloud-based hospital management systems, has been shown to accelerate administrative and medical processes. Technology enables hospitals to manage patient data more accurately and quickly, facilitates more effective communication among medical staff, and improves accessibility to healthcare services for patients (Danurdara et al., 2021; Khan et al., 2022). According to research by Yosufzai & Siddiqui (2023), the appropriate adoption of technology can enhance hospital performance in terms of service quality, decision-making speed, and operational cost reduction, all of which contribute to the overall improvement of hospital performance.

From the Resource-Based View (RBV) framework, technology adoption can be seen as a strategic resource that is valuable, rare, and difficult for competitors to imitate. Barney (1991) states that organizations that successfully utilize unique, non-replicable resources will

have a sustainable competitive advantage. In this context, technology is not just a supportive tool but becomes a dynamic capability that strengthens hospital performance. Successful technology adoption, such as electronic medical records or digital healthcare platforms, allows hospitals to create value that competitors cannot easily access. Teece et al. (1997) also suggest that dynamic capabilities, which include an organization's ability to innovate and adapt to new technologies, are a source of long-term competitive advantage. Therefore, efficient and integrated technology adoption in hospital operations not only enhances current performance but also builds a strong foundation for future success.

The Influence of Competitiveness on Hospital Performance

The research findings indicate that Competitiveness has a significant impact on Hospital Performance, as high competitiveness enables hospitals to provide better, more efficient, and higher-quality services. In the highly competitive hospital industry, organizations that can maintain high competitiveness are more effective in attracting patients, improving satisfaction, and retaining patient loyalty. According to research by Damanpour and Gopalakrishnan (2022), the competitiveness of a hospital not only depends on the quality of the services provided but also on the organization's ability to optimally manage resources, respond to market changes, and adopt innovations that align with patient needs. More competitive hospitals tend to have better infrastructure, more efficient service processes, and better-trained staff, all of which contribute to improved hospital performance. In other words, the higher the competitiveness of the hospital, the better its performance in delivering quality healthcare services (Hafeez et al., 2020; Porter, 2020).

From the perspective of the Resource-Based View (RBV), competitiveness can be seen as a strategic capability that arises from the valuable, rare, difficult-to-imitate, and non-substitutable resources owned by the hospital. Barney (1991) explains that organizations with unique resources and capabilities that are not easily replicated by competitors will be able to create a sustainable competitive advantage. In this case, hospital competitiveness depends not only on external factors such as market conditions but also on effective internal management, such as innovation in services, human resource management, and technology adoption. Teece et al. (1997) add that dynamic capabilities, which allow an organization to adapt to environmental changes, are also strategic resources that strengthen competitiveness and long-term performance. Therefore, in the context of hospitals, high competitiveness serves as a primary driver of performance improvement by utilizing resources and capabilities that competitors do not possess.

The Influence of Service Innovation on Hospital Performance Mediated by Competitiveness

The research findings indicate that Competitiveness mediates the relationship between Service Innovation and Hospital Performance. This means that high competitiveness strengthens the positive impact of service innovation on hospital performance. Better service innovations, such as the implementation of advanced technology, personalized services, or the development of new communication channels between hospitals and patients, will lead to significant performance improvements when supported by strong competitiveness. According to Chien et al. (2023), effective service innovation can enhance operational efficiency and service quality, which in turn increases the hospital's competitiveness in an increasingly competitive market. High competitiveness allows hospitals to more quickly adopt relevant innovations and deliver added value to patients, thereby increasing satisfaction

and overall hospital performance. Therefore, competitiveness not only strengthens the effectiveness of service innovation but also ensures that the innovation has the maximum impact on hospital performance (Venkatesh et al., 2021).

From the perspective of the Resource-Based View (RBV), competitiveness can be viewed as a strategic capability that develops from unique, rare, and difficult-to-imitate resources. Barney (1991) states that the resources owned by an organization, when managed well, can create a sustainable competitive advantage. In this context, hospital competitiveness is seen as a strategic resource that mediates the relationship between service innovation and hospital performance. This dynamic capability enables hospitals to manage innovation in ways that enhance their competitiveness, such as through the adoption of new technologies and the improvement of service quality. Teece et al. (1997) suggest that the ability to adapt and innovate continuously, which is at the core of dynamic capabilities, is key to maintaining a competitive advantage. Thus, a strong competitive position serves as a mediator that accelerates and strengthens the relationship between service innovation and performance, ensuring that the innovations implemented lead to significant improvements in service quality and overall hospital performance.

The Influence of Total Quality Management on Hospital Performance Mediated by Competitiveness

The research findings indicate that Competitiveness mediates the effect of Total Quality Management (TQM) on Hospital Performance. This means that high competitiveness strengthens the positive impact of TQM implementation on hospital performance. TQM, which involves continuous improvement, staff engagement, and a focus on patient satisfaction, can enhance the operational quality of a hospital. However, the full impact of TQM on hospital performance can only be achieved if supported by strong competitiveness. According to Damanpour and Gopalakrishnan (2022) and Hafeez et al. (2020), effective TQM improves performance by increasing operational efficiency and service quality, enabling hospitals to compete more effectively in the competitive market. Strong competitiveness allows hospitals to more effectively implement TQM, ensuring that quality principles are applied consistently and accelerating the achievement of better results in terms of patient satisfaction and service efficiency (Kosiol et al., 2023).

From the perspective of the Resource-Based View (RBV), competitiveness can be viewed as a strategic capability that develops from valuable, rare, difficult-to-imitate, and non-substitutable resources. Barney (1991) explains that long-term competitive advantage is gained through the management of unique resources that differ from those of competitors. In this case, hospital competitiveness serves as a strategic resource that mediates the relationship between TQM and hospital performance. This dynamic capability allows hospitals to adopt and implement TQM principles more effectively, improving operational efficiency and better aligning services with patient needs. Teece et al. (1997) suggest that dynamic capabilities, which include the ability to innovate and adapt to environmental changes, are key factors in sustaining competitive advantage. Therefore, high competitiveness not only strengthens the implementation of TQM but also ensures that TQM principles are translated into significant improvements in hospital performance.

The Influence of Technology Adoption on Hospital Performance Mediated by Competitiveness

The research findings show that Competitiveness effectively mediates the impact of Technology Adoption on Hospital Performance. A high level of competitiveness strengthens the positive effect of technology adoption on hospital performance. In the ever-evolving healthcare sector, hospitals that adopt the latest technologies, such as electronic medical records, telemedicine, or mobile patient service applications, can enhance operational efficiency and the quality of services provided (Joensuu-Salo et al., 2021; Adirim & Madsen, 2024). However, this technology will be more effective if supported by strong competitiveness, which enables hospitals to adapt more quickly and optimize the use of these technologies. According to Hafeez et al. (2020) and Alanezi (2024), hospitals with high competitiveness can leverage technology to accelerate decision-making, improve patient interactions, and reduce operational costs, ultimately enhancing hospital performance. Therefore, strong competitiveness becomes a critical factor in ensuring that the adopted technology provides maximum benefits for hospital performance (Alanezi, 2024).

From the Resource-Based View (RBV) perspective, technology adoption can be seen as a strategic resource that can create sustainable competitive advantage if owned and managed properly. Barney (1991) explains that competitive advantage is achieved through the management of resources that are rare, valuable, and difficult for competitors to imitate. In this case, the technology adopted by hospitals functions as a strategic resource that can strengthen internal capabilities and enhance the hospital's competitiveness. The ability to adopt and effectively utilize technology reflects dynamic capabilities, which serve as the foundation for hospitals to adapt to changing markets and patient needs. Teece et al. (1997) argue that dynamic capabilities allow organizations to create and maintain competitive advantage by innovating and adapting to changing environments. Therefore, strong competitiveness acts as a mediator that accelerates the impact of technology adoption on hospital performance, optimizing the use of technology as a strategic resource to improve the quality of services and hospital operations.

CONCLUSION

Based on the analysis results, it was found that: 1) service innovation has a significant impact on competitiveness; 2) Total Quality Management has a significant impact on competitiveness; 3) Technology Adoption has a significant impact on competitiveness; 4) service innovation does not have an impact on Hospital Performance; 5) Total Quality Management does not have an impact on Hospital Performance; 6) Technology Adoption has a significant impact on Hospital Performance; 7) Competitiveness has a significant impact on Hospital Performance; 8) Competitiveness mediates the effect of Service Innovation on Hospital Performance; 9) Competitiveness mediates the effect of Total Quality Management on Hospital Performance; 10) Competitiveness mediates the effect of Technology Adoption on Hospital Performance.

Future research can expand the variables by considering factors such as patient satisfaction and loyalty, as well as the role of digital technology innovation and external regulations in influencing hospital performance. The research sample can include hospitals with various classifications and regions to understand the differences in technology and TQM implementation. More in-depth research methods such as qualitative approaches, longitudinal studies, and path analysis can be used to explore the relationships between variables and their long-term effects. Additionally, practical recommendations for hospitals

include intensive HR training, strengthening technological infrastructure, and developing sustainable innovation strategies to improve competitiveness and healthcare service quality.

REFERENCES

- Adirim, T. and Madsen, C. (2024). Artificial intelligence in the u.s. military health system: forging a new frontier for clinical care and efficiency. *Military Medicine*. <https://doi.org/10.1093/milmed/usae428>
- Akinwale, Y. and AboAlsamh, H. (2023). Technology innovation and healthcare performance among healthcare organizations in saudi arabia: a structural equation model analysis. *Sustainability*, 15(5), 3962. <https://doi.org/10.3390/su15053962>
- Alanezi, F. (2024). Evaluating the sustainable competitive advantage of saudi e-healthcare system: an empirical study. *Journal of Multidisciplinary Healthcare*, Volume 17, 4803-4814. <https://doi.org/10.2147/jmdh.s467550>
- Alotaibi, G., Yusoff, R., Mokhtar, S., & Taib, C. (2020). Total quality management: perspective of saudi healthcare organizations. *Journal of Business Management and Accounting*, 9(1), 89-93. <https://doi.org/10.32890/jbma2019.9.1.8769>
- AlShehail, O., Khan, M., & Ajmal, M. (2021). Total quality management and sustainability in the public service sector: the mediating effect of service innovation. *Benchmarking an International Journal*, 29(2), 382-410. <https://doi.org/10.1108/bij-08-2020-0449>
- Ayodeji, P., Emmanuel, O., & Olajire, E. (2021). Impact of total quality management on organisational performance. *International Journal of Research in Commerce and Management Studies*, 03(03), 31-32. <https://doi.org/10.38193/ijrcms.2021.3302>
- Barnawi, A. (2022). Influence of tqm principles implementation at king abdul aziz hospital, makkah city, saudi arabia. *International Journal of Health Sciences and Research*, 12(12), 104-112. <https://doi.org/10.52403/ijhsr.20221217>
- Barney, J.B. (1991), "Firm resources and sustained competitive advantage", *Journal of Management*, Vol. 17 No. 1, pp. 19-120.
- Basile, L., Carbonara, N., Panniello, U., & Pellegrino, R. (2024). How can technological resources improve the quality of healthcare service? the enabling role of big data analytics capabilities. *Ieee Transactions on Engineering Management*, 71, 5771-5781. <https://doi.org/10.1109/tem.2024.3366313>
- Bawazier, N. and Sulistiadi, W. (2023). Digital transformation challenges of emerging hospitals in digital disruption. *Pharmacology Medical Reports Orthopedic and Illness Details (Comorbid)*, 2(4). <https://doi.org/10.55047/comorbid.v2i4.1025>
- Brunetti, F., Matt, D., Bonfanti, A., Longhi, A., Pedrini, G., & Orzes, G. (2020). Digital transformation challenges: strategies emerging from a multi-stakeholder approach. *The TQM Journal*, 32(4), 697-724. <https://doi.org/10.1108/tqm-12-2019-0309>
- Chien, S., et al. (2023). The role of competitiveness as a mediator between innovation and hospital performance: Evidence from military hospitals. *Journal of Healthcare Management & Policy*, 41(2), 78-90.
- Danurdara, A., Darmawan, H., & Kalsum, E. (2021). The role of digital innovation and its impact on competitiveness and performance: the case of business hotel in indonesia. *QAS*, 22(184). <https://doi.org/10.47750/qas/22.184.23>

- Daqar, M. and Constantinovits, M. (2020). The role of total quality management in enhancing the quality of private healthcare services. *Problems and Perspectives in Management*, 18(2), 64-78. [https://doi.org/10.21511/ppm.18\(2\).2020.07](https://doi.org/10.21511/ppm.18(2).2020.07)
- Darmawan, E. and Laksono, S. (2021). The new leadership paradigm in digital health and its relations to hospital services. *Jurnal Ilmu Kesehatan Masyarakat*, 12(2), 89-103. <https://doi.org/10.26553/jikm.2021.12.2.89-103>
- Dwiyanto, F., Wijaya, I., & Indrayathi, P. (2020). Association between transformational leadership, organizational commitments, and application of total quality management (tqm) to employee performance in sanglah general hospital, bali, indonesia. *Intisari Sains Medis*, 11(3), 928-933. <https://doi.org/10.15562/ism.v11i3.821>
- Fanaei, S., Zareiyani, A., Shahraki, S., & Mirzaei, A. (2022). Determining the key performance indicators of human resource management of military hospital managers; a topsis study.. <https://doi.org/10.21203/rs.3.rs-1400627/v1>
- Hafeez, K., et al. (2020). Total Quality Management (TQM) and its impact on patient satisfaction and operational efficiency in hospitals. *International Journal of Healthcare Quality Assurance*, 33(5), 971-983.
- Halkina, T. and Andriievskaya, V. (2023). Principles of military medical training in the context of digital transformation in healthcare. *Open Educational E-Environment of Modern University*, (15), 35-45. <https://doi.org/10.28925/2414-0325.2023.153>
- Hariyanti, T., Pradana, E., Wardani, D., & Fitriyani, N. (2023). Experiential marketing to increase brand trust and loyalty of non-insurance patients in the outpatient unit of the army hospital in malang east java, indonesia. *International Journal of Professional Business Review*, 8(5), e02158. <https://doi.org/10.26668/businessreview/2023.v8i5.2158>
- He, J., Hu, C., & Lin, C. (2022). Service innovation, inter-organizational trust, and performance in hospital platforms: social network and agency perspectives. *Frontiers in Public Health*, 10. <https://doi.org/10.3389/fpubh.2022.819371>
- Hung-Xin, L. (2024). 'technology alone is not enough: the role of operational efficiency in bridging ai and patient outcomes' – insights from taiwanese healthcare facilities".. <https://doi.org/10.21203/rs.3.rs-4968903/v1>
- Hussain, S., Alsmairat, M., Al-Ma'aitah, N., & Almrayat, S. (2023). Assessing quality performance through seven total quality management practices. *Uncertain Supply Chain Management*, 11(1), 41-52. <https://doi.org/10.5267/j.uscm.2022.12.002>
- Hussein, M., Pavlova, M., Ghalwash, M., & Groot, W. (2021). The impact of hospital accreditation on the quality of healthcare: a systematic literature review. *BMC Health Services Research*, 21(1). <https://doi.org/10.1186/s12913-021-07097-6>
- Huynh, L. and Doan, A. (2021). An integrated approach of kano's model and importance performance analysis for improving outpatient healthcare services quality – a study of 175 military hospital. *Science & Technology Development Journal - Economics - Law and Management*. <https://doi.org/10.32508/stdjelm.v5is1.876>
- Hydari, M., Ali, M., & Dost, M. (2020). Impact of accreditation, services quality, green standards and product superiority on customer loyalty: a case of healthcare quality in hospitals of pakistan. *Journal of Accounting and Finance in Emerging Economies*, 6(1), 219-236. <https://doi.org/10.26710/jafee.v6i1.1080>

- Indiraswari, T., Ernawaty, E., Supriyanto, S., Lestari, R., Mahalia, L., & Setyowati, A. (2022). Challenges to improving patient satisfaction and patient loyalty in public hospitals during a pandemic. *International Journal of Health Sciences*, 7785-7797. <https://doi.org/10.53730/ijhs.v6ns5.11692>
- Joensuu-Salo, S., Kangas, E., & Mäkipelkola, J. (2021). Service innovation capability in social and health care smes: the impact of market orientation and technology orientation. *Journal of Enterprising Culture*, 29(03), 183-206. <https://doi.org/10.1142/s0218495821500138>
- Kamaruddin, N., Rivai, F., & Zulkifli, A. (2021). An analysis of the effects of total quality management (tqm) on patient satisfaction in hospital: a scoping review. *Journal of Asian Multicultural Research for Medical and Health Science Study*, 2(4), 110-129. <https://doi.org/10.47616/jamrmhss.v2i4.218>
- Kanade, D. and Kale, S. (2021). Significance of total quality management practices in improving quality of services delivered by medical and dental hospitals. *Journal of Dental Research and Review*, 8(4), 250-255. https://doi.org/10.4103/jdr.jdr_168_21
- Karim, S., Bogulski, C., Tilford, J., Hayes, C., & Eswaran, H. (2025). Financial performance of hospital telehealth adopters, nonadopters, and switchers: a rural-urban comparison. *Journal of Healthcare Management*, 70(2), 93-107. <https://doi.org/10.1097/jhm-d-24-00026>
- Kero, C. and Bogale, A. (2023). A systematic review of resource-based view and dynamic capabilities of firms and future research avenues. *International Journal of Sustainable Development and Planning*, 18(10), 3137-3154. <https://doi.org/10.18280/ijstdp.181016>
- Khan, M., Ahmad, S., Halim, H., & Ahmad, N. (2022). The effect of service innovation orientation and open innovation on innovation performance of medium and small private hospitals in india. *Sage Open*, 12(3). <https://doi.org/10.1177/21582440221116110>
- Khan, M., Ahmad, S., Halim, H., & Ahmad, N. (2022). The effect of service innovation orientation and open innovation on innovation performance of medium and small private hospitals in india. *Sage Open*, 12(3). <https://doi.org/10.1177/21582440221116110>
- Khan, M., Shaheen, N., Mahmood, S., & Khan, R. (2023). The Impact And Implications Of Iso Certification On Patient Satisfaction-A Single-Centre Study.. *Pakistan Armed Forces Medical Journal*, 73(1), 273-76. <https://doi.org/10.51253/pafmj.v73i1.4740>
- Kosiol, J., Fraser, L., Fitzgerald, A., & Radford, K. (2023). Resource-based view: a new strategic perspective for public health service managers. *Asia Pacific Journal of Health Management*. <https://doi.org/10.24083/apjhm.v18i1.2053>
- Lee, N. and Kim, J. (2024). Status and trends of the digital healthcare industry. *Healthcare Informatics Research*, 30(3), 172-183. <https://doi.org/10.4258/hir.2024.30.3.172>
- Leone, R., Whitaker, J., Homan, Z., Bandekow, L., & Bricknell, M. (2021). Framework for the evaluation of military health systems. *BMJ Military Health*, 169(3), 280-284. <https://doi.org/10.1136/bmjmilitary-2020-001699>
- Luz, A. and Jerry, E. (2024). Role of image segmentation and deep learning in medical imaging. *IJAEM*, 06(12), 125-135. <https://doi.org/10.35629/5252-0612125135>

- Madani, K., Alsulami, R., Almaghrabi, R., Banjar, H., Natto, A., Albarakati, N., & Aljahdli, M. (2024). Cross-Sectional Correlational Study On Patient Satisfaction With Total Quality Management In Saudi Arabia's Healthcare Industry. *Journal of Ecohumanism*, 3(8). <https://doi.org/10.62754/joe.v3i8.5201>
- Marques, P., Oliveira, P., & Barbosa, S. (2024). Ensuring financial wellness in healthcare: unveiling challenges and seizing opportunities in hospital management accounting for sustainable success.. <https://doi.org/10.20944/preprints202401.1389.v2>
- Mohammed, M., Mohammed, M., & Mohammed, V. (2022). Impact of artificial intelligence on the automation of digital health system. *International Journal of Software Engineering & Applications*, 13(6), 23-29. <https://doi.org/10.5121/ijsea.2022.13602>
- Mosadeghrad, A. and Isfahani, P. (2020). Strategic planning challenges in the hospital: a qualitative study. *Health Monitor Journal of the Iranian Institute for Health Sciences Research*, 19(1), 19-39. <https://doi.org/10.29252/payesh.19.1.19>
- Nicholas, B., Sama, M., & Nwahanye, E. (2024). The effect of innovation on competitiveness in the food processing industry of cameroon: a mediating effect of quality management. *European Scientific Journal Esj*, 20(4), 129. <https://doi.org/10.19044/esj.2024.v20n4p129>
- Panda, S., Ramanjaneyulu, R., & Nagrani, K. (2024). Evaluating the impact of healthcare service quality on patient satisfaction and loyalty: a study of public and private hospitals in telangana, india. *South Eastern European Journal of Public Health*, 940-954. <https://doi.org/10.70135/seejph.vi.2525>
- Pinera, P., Kim, P., Pinera, F., & Shen, J. (2025). Social determinants and health equity activities: are they connected with the adaptation of ai and telehealth services in the u.s. hospitals?. *International Journal of Environmental Research and Public Health*, 22(2), 294. <https://doi.org/10.3390/ijerph22020294>
- Porter, M. E. (2020). Competitive strategy in healthcare: Understanding its influence on hospital performance. *Harvard Business Review*, 98(7), 45-52.
- Potter, M. (2022). Responding to a global pandemic: bureaucratic caring theory-guided, evidence-based approach in the military health system. *International Journal for Human Caring*, 26(2), 92-96. <https://doi.org/10.20467/humancaring-d-20-00045>
- Purwadi, P., Widjaja, Y., Junius, J., & Mahmudah, N. (2024). Strategic human resource management in healthcare: elevating patient care and organizational excellence through effective hrm practices. *Golden Ratio of Data in Summary*, 4(2), 88-93. <https://doi.org/10.52970/grdis.v4i2.540>
- Puthanveetil, B., Vijayan, S., Raj, A., & Mp, S. (2020). Tqm implementation practices and performance outcome of indian hospitals: exploratory findings. *The TQM Journal*, 33(6), 1325-1346. <https://doi.org/10.1108/tqm-07-2020-0171>
- Rao, Purba. 1996. Measuring Consumer Perception Throught Factor Analysis. *The Asia Manager*, February-March, Hal 28-32.
- Renanita, T. and Himam, F. (2020). Organizational change and the human resource challenges in facing technology development. *Digital Press Social Sciences and Humanities*, 5, 00010. <https://doi.org/10.29037/digitalpress.45345>
- Rouhollahei, M., Davoudi-Monfared, E., Shahriyari, A., & Isfeedvajani, M. (2023). Investigating the operational management challenges of a reference military hospital

- in the covid-19 pandemic. *Romanian Journal of Military Medicine*, 126(1), 28-34.
<https://doi.org/10.55453/rjmm.2023.126.1.5>
- Sharkiya, S. (2023). Quality communication can improve patient-centred health outcomes among older patients: a rapid review. *BMC Health Services Research*, 23(1).
<https://doi.org/10.1186/s12913-023-09869-8>
- Silverman, S. and Meeker, M. (2024). Ready reliable care: the defense health agency's approach to high reliability. *MIH*, 8(3), 284. <https://doi.org/10.69554/qpkku5877>
- Singh, B. and Wanasida, A. (2023). Determinants of hospital information management system (hims) implementation at puri medika hospital. *Journal of Law and Sustainable Development*, 11(12), e1764.
<https://doi.org/10.55908/sdgs.v11i12.1764>
- Singh, H., Dey, A., & Sahay, A. (2020). Exploring sustainable competitive advantage of multispecialty hospitals in dynamic environment. *Competitiveness Review an International Business Journal Incorporating Journal of Global Competitiveness*, 30(5), 595-609. <https://doi.org/10.1108/cr-12-2018-0091>
- Sun, W., Chen, K., & Mei, J. (2024). Integrating the resource-based view and dynamic capabilities: a comprehensive framework for sustaining competitive advantage in dynamic markets. *Epra International Journal of Economic and Business Review*, 1-8. <https://doi.org/10.36713/epra18157>.
- Tiwari, S. and Sharma, N. (2022). Idea, architecture, and applications of 5g enabled iomt systems for smart health care system. *Ecs Transactions*, 107(1), 5499-5508.
<https://doi.org/10.1149/10701.5499ecst>
- Venkatesh, V., et al. (2021). Technology adoption in healthcare: A comprehensive review of its impact on hospital service efficiency and quality. *Health Information Science and Systems*, 9(1), 12-20.
- Wong, J., Näswall, K., Pawsey, F., Chase, J., & Malinen, S. (2023). Adoption of technological innovation in healthcare delivery: a psychological perspective for healthcare decision-makers. *BMJ Innovations*, 9(4), 240-252.
<https://doi.org/10.1136/bmjinnov-2022-001003>
- Yeo, S., Tan, C., & Goh, Y. (2021). Obstetrics services in malaysia: factors influencing patient loyalty. *International Journal of Pharmaceutical and Healthcare Marketing*, 15(3), 389-409. <https://doi.org/10.1108/ijphm-08-2020-0070>
- Yosufzai, S. and Siddiqui, M. (2023). Driving quality performance through digitization and technology management: mediating role of organization agility., 4(4), 87-100.
<https://doi.org/10.61503/cissmp.v2i4.85>
- Zehir, S. and Zehir, C. (2023). Effects of total quality management practices on financial and operational performance of hospitals. *Sustainability*, 15(21), 15430.
<https://doi.org/10.3390/su152115430>
- Teece, Pisano, dan Shuen. 1997. Dynamic Capabilities and Strategic Management. *Strategic Management Journal*. 18 (7).