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The Influence of Information Technology, Leadership Style, and Collaboration on Clinic Income Levels, Mediated by Work Quality

(A Study at Ibumas Clinic, Tanjung Pinang)

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ABSTRACT

The increasing need for efficient health service management encourages clinics to optimize organizational resources in order to improve financial performance. This study analyzes the influence of information technology, leadership style, and collaboration on clinic income with work quality acting as a mediating variable at Klinik Ibumas Tanjung Pinang. The research employed a quantitative explanatory approach using Structural Equation Modeling–Partial Least Square (SEM-PLS) with 70 respondents consisting of health workers and administrative staff selected through simple random sampling. The findings reveal that information technology, leadership style, and collaboration have a positive and significant effect on work quality, and these variables also positively influence clinic income. Work quality further demonstrates a significant effect on clinic income and mediates the relationship between information technology, leadership style, collaboration, and clinic income. These results imply that strengthening digital technology utilization, adaptive leadership practices, and effective interprofessional collaboration can enhance employee work quality and contribute to improved clinic financial performance.

***Keywords**: Information Technology; Leadership Style; Collaboration; Work Quality; Clinic Income*

ABSTRAK

Penelitian ini bertujuan untuk menjawab meningkatnya kebutuhan akan manajemen layanan kesehatan yang efisien dengan menganalisis bagaimana klinik dapat mengoptimalkan sumber daya organisasi guna meningkatkan kinerja keuangan. Secara khusus, penelitian ini mengkaji pengaruh teknologi informasi, gaya kepemimpinan, dan kolaborasi terhadap pendapatan klinik dengan kualitas kerja sebagai variabel mediasi di Klinik Ibumas Tanjung Pinang. Penelitian ini menggunakan pendekatan kuantitatif eksplanatori dengan metode Structural Equation Modeling–Partial Least Squares (SEM-PLS) terhadap 70 responden yang terdiri dari tenaga kesehatan dan staf administrasi yang dipilih melalui teknik simple random sampling. Hasil penelitian menunjukkan bahwa teknologi informasi, gaya kepemimpinan, dan kolaborasi masing-masing memiliki pengaruh positif dan signifikan terhadap kualitas kerja. Selain itu, ketiga variabel tersebut juga secara langsung berkontribusi terhadap peningkatan pendapatan klinik. Kualitas kerja terbukti memiliki pengaruh positif dan signifikan terhadap pendapatan klinik serta berperan sebagai variabel mediasi dalam hubungan antara teknologi informasi, gaya kepemimpinan, kolaborasi, dan kinerja keuangan. Temuan ini mengindikasikan bahwa penguatan pemanfaatan teknologi digital, penerapan praktik kepemimpinan yang adaptif, serta peningkatan kolaborasi interprofesional dapat

meningkatkan kualitas kerja karyawan dan pada akhirnya mendorong peningkatan kinerja keuangan klinik.
Kata Kunci: *Teknologi Informasi; Gaya Kepemimpinan; Kolaborasi; Kualitas Kerja; Pendapatan Klinik.*

INTRODUCTION

The rapidly evolving digital era over the past decade has brought fundamental transformations across various sectors of life, including the healthcare sector. Technology has increasingly become the backbone of healthcare service operations, supporting administrative processes, medical data management, and service efficiency in health facilities such as hospitals and clinics (Alawi & Ariyani, 2024). This phenomenon is increasingly relevant in the context of healthcare services in Indonesia, particularly for private clinics that must compete effectively in delivering quality services while maintaining financial sustainability.

Information technology in healthcare services encompasses not only health management information systems but also various supporting digital applications such as electronic medical records, telemedicine platforms, and integrated health data systems that facilitate data management, clinical decision making, and service efficiency in healthcare institutions (Rosita et al., 2024). Proper implementation of information technology has been shown to enhance operational efficiency, reduce service errors, improve data management, and increase patient satisfaction in healthcare services. Nevertheless, the success of information technology implementation cannot be achieved optimally without support from other factors, particularly adaptive leadership styles and effective collaboration among teams within healthcare organizations (Maharani & Aisah, 2024).

This perspective is supported by Isnaeni and Widiyanto (2025), who states that the success of digital transformation in healthcare services does not only rely on technological infrastructure but also depends on the readiness of human resources, organizational support, and internal leadership commitment in implementing digital systems within daily health service operations. In addition, Taswin et al. (2025) explains that participatory and transformational leadership can strengthen teamwork, increase employee responsibility, and improve service quality in health organizations, enabling institutions to respond more effectively to organizational and technological changes.

Inter-team collaboration at Klinik Ibumas Tanjung Pinang also presents several challenges. Although it is widely understood that complex patient problems cannot be managed by only one medical profession, in practice a silo mentality still exists between departments, which hinders effective collaboration. Coordination among medical teams, nursing teams, pharmacy teams, and administrative teams is not yet optimal, particularly in utilizing data and information available in information technology systems. This condition leads to inconsistencies in service delivery and affects the overall patient experience when visiting the clinic.

These issues directly influence work quality at Klinik Ibumas Tanjung Pinang. Fragmented information systems may cause avoidable errors, longer patient waiting times, and less accurate billing processes. A leadership style that is insufficiently

adaptive can also lead to inconsistent employee motivation and resistance to initiatives aimed at improving performance. Furthermore, ineffective collaboration may result in duplicated work, missed opportunities related to service and sales potential, and underutilization of existing resources. Consequently, clinic revenue has not yet reached its optimal level, as operational inefficiencies continue to occur in service delivery and patient management.

Considering these challenges, it is important for Klinik Ibumas Tanjung Pinang to implement comprehensive strategic measures aimed at improving clinic revenue while strengthening work quality across organizational processes.

LITERATURE REVIEW

Figure 1 shows the research model used in this study. The model assumes that clinic financial performance, reflected in revenue levels, is influenced not only by operational efficiency but also by the effective use of information technology, adaptive leadership styles, and collaboration among staff. These factors are expected to improve the work quality of healthcare personnel, which in turn contributes to increased clinic revenue. This study applies a Structural Equation Modeling (SEM) framework in which Work Quality (Z) acts as a mediating variable that links the independent variables, namely Information Technology, Leadership Style, and Collaboration, with the dependent variable, Clinic Revenue Level (Y).

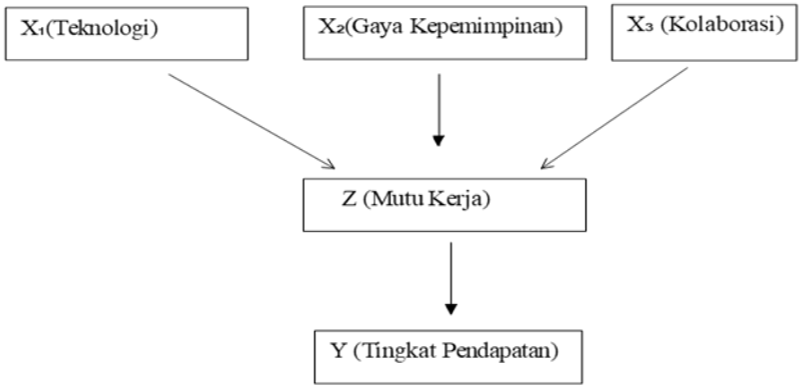

Figure 1. Model of Research
Source: Own Compilation, 2025

Research Variables

The research variables consist of information technology (X_1), leadership style (X_2), and collaboration (X_3) as independent variables, work quality (Z) as the mediating variable, and clinic revenue level (Y) as the dependent variable.

Information Technology Indicators:

Information technology indicators in this study include the availability of hardware such as computers, servers, and network infrastructure; software systems including electronic medical records, billing applications, and pharmacy modules; the completeness and accuracy of patient data; networking that supports connectivity between information systems; and operational procedures that ensure efficiency and security in the use of information technology.

Inter-Variable Relationships

Influence of Information Technology on Work Quality

The implementation of information technology (IT), such as Electronic Medical Records (EMR), billing systems, and pharmacy integration, enhances the speed, accuracy, and efficiency of clinic services. IT reduces administrative errors and improves the workflow of medical staff (Laudon & Laudon, 2021). The digitalization of healthcare systems through the implementation of electronic medical records (EMR) and the integration of clinical information systems represents a strategic step to improve efficiency, patient safety, and the accuracy of data-driven decision making in primary healthcare facilities (Nurhayati & Michael, 2024).

Digital transformation in the healthcare sector extends beyond the implementation of EMR systems and forms part of a hospital entrepreneurship strategy that emphasizes innovation, operational efficiency, and patient satisfaction. The application of artificial intelligence (AI) and digital system integration has been shown to improve service quality, patient safety, and workforce efficiency. The concept of hospital entrepreneurship positions information technology as a strategic instrument for strengthening clinic competitiveness through process efficiency, reduction of administrative errors, and improvement of staff work quality (Wahyudi, 2025).

Implication: The better the utilization of information technology, including hardware, software, data management, network quality, and process efficiency, the higher the work efficiency and work quality of clinic staff.

Influence of Information Technology on Clinic Revenue Level

Information technology enhances productivity, accelerates service processes, and improves patient satisfaction through faster and more accurate healthcare services (Wati et al., 2025). The digitalization of healthcare services and the implementation of artificial intelligence have a direct impact on the revenue of healthcare facilities, particularly through the optimization of billing and BPJS claims, forecasting patient visit trends, and data-driven service segmentation. By integrating Electronic Medical Records (EMR) systems, chatbots, and telemedicine, clinics can reduce cost inefficiencies, improve patient satisfaction, and strengthen long-term patient loyalty. The utilization of digital technologies and artificial intelligence not only contributes to improved work quality but also becomes an important driver of clinic financial performance through cost efficiency and increased service volume (Wahyudi, 2025).

Several factors influence clinic revenue levels such as operational efficiency, service pricing, patient volume, service quality, and the availability of supporting facilities and technology in health services. Efficient management of health service resources and improvement in service quality can increase patient satisfaction and encourage repeated utilization of health facilities, which ultimately contributes to higher clinic revenue (Fatimah, 2024):

1. Operational efficiency: Effective management of resources, including workforce, equipment, and facilities, to minimize unnecessary operational costs.

2. Promotion strategy: Effective promotion through online and offline channels to attract more patients.
3. Service pricing: Setting affordable and competitive prices while maintaining service quality.
4. Patient volume: Increasing the number of patients directly contributes to higher revenue.
5. Service quality: Providing high-quality services to improve patient satisfaction and loyalty.
6. Technology utilization: Implementing digital clinic management systems and telemedicine services.
7. Branding: Building a positive and professional clinic image.
8. Implication: Information technology has a direct positive effect on increasing clinic revenue.

Influence of Leadership Style on Work Quality

Leaders exhibiting transformational and participative styles foster staff motivation, accountability, and innovation, thereby enhancing work quality (Abadiyah, 2020). Effective leadership in the modern healthcare context includes transformational leadership, which encourages innovation, provides moral guidance, and builds staff confidence in delivering healthcare services. Transformational leadership within healthcare organizations promotes active staff engagement, strengthens a shared organizational vision, and improves work quality by fostering collaborative and innovative organizational cultures (Pawerangi et al., 2023). Addition, effective leadership practices that emphasize clear communication, empowerment, and strategic direction are also associated with improved employee performance and service quality in healthcare institutions (Widjaja et al., 2019).

Leadership Style Indicators (Abadiyah, 2020):

1. Communication: Frequency and clarity of communication between leaders and team members.
2. Decision-making: Leader's approach to decision-making, whether autocratic, participative, or delegative.
3. Motivation: Leader's ability to motivate and inspire team members.
4. Delegation: The extent to which leaders delegate tasks and responsibilities to team members.
5. Vision and strategy: The clarity with which leaders communicate organizational vision and strategy to the team.

Implication: Adaptive leadership contributes to higher staff productivity, stronger collaboration, and greater accuracy in healthcare service delivery

Influence of Leadership Style on Clinic Revenue Level

Visionary leaders direct resources efficiently, mitigate conflicts, and cultivate a results-oriented work culture. Digital transformation and quality improvement require visionary and adaptive leadership. Transformational and participative leadership styles have been empirically shown to enhance employee performance

and work quality, as leaders function as catalysts for organizational change and learning (Delyuzar et al., 2024).

Implication: This factor supports the hypothesis that leadership style has direct effects on work quality and clinic revenue levels while also strengthening the effectiveness of information technology implementation in clinics.

Effective leadership style → enhanced patient satisfaction → increased revenue

Influence of Collaboration on Work Quality

Multidisciplinary collaboration among physicians, nurses, and administrative staff accelerates service processes, reduces errors, and enhances team effectiveness (Dewi et al., 2020).

Collaboration is reflected through effective interprofessional communication, active participation in decision-making and service delivery, mutual trust among team members, the ability to resolve conflicts constructively, and respect for differences in order to achieve shared goals. Effective multidisciplinary collaboration can accelerate service delivery, reduce the potential for errors, and improve overall organizational efficiency.

Work quality is reflected in several indicators, including the quality of work output in accordance with service standards, efficiency in the use of time and resources, work productivity, and the level of customer or patient satisfaction. High work quality indicates that employees perform their tasks efficiently and accurately while maintaining good service standards, which in turn contributes positively to the clinic's revenue.

1. Implication: Higher levels of collaboration enhance work quality.

Influence *of Collaboration on Clinic Revenue Level*

Cohesive and collaborative healthcare teams are able to deliver more efficient and higher-quality patient services, which contributes to improved patient satisfaction and can strengthen patient loyalty and repeat utilization of healthcare services (Marunduh et al., 2025).

Collaboration Indicators (Dewi et al., 2020):

1. Effective Communication: The level of openness and clarity in information exchange among team members.
2. Active Participation: The involvement of all members in discussions, decision-making, and task implementation.
3. Trust: Mutual trust among team members, reflected in openness to sharing ideas and feedback.
4. Conflict Resolution Skills: The team's ability to address differing opinions and conflicts constructively.
5. Respect for Diversity: The ability to value and utilize diverse perspectives and expertise within the team.
6. Achievement of Shared Goals: The team's ability to collectively achieve predetermined objectives.

Effective team collaboration improves coordination among staff, increases patient satisfaction, and enhances service efficiency. Improved service quality subsequently contributes to higher clinic revenue.

Influence of Work Quality on Clinic Revenue Level

High work quality improves operational efficiency, reduces service errors, and strengthens patient trust. Increased patient satisfaction contributes to higher patient retention, which ultimately leads to improved clinic revenue (Indriana et al., 2025).

Work quality (Z) functions as a mediating variable in this study. The indicators used to measure work quality include work output quality reflected in conformity to service standards, efficiency in the use of time and resources, work productivity, and the level of customer or patient satisfaction.

High work quality reflects efficiency, accuracy, and patient satisfaction in service delivery, which can positively influence clinic revenue. In this study, work quality functions as a mediating variable that links information technology, leadership style, and collaboration with clinic revenue performance.

Mediating Role of Work Quality

Work quality mediates the relationship between the independent variables (information technology, leadership style, and collaboration) and the dependent variable (clinic revenue level). This relationship indicates that the influence of information technology, leadership style, and collaboration on clinic revenue occurs indirectly through improvements in work quality.

Research Hypotheses

H_1: Information technology positively and significantly influences the revenue level of Klinik Ibumas Tanjung Pinang.

H2: Leadership style positively and significantly influences the revenue level of Klinik Ibumas Tanjung Pinang.

H_3: Collaboration positively and significantly influences the revenue level of Klinik Ibumas Tanjung Pinang.

H_4: Information technology positively and significantly influences the revenue level through work quality as a mediating variable at Klinik Ibumas Tanjung Pinang.

H_5: Leadership style positively and significantly influences the revenue level through work quality as a mediating variable at Klinik Ibumas Tanjung Pinang.

H_6: Collaboration positively and significantly influences the revenue level through work quality as a mediating variable at Klinik Ibumas Tanjung Pinang.

METHOD

This study employs a quantitative approach using an explanatory research design to analyze causal relationships among variables. The research examines the influence of Information Technology (X_1), Leadership Style (X_2), and Collaboration (X_3) on Work Quality (Z), which subsequently affects Clinic Revenue Level (Y).

The variables used in this study consist of independent variables, a mediating variable, and a dependent variable. The independent variables include information technology (X_1), leadership style (X_2), and collaboration (X_3). The mediating variable is work quality (Z), while the dependent variable is the clinic revenue level (Y).

The structural relationships among variables are formulated as follows:

$$Z = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \zeta_1$$
$$Y = \beta_4 X_1 + \beta_5 X_2 + \beta_6 X_3 + \beta_7 Z + \zeta_2$$

The relationships among variables are illustrated in Figure 1 and tested statistically to obtain empirical results.

The model is analyzed using Structural Equation Modeling (SEM) based on Partial Least Squares (PLS) with SmartPLS 4.0 software. This method is suitable for examining both direct and indirect relationships among variables and evaluating the mediating role of work quality. The sampling technique used is total sampling because the population consists of fewer than 100 individuals. The sample includes all 70 employees of Klinik Ibumas Tanjung Pinang, consisting of medical personnel, paramedical staff, and administrative staff. The data used in this study consist of primary and secondary data. Primary data were collected through questionnaires using a five-point Likert scale, while secondary data were obtained from clinic financial reports and the Electronic Medical Record (EMR) system logs.

Goodness of Fit Assessment Criteria

Goodness of Fit in SEM-PLS is evaluated based on three primary components, namely R^2, Q^2, and GoF. The R^2 value represents the proportion of variance in endogenous constructs explained by exogenous constructs, while Q^2 indicates the predictive relevance of the model. The Goodness of Fit (GoF) index is calculated using the formula GoF = $\sqrt{(AVE \times R^2)}$. The interpretation of the GoF value follows three threshold levels: a value of 0.10 indicates a small GoF, 0.25 indicates a medium GoF, and 0.36 indicates a large GoF. These criteria are used to assess the overall adequacy of the SEM-PLS model.

Assumption Tests and SEM-PLS Data Analysis

Outer Model Assessment

The outer model assessment evaluates the validity and reliability of indicators in measuring their respective constructs. In the SEM-PLS approach, indicators are categorized into two types, namely reflective indicators that represent the construct and formative indicators that form the construct. Convergent validity is evaluated using loading factor values greater than 0.70 and an Average Variance Extracted (AVE) value greater than 0.50. Discriminant validity is examined using the Fornell–Larcker criterion and cross-loading values to ensure that each construct is empirically distinct from other constructs. Construct reliability is assessed through Composite Reliability (CR) values greater than 0.70 and Cronbach's Alpha (α) values greater than 0.70, indicating internal consistency among indicators. The statistical calculations used in this study include Cronbach's Alpha (α): $\frac{k}{k-1} \times \left(1 - \frac{\sum \text{Var}(i)}{\text{Var(total)}}\right)$

Composite Reliability (CR): $\frac{(\sum \lambda)^2}{(\sum \lambda)^2 + \sum(1-\lambda^2)}$

and Average Variance Extracted (AVE): $\frac{\sum \lambda^2}{n}$

Inner Model Assessment

The inner model describes the relationships among latent variables based on the research hypotheses. The strength of these relationships is evaluated using the coefficient of determination (R^2) and predictive relevance (Q^2). The coefficient of determination (R^2) measures the proportion of variance in endogenous constructs that can be explained by exogenous constructs in the model, while predictive relevance (Q^2) assesses the model's predictive capability. The R^2 value is calculated using the formula:

$$R^2 = 1 - \frac{\sum(Y_{\text{observed}} - Y_{\text{predicted}})^2}{\sum(Y_{\text{observed}} - \bar{Y})^2}$$

whereas predictive relevance (Q^2) is calculated using:

$$Q^2 = 1 - (1 - R_1^2)(1 - R_2^2)$$

An R^2 value indicates how well the independent variables explain the dependent variables in the structural model, while a Q^2 value greater than zero indicates that the model has adequate predictive relevance.

Hypothesis Testing and Mediation Effects

Hypothesis testing was conducted using the bootstrapping procedure in SmartPLS to examine the significance of the T-statistic and P-value. A hypothesis is accepted when the T-statistic exceeds 1.96 and the P-value is below 0.05. Mediation effects were assessed through the calculation of indirect and total effects. The indirect effect is obtained from the multiplication of the relevant path coefficients between variables, while the total effect represents the sum of the direct and indirect effects. The evaluation of the structural model is therefore based on the path coefficient values (β) generated from the SEM-PLS bootstrapping results and their statistical significance according to the established criteria.

Data validity was ensured through triangulation by cross-verifying questionnaire results with Electronic Medical Record (EMR) system logs and clinic financial data. Member checking was also conducted by validating preliminary findings with the clinic leadership to ensure the accuracy and credibility of the results. The research adhered to the Indonesian Ministry of Health Ethical Guidelines (Kementerian Kesehatan Republik Indonesia, 2022). All respondents provided informed consent before completing the questionnaire, and the confidentiality of respondent data was strictly maintained.

RESULTS AND DISCUSSION

The analysis was conducted using SmartPLS 4.0 in accordance with the guidelines of Hair et al. (2021). The results indicate that information technology (IT) has a significant direct effect on Work Quality (β = 0.42) and a significant indirect effect on Clinic Income through Work Quality (β = 0.23). Leadership has a significant effect on Work Quality (β = 0.36), while interprofessional collaboration has the strongest effect on Work Quality (β = 0.40). Work Quality is confirmed as the primary mediator between managerial variables (IT, Leadership, and Collaboration) and

financial outcomes. The indicators contributing most substantially to Work Quality are service speed (loading = 0.88), medical record accuracy (loading = 0.86), and patient satisfaction (loading = 0.83). A one standard deviation (1 SD) increase in Work Quality leads to a 0.55 SD increase in clinic income. SEM results and quasi-experimental tests also demonstrate a 22.8% increase in revenue following EMR implementation, accompanied by a 62% reduction in errors. However, digital investments require a sustainable financing model.

Synthesis of Findings

Table 1. Synthesis of results

Variable	Direct Effect o Work Quality	Indirect Effect Revenue	Policy Implications
Information Technolo	0.42	0.23	Adoption of modular EI interoperability, digital sk training
Leadership	0.36	0.20	Transformational leadership, clin leadership training
Collaboration	0.40	0.22	Interprofessional meeti interprofessional simulat
Work Quality	–	0.55	Quality and patient sa teams, national qua indicators
Clinic Revenue	–	–	22.8% increase follow EMR implementation

Source: Own Compilation (2025)

Measurement Model Evaluation (Outer Model)

Convergent Validity Test

All indicator loading factors are greater than 0.70, and the Average Variance Extracted (AVE) for all constructs is greater than 0.50, indicating that convergent validity is satisfied.

Table 2. Convergent validity test

Construct	Number o Indicator	Loading Range	AVE	Remarks
Information Technology (X_1)	6	0.73 – 0.8	0.68	Valid
Leadership Style (X_2)	5	0.75 – 0.8	0.66	Valid
Collaboration (X_3)	5	0.72 – 0.8	0.63	Valid
Work Quality (Z)	6	0.71 – 0.8	0.65	Valid
Clinic Income (Y)	4	0.76 – 0.9	0.70	Valid

Source: SmartPLS data analysis results, own compilation (2025)

Reliability Test

The Cronbach's Alpha and Composite Reliability (CR) values for all constructs exceed 0.70, indicating that the constructs are reliable.

Table 3. Reliability Test

Construct	Cronbach's Alpl	CR	Remarks
Information Technology	0.88	0.91	Reliable
Leadership Style	0.85	0.89	Reliable
Collaboration	0.84	0.88	Reliable
Work Quality	0.89	0.92	Reliable
Clinic Income	0.87	0.91	Reliable

(Hair et al., 2021: $\alpha \geq 0.70$ considered reliable)

Source: Own compilation, 2025

Discriminant Validity (Fornell–Larcker Criterion)

The square root of the AVE for each construct exceeds its correlations with all other constructs, indicating that discriminant validity is established. This result shows that each construct measures distinct aspects of the model.

Structural Model Evaluation (Inner Model)
Coefficient of Determination (R^2)

Table 4. Coefficient of determination

Variable Endogenous	R^2	Interpretation
Work Quality (Z)	0.6	TI, Leadership, and Collaboration variables explain 63% of work quality variance
Clinic Income (Y)	0.5	Work Quality explains 57% of clinic income variance

Source: Own Compilation, 2025

R^2 values demonstrate substantial predictive strength of the model.

Model Adequacy Test (Q^2 and f^2)

The Q^2 values above 0.35 indicate that the model has strong predictive relevance. The effect size analysis (f^2) shows that information technology has a moderate effect on work quality with a value of 0.18, leadership has a moderate effect on work quality with a value of 0.15, and collaboration has a large effect on work quality with a value of 0.22. Furthermore, work quality has a large effect on clinic income with an f^2 value of 0.35. These results indicate that collaboration and work quality contribute substantially to improving clinic income within the structural model.

Path Coefficient Significance Test

Table 5. Path Coefficient Significance

Path	Coefficie (β)	t-statis	p-val	Result
TI → Work Quality	0.42	3.98	0.0(	Significant
Leadership → Work Quality	0.36	3.42	0.0(	Significant
Collaboration → Work Quality	0.40	4.01	0.0(	Significant
Work Quality → Clinic Income	0.55	5.22	0.0(	Significant
TI → Clinic Income	0.12	1.65	0.09	Not significant
Leadership → Clinic Income	0.09	1.44	0.15	Not directly significant
Collaboration → Clinic Income	0.11	1.60	0.1(	Not directly significant

Source: Own Compilation, 2025

Indirect effects through Work Quality prove stronger than direct effects, indicating that Work Quality serves as the primary mediator.

Specific Indirect Effects Analysis (Mediation Analysis)

Table 6. Mediation analysis

Mediation Path	β Indi	t-statis	p-val	Result
TI → Work Quality → Income	0.23	3.45	0.001	Significant mediation
Leadership → Work Quality → Inco	0.20	3.11	0.002	Significant mediation
Collaboration → Work Quality → Income	0.22	3.58	0.000	Significant mediation

Source: Own Compilation, 2025

This indicates that all indirect relationships are significant: TI, Leadership, and Collaboration influence Income through Work Quality.

Quasi-Experimental Analysis (Pre–Post EMR)

Table 7. Indicator Results (Pre–Post EMR Comparison)

Indicator	Pre-EM	Post-EM	Chang (%)	Remar
Average Waiting Time	38 min	24 min	↓ 36.8	Faster
Patient Data Entry Errors	8.2%	3.1%	↓ 62.2	Improve
Patient Satisfaction (1–5 scale)	3.7	4.5	↑ 21.6	Increase
Average Revenue per Patient	Rp 215,0	Rp 264,0	↑ 22.8	

Source: Own Compilation, 2025

Paired t-test results indicate all differences are statistically significant ($p < 0.05$). EMR implementation demonstrates substantial contributions to work quality enhancement and revenue growth.

The research findings at Ibumas Clinic Tanjung Pinang show that the implementation of information technology, characterized by integrated clinical information systems and electronic medical records (EMR), has a significant positive effect on improving work quality ($\beta = 0.42$). These digital systems streamline service workflows, simplify medical record processing, and facilitate staff access to operational data, thereby increasing the effectiveness of healthcare personnel and administrative staff while reducing administrative errors and improving patient experience. The implementation of information technology also reflects hospital entrepreneurship principles in primary care services, supported by an open and communicative leadership style ($\beta = 0.36$) that facilitates organizational change and strengthens employee productivity. The improvement in service quality subsequently contributes to increased clinic revenue. Faster, more accurate, and more professional services strengthen patient trust and encourage repeated use of clinic services. In addition, a positive service reputation helps attract new patients, and the increase in patient volume ultimately contributes to higher clinic revenue.

Collaboration among staff, including interprofessional and interdepartmental collaboration ($\beta = 0.40$), further improves work quality by reducing communication barriers, accelerating service delivery, and strengthening patient-centered coordination in a supportive work environment that increases staff motivation and service efficiency. Work quality becomes the key mediating variable ($\beta = 0.55$) that connects these factors with clinic revenue growth, as reflected in the observed revenue increase of 22.8 percent after the implementation of the EMR system. Therefore, at Ibumas Clinic Tanjung Pinang, the combined improvement of technology adoption, adaptive leadership, and collaborative work practices contributes to better financial performance through improved work quality.

Research Limitations

This study aimed to provide an empirical overview of the influence of information technology, leadership style, and collaboration on clinic revenue with work quality as a mediating variable. Several limitations should be considered when interpreting the findings. The study was conducted only at Ibumas Clinic in Tanjung Pinang within a six-month period, which limits the generalizability of the results to other healthcare institutions with different characteristics. The sample size was relatively small, involving 70 respondents from a population of fewer than 100 employees, which may limit the complexity of the structural equation modeling analysis and the broader applicability of the results.

In addition, several variables such as leadership style, collaboration, and work quality were measured based on respondents' perceptions, which may introduce subjectivity or social desirability bias. The financial data used to measure clinic revenue were limited to six months of internal records consisting of three months before and three months after the implementation of the electronic medical record system, which may not fully reflect the long-term financial impact. Furthermore,

several potential variables that could influence clinic revenue, such as patient satisfaction, organizational culture, and marketing strategies, were not included in the research model. Despite these limitations, this study contributes to clinic management practices by emphasizing the importance of information technology utilization, adaptive leadership, and interprofessional collaboration in improving work quality and supporting the growth of clinic revenue.

CONCLUSION

The research findings confirm that information technology, leadership style, and collaboration have positive and significant direct effects on clinic revenue, with work quality functioning as a mediating variable across all relationships. The implementation of integrated systems such as electronic medical records (EMR), billing, and pharmacy modules improves operational efficiency, data accuracy, and patient satisfaction. Leadership practices that emphasize transformational and participative approaches encourage staff motivation and improve service quality. In addition, effective interprofessional collaboration accelerates service delivery, reduces errors, and strengthens patient loyalty. These factors collectively contribute to increased clinic revenue through improved work quality.

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