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Impact of System and Information Quality on User Satisfaction: The Moderating Role of Service Quality

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***Abstract*— This study examines the effects of system quality and information quality on user satisfaction with SAP Business One at PT. X, with service quality tested as a moderating variable. Unlike previous ERP satisfaction studies that primarily examine direct relationships, this research evaluates whether service quality strengthens the effects of system and information quality during the early stage of ERP implementation in a furniture manufacturing company. A quantitative associative approach was applied to data collected from 30 active SAP users selected through purposive sampling and analyzed using moderated multiple regression analysis. The results demonstrate that system quality and information quality have significant positive effects on user satisfaction. The regression model explains 83.1% of the variance in user satisfaction ($R^2 = 0.831$). However, service quality does not significantly moderate either relationship, indicating that users place greater emphasis on system functionality, performance, data accuracy, and timeliness than on support services. These findings clarify the limited moderating role of service quality within an early-stage manufacturing ERP implementation and provide practical guidance for organizations to prioritize improvements in system and information quality. (*Abstract*)**

***Keywords*— *SAP Business One, System Quality, Information Quality, Service Quality, User Satisfaction* (*key words*)**

I. INTRODUCTION

In the Industry 4.0 era, organizations increasingly rely on integrated information systems to improve operational efficiency, decision-making, and visibility across business functions. Enterprise Resource Planning (ERP) systems support these objectives by integrating organizational resources and processes within a centralized platform. Successful ERP implementation can improve operational effectiveness, information accessibility, and coordination among departments [1]. However, the benefits of ERP depend not only on technical implementation but also on users' perceptions of the system, the information it generates, and the support provided during its use.

This study is grounded in the DeLone and McLean Information Systems Success Model, which identifies system quality, information quality, and service quality as important determinants of information-system use and user satisfaction [2], [3]. System quality refers to the performance of an information system in terms of functionality, reliability, response time, security, and ease of use. Information quality concerns the accuracy, completeness, relevance, accessibility, and timeliness of the information produced by the system. Service quality represents the responsiveness, reliability, communication, and technical assistance provided to users. User satisfaction reflects users' overall evaluation of their experience with the system and is commonly used as an indicator of information-system success [3], [4].

PT. X is a furniture manufacturing company in Semarang, Central Java, Indonesia, that operates a make-to-order production system and serves both domestic and international markets. The complexity of its production, inventory, purchasing, sales, and financial activities encouraged the company to implement SAP Business One as an integrated ERP system [5]. The implementation began in August 2023 and included business-process mapping, system configuration, data migration, functional testing, user acceptance testing, training, and system deployment. During the early implementation period, users experienced several adaptation challenges, including data-entry errors, adjustment to new workflows, and dependence on technical assistance from the system provider. These conditions make the company an appropriate context for examining ERP user satisfaction during the early post-implementation stage.

To provide the operational context of the study, SAP Business One version 10 was implemented at PT. X between September 2023 and March 2024 through five main phases: preparation, business blueprint development, system realization, final preparation, and go-live support [6]. The system integrates key business functions, including purchasing, sales, finance, inventory, production, Material Requirements Planning, and reporting [7], [8]. Within the production process, customer orders are converted into sales orders and processed through MRP to generate production work orders. Materials are then transferred from the warehouse and recorded through the *Issue for Production* function, while completed products are entered through *Receipt from Production* before delivery preparation. The system was also customized through work-order monitoring queries,

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document print layouts, and Bill of Materials integration with Autodesk Inventor [9], [10]. This integrated workflow makes system reliability, information accuracy, and implementation support particularly important because disruptions or data errors may directly affect material availability, production scheduling, inventory records, quality control, and delivery performance.

Previous studies have produced inconsistent findings regarding the determinants of ERP user satisfaction. Some studies indicate that system quality and information quality significantly improve satisfaction because reliable system performance and accurate information facilitate users' work. However, a study conducted at PT Orindo Alam Ayu Medan found that system quality did not significantly affect ERP user satisfaction, which was attributed to inadequate system performance [11]. In contrast, research conducted at Pelindo I Sumatera Utara reported that system quality and information quality positively affected SAP user satisfaction, although the moderating role of perceived usefulness was not significant [12]. These differences suggest that the effects of system and information quality may depend on organizational context, implementation conditions, user experience, and the availability of support services.

A specific research gap remains in understanding the role of service quality in these relationships. Previous ERP satisfaction studies have predominantly examined service quality as a direct predictor of user satisfaction or have focused on the direct effects of system quality and information quality. Consequently, limited evidence is available regarding whether service quality changes the strength of the relationships between system quality, information quality, and user satisfaction [13]. This gap is particularly relevant during early ERP implementation, when users may require training, problem resolution, communication, and technical assistance to understand system functions and interpret system-generated information. High-quality support may strengthen the positive effect of system quality by helping users utilize system features effectively. It may also reinforce the influence of information quality by helping users access, interpret, and apply ERP information in their work.

This study therefore examines service quality as a moderating variable rather than solely as a direct antecedent of user satisfaction. The study extends the application of the DeLone and McLean model by testing whether service quality functions as a boundary condition for the effects of system quality and information quality. Its contribution is not limited to applying an established model within a single organization. The study provides empirical evidence from an early post-implementation ERP environment in the furniture manufacturing industry, where make-to-order production, integrated inventory control, and cross-functional data requirements create distinctive system-use conditions. It also provides practical evidence regarding whether organizations should prioritize technical system performance, information outputs, or user-support services when seeking to improve ERP user satisfaction [14].

Accordingly, this study addresses the following research questions:

RQ1: Does system quality significantly affect ERP user satisfaction at PT. X?

RQ2: Does information quality significantly affect ERP user satisfaction at PT. X?

RQ3: Does service quality moderate the relationship between system quality and ERP user satisfaction?

RQ4: Does service quality moderate the relationship between information quality and ERP user satisfaction?

Based on the DeLone and McLean Information Systems Success Model and previous empirical findings, the following hypotheses are proposed:

H1: System quality has a positive and significant effect on ERP user satisfaction.

H2: Information quality has a positive and significant effect on ERP user satisfaction.

H3: Service quality positively moderates the relationship between system quality and ERP user satisfaction.

H4: Service quality positively moderates the relationship between information quality and ERP user satisfaction.

II. Research Method

This study employed a quantitative, cross-sectional, and associative research design to examine the relationships among system quality, information quality, service quality, and ERP user satisfaction at PT. X. The quantitative approach enabled the constructs to be measured numerically and the proposed hypotheses to be statistically tested. Because the data were collected at a single point in time, the findings represent statistical associations among the variables and do not establish definitive causal relationships [15].

The conceptual framework, presented in Figure 1, proposes that system quality (X_1) and information quality (X_2) directly influence user satisfaction (Y). Service quality (Z) was examined as a moderating variable that could strengthen or weaken the relationships between the two independent variables and user satisfaction [16].

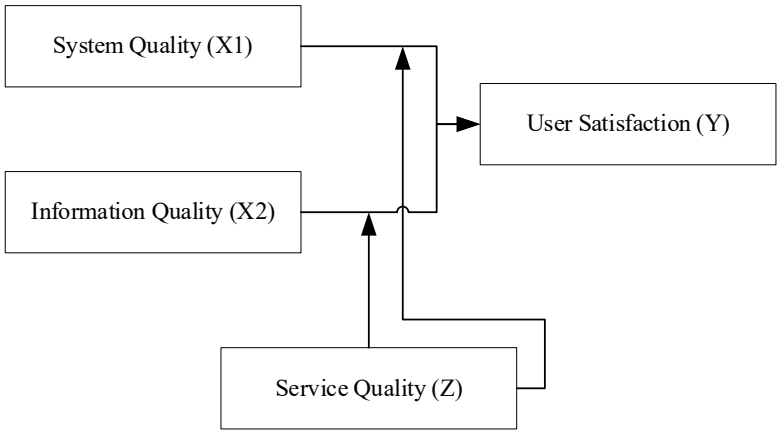

Figure 1. Conceptual Framework [17]

A. Population and Respondent Selection

The initial population consisted of 32 employees registered as ERP users at PT. X. Respondents were required to actively use the functional features of the system in performing their work. Two registered users were excluded because they accessed the system only in *view mode* and did not perform data entry, processing, transaction, or other operational functions. Consequently, the eligible population consisted of 30 active users.

All 30 eligible users were included in the study; therefore, the respondent-selection method was classified as total sampling, or a census of the eligible population, rather than sampling based on Slovin's formula. This approach was selected because the eligible population was small and fully accessible. The respondents represented several organizational units: Production Planning and Control (10 respondents), Finance and Accounting (6), Warehouse (6), Research and Development (3), Sales and Marketing (2), and one respondent each from the owner, director, and information technology categories [18]. This approach balances statistical power with practical efficiency:

$$n = \frac{N}{1 + Ne^2} = \frac{32}{1 + 32(0{,}05)^2} = 30 \quad (1)$$

Although all eligible users were included, the absolute number of respondents remained limited. A sample of 30 respondents may provide limited statistical power for detecting interaction effects in moderated regression. In addition, because all respondents were drawn from a single organization, the results should be generalized to other companies or industries with caution.

B. Measurement Instrument

Primary data were collected using a structured questionnaire adapted from previously established measures in ERP and information-system research [19]. The questionnaire was presented in Indonesian and its wording was contextually adjusted to reflect the ERP system and working environment at PT. X. The instrument consisted of 20 statements divided equally among four constructs:

1. System quality (X_1) was measured using five items covering functionality availability, system performance, security, system reliability or interruptions, and user-interface quality.
2. Information quality (X_2) was measured using five items covering data accuracy, information completeness, timeliness, accessibility of historical data, and ease of information retrieval.
3. Service quality (Z) was measured using five items covering service responsiveness, accessibility of support services, technical-service quality, support-team communication, and improvement of the support process.
4. User satisfaction (Y) was measured using five items covering overall satisfaction, satisfaction with system features, satisfaction with system performance, satisfaction with system response, and satisfaction with ease of use.

Responses were recorded on a five-point Likert scale:

1 = strongly disagree;

2 = disagree;

3 = somewhat disagree;

4 = agree;

5 = strongly agree.

The questionnaires were distributed directly to the 30 eligible users. Respondents were given approximately one day to read and complete the instrument independently. The returned questionnaires were screened for missing or inconsistent responses. The final analytical dataset contained 30 complete questionnaires; therefore, no missing-value imputation was applied.

C. Instrument Validity and Reliability

Item validity was evaluated using item–total correlations. With 30 respondents, the degrees of freedom were calculated as

$$df = n - 2 = 28 \quad (2)$$

At a significance level of 5%, the critical correlation value was

$$r = 0{,}37 \quad (3)$$

An item was considered valid when its item–total correlation was positive and exceeded 0.37 [20]. All 20 questionnaire items fulfilled this criterion, with correlations ranging from 0.52 to 0.90. Table 1 presented validity result.

Table 1. Item Validity result

Construct	Item	Item–total correlation	Critical (r)	Result
System quality	X1.1	0.73	0.37	Valid
System quality	X1.2	0.58	0.37	Valid
System quality	X1.3	0.90	0.37	Valid
System quality	X1.4	0.69	0.37	Valid
System quality	X1.5	0.78	0.37	Valid
Information quality	X2.1	0.76	0.37	Valid
Information quality	X2.2	0.88	0.37	Valid
Information quality	X2.3	0.83	0.37	Valid
Information quality	X2.4	0.84	0.37	Valid
Information quality	X2.5	0.67	0.37	Valid
Service quality	Z1	0.55	0.37	Valid
Service quality	Z2	0.87	0.37	Valid
Service quality	Z3	0.56	0.37	Valid
Service quality	Z4	0.74	0.37	Valid
Service quality	Z5	0.90	0.37	Valid
User satisfaction	Y1	0.75	0.37	Valid
User satisfaction	Y2	0.71	0.37	Valid
User satisfaction	Y3	0.52	0.37	Valid
User satisfaction	Y4	0.78	0.37	Valid
User satisfaction	Y5	0.83	0.37	Valid

Internal consistency was assessed using Cronbach's alpha. A construct was considered reliable when its alpha coefficient exceeded the acceptance threshold of 0.70. As shown in Table 2, all constructs met this requirement.

Table 2. Construct reliability Result

Construct	Number of items	Cronbach's alpha	Threshold	Result
System quality	5	0.804	0.70	Reliable
Information quality	5	0.860	0.70	Reliable
Service quality	5	0.774	0.70	Reliable
User satisfaction	5	0.778	0.70	Reliable

The reliability coefficients were taken from the original analysis and show acceptable internal consistency across the four constructs.

D. Ethical Considerations

Participation in the study was voluntary. Before completing the questionnaire, respondents were informed about the purpose of the research and the academic use of the collected data. Respondents were not required to provide names or other direct personal identifiers. Their responses were treated confidentially and reported only in aggregate form.

The respondents were also informed that their decision to participate or decline participation, as well as the answers they provided, would not affect their employment status, performance evaluation, or professional relationship with the company. Access to the data was restricted to the research team, and the data were used exclusively for research and academic publication purposes [21].

E. Data Analysis

Descriptive statistics were first used to summarize respondent assessments of system quality, information quality, service quality, and user satisfaction. Before hypothesis testing, the regression assumptions were examined. Residual normality was evaluated using the Kolmogorov–Smirnov test, with a significance value greater than 0.05 indicating that the residuals did not significantly deviate from a normal distribution. Multicollinearity was assessed using tolerance and Variance Inflation Factor values, with a VIF below 10 indicating the absence of serious multicollinearity [22].

Moderated multiple regression analysis was used to test the direct effects of system quality and information quality and the moderating effect of service quality. The regression model was specified as follows:

$$Y = a + \beta 1X1 + \beta 2X2 + \beta 3Z + \beta 4X1.Z + \beta 5X2.Z + e \quad (4)$$

where:

Y = User Satisfaction

X_1 = System Quality

X_2 = Information Quality

Z = Service Quality (Moderator) [23]

The direct-effect hypotheses were evaluated from the coefficients of X_1 and X_2. The moderation hypotheses were evaluated from the coefficients of the interaction terms $X_1 \times Z$ and $X_2 \times Z$. Service quality was considered a significant moderator when the corresponding interaction coefficient had a probability value below 0.05.

F. Methodological Limitations

Several methodological limitations should be considered when interpreting the results. First, although all eligible ERP users were included, the study involved only 30 respondents. This relatively small number limits the statistical power of the regression analysis, particularly its ability to detect moderating effects, which are generally smaller and require larger samples than direct effects.

Second, the study was conducted within a single furniture manufacturing company. Organizational procedures, ERP configurations, management practices, and implementation conditions at PT. X may differ from those of other organizations. Consequently, the findings have limited generalizability and should not be directly extended to other companies, industries, or ERP platforms without further empirical examination.

Third, the cross-sectional design captured user perceptions at only one point in time. The study therefore could not examine changes in user satisfaction as users gained experience, received additional training, or adapted to the ERP system. The relationships identified in this study should consequently be interpreted as statistical associations rather than evidence of temporal or causal effects.

Fourth, all variables were measured using respondents' self-reported perceptions. The results may therefore be influenced by recall bias, social-desirability bias, individual expectations, or differences in respondents' interpretations of the questionnaire items. Because the independent variables, moderating variable, and dependent variable were collected from the same respondents using the same questionnaire at the same time, the study may also be subject to common method bias.

Finally, the research model focused on system quality, information quality, and service quality. It did not examine other organizational and user-related variables that may influence ERP user satisfaction, such as user competence, training effectiveness, organizational culture, management support, ERP experience, perceived usefulness, resistance to change, and user involvement. Future studies should incorporate these variables and use larger, multi-organizational, and longitudinal samples to improve statistical power and external validity [24].

III. Result and Discussion

A. Descriptive Statistical Analysis

Descriptive statistics were used to summarize the respondents' assessments of system quality, information quality, service quality, and user satisfaction. The results are presented in Table 3.

Table 3. Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
System Quality (X_1)	30	16	25	21.567	3.025
Information Quality (X_2)	30	15	25	19.800	3.438
Service Quality (Z)	30	16	25	21.067	3.352
User Satisfaction (Y)	30	16	25	20.867	3.256

System quality had the highest average score among the four constructs ($M = 21.567, SD = 3.025$), followed by service quality ($M = 21.067, SD = 3.352$) and user satisfaction ($M = 20.867, SD = 3.256$). Information quality had a slightly lower average score ($M = 19.800, SD = 3.438$). Overall, the results indicate generally favorable user perceptions, although the standard deviations show some variation among respondents [25].

B. Validity and Reliability Test

Item validity was assessed using item-total correlations. All 20 questionnaire items had correlation coefficients ranging from 0.52 to 0.90, exceeding the critical value of 0.37. Therefore, all questionnaire items were considered valid. Internal consistency was examined using Cronbach's alpha. As shown in Table 4, all constructs had coefficients above the acceptance threshold of 0.70 [26].

Table 4. Reliability Results

Construct	Number of Items	Cronbach's Alpha	Threshold	Result
System Quality	5	0.804	0.70	Reliable
Information Quality	5	0.860	0.70	Reliable
Service Quality	5	0.774	0.70	Reliable
User Satisfaction	5	0.778	0.70	Reliable

These results demonstrate that the measurement instrument had acceptable validity and internal consistency [27].

C. Assumption Testing

Residual normality was examined using the one-sample Kolmogorov-Smirnov test. The test produced a statistic of 0.127 and a significance value of 0.200. Because the significance value exceeded 0.05, the residuals did not significantly deviate from a normal distribution. Table 5 shown result of normality test.

Table 5. Normality Test

Normality Test	T-Statistic	Asymp Sig. (2-tailed)
Kolmogorov-Smirnov	0.127	0.200

Multicollinearity in the direct-effect regression model was assessed using tolerance and Variance Inflation Factor values. System quality and information quality each had a tolerance value of 0.354 and a VIF of 2.824. These values indicate that serious multicollinearity was not present in the direct-effect model. Table 6 shown result of multicollinearity test.

Table 6. Multicollinearity Test Dependent Variable User Satisfaction

Variable	Collinearity Statistics	
	Tolerance	VIF
System Quality	0.354	2.824
Information Quality	0.354	2.824

However, these results apply only to the direct-effect model. Multicollinearity must also be assessed after service quality and the two interaction terms are included in the moderation model [28].

D. Regression Analysis

Multiple linear regression was conducted to examine the effects of system quality and information quality on user satisfaction. The overall regression model was statistically significant, $F(2,27) = 66.438, p < 0.001$. The model produced an R^2value of 0.831 and an adjusted R^2value of 0.819. Thus, system quality and information quality jointly explained 83.1% of the variance in user satisfaction, while the remaining 16.9% was associated with factors not included in the model. Table 7 shown regression result.

Table 7. Direct-Effect Regression Results

Predictor	B	Std. Error	Standardized (β)	t	p	95% CI for B
Constant	0.805	1.853	—	0.434	0.667	[-2.997, 4.608]
System Quality	0.497	0.143	0.462	3.475	0.002	[0.204, 0.791]
Information Quality	0.472	0.126	0.498	3.747	0.001	[0.213, 0.731]

Model summary: $R = 0.912$; $R^2 = 0.831$; adjusted $R^2 = 0.819$; standard error of the estimate $= 1.38678$; $F(2,27) = 66.438$; $p < 0.001$.

System quality had a positive and statistically significant effect on user satisfaction ($B = 0.497, \beta = 0.462, t = 3.475, p = 0.002$). Its 95% confidence interval did not include zero, ranging from 0.204 to 0.791. Therefore, H1 was supported.

Information quality also had a positive and statistically significant effect on user satisfaction ($B = 0.472$, $\beta = 0.498$, $t = 3.747$, $p = 0.001$). Its 95% confidence interval ranged from 0.213 to 0.731. Therefore, H2 was supported. The standardized coefficient indicates that information quality had a slightly stronger relative association with user satisfaction than system quality [29].

E. Moderation Analysis

Moderated regression analysis was conducted to determine whether service quality changed the strength of the relationships between system quality, information quality, and user satisfaction. The interaction terms were represented by $X_1 \times Z$ and $X_2 \times Z$.

The original analysis did not document whether system quality, information quality, and service quality were mean-centered before the interaction terms were created. Mean-centering is recommended because the use of raw product terms can produce substantial nonessential multicollinearity and make the lower-order coefficients difficult to interpret. Therefore, the final analysis should be rerun using:

$$X_{2c} = X_2 - \bar{X}_2 \quad (5)$$

$$Z_c = Z - \bar{Z} \quad (6)$$

and:

$$X_{1c}Z_c = X_{1c} \times Z_c \quad (7)$$

$$X_{2c}Z_c = X_{2c} \times Z_c \quad (8)$$

Based on the currently reported, uncentered regression output, the coefficient results are presented in Table 8.

Table 8. Original Moderated Regression Results

Predictor	B	Std. Error	Standardized (β)	t	p	95% CI for B
Constant	-8.386	7.858	—	-1.067	0.297	[-24.604, 7.832]
Service Quality	1.290	0.373	1.328	3.460	0.002	[0.520, 2.060]
System Quality	0.376	0.510	0.350	0.739	0.467	[-0.677, 1.429]
Information Quality	0.193	0.521	0.204	0.370	0.715	[-0.882, 1.268]
System Quality × Service Quality	-0.018	0.024	-0.726	-0.765	0.452	[-0.068, 0.032]
Information Quality × Service Quality	-0.003	0.024	-0.131	-0.134	0.895	[-0.053, 0.047]

The interaction between system quality and service quality was not statistically significant ($B = -0.018$, $t = -0.765$, $p = 0.452$). Its 95% confidence interval ranged from -0.068 to 0.032 and included zero. Therefore, service quality was not shown to moderate the relationship between system quality and user satisfaction, and H3 was not supported. Similarly, the interaction between information quality and service quality was not statistically significant ($B = -0.003$, $t = -0.134$, $p = 0.895$). Its 95% confidence interval ranged from -0.053 to 0.047 and also included zero. Therefore, H4 was not supported [30].

The nonsignificant interaction effects do not imply that service quality is unnecessary or unimportant. They only indicate that service quality did not significantly change the strength of the relationships between system quality, information quality, and user satisfaction within the context examined. The significant coefficient for service quality in the uncentered model represents a lower-order effect rather than evidence of moderation. Moreover, because zero falls outside the observed ranges of system and information quality, this lower-order coefficient should not be interpreted substantively until the model has been rerun using mean-centered variables [31].

F. Discussion

The Effect of System Quality on User Satisfaction

The findings indicate that system quality has a positive and significant effect on ERP user satisfaction. This result supports the DeLone and McLean Information Systems Success Model, which positions system quality as a central determinant of users' evaluations of an information system. Users are more likely to be satisfied when the system provides the required functions, operates reliably, responds quickly, protects organizational data, and offers an interface that is easy to understand and navigate.

In the context of PT. X, system quality is particularly important because SAP Business One integrates production planning, inventory, purchasing, sales, and financial activities. System interruptions, slow response times, or unavailable functions may therefore disrupt several connected business processes rather than only affecting individual users. By contrast, a stable and responsive system reduces the effort required to complete transactions, minimizes delays, and allows employees to concentrate on their operational responsibilities. The relatively high evaluations of functional availability and system performance suggest that users value the system primarily for its ability to support routine work effectively [32].

The significant relationship is consistent with previous ERP studies showing that functionality, reliability, ease of use, and response speed increase user satisfaction [33]. However, the effect of system quality may vary across organizational settings. In organizations where users experience frequent system errors, inadequate customization, or poor infrastructure, system quality may not generate the same positive evaluation. At PT. X, the significant result may be explained by the alignment between the ERP functions and the company's make-to-order production activities, as well as the customization of reports, production documents, and work-order monitoring features. These adjustments may have made the system more relevant to users' actual tasks.

The Effect of Information Quality on User Satisfaction

Information quality also has a positive and significant effect on ERP user satisfaction. This finding is consistent with the DeLone and McLean model, which proposes that users assess an information system not only by how the system operates but also by the usefulness of the information it produces. Accurate, complete, timely, relevant, and accessible information reduces uncertainty and supports users in completing operational and managerial tasks.

At PT. X, information quality is essential because ERP-generated data are used across interconnected functions. Production personnel require accurate information regarding work orders and material requirements, warehouse employees depend on updated inventory records, and finance personnel require complete transaction data for accounting and reporting. Inaccurate or delayed information in one function may consequently affect production scheduling, material availability, inventory balances, costing, and delivery performance. Therefore, users are more likely to be satisfied when the information provided by the system can be trusted and accessed when needed.

Respondents placed particular emphasis on data accuracy and timeliness. These indicators are directly related to the company's operational environment, where production and inventory decisions depend on current and consistent data. Nevertheless, information quality should not be interpreted only in terms of accuracy and timeliness. Information completeness ensures that users do not need to consult multiple systems or manual records, relevance prevents information overload, and accessibility allows users to retrieve historical and operational data efficiently.

The finding supports earlier research identifying information quality as an important determinant of ERP user satisfaction [34]. The similarity may result from the integrated nature of ERP systems, in which users depend heavily on shared data generated by other departments. However, studies conducted in organizations with incomplete data migration, inconsistent input practices, or poorly defined data ownership may report weaker relationships. Thus, the positive effect found at PT. X may also reflect the extent to which users perceive the system's information as sufficiently dependable for their daily responsibilities.

The Moderating Role of Service Quality on the Relationship between System Quality and User Satisfaction

The interaction between system quality and service quality was not statistically significant ($p = 0.452$). This result indicates that service quality did not significantly change the strength of the relationship between system quality and user satisfaction. However, this finding does not imply that service quality is unnecessary or unimportant. It only means that, within the context examined, differences in service quality did not make the effect of system quality on satisfaction stronger or weaker.

Several organizational and implementation factors may explain this result. First, users may interact continuously with the ERP system but contact the support provider only when a problem occurs. As a result, their satisfaction may be shaped more strongly by daily system performance than by occasional support experiences. Second, support services may have been delivered relatively uniformly to all users, producing insufficient variation to generate a detectable interaction effect. When users receive similar levels of support, service quality has limited ability to explain differences in how system quality affects satisfaction.

Third, users may have become sufficiently familiar with routine ERP functions through previous training, practical experience, or assistance from internal personnel. Internal IT employees, supervisors, and experienced users may resolve minor problems before external consultants are contacted. This internal support mechanism can reduce direct user dependence on the implementation provider. Fourth, because the ERP functions are closely aligned with routine operational activities, users may evaluate the system primarily according to whether it works reliably, quickly, and consistently, regardless of the quality of external support [35].

The nonsignificant moderation result may also be related to the limited sample size. Interaction effects are generally smaller and statistically more difficult to detect than direct effects. With only 30 respondents, the analysis may have insufficient statistical power to identify a modest moderating effect. Therefore, the absence of statistical significance should not be interpreted as conclusive evidence that service quality never influences the system quality–satisfaction relationship.

This finding is consistent with [36], which also reported that service quality did not significantly moderate the effect of system quality. However, it may differ from studies conducted during more problematic implementation stages, where users rely heavily on consultants to resolve system errors, configure functions, or provide continuous training. Under such conditions, service quality may play a stronger moderating role because effective support determines whether users can benefit from the technical capabilities of the ERP system.

The Moderating Role of Service Quality on the Relationship between Information Quality and User Satisfaction

The interaction between information quality and service quality was also not statistically significant ($p = 0.895$). Thus, service quality did not significantly strengthen or weaken the relationship between information quality and user satisfaction. Users' evaluations of information accuracy, completeness, timeliness, relevance, and accessibility appear to influence satisfaction independently of their perceptions of support services.

One possible explanation is that information quality is largely determined by system configuration, data governance, and user input practices rather than by the immediate quality of technical support. Consultants may assist with configuration and problem resolution, but the accuracy and completeness of operational information also depend on whether employees enter data correctly and consistently. Therefore, users may associate information quality more directly with organizational data practices and system processes than with the responsiveness of the external support provider.

Service support may also become relevant only when users encounter unusual data problems, reporting errors, or difficulties retrieving information. During routine operations, users may be able to obtain the required information without consultant intervention. Consequently, service quality may influence satisfaction directly through problem resolution or training, but it may not alter the effect of information quality itself. This distinction is important because a variable can be valuable as a direct antecedent without functioning as a moderator [37].

The result may additionally reflect users' growing competence and familiarity with the system. Experienced users may know how to locate reports, verify data, and correct minor errors without relying extensively on support personnel. Internal training and peer assistance may further replace dependence on external services. As with the previous moderation test, the small sample and limited variation in service-quality evaluations may also have reduced the probability of detecting an interaction effect.

The finding is consistent with [38], which similarly found no significant moderating effect of service quality on the relationship between information quality and user satisfaction. Nevertheless, the result may differ in organizations where data migration remains incomplete, reporting structures are frequently modified, or users depend heavily on consultants to interpret system outputs. In such environments, service quality may become more influential in determining whether users can benefit from the information generated by the ERP system.

Practical Implications

ERP managers should prioritize system stability, speed, security, usability, and data quality through regular monitoring, clear data-entry procedures, master-data validation, and role-based training. SAP consultants should provide accessible documentation, structured technical support, post-implementation reviews, and assistance in developing internal ERP capabilities [39].

Overall, system and information quality directly improve ERP user satisfaction, while service quality does not significantly moderate these relationships. However, service quality remains important for training and problem resolution. Future studies should use larger, multi-organizational, and longitudinal samples and examine variables such as user competence, training effectiveness, management support, and organizational culture [40], [41].

IV. Conclusion

This study confirms that system quality and information quality positively and significantly affect ERP user satisfaction at PT. X. These findings support the DeLone and McLean Information Systems Success Model. However, service quality did not significantly moderate either relationship. This does not mean that service quality is unimportant, but that its role may be more relevant to training, technical assistance, and problem resolution than to strengthening the effects of system and information quality.

Practically, ERP managers should prioritize system reliability, usability, performance, and data accuracy, while consultants should provide role-based training and responsive post-implementation support. This study is limited by its small sample of 30 users, single-company setting, and cross-sectional design. Future research should involve larger samples, multiple organizations and industries, longitudinal designs, and additional variables such as user competence, organizational culture, training effectiveness, and perceived usefulness.

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