

Enhancing Trust in Digital Procurement: The Role of E-Signature and Information Quality in Billing System Adoption among SMEs

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ABSTRACT

This study evaluates the determinants of successful digital billing adoption, specifically electronic signatures and e-stamps, among Small and Medium Enterprises (SMEs) in Indonesia's B2B e-procurement ecosystem by integrating the Information System Success Model (ISSM) and the Unified Theory of Acceptance and Use of Technology (UTAUT). Utilizing a mixed-method approach with 185 valid survey responses analyzed via SEM-PLS and supplementary qualitative interviews, the results demonstrate that System Quality and Information Quality significantly enhance Performance Expectancy and directly impact Successful Use, while Social Influence serves as the primary driver of Behavioral Intention. The findings highlight a critical nuance where adoption is largely fueled by external pressure from institutional buyers (State-Owned Enterprises) rather than internal volition; furthermore, despite the statistical significance of technical factors, qualitative data reveal that system instability remains a major friction point affecting user trust. Ultimately, the study concludes that sustaining digital billing success requires platform providers to prioritize technical reliability to foster genuine user trust, while policymakers should leverage strategic buyer mandates to accelerate compliance across the supply chain.

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1. INTRODUCTION

In the contemporary landscape of the global digital economy, the transformation of supply chain management has become an imperative strategy for enhancing operational efficiency and competitiveness [1], [2]. Within this domain, electronic procurement (e-procurement) has emerged as a critical tool for streamlining Business-to-Business (B2B) transactions, particularly for Small and Medium-sized Enterprises (SMEs) integrating into larger supply chains [3], [4]. While the digitization of ordering and purchasing processes has matured, the subsequent phase of financial settlement, specifically electronic invoicing (e-invoicing) and digital billing often lags behind, creating disjointed workflows that rely on hybrid manual-digital processes. E-invoicing, defined as the dematerialized exchange of billing data between a supplier and a buyer, is essential for reducing administrative costs, minimizing errors, and accelerating payment cycles [5], [6]. However, for SMEs in developing economies, the transition from traditional paper-based billing to fully integrated digital systems presents significant challenges related to security, legal validity, and technological readiness [7], [8].

A central impediment to the successful adoption of digital billing systems is the issue of trust. In digital transactions, where face-to-face interaction is absent, trust becomes the pivotal determinant of user behavior and continuous usage [9]. Trust in a digital environment is heavily reliant on the assurance of data integrity and the legal enforceability of documents. To address this, technologies such as electronic signatures (e-signatures) and electronic stamps (e-meterai) have been introduced to guarantee the authentication of identity and the validity of documents [10]. Although these features are designed to mitigate risk and enhance security, their mere existence does not guarantee user acceptance. Research suggests that for digital features to effectively build trust and drive successful use, they must be supported by a robust system architecture that delivers high-quality information [11], [12].

The evaluation of such systems requires a comprehensive theoretical approach that bridges technical performance with user behavior. The Information System Success Model (ISSM) posits that System Quality and Information Quality are fundamental antecedents to user satisfaction and the net benefits of a system [13], [14]. However, technical quality alone may not fully explain the behavioral intent to use specific security features. Therefore, integrating ISSM with the Unified Theory of Acceptance and Use of Technology (UTAUT) provides a more holistic lens. UTAUT suggests that technical superiority must translate into Performance Expectancy, the degree to which a user believes the system will help them attain gains in job performance, to influence usage behavior [11], [15]. While previous studies have examined these models in isolation regarding ERP or general e-commerce adoption [16], there remains a paucity of empirical research investigating how quality dimensions and security features (e-signatures) specifically interact to drive the successful use of billing systems among active SME vendors.

This study aims to fill this gap by evaluating the determinants of digital billing system success within a prominent B2B e-procurement platform for State-Owned Enterprises (SOEs) in Indonesia. Unlike prior research that often focuses on barriers to initial adoption among non-users, this research specifically analyzes the experiences of 185 active users who have integrated digital billing features into their business processes. By integrating constructs from ISSM (System Quality, Information Quality) and UTAUT (Performance Expectancy), this study assesses how the reliability of e-signatures and the quality of billing information influence user trust and the successful usage of the system. The findings of this research are expected to provide strategic insights for platform providers and policymakers on enhancing trust and operational compliance in the digital procurement ecosystem for SMEs.

2. RESEARCH METHOD

Research Design

This study employs a quantitative approach with a causal-explanatory design to evaluate the determinants of digital billing system success. The research integrates two theoretical frameworks: the Information System Success Model (ISSM) introduced by Delone & Mclean (2014) and the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al (2003). This integration allows for a comprehensive analysis of both technical system performance and user behavioral intentions in a B2B e-procurement context.

Theoretical Framework and Hypotheses Development

This study integrates System Quality (SQ) and Information Quality (IQ) into the UTAUT framework to evaluate e-invoicing adoption among SMEs. System Quality, encompassing technical stability and reliability [11], and Information Quality, focused on the accuracy of legal documents like e-meterai, are posited as primary determinants of Performance Expectancy (PE) and Successful Use (SU). Consequently, it is hypothesized that SQ positively influences PE (H4) and SU (H6), while IQ exerts a significant positive effect on PE (H5) and SU (H7).

Furthermore, user intention is driven by Performance Expectancy (PE), Effort Expectancy (EE), and Social Influence (SI). In a B2B context, PE relates to streamlined accounts receivable [5], [17], while EE addresses the ease of navigation for users with varying digital literacy [10], [18]. Social Influence captures the external pressure from State-Owned Enterprises (SOEs) and

regulatory mandates [5]. These constructs are hypothesized to positively impact Behavioral Intention (BI) (H1, H2, H3). Finally, aligning with behavioral theory [19], it is proposed that a higher BI significantly leads to the Successful Use (SU) of the platform (H8).

Population and Sampling

The population of this study consists of Small and Medium Enterprises (SMEs) that act as vendors on a prominent B2B e-procurement platform for State-Owned Enterprises (SOEs) in Indonesia. To ensure the validity of the post-adoption evaluation, the sampling technique used was purposive sampling. The specific criteria for respondents were: (1) Active vendors who have conducted transactions within the last six months, and (2) Users who have actively utilized the digital billing features, specifically electronic signatures (e-signatures) and electronic stamps (e-meterai).

Based on these criteria, a total of 185 valid respondents were selected as the final sample for analysis. This sample size meets the "10-times rule" requirement for SEM-PLS analysis, which suggests that the sample size should be at least 10 times the largest number of structural paths directed at a particular construct. The respondents represent various roles within the SMEs, including owners, managers, and administrative staff responsible for financial billing processes.

Data Collection and Instrument

Data collection was conducted using an online questionnaire distributed via Google Forms. The instrument items were adapted from prior studies to suit the context of digital billing systems. The measurement items were assessed using a 5-point Likert scale, ranging from 1 ("Strongly Disagree") to 5 ("Strongly Agree"). The constructs measured in this study were adapted from established theoretical frameworks to ensure content validity. System Quality (SQ) and Information Quality (IQ) were derived from the ISSM framework to assess technical reliability, response time, and data accuracy. To capture user perceptions regarding utility, ease of use, and environmental support, the study incorporated Performance Expectancy (PE), Effort Expectancy (EE), and Social Influence (SI) from the UTAUT model. Furthermore, the instrument evaluated Behavioral Intention (BI) to gauge the user's intent to continue utilizing the digital features, culminating in the assessment of Successful Use (SU), which represents the net benefit or effectiveness of the system in streamlining the billing process. To operationalize this construct, respondents evaluated the Successful Use based on three specific items: SU1 ('The use of the billing system, including Document Security features (e-Signature and e-Meterai), can speed up the completion of the billing process.'), SU2 ('The billing system with e-Signature and e-Meterai features simplifies every stage of the billing process.'), and SU3 ('The billing system with e-Signature and e-Meterai features makes the billing process more effective overall.')

Data Analysis Technique

This study employed Structural Equation Modeling based on Partial Least Squares (PLS-SEM) utilizing SmartPLS 4.0 software to process the data. This approach was selected due to its robustness in handling complex models with non-normal data distributions and its capability to provide efficient results even with small-to-medium sample sizes. The analytical procedure was executed in two distinct phases. Initially, the measurement model (outer model) was scrutinized to verify the validity and reliability of the indicators. Convergent validity was established by ensuring that factor loadings exceeded 0.70 and the Average Variance Extracted (AVE) surpassed 0.50. Additionally, discriminant validity was assessed via the Fornell-Larcker criterion, requiring the square root of the AVE for each construct to be higher than its correlations with other latent variables. Internal consistency was confirmed through Cronbach's Alpha and Composite Reliability (CR), with a minimum threshold of 0.70 set for both metrics. Subsequently, the structural model (inner model) was evaluated to test the proposed relationships. In this phase, the model's predictive power was gauged using the Coefficient of Determination (R²). Finally, hypothesis testing was performed using a bootstrapping technique with 5,000 resamples. The significance of the relationships was determined by examining Path Coefficients (β) and T-statistics, where a t-value greater than 1.96 ($p < 0.05$) indicated the acceptance of a hypothesis.

Qualitative Data Collection and Analysis

To supplement and triangulate the quantitative findings, qualitative data was collected through semi-structured interviews. The sampling strategy employed for the qualitative phase was purposive sampling, selecting 5 interviewees from the 185 valid users to ensure they had hands-on experience with the digital billing features. The roles of the interviewees represented key organizational functions, including PIC/manager, owner, admin, and customer service. The interview protocol focused on understanding the practical challenges, friction points (such as e-signature errors), and the impact of external pressure (buyer mandates) on system adoption. Interviews lasted approximately 20 minutes each. Qualitative data was analyzed using a thematic coding method, where responses were categorized into constructs aligning with the structural model: Performance Expectancy, Effort Expectancy, Social Influence, and System Quality. Trustworthiness of the qualitative data was ensured through member checking, where the summarized findings were returned to the 5 interviewees to verify accuracy, and through peer debriefing among the researchers.

3. RESULTS AND DISCUSSION

Demographic Profile of Respondents

Data collection was conducted through an online survey targeting SME vendors actively using a prominent B2B e-procurement platform. A total of 275 valid responses were obtained. The descriptive demographic profile of the overall respondents (N=275) is detailed in Table 1, showing organizational roles and transaction frequency. While 275 respondents actively use the procurement ecosystem, the data highlights a specific digital divide regarding the adoption of digital billing features (e-Signature and e-Meterai). Specifically, 185 respondents (67.3%) have fully adopted these features (Users), while 90 respondents (32.7%) have not (Non-Users). Because this study is a post-adoption evaluation aimed at assessing the Successful Use and net benefits of digital billing features, the 90 non-users were systematically excluded from the structural model estimation dataset. Including non-users would bias the model estimation, as they lack the actual experiential basis required to accurately evaluate technical System Quality, Information Quality, and the resulting Successful Use of the e-signature tools. Consequently, all subsequent PLS-SEM structural analyses strictly utilize the filtered dataset of actual users (N=185).

Table 1. Demographic Profile of Respondents (N = 275)

Characteristics	Category	Frequency	Percentage (%)
Gender	Male	125	45.5%
	Female	150	54.5%
Current Position	Owner	66	24.0%
	Manager / PIC	71	25.8%
	Admin (Operational)	71	25.8%
	Customer Service	67	24.4%
Length of Platform Usage	< 1 Year	76	27.6%
	1 – 3 Years	99	36.0%
	> 3 Years	100	36.4%
Transaction Frequency (Last 3 months)	Never (0 times)	82	29.8%
	1 – 2 times	47	17.1%
	3 – 5 times	47	17.1%
	6 – 10 times	42	15.3%
	Almost every day (>10)	57	20.7%
Adoption Status	Users (Adopted e-Sign/e-Meterai)	185	67.3%
	Non-Users	90	32.7%

Measurement Model Assessment

The first stage of the analysis involved evaluating the measurement model (outer model) to ensure the validity and reliability of the research instrument. This assessment encompassed convergent validity and internal consistency reliability. As presented in Table 2, all measurement items exhibited Outer Loadings exceeding the recommended threshold of 0.70, ranging from 0.736 to 0.880, confirming that the indicators are robust measures of their respective constructs. Internal consistency was established as all constructs displayed Cronbach's Alpha (CA) and Composite Reliability (CR) values above 0.70. Furthermore, the Average Variance Extracted

(AVE) for all variables (System Quality, Information Quality, Performance Expectancy, Effort Expectancy, Social Influence, Behavioral Intention, and Successful Use) exceeded the 0.50 cut-off, demonstrating satisfactory convergent validity.

Table 2. Measurement Model Assessment

Construct	Items	Items Wording	Outer Loading	CA	CR	AVE
System Quality (SQ)	SQ1	The billing system is fast and responsive when accessed	0.832	0.862	0.906	0.708
	SQ2	The billing system rarely experiences disruptions or errors during use	0.860			
	SQ3	The billing system has good document integration between PO, BAST, and Invoices	0.836			
	SQ4	The billing system provides adequate data security protection	0.836			
Information Quality (IQ)	IQ1	The billing system provides accurate information	0.831	0.840	0.893	0.676
	IQ2	The information generated by the billing system is easy to understand	0.826			
	IQ3	The billing system provides complete information as needed	0.808			
	IQ4	The information provided by the billing system is always up-to-date	0.824			
Performance Expectancy (PE)	PE1	The use of the billing system helps me complete the billing process faster	0.820	0.849	0.899	0.689
	PE2	The billing system improves the security of my billing documents	0.860			
	PE3	The billing system helps reduce errors in the billing process	0.818			
	PE4	The billing system meets my billing needs	0.821			
Effort Expectancy (EE)	EE1	The billing system is easy to learn for new users	0.846	0.836	0.891	0.671
	EE2	The billing system is easy to operate without requiring much effort	0.736			
	EE3	The user flow of the billing system is clear.	0.862			
	EE4	I feel comfortable using the billing system without the need for frequent technical assistance	0.828			
Social Influence (SI)	SI1	My supervisor encourages the use of the billing system and e-Signature/e-Stamp features.	0.805	0.805	0.885	0.719
	SI2	Internal policies/unit regulations support or require e-documents (e-Signature/e-Stamp).	0.857			
	SI3	The buyer supports the use of the billing system as well as the use of e-Signature/e-Stamp features	0.880			
Behavioral Intention (BI)	BI1	I intend to continue using the billing system in the future	0.855	0.803	0.884	0.717
	BI2	I will recommend the use of the billing system to other colleagues	0.823			
	BI3	I will use the e-Signature/e-Stamp features as often as possible	0.862			
Successful Use (SU)	SU1	Using the billing system, including Document Security features (e-Signature and e-Stamp), can speed up the completion of the billing process	0.832	0.804	0.884	0.718
	SU2	The billing system with e-Signature and e-Stamp features simplifies every stage of the billing process	0.858			
	SU3	The billing system with e-Signature and e-Stamp features makes the billing process more effective overall	0.851			

Note: Threshold values: Outer Loading > 0.70; Cronbach's Alpha (CA) > 0.70; Composite Reliability (CR) > 0.70; Average Variance Extracted (AVE) > 0.50.

Discriminant validity was assessed using the Fornell-Larcker criterion to ensure that each construct is empirically distinct. The results in Table 3 show that the square root of the AVE for each construct (represented by the bold values on the diagonal) is greater than its correlation with any other construct in the model. For instance, the square root of AVE for System Quality (0.847) is higher than its correlation with Performance Expectancy (0.639) and Successful Use (0.536). These results confirm that the measurement model possesses adequate discriminant validity.

Table 3. Discriminant Validity (Fornell-Larcker Criterion).

Construct	BI	EE	IQ	PE	SI	SQ	SU
Behavioral Intention (BI)	0.847						
Effort Expectancy (EE)	0.624	0.819					
Information Quality (IQ)	0.381	0.341	0.822				
Performance Expectancy (PE)	0.566	0.385	0.538	0.830			
Social Influence (SI)	0.517	0.300	0.178	0.310	0.848		
System Quality (SQ)	0.536	0.399	0.634	0.639	0.305	0.847	
Successful Use (SU)	0.337	0.228	0.228	0.636	0.167	0.536	0.841

Note: The diagonal elements (in bold) represent the square root of the Average Variance Extracted (AVE). Off-diagonal elements represent the correlations between constructs.

Furthermore, because all variables were self-reported using a single instrument at the same time, Common Method Variance (CMV) diagnostics were performed using a full collinearity assessment. The results indicated that all inner Variance Inflation Factor (VIF) values were below the recommended threshold of 3.3. This confirms that common method bias is not a critical issue and does not significantly inflate the path coefficients in this study.

Structural Model Assessment

Upon validating the measurement model, the structural model (inner model) was evaluated to test the hypothesized relationships. The model's predictive power was assessed using the coefficient of determination (R^2). The analysis indicates that the model explains 59.4% of the variance in Behavioral Intention ($R^2=0.594$) and 62.4% of the variance in Performance Expectancy ($R^2=0.624$). Additionally, the constructs of System Quality, Information Quality, and Behavioral Intention collectively explain the variance in Successful Use.

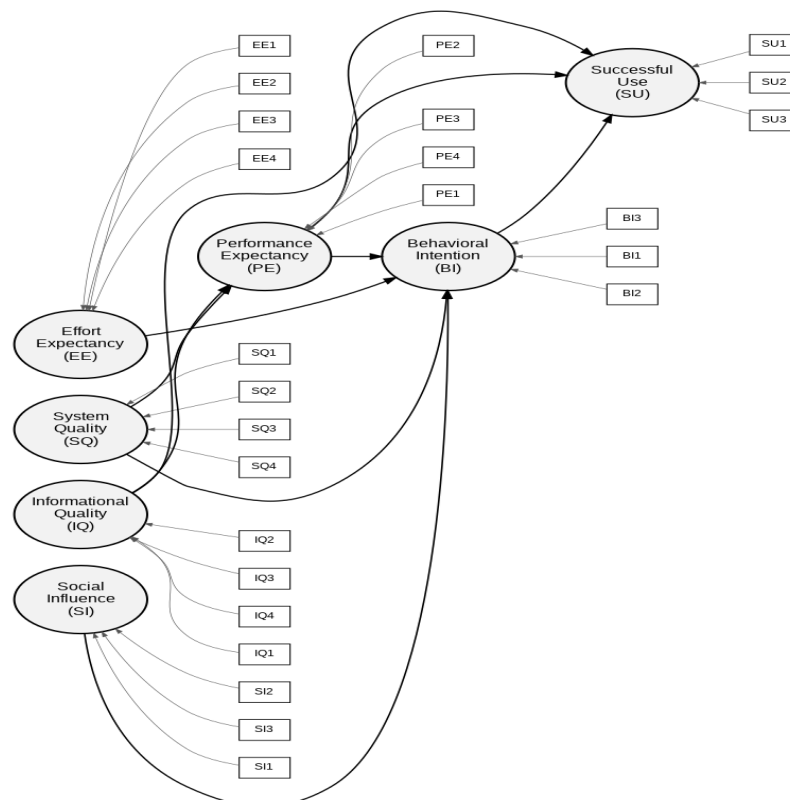


Figure 1. Structural Model Results. Exported from SmartPLS with modification.

Hypothesis testing was conducted using a bootstrapping procedure with 5,000 subsamples. The summary of the hypothesis testing is presented in Table 4. The results demonstrate that all proposed hypotheses (H1 to H8) are supported, with T-statistics > 1.96 and P-values < 0.001 .

Specifically, the technical factors derived from the ISSM framework proved to be significant predictors. System Quality and Information Quality positively influenced Performance Expectancy (H4: $t=12.202$; H5: $t=7.811$) and had a direct positive impact on Successful Use (H6 and H7). From the UTAUT perspective, Performance Expectancy, Effort Expectancy, and Social Influence were identified as strong drivers of Behavioral Intention to use digital billing features (H1, H2, H3). Finally, Behavioral Intention was found to significantly influence Successful Use (H8: $t=3.983$), confirming that a strong intention to use is a prerequisite for the actual success of the system.

Table 4. Structural Model Assessment (Hypothesis Testing Results).

Hypothesis	Relationship	Path Coefficient (β)	T-Statistics	P-Values	Decision
H1	Performance Expectancy $\rightarrow$ Behavioral Intention	0.316	4.920	< 0.001	Supported
H2	Effort Expectancy $\rightarrow$ Behavioral Intention	0.413	7.742	< 0.001	Supported
H3	Social Influence $\rightarrow$ Behavioral Intention	0.295	5.687	< 0.001	Supported
H4	System Quality $\rightarrow$ Performance Expectancy	0.541	12.202	< 0.001	Supported
H5	Information Quality $\rightarrow$ Performance Expectancy	0.415	7.811	< 0.001	Supported
H6	System Quality $\rightarrow$ Successful Use	0.349	8.286	< 0.001	Supported
H7	Information Quality $\rightarrow$ Successful Use	0.462	10.229	< 0.001	Supported
H8	Behavioral Intention $\rightarrow$ Successful Use	0.242	3.983	< 0.001	Supported

Note: $t > 1.96$ indicates significance at $p < 0.05$. P-values smaller than 0.001 are reported as $p < 0.001$

To provide a deeper understanding of the statistical results, qualitative insights gathered from semi-structured interviews with active sellers are summarized in Table 5. These findings highlight the practical challenges and contextual factors influencing the adoption of digital billing features.

Table 5. Key Qualitative Findings from Interviews.

Construct	Key Interview Findings (Summary)
Performance Expectancy	Users acknowledge that digital documents accelerate the billing process and reduce administrative duplication. However, some institutional buyers still require physical documents, reducing the realized benefits
Effort Expectancy	While the system is conceptually simple, users experienced technical glitches (e.g., shifting e-signatures upon printing) which complicated the process. Users suggested adding "pop-up walkthroughs" for better guidance
Social Influence	Adoption is heavily driven by buyer requirements. Sellers stated, "If the buyer doesn't require it, I won't use it," indicating that external pressure is a stronger driver than personal preference
System Quality	The platform is functional but users reported instability issues, such as settlement delays and error notifications, which affect trust in the digital process

Note: Based on semi-structured interviews with active sellers.

Data collection was conducted through an online survey targeting Small and Medium Enterprises (SMEs) that actively utilize a prominent B2B e-procurement platform in Indonesia. From the distributed questionnaires, a total of 275 valid responses were obtained, representing a diverse demographic profile. The respondents were relatively balanced in gender distribution (54.5% female) and held key organizational roles ranging from operational staff such as Admins (25.8%) to strategic decision-makers like Managers and Owners (49.8%). While the majority of respondents (72.4%) have utilized the platform for over a year, a distinct digital divide was observed regarding the specific adoption of digital billing features: 185 respondents (67.3%) have integrated electronic signatures (*e-signatures*) and electronic stamps (*e-meterai*) into their workflow, whereas 90 respondents (32.7%) have not. Consequently, the structural analysis focused on the 185 active users to accurately evaluate the determinants of system success.

The evaluation of the measurement model confirmed the robustness of the research instrument. All indicators for the constructs, such as System Quality, Information Quality, Performance Expectancy, Effort Expectancy, Social Influence, Behavioral Intention, and Successful Use exhibited outer loadings above the 0.70 threshold, establishing strong convergent validity. Furthermore, the internal consistency was validated with Cronbach's Alpha and Composite Reliability values exceeding 0.70 for all variables. Discriminant validity was also established using the Fornell-Larcker criterion, where the square root of the Average Variance Extracted (AVE) for each construct was higher than its correlation with any other construct, ensuring that each variable represents a distinct empirical concept.

Upon validating the measurement model, the structural model assessment revealed significant relationships that support the integration of the Information System Success Model (ISSM) and the Unified Theory of Acceptance and Use of Technology (UTAUT). The model demonstrated substantial predictive power, explaining 59.4% of the variance in Behavioral Intention and 62.4% in Performance Expectancy. Hypothesis testing confirmed that System Quality and Information Quality significantly influence Performance Expectancy (H4, H5) and directly impact Successful Use (H6, H7). These findings align with recent studies suggesting that in digital accounting contexts, the technical reliability and accuracy of information are foundational antecedents that shape user perceptions of utility [8], [11]. For SMEs, the ability of the system to produce legally valid and accurate billing documents is not merely a technical feature but a critical driver of their intention to continue using the platform.

However, a deeper narrative emerges when contrasting these statistical results with qualitative insights gathered from semi-structured interviews. While the quantitative data indicates a positive relationship between system quality and usage, qualitative feedback highlights a fragility in user trust due to technical instability. Users reported specific issues such as "shifting digital signatures upon printing" and "error notifications" during the signing process. This corroborates findings by Handoyo (2024), who emphasized that in digital commerce, perceived security and technical stability are prerequisites for trust; even minor technical glitches in security features like e-signatures can disproportionately erode user confidence. Thus, while the system is statistically "successful," the qualitative friction points suggest that technical perfection is mandatory for sustained adoption in financial transactions [20], [21], [22].

From a behavioral perspective, the study found that Performance Expectancy, Effort Expectancy, and Social Influence are significant predictors of Behavioral Intention (H1, H2, H3). Among these, Social Influence emerged as a particularly dominant factor, shedding light on the unique nature of B2B adoption. Unlike voluntary consumer applications, the qualitative data reveals that SME adoption is heavily driven by "trading partner pressure" from large institutional buyers (State-Owned Enterprises). Sellers explicitly stated that their usage is often a response to buyer requirements rather than internal initiative [23], [24], with some noting, "if the buyer does not require it, I won't use it". This mirrors the "mandatory" adoption context described by Lutfi et al. (2022) and Tiwari et al. (2023), where regulatory pressure and supply chain mandates act as primary catalysts for technology diffusion. Consequently, the high adoption intention observed is likely a function of compliance necessity rather than purely voluntary preference.

Finally, the strong positive relationship between Behavioral Intention and Successful Use (H8) confirms that intention remains the best predictor of actual system usage. However, the study suggests that for this intention to translate into long-term success, platform providers must address the "digital divide" in technical literacy. Qualitative findings indicated that despite the influence of Effort Expectancy, users still struggle with the complexity of affixing e-meterai, suggesting a need for better instructional support such as "pop-up walkthroughs". This aligns with Raza (2025) and San et al. (2025), who identify lack of expertise and awareness as major barriers for SMEs. By resolving these technical and educational barriers, the platform can shift user motivation from mere compliance (Social Influence) to genuine appreciation of system utility (Performance Expectancy), thereby ensuring the sustainability of digital billing adoption in the SME sector.

4. CONCLUSION

The empirical results demonstrate that System Quality and Information Quality are critical prerequisites that directly influence Successful Use and shape users' Performance Expectancy. This implies that for SMEs to perceive the system as useful, the platform must first guarantee technical stability and data accuracy. Furthermore, the study identifies Social Influence as a dominant driver of Behavioral Intention. Qualitative insights clarify that this influence manifests primarily as "trading partner pressure" from large buyers (SOEs) rather than voluntary adoption. While statistical data suggests high adoption rates, the qualitative findings reveal that technical glitches (e.g., e-signature errors) remain a friction point that threatens user trust. The successful digitalization of SME billing is a dual function of technological reliability and external enforcement. To sustain long-term adoption, platform providers must prioritize resolving technical

instability to match user expectations, while policymakers should leverage the strategic position of SOE buyers to enforce digital compliance standards across the supply chain. Despite the significant findings, this study has certain limitations. First, all constructs, including Successful Use, were measured utilizing cross-sectional self-reported survey data. Because Successful Use was evaluated perceptually by the users rather than objectively, there is a lack of behavioral validation. Future research should address this limitation by incorporating objective system data, such as actual system logs, processing time metrics, error rates, and payment cycle outcomes, to provide a more robust and holistic assessment of digital billing system success.

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DATA AVAILABILITY

Data supporting this study is available from ze-nodo at <https://doi.org/10.5281/zenodo.18378056>. Access to the data is subject to approval and a data sharing agreement due to respondent company confidentiality surrounding sensitive operational and project data. For access request, please contact the corresponding author's email address for approval.

AUTHOR CONTRIBUTIONS

Fanny Leonita Felysia: Conceptualization; Data Curation; Data Labeling; Methodology; Writing - Original Draft; Visualization. **Tanty Oktavia:** Conceptualization; Data Labeling; Methodology; Supervision; Writing - Review & Editing.

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