



ANALYSIS OF THE FACTORS INFLUENCING SATISFACTION IN BUILDING USER TRUST IN THE SKULID APPLICATION: AN INTEGRATED TAM AND UTAUT APPROACH

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ABSTRACT

This study examines the determinants of user satisfaction and trust in Skul.id, an e-learning application developed by Telkomsel. Integrating the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), the study analyzes the effects of Perceived Usefulness, Perceived Ease of Use, Performance Expectancy, Effort Expectancy, and Facilitating Conditions on User Satisfaction and Trust. A quantitative approach was employed using an online questionnaire distributed to students who had used Skul.id for at least three months. Data from respondents selected through non-propability convenience sampling were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS. The results indicate that all examined factors significantly and positively affect user satisfaction, with effort expectancy exerting the strongest influence. Gender and experience do not significantly moderate these relationships, suggesting relatively homogeneous technology adoption behavior among digital native students. Furthermore, satisfaction explains 67% of the variance in user trust, demonstrating its central role in trust formation. These findings confirm the applicability of TAM and UTAUT in youth-oriented e-learning contexts and highlight the importance of enhancing learning benefits, usability, and technological support to strengthen user trust and loyalty.

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1. INTRODUCTION

Advancements in digital technology have driven telecommunications companies to pursue continuous transformation in order to remain competitive within an increasingly digitized industry landscape. Digitalization functions not only as an efficiency instrument but also as a fundamental enabler of business innovation, facilitating the provision of faster, more integrated services aligned with the needs of customers who are progressively oriented toward online connectivity. Changes in consumer behavior indicate increasing demand for personalized, responsive, and meaningful digital experiences. As the largest telecommunications service provider in Indonesia, Telkomsel holds a strategic role in supplying reliable communication infrastructure and services. Since commencing operations in 1995, Telkomsel has served more than 158.4 million active subscribers with network coverage spanning 97% of Indonesia's territory, supported by 269,000 4G LTE BTS units, 3,000 5G BTS units, and GraPARI service networks operating in nearly all major cities.

Although Telkomsel continues to dominate the national market with approximately 158.4 million subscribers as of October 2025, its market share within the youth segment remains relatively lower compared to major competitors. This condition reflects strategic challenges that require targeted initiatives to strengthen competitiveness, trust, and loyalty among users aged 12–18 years, a demographic characterized by high levels of digital adoption and strong responsiveness to technological innovation. This segment is widely regarded as a key driver of future industry growth, making the reinforcement of engagement among student populations a strategic priority.

In response to this opportunity, Telkomsel has developed a digital education-based service through the Skul.id e-learning platform, designed to support learning processes while simultaneously expanding market penetration within the student segment. Skul.id is positioned not merely as an educational digital product, but also as an entry point for shaping digital experiences and building trust among young users toward Telkomsel's broader service ecosystem.

Within the context of technology adoption, trust in digital systems constitutes a critical determinant influencing perceptions of technological benefit and reliability [1]. The Technology Acceptance Model (TAM) posits that perceived usefulness and perceived ease of use shape users' behavioral intention and actual technology usage [2]. Meanwhile, the Unified Theory of Acceptance and Use of Technology (UTAUT) extends this framework by incorporating dimensions of social influence and facilitating conditions [3]. Previous studies have demonstrated that trust strengthens the relationship between technological perception and adoption, particularly within digital service and mobile application contexts (Truong & Nguyen, 2025; Ardiyanto & Kusumadewi, 2020). In the field of e-learning, findings by Al Kurdi et al. (2020) and Sholikah and Sutirman (2020) reveal that ease of use and perceived usefulness positively affect user intention and satisfaction.

However, empirical research that simultaneously integrates TAM and UTAUT with the trust variable in e-learning platforms provided by telecommunications operators especially those targeting students aged 12–18 years remains limited. Accordingly, this study aims to analyze the influence of perceived usefulness, perceived ease of use, performance expectancy, effort expectancy, and facilitating conditions on user satisfaction and trust among high-school students using the Skul.id platform.

The findings of this study are expected to contribute theoretically to the development of technology-adoption studies in digital learning environments, enrich the literature concerning trust within digital education service ecosystems, and provide strategic recommendations for the enhancement of Skul.id in strengthening user satisfaction and improving market share within the youth segment.

2. RESEARCH METHODS

This study employs an associative quantitative approach, as it focuses on examining the relationships among variables, particularly Perceived Usefulness, Perceived Ease of Use, Performance Expectancy, Effort Expectancy, Facilitating Conditions, Satisfaction, and Trust in the use of the Skul.id application. The quantitative method was selected because it enables the collection of large-scale data through structured questionnaires and supports objective statistical testing. The associative approach is applied to analyze inter-variable relationships in accordance with the theoretical foundations of the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), which underpin this study. The operational variables were measured using a Likert scale questionnaire (1–5), in which respondents indicated their level of agreement with statements representing each construct. The instrument was developed based on indicators adapted from prior studies to ensure relevance to the context of e-learning and the use of digital educational applications.

The study population comprises all Skul.id users from five schools, namely SMA Diponegoro Jombang (903 students), SMAN 3 Sampang (673 students), SMK NU Mojoagung Jombang (852 students), SMK Santo Yusuf Blitar (753 students), and SMKN 2 Turen Malang (873 students). These figures were obtained from the Dapodik database, resulting in a total population of 4,054 students. This study employed a convenience sampling technique, a form of non-probability sampling, where respondents were selected from schools that collaborate with Telkomsel and actively utilize the Skul.id platform. The sample size in this study was determined based on the guideline proposed by Hair et al. (2017) for Structural Equation Modeling using Partial Least Squares (SEM-PLS). In PLS-SEM studies, the minimum sample size can be estimated by considering the number of indicators used to measure latent constructs. Given that the research model comprises a total of 31 indicators, the recommended minimum sample size is obtained by applying the ten-times rule, resulting in a minimum requirement of 310 respondents. This criterion ensures adequate statistical power and model stability for estimating the structural relationships among constructs. Accordingly, the study targeted a sample size that meets or exceeds this threshold to support reliable SEM-PLS analysis.

Data were collected online using a Google Forms questionnaire consisting of items measuring the research constructs and respondents' demographic information. A five-point Likert scale was used to assess users' perceptions of usefulness, ease of use, facilitating conditions, satisfaction, and trust in the application. To ensure

the attainment of the minimum required number of respondents, the survey link was selectively distributed among Skul.id users within the participating schools. All submitted responses were reviewed for completeness and consistency prior to further analysis.

Data analysis was carried out using Structural Equation Modeling (SEM) based on Partial Least Squares (PLS) through SmartPLS software, which was selected due to its suitability for models involving multiple latent variables and data that tend to exhibit non-normal distribution. The analytical procedures included convergent validity testing using outer loading values ≥ 0.70 and AVE ≥ 0.50 , discriminant validity testing using the Fornell-Larcker criterion, cross-loadings, and HTMT < 0.90 , as well as reliability testing using Composite Reliability ≥ 0.70 and Cronbach's Alpha ≥ 0.70 (with values between 0.60–0.70 considered acceptable for exploratory research). Hypothesis testing was conducted through a bootstrapping procedure to assess the significance of path coefficients in the SEM model. Overall, the analytical process was designed to generate comprehensive empirical insights into the factors influencing user satisfaction and trust in the Skul.id application.

3. RESULT AND ANALYSIS

Respondent Characteristics

This study involved 310 respondents drawn from five partner schools of Skul.id within the youth segment, comprising senior secondary students (SMA/SMK or equivalent) aged 16–18 years). Based on school affiliation, the majority of respondents were from SMK Santo Yusuf, accounting for 55.5%, while the smallest proportion was from SMA Diponegoro Jombang at 6.8%. From a demographic perspective, the respondents were predominantly male, representing 67.7% of the total sample, whereas female respondents accounted for 32.3%. In terms of grade level distribution, most respondents were students in Grade 10 (50.6%), followed by Grade 11 (34.2%), and Grade 12 (15.2%).

Table 1. Results of the Analysis of Respondent Characteristics

Characteristics	Category	Number of Respondents	Percentage (%)
School Origin	Diponegoro Senior High School Jombang	21	6.8
	Public Senior High School 3 Sampang	25	8.1
	NU Vocational High School Mojoagung	39	12.6
	Santo Yusuf Vocational High School	172	55.5
	Public Vocational High School 2 Turen	53	17.1
Gender	Total	310	100.0
	Male	210	67.7
	Female	100	32.3
Grade Level	Total	310	100.0
	Grade 10	157	50.6
	Grade 11	106	34.2
	Grade 12	47	15.2
	Total	310	100.0

Research Findings

Outer Model

The outer model analysis was conducted to evaluate the relationships between latent variables and their respective indicators, thereby ensuring that the research instrument demonstrated adequate levels of validity and reliability. At this stage, the assessment focused on three key components, namely convergent validity, discriminant validity, and construct reliability. The evaluation results indicated that all indicators within each construct met the criteria for convergent validity based on their outer loading values and the Average Variance Extracted (AVE). According to Hair et al. (2021), an indicator is considered valid when it has a loading value of ≥ 0.70 , whereas loading values in the range of 0.60–0.69 may still be considered acceptable during the model development phase.

Convergent Validity

The estimation results presented in Table 2 show that all indicators exhibit loading values exceeding the minimum threshold of 0.50, as suggested by Hair et al. (2014), and are therefore considered acceptable and appropriate for inclusion in the analysis. Indicators within the constructs of Perceived Usefulness, Perceived Ease of Use, Effort Expectancy, Performance Expectancy, Facilitating Conditions, Satisfaction, and Trust demonstrate strong convergent contributions to their respective latent constructs, with loading values ranging from 0.641 to 0.879. The highest loading values are observed in the gender and experience constructs (1.000), which is expected given that these constructs are measured using single-item indicators.

Table 1. Results of Outer Loading (Convergent Validity)

Variable	Indicator	Outer Loading	Remark
Perceived Usefulness	PU1	0.816	Valid
	PU2	0.809	Valid
	PU3	0.737	Valid
	PU4	0.765	Valid
Perceived Ease of Use	PEOU1	0.733	Valid
	PEOU2	0.73	Valid
	PEOU3	0.641	Valid
	PEOU4	0.794	Valid
Effort Expectancy	EE1	0.801	Valid
	EE2	0.768	Valid
	EE3	0.687	Valid
	EE4	0.651	Valid
Performance Expectancy	PE1	0.832	Valid
	PE2	0.689	Valid
	PE3	0.879	Valid
	PE4	0.874	Valid
Facilitating Conditions	FC1	0.645	Valid
	FC2	0.712	Valid
	FC3	0.725	Valid
	FC4	0.825	Valid
Satisfaction	S1	0.739	Valid
	S2	0.779	Valid
	S3	0.806	Valid
	S4	0.831	Valid
	S5	0.813	Valid
Trust	T1	0.821	Valid
	T2	0.829	Valid
	T3	0.763	Valid
	T4	0.778	Valid
Experience	EX	1	Valid
Gender	G	1	Valid

Convergent validity was also confirmed through the Average Variance Extracted (AVE) values, as presented in the following table. All constructs exhibit AVE values exceeding the recommended threshold of 0.50, indicating that each construct is capable of explaining more than 50% of the variance of its respective indicators. Performance Expectancy demonstrates the highest AVE value (0.675), suggesting that this construct represents the strongest measurement dimension within the model, followed by Trust (0.637), Satisfaction (0.631), and Perceived Usefulness (0.612), all of which reflect satisfactory measurement stability. Meanwhile, Effort Expectancy, Facilitating Conditions, and Perceived Ease of Use also meet the criteria for convergent validity, with AVE values ranging from 0.528 to 0.532. Accordingly, all constructs in the model are considered valid and suitable for retention in subsequent stages of analysis.

Table 3. AVE Results of the Convergent Validity Test

Variable	Average Variance Extracted (AVE)	Remark
Perceived Usefulness	0.612	Valid
Perceived Ease of Use	0.528	Valid
Effort Expectancy	0.532	Valid
Performance Expectancy	0.675	Valid
Facilitating Condition	0.532	Valid
Satisfaction	0.631	Valid
Trust	0.637	Valid

Discriminant Validity

Next, discriminant validity was examined to ensure that each construct in the model possessed a distinct measurement identity and that no overlap occurred among the construct. The cross-loading results indicate that all indicators exhibit the highest loading values on their respective constructs compared to other constructs, thereby confirming that the instrument is empirically capable of distinguishing each construct. This finding is

further supported by the Fornell-Larcker criterion, in which the square root of the AVE values on the diagonal exceeds the inter-construct correlations. This condition demonstrates that each construct explains a greater proportion of variance in its own indicators than in the indicators of other constructs, thus satisfying the criteria for discriminant validity. An additional assessment using the Heterotrait-Monotrait Ratio (HTMT) also shows that all HTMT values fall below the threshold of 0.90, indicating that the separation between constructs in the model is adequate and that no discriminant validity issues are present.

Table 4. Heterotrait-Monotrait Ratio of Correlations

	EE	EX	FC	G	PE	PEOU	PU	S	T	G x PE	G x EE	EX x EE	G x FC	EX x FC	EX x PE
EE															
EX	0.507														
FC	0.796	0.487													
G	0.099	0.082	0.167												
PE	0.740	0.510	0.659	0.055											
PEOU	0.891	0.414	0.769	0.131	0.710										
PU	0.833	0.530	0.743	0.043	0.891	0.788									
S	0.882	0.563	0.821	0.126	0.765	0.803	0.826								
T	0.857	0.588	0.681	0.143	0.640	0.715	0.680	0.879							
G x PE	0.033	0.011	0.072	0.016	0.199	0.094	0.085	0.042	0.044						
G x EE	0.028	0.063	0.048	0.064	0.026	0.105	0.032	0.040	0.066	0.613					
EX x EE	0.164	0.148	0.086	0.048	0.213	0.196	0.149	0.161	0.129	0.192	0.271				
G x FC	0.038	0.032	0.086	0.105	0.022	0.100	0.076	0.029	0.036	0.553	0.573	0.159			
EX x FC	0.101	0.045	0.135	0.028	0.066	0.051	0.053	0.082	0.046	0.207	0.206	0.662	0.237		
EX x PE	0.229	0.166	0.073	0.007	0.123	0.154	0.161	0.170	0.183	0.238	0.150	0.781	0.121	0.665	

Construct Reliability

Reliability testing of the constructs was conducted using Cronbach’s Alpha and Composite Reliability indicators. The results presented in the table indicated that all constructs exhibited Cronbach’s Alpha and Composite Reliability values above 0.70, consistent with the threshold recommended by Nunnally and Bernstein (1994). Accordingly, the measurement instrument can be considered reliable and internally consistent. The Satisfaction construct demonstrates the highest reliability level ($\alpha = 0.853$; $CR = 0.895$), followed by Performance Expectancy and Trust, which likewise reflect excellent measurement quality. These findings suggest that the observed indicators consistently measure their respective underlying constructs in a stable and reproducible manner.

Table 5. Cronbach’s Alpha and Composite Reliability Values

Variable	Cronbach’s Alpha	Composite Reliability (ρ_a)	Composite Reliability (ρ_c)	Remark
Perceived Usefulness	0.788	0.792	0.863	Reliable
Perceived Ease of Use	0.704	0.718	0.816	Reliable
Effort Expectancy	0.707	0.725	0.819	Reliable
Performance Expectancy	0.836	0.845	0.892	Reliable
Facilitating Condition	0.707	0.730	0.819	Reliable
Satisfaction	0.853	0.855	0.895	Reliable
Trust	0.810	0.814	0.875	Reliable

Inner Model

The inner model in PLS-SEM is employed to evaluate the strength of the relationships among latent constructs within the structural model.

Hypothesis Testing (Bootstrapping)

The bootstrapping results showed that Perceived Usefulness, Perceived Ease of Use, Performance Expectancy, Effort Expectancy, and Facilitating Conditions exerted positive and significant effects on Satisfaction. This indicates that user satisfaction with Skul.id is shaped by a combination of perceived benefits, ease of use, perceived improvement in learning performance, reduced effort in system use, and the availability of adequate supporting facilities. Among these constructs, Effort Expectancy and Facilitating Conditions demonstrated

relatively stronger effects, suggesting that user experience and infrastructural support play a pivotal role in enhancing user satisfaction.

Conversely, the moderating variables gender and, to some extent, experience did not exhibit significant effects on most structural paths. This implies that differences in gender and user experience levels do not substantially influence users' satisfaction perceptions in using Skul.id. However, experience was found to positively moderate the relationship between Facilitating Conditions and Satisfaction, indicating that users with higher technological experience are able to utilize supporting facilities more effectively, thereby strengthening the impact of facilitating conditions on satisfaction.

The significance testing in PLS-SEM was conducted using the bootstrapping technique to obtain path coefficient estimates along with their corresponding t-statistics and p-values. A relationship was considered statistically significant when the p-value is less than 0.05, indicating that the relationship between latent variables is empirically supported and the hypothesis is accepted. The bootstrapping results in this study include both direct and indirect effects, which serve as the basis for interpreting the inter-construct relationships within the model.

Table 6. Bootstrapping Results for Direct Effect Path Coefficients

Hypothesis	Relationship Between Variables	Original Sample (O)	T-Statistics	P-Values	Result
H1	Perceived Usefulness → Satisfaction	0.141	2.523	0.012	Supported
H2	Perceived Ease of Use → Satisfaction	0.135	2.847	0.004	Supported
H3	Performance Expectancy → Satisfaction	0.156	2.936	0.003	Supported
H4	Gender × Performance Expectancy → Satisfaction	-0.009	0.187	0.852	Not Supported
H5	Experience × Performance Expectancy → Satisfaction	-0.049	1.114	0.266	Not Supported
H6	Effort Expectancy → Satisfaction	0.230	4.144	0.000	Supported
H7	Gender × Effort Expectancy → Satisfaction	-0.016	0.277	0.782	Not Supported
H8	Experience × Effort Expectancy → Satisfaction	-0.057	1.090	0.276	Not Supported
H9	Facilitating Conditions → Satisfaction	0.206	3.710	0.000	Supported
H10	Gender × Facilitating Condition → Satisfaction	0.028	0.600	0.549	Not Supported
H11	Experience × Facilitating Condition → Satisfaction	0.130	3.192	0.001	Supported
H12	Satisfaction → Trust	0.734	23.755	0.000	Supported

Coefficient of Determination (R Square)

The R^2 results indicate that the satisfaction variable had an R^2 value of 0.677, which falls into the “strong” category. This implies that 67.7% of the variance in user satisfaction was explained by the constructs perceived usefulness, perceived ease of use, performance expectancy, effort expectancy, and facilitating conditions, together with their moderating variables. Meanwhile, the trust variable had an R^2 value of 0.538, which was categorized as “moderate,” meaning that 53.8% of the variance in user trust was explained by satisfaction, while the remaining proportion was influenced by factors outside the model.

Table 7. Coefficient of Determination (R Square)

Variabel Endogen	R-square	R-square Adjusted
Satisfaction	0.677	0.663
Trust	0.538	0.537

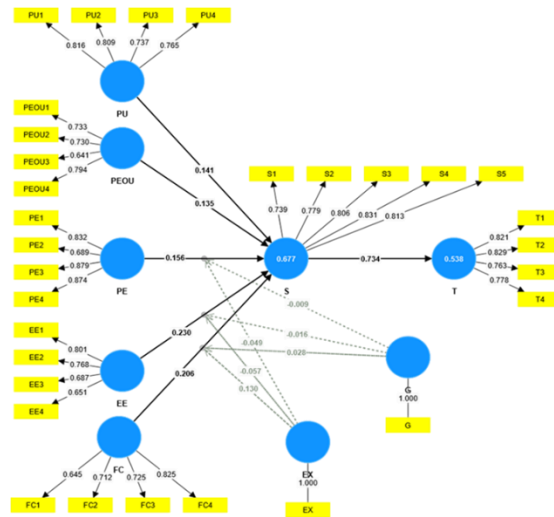


Figure 2. Structural Model of the Research Variables

Discussion

The findings of this study confirm that user acceptance and satisfaction with Skul.id are influenced by a combination of functional attributes, user experience, and the availability of technological support facilities. These results are relevant to the research context, which originates from the market share gap faced by Telkomsel in the youth segment in the East Java Region, where increasing satisfaction and trust is positioned as a fundamental strategy for strengthening engagement among student customers. Skul.id, as an e-learning platform, not only functions as a digital education service but also serves as an entry point for cultivating loyalty and trust toward Telkomsel’s digital ecosystem among users aged 12–18 years.

The results of the TAM constructs indicated that Perceived Usefulness and Perceived Ease of Use exerted a positive and significant influence on user satisfaction. This confirms that students are more satisfied when the application is perceived as beneficial for learning activities and easy to use without technical difficulties. These findings are consistent with Davis (1989) and prior empirical studies, which emphasize that perceived usefulness and perceived ease of use constitute the foundation for forming positive attitudes toward technology. Accordingly, effective learning experiences and a simple user interface represent key components in enhancing student satisfaction with Skul.id.

Furthermore, the UTAUT constructs Performance Expectancy, Effort Expectancy, and Facilitating Conditions are also found to have a significant effect on satisfaction. Performance Expectancy demonstrated that satisfaction increases when students perceive improvements in learning effectiveness. Effort Expectancy reinforces that ease of use and low effort requirements are primary preferences for adolescent users who are accustomed to digital applications. Meanwhile, Facilitating Conditions revealed that the availability of devices, network quality, technical support, and supporting features are critical determinants in shaping a positive user experience. These findings strengthen the validity of UTAUT within the context of operator-based e-learning services.

Interestingly, most moderating effects of gender and experience are not significant, indicating that students, as a digital-native cohort, exhibit relatively homogeneous technology-use characteristics. Consequently, demographic variables are no longer major differentiating factors, contrary to what has been widely reported in classical UTAUT studies. This is in line with the findings of Khechine et al. (2024) in “UTAUT Model for Blended Learning: The Role of Gender and Age in the Intention to Use Webinars,” which showed that gender did not have a significant moderating effect on the performance expectancy–satisfaction pathway in the context of blended-learning webinars. Similar results were also reported by Al-Enran et al. (2023) in “Acceptance of E-Learning in Higher Education: The Role of UTAUT Moderators,” which confirmed that the experience moderator does not exert a significant effect on the performance expectancy–satisfaction relationship in e-learning contexts. Meanwhile, Faradila (2024) found that gender and experience do not significantly moderate the relationship between effort expectancy and behavioral intention in the Digipos application in Bogor. However, the Experience × Facilitating Conditions interaction was significant, indicating that users with higher technological experience are more capable of optimizing supporting facilities, thereby generating higher satisfaction levels. This suggests that experience does not moderate all relational pathways, but operates selectively on variables associated with the utilization of technological infrastructure.

The strongest empirical finding in this study was the effect of satisfaction on trust, which demonstrates a highly significant and dominant relationship. Satisfaction derived from usefulness, ease of use, and supporting facilities is proven to foster students’ confidence in the reliability of Skul.id as a digital learning platform. This

reinforces the notion that satisfaction constitutes the foundational basis for the formation of user trust in digital education services. Thus, improving the quality of user experience in Skul.id not only contribute to short-term satisfaction, but also plays a strategic role in building trust that supports Telkomsel's market share strengthening efforts in the youth segment.

From a practical perspective, these findings provide strategic implications for Telkomsel in strengthening its market share within the adolescent segment. The development of Skul.id should therefore prioritize improvements in learning usefulness, ease of use, effort efficiency, and the availability of supporting facilities and technical assistance. In practice, several initiatives aligned with these priorities have already been implemented by Telkomsel. One example is the introduction of the Skul Quiz program, which offers learning materials aligned with the national curriculum as well as practice exercises designed to support preparation for UTBK/SNBT examinations. Additionally, the integration of online try-out features, adaptive question banks, and automated answer explanations enables students to independently evaluate their understanding and monitor learning progress, thereby reinforcing the perceived usefulness of the platform.

Furthermore, Telkomsel has strengthened facilitating conditions through the provision of the *Ilmupedia* educational data package, which offers affordable dedicated internet quotas specifically designed for accessing Skul.id. The optimization of platform access without reducing users' primary internet quota also represents a distinctive value proposition that enhances usability and reduces barriers to adoption. Complementing these technological supports, responsive technical assistance is available through dedicated customer support services for student users, ensuring that technical issues can be addressed promptly. Collectively, these initiatives illustrate how improvements in functional performance, infrastructure support, and service responsiveness can translate empirical acceptance factors into concrete market strategies that foster user satisfaction and trust in Skul.id.

Theoretical and Practical Implications

Theoretically, this study contributes by integrating the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), positioning satisfaction as a primary antecedent of trust within a telecommunication-operator-based e-learning context. This research enriches the body of literature by demonstrating that, within the youth segment, the core constructs of TAM and UTAUT remain highly relevant, whereas the moderating roles of gender and experience tend to be limited. These findings reinforce the notion that the development of technology adoption theory should incorporate user demographic characteristics and contextual usage factors.

Practically, the findings of this study provide strategic implications for Telkomsel in its efforts to strengthen market share within the youth segment. The development of Skul.id should prioritize the enhancement of perceived learning benefits, ease of use, effort efficiency, and the availability of facilities and technical support. Moreover, user satisfaction should be positioned as a key managerial focus, as it plays a significant role in fostering students' trust in Telkomsel's digital learning services. By strengthening satisfaction and trust, Skul.id has the potential to serve as a strategic instrument for reinforcing customer loyalty and sustaining competitive advantage within the 12-18-year-old market segment.

4. CONCLUSION

The findings of this study demonstrate that the core constructs of TAM and UTAUT, namely perceived usefulness, perceived ease of use, performance expectancy, effort expectancy, and facilitating conditions, significantly influence senior high school students' satisfaction in using Skul.id. Satisfaction, in turn, exerts a strong effect on trust, indicating that positive user experiences constitute a fundamental mechanism through which confidence in the platform is formed. The moderating roles of gender and user experience were largely insignificant. However, user experience was found to strengthen the effect of facilitating conditions on satisfaction, suggesting that technological familiarity enhances the ability to benefit from supporting infrastructure.

This study is limited to senior high school students and a selected set of variables. Future research is therefore recommended to expand the respondent scope to include broader age groups, particularly users aged 25-50 years such as teachers and school staff, in order to capture professional perspectives in educational institutions. Further studies may also incorporate additional external variables, including learning motivation and social influence, and apply more diverse methodological approaches to obtain a deeper understanding of the determinants of adoption and sustained use of digital learning applications.

In addition, future research may explore alternative model specifications by examining the direct influence of TAM and UTAUT variables on user trust without positioning satisfaction as a mediating construct. Such an approach is expected to provide a more comprehensive understanding of how technology acceptance factors directly contribute to the formation of trust and how these influences interact in shaping satisfaction and trust simultaneously in digital learning application contexts of digital learning application usage.

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