

Evaluating Factors Affecting the Adoption of a Mobile Assisted Business Application Using the Technology Acceptance Model

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Abstract

Digital transformation requires organizations to ensure that employees adopt and effectively use new systems. Understanding the drivers of adoption is therefore essential, particularly in enterprise contexts where system utilization affects performance outcomes. This study examines the factors influencing the adoption of a mobile-assisted business application using the technology acceptance model. The model focuses on the relationships among perceived usefulness, perceived ease of use, attitude toward using, behavioral intention, and actual use. A two-phase approach was applied. First, a survey of internal users yielded 212 valid responses, analyzed with Covariance-Based Structural Equation Modeling. Second, system log data were collected to capture actual usage behavior. The findings show that perceived ease of use significantly affects PU ($\beta = 0.58, p < 0.01$), while both perceived usefulness and perceived ease of use positively influence attitude toward using ($\beta = 0.41; \beta = 0.29, p < 0.01$). Attitude toward using predicts behavioral intention ($\beta = 0.52, p < 0.01$), which subsequently drives actual use ($\beta = 0.36, p < 0.01$). Although model fit indices are satisfactory, the R^2 for actual use (13%) suggests additional contextual factors shape actual usage. This study extends TAM by integrating behavioral data and offers practical insights for enhancing adoption through usability improvements, user training, and performance-based incentives.

Keywords

Attitude Toward Using, Behavioural Intention, Perceived Usefulness, Relationship.

1. Introduction

Digital transformation in the telecommunications industry has become a strategic necessity to maintain competitiveness, improve operational efficiency, and deliver better customer experiences (Ramirez, 2023). In response to these pressures, Telkom Indonesia launched the MyTEnS application as part of its innovation agenda. The platform is intended to streamline internal processes such as customer data management, project planning, and performance monitoring. Functioning as a digital work assistant, MyTEnS is expected to provide faster access to information, enhance task coordination, and support more effective decision-making. These strategic goals demonstrate the company's commitment to leveraging digital technologies for organizational improvement (Shortt et al., 2023).

Despite these objectives, adoption reports indicate that actual usage of MyTEnS has remained below expectations (Rakshit et al., 2021). This low uptake highlights a critical problem: the presence of underlying barriers that influence user acceptance and limit the system's potential. If left unaddressed, low adoption may undermine the effectiveness of the digital transformation agenda, reduce returns on technological investments, and hinder the company's ability to achieve efficiency gains. Thus, identifying the determinants of system acceptance and usage becomes an urgent concern, both for Telkom Indonesia and for similar enterprises pursuing digital transformation.

The adoption of new information systems is closely tied to how users perceive their value and usability. The Technology Acceptance Model (TAM), first introduced by Davis (1989) and later refined by Venkatesh and Davis (2000), provides a useful theoretical lens for this purpose. TAM emphasizes two key cognitive beliefs perceived usefulness and perceived ease of use which shape users' attitudes toward a system (attitude toward using). These attitudes influence behavioral intention, which ultimately leads to actual use. By simplifying the complex process of technology adoption into these core constructs, TAM has been widely applied to assess the success of information system implementations across organizational settings.

Nevertheless, a research gap exists in how TAM has typically been applied. Many prior studies rely heavily on self-reported surveys conducted at a single point in time. While such approaches capture perceptions and intentions, they often fall short in linking these with actual behavioral evidence of system usage (Wilson et al., 2021). This limitation reduces the ability to fully explain why adoption succeeds or fails in organizational contexts. Furthermore, the dynamics between intention and behavior may evolve over time, which cross-sectional designs cannot capture. Addressing these shortcomings requires integrating subjective perceptions with objective behavioral data and employing a longitudinal approach to better understand how attitudes translate into sustained system usage (Kumar et al., 2020; Chen et al., 2023).

Against this backdrop, the present study investigates the adoption of the MyTEnS application within Telkom Indonesia by applying TAM in a more comprehensive manner (Rawashdeh et al., 2021; Prastiawan et al., 2021). Specifically, the research evaluates not only users' perceptions of usefulness and ease of use but also their actual usage behavior as recorded in system log data. By adopting a longitudinal design, the study captures the temporal dynamics between user intention

and subsequent behavior, providing richer insights than conventional single-time-point analyses (Chen & Aklikokou, 2020).

The objectives of this study are twofold. First, it seeks to address critical theoretical issues regarding the extent to which perceptions of usefulness and ease of use influence attitudes and intentions toward MyTEnS, as well as the degree to which these perceptions and intentions translate into actual system usage. Second, the study aims to contribute practical recommendations for Telkom Indonesia. By identifying the key drivers and barriers of adoption, the findings will inform strategies for system enhancement, user training, and organizational change management, ultimately maximizing the value that the company can derive from its digital transformation initiatives.

From a theoretical perspective, this research extends the application of TAM by integrating self-reported perceptions with objective behavioral evidence and by employing a longitudinal methodological approach. From a managerial perspective, the findings provide actionable insights that will help Telkom Indonesia not only improve the adoption of MyTEnS but also strengthen the overall effectiveness of its digital innovation strategy. In doing so, the study contributes both to the advancement of academic knowledge and to the practical success of enterprise-level digital transformation.

2. Literature Review

2.1. Theoretical Foundation

The Technology Acceptance Model (TAM) has been widely used to predict and explain technology adoption across various domains. The model suggests that user acceptance is determined primarily by perceived usefulness and perceived ease of use, which shape attitude toward using, influence behavioral intention, and ultimately drive actual use. TAM's predictive capability and simplicity make it suitable for evaluating enterprise applications such as MyTEnS. Perceived usefulness refers to the extent to which a user believes that using a system enhances their job performance (Davis, 1989). Previous studies, Venkatesh and Davis (2000), emphasize that perceived usefulness is a critical determinant of technology adoption since systems perceived as beneficial in improving efficiency, accuracy, and effectiveness are more likely to be embraced.

Perceived Ease of Use reflects the degree to which users believe a system is easy to operate and requires minimal effort to learn. Empirical evidence suggests that perceived ease of use not only affects attitudes directly but also enhances perceived usefulness by reducing cognitive effort and perceived complexity (King & He, 2006; Pratista & Marsasi, 2023). Attitude Toward Using denotes the overall affective evaluation of a system, whether favorable or unfavorable. According to Fishbein and Ajzen (1975) the Theory of Reasoned Action, attitudes play a central role in forming behavioral intentions by reflecting a user's positive or negative evaluation of technology use.

Behavioral Intention represents a user's motivation to adopt or continue using a system. Studies (Legris et al., 2003) indicate that behavioral intention is a strong predictor of actual system usage, provided external constraints such as lack of resources or technical barriers are minimal. Actual use refers to the measurable extent of system utilization, often captured through usage frequency, duration, and scope. Recent research highlights the value of combining self-

reported usage with objective data, such as log files, to ensure greater validity and reliability (Venkatesh et al., 2012).

2.2. Direct Relationships Among Constructs and Hypotheses

TAM emphasizes the interplay among perceived usefulness, perceived ease of use, attitude toward using, behavioral intention, and actual use in shaping technology adoption. The first key relationship is between perceived ease of use and perceived usefulness. When users find a system simple and user-friendly, they are more likely to perceive it as beneficial for their work performance (Rezvani et al., 2022; Hafifah et al., 2023). Thus, usability enhances perceived value. Second, perceived usefulness is strongly linked to attitude toward using, as systems perceived as useful elicit more positive affective responses. Research by Indarsin and Ali (2017) found that perceived usefulness has a significant effect on attitude towards use. This shows that the new system is expected to provide benefits that have a direct impact on work speed, improved performance, productivity, effectiveness, and do not provide problems. Third, perceived ease of use also affects attitude toward using by reducing cognitive strain and improving the likelihood of favorable evaluations (King & He, 2006; Ter Ji-Xi et al., 2021). Attitude toward using subsequently shapes behavioral intention. Consistent with the Theory of Reasoned Action, positive attitudes increase the likelihood of adoption, as intention bridges perception with behavioral outcomes (Fishbein & Ajzen, 1975; Chaveesuk et al., 2022). Finally, behavioral intention, predicts actual use, as motivation to adopt usually translates into observable behavior, provided that technical or organizational constraints are minimal (Legris et al., 2003; Lin et al., 2020).

H1: Perceived ease of use has a significant impact on perceived usefulness.

H2: Perceived usefulness has a significant impact on attitude toward using.

H3: Perceived ease of use has a significant impact on attitude toward using.

H4: Attitude toward using has a significant impact on behavioral intention.

H5: Behavioral intention has a significant impact on actual use.

2.3 Mediating Relationships in the TAM Framework

While direct relationships are central to TAM, mediating pathways further enrich the understanding of user adoption. One important mediation occurs when perceived ease of use influences attitude toward using through perceived usefulness. Systems that are easy to use are not only seen as less demanding but also as more valuable, which ultimately fosters favorable attitudes (Venkatesh & Davis, 2000; Mailizar et al., 2021). Similarly, perceived usefulness affects behavioral intention indirectly through attitude toward using perceptions of usefulness enhance positive attitudes, which in turn strengthen intention to adopt (Fishbein & Ajzen, 1975; Hair et al., 2019).

Another mediation involves perceived ease of use impacting behavioral intention through attitude toward using. Ease of use generates positive affective evaluations, which then translate into stronger behavioral intentions (King & He, 2006; Wang et al., 2022). Finally, attitude toward using indirectly influences actual use through behavioral intention, highlighting the critical role

of intention as a bridge between attitude and actual behavior. This aligns with findings that behavioral intention remains the strongest predictor of system usage, though external factors may moderate this relationship (Legris et al., 2003; Venkatesh et al., 2012).

Empirical evidence supports these mediation pathways. For example, perceived ease of use exerts a significant indirect effect on attitude toward using through perceived usefulness, while both perceived usefulness and perceived ease of use indirectly influence behavioral intention via attitude toward using (Tahar et al., 2020; Prastiawan et al., 2021). Similarly, attitude toward using impacts actual use indirectly through behavioral intention, underscoring the sequential nature of the adoption process. These findings demonstrate that perceptions of ease and usefulness not only drive attitudes directly but also shape downstream behaviors through mediational channels.

H6: Perceived ease of use has a significant impact on attitude toward using through perceived usefulness.

H7: Perceived usefulness has a significant impact on behavioral intention through attitude toward using.

H8: Perceived ease of use has a significant impact on behavioral intention through attitude toward using.

H9: Attitude toward using has a significant impact on actual use through behavioral intention.

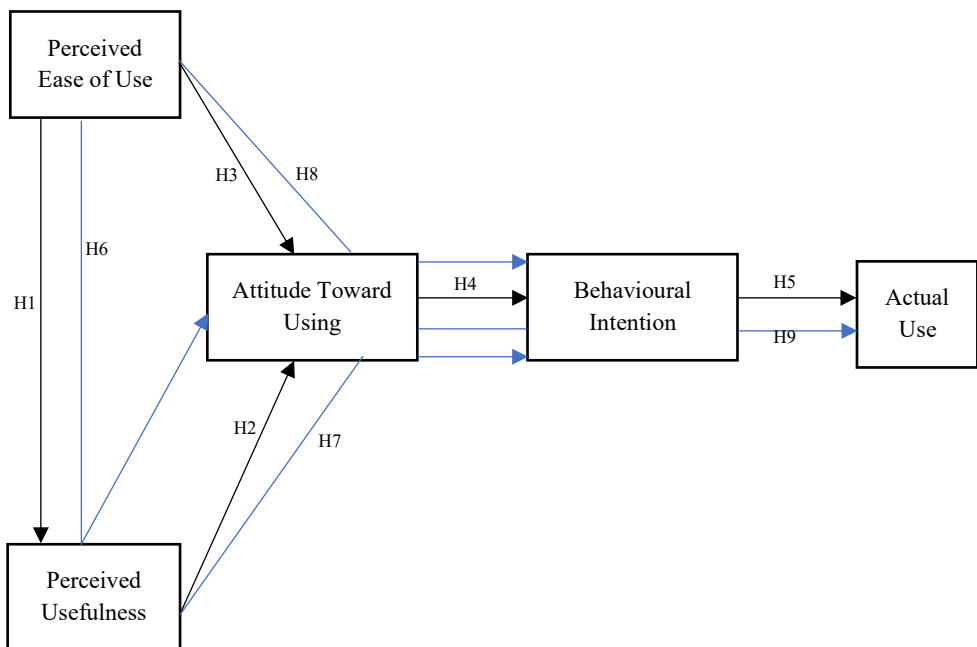


Figure 1. Conceptual Framework

Based on the figure, the hypothetical framework illustrates the relationship between several variables in a technology adoption model. Perceived ease of use and perceived usefulness are the initial factors that influence attitude toward using. Perceived ease of use also has a direct influence on perceived usefulness. Furthermore, attitude toward using acts as a predictor of behavioral

intention, which in turn influences actual use. Overall, this diagram shows how users' perceptions of the ease and usefulness of a technology gradually shape their intentions and actual behavior in using it.

3. Methods

This study employs an explanatory research design with a longitudinal approach to evaluate the causal relationships among variables in the Technology Acceptance Model (TAM). Data were collected at two points in time to capture users' behavioral intentions and their actual usage of the MyTEnS application. The study combines self-reported perceptions and attitudes with objective usage data obtained from system logs, thereby strengthening the validity of findings and reducing the risk of common method bias.

The research population comprises employees from the Sales Support and Solution Engineer divisions of Telkom Indonesia, who actively use the MyTEnS application in their daily work. The total population is estimated to be around 520 individuals across six regional offices. A stratified random sampling technique was applied to ensure proportional representation of respondents from each region. Based on this approach, a target sample of 240 respondents was established. After data cleaning and verification, a total of 212 valid responses were retained for analysis, yielding a high response rate of 88%.

Data collection was conducted in two phases. During the first phase (T1), an online survey was distributed to measure perceived usefulness, perceived ease of use, attitude toward using, behavioral intention, and demographic characteristics using a seven-point Likert scale. Four weeks later (T2), system log data were extracted to assess actual use through objective indicators such as login frequency, diversity of feature usage, and total time spent within the application. A short confirmation survey was also conducted to validate the log data and ensure consistency across measures.

The measurement of variables relied on established scales from previous TAM studies (Davis, 1989; Venkatesh & Davis, 2000). Perceived Usefulness was measured using four indicators covering productivity, efficiency, decision quality, and work performance. Perceived Ease of Use included four indicators reflecting ease of learning, clarity of interaction, operational simplicity, and speed of proficiency. Attitude Toward Using was measured with three indicators capturing the overall affective evaluation of MyTEnS, while behavioral intention was assessed through three indicators measuring users' willingness to adopt, continue using, and recommend the application. Actual Use was measured objectively via system logs and cross-validated through user self-reports to ensure data accuracy.

Data analysis was conducted using Covariance-Based Structural Equation Modeling (CB-SEM) with AMOS. The measurement model was evaluated through Confirmatory Factor Analysis (CFA) to ensure construct validity and reliability, applying standard thresholds for factor loadings (>0.60), Average Variance Extracted (AVE > 0.50), and Composite Reliability (CR > 0.70). Discriminant validity was tested using Fornell–Larcker and HTMT criteria. The structural model was then assessed by examining path coefficients, supported by bootstrapping with 5,000 resamples to determine statistical significance. Model fit was evaluated using multiple indices, including χ^2/df , CFI, TLI, RMSEA, and SRMR, to confirm the adequacy of the proposed

framework. Finally, robustness checks were performed by testing alternative model specifications and comparing their fit indices, ensuring the reliability of the results.

4. Results

The analysis began with a description of the respondents to provide contextual understanding of the sample characteristics. Table 1 summarizes demographic information, showing a nearly balanced gender distribution, with 55.7% male and 44.3% female respondents. A majority of employees were over 30 years of age (54.7%) and had more than five years of work experience (51.4%). These characteristics suggest a relatively experienced workforce, which may influence perceptions of ease of use and usefulness of the MyTENs application.

Table 1. Respondent Profile

Variable	Category	Frequency	Percentage (%)
Gender	Male	118	55.7
	Female	94	44.3
Age	≤ 30 years	96	45.3
	> 30 years	116	54.7
Work Experience	≤ 5 years	103	48.6
	> 5 years	109	51.4

Descriptive statistics for the key constructs are shown in Table 2. The results indicate generally high mean scores for perceived usefulness, perceived ease of use, perceived ease of use, attitude toward using, behavioral intention, all exceeding 5.6 on a seven-point Likert scale. However, actual use recorded a slightly lower mean (4.92), suggesting that while employees reported positive perceptions and intentions, their real engagement with the application was moderate.

Table 2. Descriptive Statistics of Constructs

Construct	Mean	SD	Min	Max
Perceived Usefulness	5.82	0.91	3.80	7.00
Perceived Ease of Use	5.65	0.87	3.70	7.00
Attitude Toward Using	5.73	0.92	3.90	7.00
Behavioral Intention	5.84	0.89	3.70	7.00
Actual Use	4.92	1.25	2.10	7.00

To assess the reliability and validity of constructs, Cronbach's Alpha, Composite Reliability (CR), and Average Variance Extracted (AVE) were calculated. As seen in Table 3, Cronbach's Alpha values ranged from 0.74 to 0.84, and CR values were between 0.79 and 0.88, exceeding the minimum threshold of 0.70. AVE values ranged from 0.51 to 0.65, indicating satisfactory convergent validity.

Table 3. Reliability and Convergent Validity

Construct	Cronbach's Alpha	Composite Reliability	AVE
Perceived Usefulness	0.84	0.88	0.65
Perceived Ease of Use	0.82	0.86	0.59
Attitude Toward Using	0.78	0.83	0.62
Behavioral Intention	0.81	0.85	0.61
Actual Use	0.74	0.79	0.51

Discriminant validity was tested using the Fornell–Larcker criterion. Table 4 shows that the square roots of AVE (diagonal values) were higher than the corresponding correlations among constructs, confirming that each construct is empirically distinct.

Table 4. Discriminant Validity – Fornell-Larcker Criterion

Construct	PU	PEOU	ATU	BI	AU
Perceived Usefulness	0.81				
Perceived Ease of Use	0.67	0.77			
Attitude Toward Using	0.59	0.62	0.79		
Behavioral Intention	0.52	0.55	0.70	0.78	
Actual Use	0.40	0.45	0.48	0.58	0.71

The model fit indices indicate a good fit between the data and the proposed TAM framework. All indices met recommended thresholds, with $\chi^2/df = 2.11$, CFI = 0.95, TLI = 0.94, RMSEA = 0.073, and SRMR = 0.047. The model fit indices showed that the χ^2/df value of 2.11 was still below the threshold of 3.0, thus categorizing it as good. The CFI index of 0.95 and the TLI of 0.94 also exceeded the recommended value of 0.90, indicating an adequate level of model fit. Furthermore, the RMSEA value was recorded at 0.073, which is still within the tolerance limit of below 0.08. Similarly, the SRMR value of 0.047 also met the recommended criteria, which is less than 0.08. Overall, these results indicate that the model used has a good level of fit and is worthy of further analysis.

Path coefficient analysis confirmed the hypothesized relationships. As shown in Table 5, all five hypotheses were supported, with perceived ease of use strongly predicting perceived usefulness, and both perceived usefulness and perceived ease of use positively influencing attitude toward using. Attitude significantly predicted behavioral intention, which in turn positively influenced actual use. Indirect effects were assessed using bootstrapping to explore mediation pathways. Table 5 shows that perceived ease of use had an indirect effect on Attitude Toward Using through perceived usefulness, while both perceived usefulness and perceived ease of use indirectly affected behavioral intention via attitude toward using. Similarly, attitude toward using had a significant indirect effect on AU through behavioral intention, confirming the mediating role of intention in driving actual behavior.

Table 5. Hypothesis Testing

	Hypothesis	β	t-value	p-value	Result	Indirect
H1	PEOU → PU	0.58	6.42	<0.01	Supported	
H2	PU → ATU	0.41	4.96	<0.01	Supported	
H3	PEOU → ATU	0.29	3.88	<0.01	Supported	
H4	ATU → BI	0.52	5.77	<0.01	Supported	
H5	BI → AU	0.36	4.65	<0.01	Supported	
H6	PEOU → ATU via PU		3.12	<0.01	Significant	0.24
H7	PU → BI via ATU		2.98	<0.01	Significant	0.21
H8	PEOU → BI via ATU		2.54	<0.05	Significant	0.15
H9	ATU → AU via BI		2.73	<0.01	Significant	0.19

The explanatory power of the model was further examined through R² values. Table 6 indicates that 34% of the variance in PU, 49% in ATU, and 27% in BI were explained by the

model, while AU showed a modest R^2 of 13%, implying that additional contextual factors beyond intention may influence actual usage behavior.

Table 6. Coefficient of Determination (R^2)

Endogenous Construct	R^2 Value	Interpretation
Perceived Usefulness	0.34	Moderate
Attitude Toward Using	0.49	Moderate
Behavioral Intention	0.27	Weak-Moderate
Actual Use	0.13	Weak

The coefficient of determination (R^2) values in Table 6 indicate the extent to which the independent variables are able to explain the variation in the dependent variable. The table above shows that perceived usefulness has an R^2 of 0.34, which is categorized as moderate, meaning that 34% of the variation in PU can be explained by perceived ease of use. Furthermore, attitude toward using shows an R^2 of 0.49 (moderate), so that almost half of the variation in user attitudes is influenced by perceived usefulness and perceived ease of use. For behavioral intention, the R^2 of 0.27 indicates weak-moderate, indicating that usage intention is only partially influenced by attitude toward using. Finally, actual use has the lowest R^2 , namely 0.13 (weak), which indicates that actual usage behavior is still influenced by other factors outside the model, such as organizational policies, technical support, or work obligations. Overall, these results confirm that although TAM is quite strong in explaining user perceptions and attitudes, there are limitations in explaining actual behavior, so it is necessary to consider additional contextual factors.

5. Discussion

The findings of this study provide strong empirical support for the Technology Acceptance Model (TAM) in explaining the adoption of the MyTEnS application at Telkom Indonesia. Consistent with theoretical expectations, perceived ease of use was found to significantly influence perceived usefulness, confirming that when users perceive a system as simple and intuitive, they are more likely to perceive its performance benefits (Davis, 1989; Venkatesh & Davis, 2000). Both perceived usefulness and perceived ease of use were also found to positively influence attitude toward use, suggesting that the balance between operational simplicity and perceived effectiveness shapes user evaluations. Furthermore, attitude toward using strongly predicted behavioral intention, which in turn positively impacted actual use. These results align with the meta-analysis findings of King and He (2006) that showed that attitudes and intentions act as important mediators between system perception and use. Although all direct paths in the model were significant, the explanatory power for Actual Use ($R^2 = 0.13$) was relatively weak. These findings echo previous criticisms of TAM by Legris et al. (2003), who argued that intentions alone do not fully account for actual technology adoption, as contextual factors such as organizational policies, workload, and technical support also play a significant role. Similarly, Venkatesh et al. (2012) highlighted the need to integrate environmental and social determinants to better capture actual usage behavior. Thus, this study extends TAM by integrating objective log data to measure actual use, moving beyond reliance on self-reported surveys that often overestimate adoption rates.

Compared to previous research, Venkatesh and Davis's (2000) study contributes two important advances. First, by adopting a longitudinal design, this study captures the temporal dynamics between behavioral intentions and actual usage, while most TAM studies are cross-

sectional. Second, the use of system logs provides a more accurate representation of actual user behavior, addressing methodological concerns raised in previous literature (Legris et al., 2003). These findings confirm that while attitudes and intentions are strong predictors, they only partially contribute to continued system usage, underscoring the role of organizational interventions such as training, usability enhancements, and incentive schemes (Chen & Aklikokou, 2020; Chatterjee et al., 2023).

From a practical perspective, the study's findings suggest that Telkom Indonesia should prioritize improving user experience and delivering tangible performance benefits. By ensuring that MyTEnS is not only easy to use but also significantly improves efficiency and decision-making, perceived usability can be strengthened. Furthermore, supportive organizational mechanisms, such as mandatory usage policies or recognition for consistent engagement, can help bridge the gap between intention and behavior.

The results provide strong empirical support for TAM in the context of enterprise application adoption (Tahar et al., 2020; Prastiawan et al., 2021). Perceived ease of use demonstrated a strong influence on perceived usefulness, highlighting the critical role of system usability in shaping perceptions of usefulness. Perceived usefulness and perceived ease of use jointly influenced attitude toward using, emphasising that employees evaluate the application based on both operational simplicity and perceived performance benefits.

However, the modest R^2 for actual use (13%) suggests that behavioral intention alone does not fully explain actual usage behavior. Organizational factors such as system performance, mandatory usage policies, or workload constraints may moderate the relationship between behavioral intention and actual use. These findings echo prior research which notes that environmental and contextual variables often play a critical role in bridging the gap between intention and behaviour (Legris et al., 2003). From a managerial perspective, improving MyTEnS adoption requires a two-pronged approach: enhancing user experience through interface optimization and training, while simultaneously demonstrating concrete performance benefits to strengthen perceptions of usefulness. Furthermore, organizational support, periodic performance tracking, and incentives may help translate high behavioral intentions into consistent and sustained usage.

6. Conclusion

This study confirms that perceived usefulness and perceived ease of use are the most influential determinants shaping user attitudes toward adopting a mobile-assisted business application. In turn, attitude strongly predicts behavioral intention, which subsequently drives actual use. These findings provide empirical support for the technology acceptance model, while also revealing that the explanatory power for actual use remains relatively low, suggesting that additional organizational and contextual factors shape adoption behavior. From a practical perspective, the results highlight the importance of improving the user experience by designing applications that are simple, intuitive, and responsive. Organizations should also invest in continuous training programs to build user confidence, while demonstrating clear performance benefits such as efficiency gains and productivity improvements to strengthen perceptions of usefulness. Equally important, supportive measures such as internal policies, monitoring

mechanisms, and incentive schemes can help ensure consistent engagement and long-term adoption.

Theoretically, this study contributes by validating the TAM framework within the context of enterprise mobile applications and by combining subjective measures with actual system usage data. This integration enhances the explanatory depth of TAM and addresses earlier criticisms of relying solely on self-reported surveys. However, some limitations should be noted. The relatively low R^2 value for actual use indicates that other determinants beyond perceived usefulness, perceived ease of use, and attitude toward using are likely to influence adoption. Factors such as organizational culture, system reliability, and individual motivation were not examined in this study but may provide valuable insights. Future research is therefore encouraged to adopt a more comprehensive model that integrates technological, organizational, and personal factors, possibly through extended frameworks such as UTAUT or dynamic models of technology use. Such efforts will contribute to a more holistic understanding of sustained system adoption

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