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The Influence of Technology Acceptance Model on Service Level Agreement Through Actual System Use in Last-Mile Logistics Operations

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Abstract: This study examines the influence of Technology Acceptance Model (TAM) on Service Level Agreement (SLA) achievement through Actual System Use in last-mile logistics operations at SiCepat Ekspres. Utilizing a quantitative approach and variance-based structural equation modeling (PLS-SEM), data were collected from 278 operational employees. Six TAM constructs Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Trust, Perceived Risk, Organizational Readiness, and Social Influence were examined as independent variables, with Actual System Use as mediating variable and SLA as the dependent variable. Results reveal that Social Influence is the strongest predictor of Actual System Use ($\beta = 0.420$), while Actual System Use significantly drives SLA achievement ($\beta = 0.585$). The model explains 75.5% of SLA variance, underscoring the central role of actual technology use as a strategic mediator in the TAM–SLA relationship within last-mile logistics operations.

Keyword: Technology Acceptance Model, Service Level Agreement, Actual System Use, Last-Mile Logistics, PLS-SEM

INTRODUCTION

The logistics industry plays a strategic role in supporting Indonesia's rapidly growing digital commerce ecosystem. As e-commerce penetration increases, demand for parcel delivery services has surged significantly, requiring logistics operators to function efficiently, reliably, and sustainably. Data from the Indonesian E-Commerce Association (idEA) shows that national e-commerce transaction volumes have continued to grow, driving parcel delivery service demand to the highest level in the history of the domestic logistics industry.

Last-mile logistics is widely recognized as the most expensive, most complex, and most vulnerable segment to failure in the supply chain. Issues such as inefficient delivery routes, urban traffic congestion, variability in recipient availability, and high first-attempt delivery failure rates collectively impact rising operational costs and declining compliance with Service Level Agreements (SLA) (Correia et al., 2021; World Economic Forum, 2021). This makes improving SLA performance a top priority for courier companies such as SiCepat Ekspres one of Indonesia's leading parcel delivery service companies focused on e-commerce package delivery.

Service Level Agreement (SLA) in the context of last-mile logistics is a service level commitment that measures the percentage of deliveries successfully completed on time within agreed deadlines. High SLA reflects operational reliability, customer satisfaction, and company competitiveness. Conversely, low SLA achievement contributes to reputational decline, loss of trust from e-commerce partners, and potential financial losses due to compensation claims (Escudero-Santana et al., 2022). SiCepat Ekspres has implemented a number of digital technologies in its operational processes, ranging from smartphone-based courier applications, Delivery Management Systems (DMS), to real-time SLA monitoring dashboards. However, technology implementation alone does not guarantee performance improvement if not accompanied by adequate levels of acceptance and use from field users (Sultan et al., 2023).

The Technology Acceptance Model (TAM), first proposed by (Davis, 1989), offers a theoretically grounded framework that has been empirically proven to explain and predict technology acceptance by users. The two main TAM constructs Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) have been proven to be significant determinants in shaping behavioral intention and actual system use. Over time, TAM has been extended with various external variables such as Trust, Perceived Risk, Organizational Readiness, and Social Influence to enhance the predictive power of the model, particularly in complex operational contexts such as last-mile logistics (Sultan et al., 2023; Yick & Selamat, 2024).

Recent literature reviews show that TAM-based technology adoption has a significant impact on improving operational visibility, estimated time of arrival (ETA) accuracy, delivery precision, and delivery success rates factors that directly contribute to SLA improvement (Mo et al., 2023; Silva et al., 2023). Organizations with higher levels of technology adoption tend to demonstrate better delivery success rates and more consistent service stability (Alverhed et al., 2024; Boysen et al., 2021). Thus, there is a strong conceptual relationship between TAM-based technology acceptance and SLA achievement in the context of last-mile logistics.

Nevertheless, most TAM studies in the logistics context focus on adoption intention or user satisfaction, without directly linking them to measurable operational performance indicators such as SLA (C. Bienstock & B. Royne, 2010; Ejdys & Gulc, 2020). Research specifically examining the relationship between TAM constructs and SLA achievement in Indonesian courier companies particularly SiCepat Ekspres remains very limited. External TAM variables such as Trust, Perceived Risk, and Organizational Readiness have also not been simultaneously tested in a single empirical model linking technology acceptance with SLA. Therefore, this study aims to analyze the influence of TAM factors on SLA achievement in last-mile logistics operations at SiCepat Ekspres through the mediation of Actual System Use, in order to produce an integrated conceptual framework as a strategic foundation for the digital transformation of last-mile logistics in Indonesia.

This study employs a structural framework to examine the interrelationship between technology acceptance, actual system use, and operational service performance achievement in the context of last-mile logistics. In the proposed model, six extended TAM constructs Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Trust (TR), Perceived Risk (PR), Organizational Readiness (OG), and Social Influence (SI) are conceptualized as main exogenous constructs. These variables are hypothesized to exert direct and indirect influences on Service Level Agreement (SLA) achievement, with Actual System Use (ASU) serving as an intervening variable bridging that relationship. Based on the conceptual framework developed, thirteen hypotheses (H1 through H13) are formulated to evaluate the direct and indirect relationships between constructs in the model. These hypotheses serve to empirically test the structural paths established in the research model, with a specific focus on the interaction between technology acceptance determinants, actual system usage intensity, and SLA achievement in the last-mile logistics operations of SiCepat Ekspres.

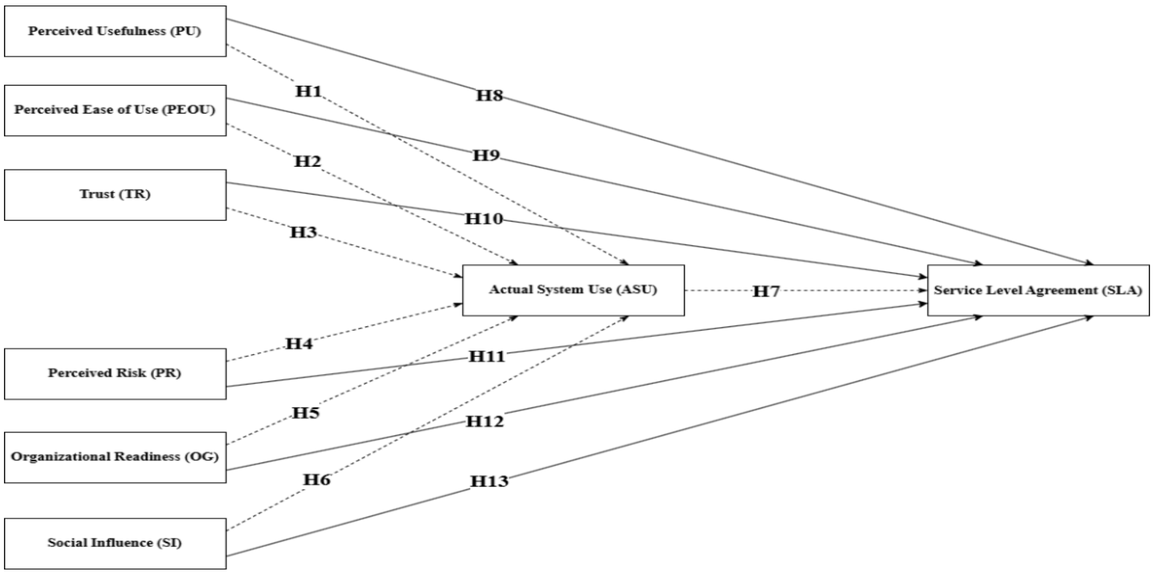

Figure 1. Research Model
Source : Research Data

Based on the proposed conceptual framework, the following hypotheses are developed in this study:

H1	:	Perceived Usefulness (PU) has a significant positive effect on Actual System Use (ASU) in last-mile logistics operations at SiCepat Ekspres.
H2	:	Perceived Ease of Use (PEOU) has a significant positive effect on Actual System Use (ASU) in last-mile logistics operations at SiCepat Ekspres.
H3	:	Trust (TR) has a significant positive effect on Actual System Use (ASU) in last-mile logistics operations at SiCepat Ekspres.
H4	:	Perceived Risk (PR) has a significant negative effect on Actual System Use (ASU) in last-mile logistics operations at SiCepat Ekspres.
H5	:	Organizational Readiness (OG) has a significant positive effect on Actual System Use (ASU) in last-mile logistics operations at SiCepat Ekspres.
H6	:	Social Influence (SI) has a significant positive effect on Actual System Use (ASU) in last-mile logistics operations at SiCepat Ekspres.
H7	:	Actual System Use (ASU) has a significant positive effect on Service Level Agreement (SLA) achievement in last-mile logistics operations at SiCepat Ekspres.
H8	:	Perceived Usefulness (PU) has a significant positive direct effect on Service Level Agreement (SLA) achievement in last-mile logistics operations at SiCepat Ekspres.
H9	:	Perceived Ease of Use (PEOU) has a significant positive direct effect on Service Level Agreement (SLA) achievement in last-mile logistics operations at SiCepat Ekspres.
H10	:	Trust (TR) has a significant positive direct effect on Service Level Agreement (SLA) achievement in last-mile logistics operations at SiCepat Ekspres.
H11	:	Perceived Risk (PR) has a significant positive direct effect on Service Level Agreement (SLA) achievement in last-mile logistics operations at SiCepat Ekspres.

H12	:	Organizational Readiness (OG) has a significant positive direct effect on Service Level Agreement (SLA) achievement in last-mile logistics operations at SiCepat Ekspres.
H13	:	Social Influence (SI) has a significant positive direct effect on Service Level Agreement (SLA) achievement in last-mile logistics operations at SiCepat Ekspres.

METHOD

This study implements a quantitative approach, namely a research method that produces numerical data and is analyzed using statistical techniques to assess the correlation between variables formulated in the conceptual model. The quantitative approach was chosen because it provides researchers with the ability to objectively measure the influence of Technology Acceptance Model (TAM)-based technology acceptance factors on Service Level Agreement (SLA) achievement in SiCepat Ekspres's last-mile logistics operations (Sugiyono, 2013).

In terms of time design, this study applies a cross-sectional design, namely the data collection process carried out at a specific time period without re-sampling. This design is used to record the actual conditions and users' perceptions of the use of digital technology in last-mile logistics operations, particularly those related to TAM constructs (Perceived Usefulness, Perceived Ease of Use, Trust, Perceived Risk, Organizational Readiness, Social Influence) and their impact on SLA achievement (Sekaran & Bougie, 2016).

In this study, there are three types of variables. Independent variables consist of six TAM constructs: Perceived Usefulness (PU), which represents users' belief that digital technology improves performance and productivity; Perceived Ease of Use (PEOU), which measures the degree of belief that using technology requires minimal effort; Trust, which reflects confidence in the reliability and security of the system; Perceived Risk, which represents the perception of the potential negative impact of technology use; Organizational Readiness, which reflects the organization's readiness to provide infrastructure, training, and managerial support; and Social Influence, which describes users' perceptions of social environmental encouragement to use technology. The mediating variable is Actual System Use, namely the frequency and consistency of actual use of digital technology by couriers and operational managers. The dependent variable is Service Level Agreement (SLA), measured through the percentage of on-time deliveries, first-attempt delivery success rates, and service reliability consistency. All variables were measured using a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree).

The research population encompasses all SiCepat Ekspres operational employees directly involved in last-mile delivery activities, namely field couriers, delivery supervisors, and regional operational managers who use digital technology in their daily work. Samples were drawn using a non-probability technique with purposive sampling, namely the determination of respondents based on specific characteristics relevant to the research objectives (Sugiyono, 2013). Respondent criteria include: active SiCepat Ekspres employees directly involved in last-mile delivery operations, actively using at least one operational digital technology system for a minimum of three months, operating in areas that have fully implemented digital systems, and willing to voluntarily complete the questionnaire.

Sample size determination was based on the 10 times rule principle in PLS-SEM (Hair et al., 2017). Given the complexity of the model involving six independent variables, one mediating variable, and one dependent variable, this study targeted the collection of data from a minimum of 150 respondents to allow results to be representatively generalized, in accordance with the recommendations of (Hair et al., 2017)for structural models with many latent variables.

Data collection was carried out through two methods. First, a literature study to gather secondary data in the form of academic books, scientific journal articles, and relevant research reports as the basis for developing the conceptual framework (Creswell, 2009). Second, an online questionnaire based on Google Forms with closed-ended question items using a five-point Likert scale, distributed to respondents who met the established purposive sampling criteria.

Validity and reliability testing was conducted using PLS-SEM through SmartPLS 4 software. Convergent validity was evaluated based on outer loading values ≥ 0.70 and Average Variance Extracted (AVE) ≥ 0.50. Discriminant validity was tested using the Fornell-Larcker approach and cross-loading. Construct reliability was evaluated based on Cronbach's Alpha and Composite Reliability values ≥ 0.70 (Ghozali, 2018; Hair et al., 2017) .

Data analysis techniques used PLS-SEM through SmartPLS 4. This method was chosen because it is appropriate for predictive and exploratory research, involves many latent constructs and mediation relationships, is more tolerant of moderate sample sizes, and does not require multivariate normality assumptions (Ghozali, 2018; Hair et al., 2017). Model evaluation was carried out through outer model and inner model testing. Hypothesis testing was conducted through a bootstrapping procedure with 5,000 resamplings; hypotheses are accepted if the p-value < 0.05.

RESULTS AND DISCUSSION

This section presents the results of data analysis using PLS-SEM through SmartPLS 4, including respondent characteristics, outer model evaluation, inner model evaluation, and discussion of hypothesis testing results.

Respondent Characteristics

"This study involved 278 respondents who are operational employees of SiCepat Ekspres directly involved in the last-mile delivery process. The majority of respondents are field couriers (88.8%), reflecting that the primary users of SiCepat Ekspres's operational digital technology are couriers on duty in the field. This distribution, as presented in Table 1, confirms that the sample is representative of the population directly engaged in daily last-mile delivery operations and interacting most frequently with the operational digital systems under study."

Table 1. Respondent Characteristics by Position/Role

Position / Role	Frequency	Percentage (%)
Field Courier	247	88,8%
Delivery Supervisor	8	2,9%
Hub Leader	7	2,5%
Sorter	5	1,8%
Team Leader	4	1,5%
Sigesit First Mile	3	1,1%
Last Mile Sorter Sigesit Mitra	2	0,7%
Other	2	0,7%
Total	**278**	**100%**

Source: Research Data

Outer Model Evaluation

Outer model evaluation was conducted to assess the validity and reliability of measurement instruments before proceeding to the structural model testing stage. Testing includes convergent validity (outer loading and AVE), discriminant validity (Fornell-Larcker criterion), and reliability (Cronbach's Alpha and Composite Reliability).

Table 2. Outer Loading Validity Test Results

Ind.	ASU	OG	PEOU	PR	PU	SI	SLA	TR	Status
ASU1	0.854	–	–	–	–	–	–	–	Valid
ASU2	0.782	–	–	–	–	–	–	–	Valid
ASU3	0.900	–	–	–	–	–	–	–	Valid
OG1	–	0.879	–	–	–	–	–	–	Valid

Ind.	ASU	OG	PEOU	PR	PU	SI	SLA	TR	Status
OG2	–	0.815	–	–	–	–	–	–	Valid
OG3	–	0.845	–	–	–	–	–	–	Valid
PEOU1	–	–	0.869	–	–	–	–	–	Valid
PEOU2	–	–	0.900	–	–	–	–	–	Valid
PEOU3	–	–	0.806	–	–	–	–	–	Valid
PR1	–	–	–	0.880	–	–	–	–	Valid
PR2	–	–	–	0.876	–	–	–	–	Valid
PR3	–	–	–	0.988	–	–	–	–	Valid
PU1	–	–	–	–	0.894	–	–	–	Valid
PU2	–	–	–	–	0.907	–	–	–	Valid
PU3	–	–	–	–	0.810	–	–	–	Valid
SI1	–	–	–	–	–	0.915	–	–	Valid
SI2	–	–	–	–	–	0.919	–	–	Valid
SI3	–	–	–	–	–	0.927	–	–	Valid
SLA1	–	–	–	–	–	–	0.885	–	Valid
SLA2	–	–	–	–	–	–	0.904	–	Valid
SLA3	–	–	–	–	–	–	0.895	–	Valid
TR1	–	–	–	–	–	–	–	0.922	Valid
TR2	–	–	–	–	–	–	–	0.933	Valid
TR3	–	–	–	–	–	–	–	0.981	Valid

Source: Research Data

Based on Table 2, all 24 indicators from the eight constructs show outer loading values above 0.70, with the highest value on PR3 (0.988) and the lowest on ASU2 (0.782). This indicates that all indicators have strong and significant correlations with their respective latent constructs.

Table 3. Discriminant Validity Test Results – Fornell-Larcker Criterion

	ASU	OG	PEOU	PR	PU	SI	SLA	TR
ASU	0.847	–	–	–	–	–	–	–
OG	0.680	0.847	–	–	–	–	–	–
PEOU	0.638	0.666	0.859	–	–	–	–	–
PR	0.258	0.214	0.220	0.916	–	–	–	–
PU	0.626	0.662	0.703	0.153	0.871	–	–	–
SI	0.746	0.730	0.676	0.259	0.713	0.920	–	–
SLA	0.837	0.646	0.648	0.319	0.657	0.742	0.894	–
TR	0.662	0.757	0.825	0.178	0.694	0.705	0.626	0.946

Source: Research Data

Table 3 shows that the diagonal values (square root of AVE) are consistently greater than the inter-construct correlation values in the same column or row, thus discriminant validity is satisfied. Although there are some construct pairs with relatively high correlations such as ASU-SLA (0.837) and PEOU-TR (0.825), all diagonal values remain greater than these correlations.

Table 4. Reliability and AVE Test Results

Variabel	Cronbach's Alpha	rho_a	Composite Reliability	AVE	Status
ASU (Actual System Use)	0.802	0.819	0.883	0.717	Valid & Reliable
OG (Organizational Readiness)	0.803	0.809	0.884	0.717	Valid & Reliable
PEOU (Perceived Ease of Use)	0.824	0.842	0.894	0.738	Valid & Reliable
PR (Perceived Risk)	0.903	0.918	0.940	0.839	Valid & Reliable
PU (Perceived Usefulness)	0.841	0.852	0.904	0.759	Valid & Reliable

Variabel	Cronbach's Alpha	rho_a	Composite Reliability	AVE	Status
SI (Social Influence)	0.910	0.910	0.943	0.847	Valid & Reliable
SLA (Service Level Agreement)	0.875	0.875	0.923	0.800	Valid & Reliable
TR (Trust)	0.941	0.943	0.962	0.894	Valid & Reliable

Source: Research Data

Table 4 shows that all constructs meet the reliability criteria with Cronbach's Alpha ranging from 0.802 to 0.941, Composite Reliability from 0.883 to 0.962, and AVE from 0.717 to 0.894. The Trust construct has the highest reliability (rho_c = 0.962) and also the highest AVE (0.894). Thus, all constructs are declared valid and reliable.

Inner Model Evaluation

Table 5. R-Square Test Results

Variabel	R-Square	R-Square Adjusted
ASU (Actual System Use)	0.616	0.607
SLA (Service Level Agreement)	0.755	0.748

Source: Research Data

Based on Table 5, the Actual System Use (ASU) construct obtains R^2 of 0.616 (substantial), meaning that 61.6% of the variance in actual technology use can be explained by TAM constructs in the model. Meanwhile, the SLA construct obtains R^2 of 0.755 (substantial), meaning that 75.5% of the variance in SLA achievement can be explained by the variables in the model. Both values categorize the model as having strong predictive power (Hair et al., 2017).

Table 6. Path Coefficients Test Results – Bootstrapping

Hypothesis	β	M	STDEV	T-Stat	p-value	Result
ASU → SLA (H7)	0.585	0.580	0.060	9.698	0.000	**Accepted**
OG → ASU (H5)	0.185	0.186	0.076	2.434	0.015	**Accepted**
OG → SLA (H12)	0.010	0.008	0.055	0.188	0.851	Rejected
PEOU → ASU (H2)	0.100	0.103	0.096	1.049	0.294	Rejected
PEOU → SLA (H9)	0.119	0.124	0.071	1.688	0.091	Rejected
PR → ASU (H4)	0.062	0.064	0.044	1.427	0.154	Rejected
PR → SLA (H11)	0.093	0.093	0.031	3.008	0.003	**Accepted**
PU → ASU (H1)	0.062	0.066	0.084	0.742	0.458	Rejected
PU → SLA (H8)	0.133	0.134	0.057	2.339	0.019	**Accepted**
SI → ASU (H6)	0.420	0.410	0.089	4.700	0.000	**Accepted**
SI → SLA (H13)	0.164	0.162	0.067	2.443	0.015	**Accepted**
TR → ASU (H3)	0.088	0.089	0.118	0.746	0.456	Rejected
TR → SLA (H10)	-0.092	-0.089	0.073	1.261	0.207	Rejected

Source: Research Data

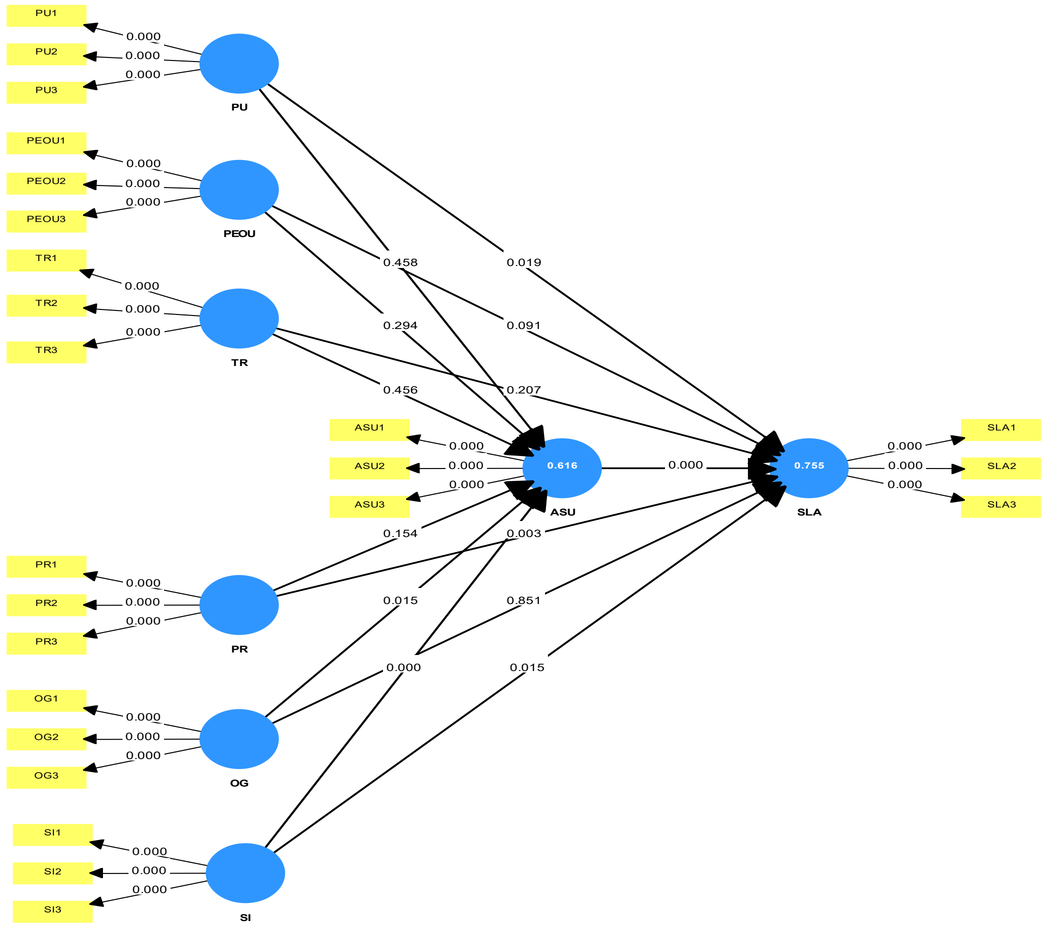

Figure 2. Bootstrapping Result
Source: Research Data

Table 6 presents the results of testing 13 hypotheses through 5,000 resamplings bootstrapping. Of the 13 hypotheses, six are accepted and seven are rejected. The ASU → SLA path has the highest coefficient in the model (β = 0.585; p = 0.000), confirming the central role of Actual System Use as a strategic mediator. Social Influence is the strongest predictor of ASU (β = 0.420; p = 0.000), followed by Organizational Readiness (β = 0.185; p = 0.015). These results are consistent with findings from (ElSemary et al., 2025) and (Shuaibu et al., 2025) which affirm the importance of social factors and organizational readiness in driving actual use of logistics technology.

Table 7. Specific Indirect Effects Test Results

Indirect Path	β	M	STDEV	T-Stat	p-value
OG → ASU → SLA	0.108	0.108	0.048	2.274	0.023*
PEOU → ASU → SLA	0.059	0.059	0.056	1.061	0.289
PR → ASU → SLA	0.036	0.036	0.026	1.402	0.161
PU → ASU → SLA	0.036	0.036	0.049	0.741	0.459
SI → ASU → SLA	0.246	0.246	0.060	4.132	0.000*
TR → ASU → SLA	0.052	0.052	0.069	0.752	0.452

Source: Research Data

Table 7 shows two significant indirect paths: SI → ASU → SLA (β = 0.246; p = 0.000) and OG → ASU → SLA (β = 0.108; p = 0.023). These findings confirm that Social Influence and Organizational Readiness affect SLA indirectly through the mediation of Actual System Use.

Discussion

Perceived Usefulness, Perceived Ease of Use, and Trust do not significantly influence Actual System Use (H1, H2, H3 rejected). This finding can be understood from the unique operational context: field couriers use technology not based on free choice, but because it is a mandatory Standard Operating Procedure (SOP). In conditions of mandatory use, perceptions of usefulness and ease become less relevant as predictors of actual usage intensity. Respondents with more than five years of experience (34.5%) tend to have already passed the perception-formation phase and are in the routinization stage of use, where PEOU becomes taken for granted as found by (Davis, 1989) in conditions of established systems. This also aligns with findings from (Ejdys & Gulc, 2020) which show that in the context of routine courier services, trust in the system has more impact on service quality than usage intensity.

Similarly, Perceived Risk does not significantly influence Actual System Use (H4 rejected). Although there are concerns about system failure, this is not strong enough to reduce actual use because technology is an unavoidable operational requirement (Esmaili et al., 2025). This situation differs from the study by (Boom-Cárcamo et al., 2024) on courier companies in developing countries which found Perceived Risk as a barrier to adoption this difference can be explained by the fact that the respondents of that study had not yet entered the routinization phase of use.

Organizational Readiness is proven to have a positive and significant effect on Actual System Use (H5 accepted; $\beta = 0.185$). This finding confirms that technology acceptance in the workplace is not solely determined by individual perceptions, but is significantly influenced by the enabling environment created by the organization, encompassing the availability of digital infrastructure, training programs, and managerial support (Ismail & Jokonya, 2023; Ricardianto et al., 2023). In the context of SiCepat Ekspres operating in various regions with diverse infrastructure conditions, organizational readiness becomes a key factor as it ensures couriers have well-functioning devices and responsive technical support.

Social Influence is the strongest predictor of Actual System Use (H6 accepted; $\beta = 0.420$) and also directly influences SLA (H13 accepted; $\beta = 0.164$). The magnitude of this influence reflects that technology use norms among coworkers, supervisor encouragement, and organizational expectations significantly drive couriers to actively use digital systems. Social Influence operates through mechanisms of normative pressure, vicarious learning, and managerial expectation (Antonios et al., 2022; Klein & Popp, 2022). With a direct effect of 0.164 plus an indirect effect through ASU of 0.246, yielding a substantial total effect of 0.410, Social Influence is the most important leverage point in the SLA improvement strategy.

Actual System Use is proven to have a positive and significant effect on SLA with the highest coefficient in the model (H7 accepted; $\beta = 0.585$). This mechanism operates through real-time delivery status updates, utilization of route optimization features, and digital confirmation for each delivery that enhances accuracy and operational visibility (Escudero-Santana et al., 2022; Mo et al., 2023). (Silva et al., 2023) also confirms that organizations with high levels of actual technology use consistently demonstrate better SLA performance. Shuaibu et al. (2025) reinforces this by showing that consistent use of route optimization features is a determining factor in on-time delivery.

Perceived Usefulness has a direct effect on SLA even though it is not significant for ASU (H8 accepted; $\beta = 0.133$). This dual effect indicates that belief in the benefits of technology drives the quality of use in each interaction not merely its frequency thereby directly contributing to SLA achievement (Davis, 1989). (C. Bienstock & B. Royne, 2010) found a similar mechanism where PU influences logistics service quality directly without always affecting usage intensity.

In contrast, Perceived Ease of Use and Trust show no significant direct effect on SLA (H9 and H10 rejected; $\beta = 0.119$, $p = 0.091$; and $\beta = -0.092$, $p = 0.207$, respectively). This pattern reinforces the routinization argument raised earlier: once technology use becomes a mandatory, well-established part of daily operations, how easy the system feels or how much a courier trusts it no longer translates into measurable service-level outcomes, because operational performance is instead driven through the mediating pathway of actual system use rather than through these perceptions acting directly on SLA.

The most intuitively contradictory finding is the positive direction of the influence of Perceived Risk on SLA (H11 accepted; β = 0.093). High risk perception encourages precautionary behavior that increases procedural compliance in delivery operations couriers are more careful in confirming delivery status and proactively reporting system anomalies (Sultan et al., 2023). Thus, well-managed risk awareness actually becomes a positive motivator for SLA performance.

Organizational Readiness does not directly influence SLA (H12 rejected), but its indirect effect through ASU is significant (β = 0.108; p = 0.023). This full mediation pattern indicates that organizational readiness is enabling providing conditions that enable optimal technology use, and it is actual use that determines SLA achievement. (Boysen et al., 2021) confirms that logistics infrastructure investment only yields sustainable SLA impact when accompanied by mechanisms that ensure consistent actual use.

CONCLUSION

This study analyzes the influence of the extended Technology Acceptance Model (TAM) on Service Level Agreement (SLA) achievement through the mediation of Actual System Use in the last-mile logistics operations of SiCepat Ekspres with 278 respondents. The model has strong predictive power (R^2 ASU = 0.616; R^2 SLA = 0.755). Of the 13 hypotheses tested, six hypotheses are accepted.

Key findings show that: 1) Social Influence is the strongest predictor of Actual System Use (β = 0.420) and also directly influences SLA (β = 0.164), making it the most important leverage point in the SLA improvement strategy; 2) Organizational Readiness significantly influences Actual System Use (β = 0.185) and affects SLA indirectly (β = 0.108), confirming its role as an enabling factor; 3) Actual System Use is the most determinant strategic mediator with the strongest influence on SLA (β = 0.585); 4) Perceived Risk positively influences SLA (β = 0.093), indicating that risk awareness encourages precautionary behavior that improves work quality; and 5) The PU, PEOU, and Trust constructs are not significant for Actual System Use in the context of mandatory technology use.

Practically, these findings indicate that SLA improvement efforts should focus on strengthening technology-based organizational culture (social influence), preparing organizational infrastructure and capabilities (organizational readiness), and increasing the intensity of actual technology use simultaneously and in an integrated manner. Future research is recommended to use a longitudinal design, expand model variables (digital literacy, job satisfaction), and conduct comparative studies across Indonesian courier companies.

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