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Extending the Expectation-Confirmation Model with Trust: Explaining Civil Servants Continuance Intention toward G2E Systems

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Abstract

Purpose: This study investigates the factors influencing civil servants' continuance intention to use SimASN, a mandatory Government-to-Employee (G2E) e-government system deployed by the Gorontalo Provincial Government, Indonesia.

Research Methodology: Drawing on the Expectation-Confirmation Model (ECM) and integrating Trust as an additional construct, this research proposes and tests an extended theoretical framework using Partial Least Squares Structural Equation Modeling (PLS-SEM). Data were collected through an online questionnaire from 204 civil servants (ASN), of which 200 valid responses were retained for analysis after data screening.

Results: Results indicate that Trust (TR) emerged as the strongest direct predictor of Continuance Intention to Use (CIU) (β = 0.410), followed by Satisfaction (SA) (β = 0.346) and Perceived Usefulness (PU) (β = 0.229). Expectation Confirmation (EC) exerts no significant direct effect on CIU but operates entirely through mediated pathways, most strongly via EC → TR → CIU (indirect effect = 0.230), closely paralleled by EC → SA → CIU (indirect effect = 0.215).

Conclusions: Trust emerges as the leading psychological mechanism, operating in parallel with Satisfaction, in mandatory e-government systems managing sensitive personnel data. The model extends ECM theory by demonstrating that conventional applications without Trust underspecify important variance in continuance intention.

Limitations: The cross-sectional design limits causal inference. The single-province, mandatory-system context may constrain generalizability to voluntary or multi-jurisdictional e-government settings.

Contributions: This study contributes to the public administration and information systems disciplines by providing an evidence base for prioritizing trust-building investments, particularly in data security and expectation alignment, to sustain long-term digital governance.

Keywords: *Continuance Intention, Expectation-Confirmation Model, E-Government, G2E Systems, SimASN*

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1. Introduction

The digital transformation of public administration has emerged as one of the defining phenomena of contemporary governance. Across all spheres of public life, governments are transitioning from analog to digital formats, a shift described as digitalization, encompassing not merely the conversion of data formats but the fundamental restructuring of administrative and political processes through digital

technology (Umbach & Tkalec, 2022; Vial, 2019). The COVID-19 pandemic served as a powerful catalyst in this trajectory: the urgent demand for contactless public services accelerated digital transformation and positioned e-government as a priority solution for maintaining service continuity while protecting citizens (Achillefs, 2023; Agostino et al., 2021).

Indonesia has actively pursued e-government development with the objective of improving public service delivery, enhancing inter-agency communication, and increasing efficiency and transparency in public administration (Nookhao & Kiattisin, 2023). Among the regions outside Java that have demonstrated significant e-government progress is Gorontalo Province. The provincial government's Electronic Government System (SPBE) index has shown a consistent upward trend, culminating in the highest ranking across the entire Sulawesi region in 2023, surpassing Central Sulawesi (3.14), South Sulawesi (3.09), and West, Southeast, and North Sulawesi provinces. One concrete manifestation of this digital transformation is SimASN (Sistem Informasi Manajemen Aparatur Sipil Negara), a Government-to-Employee (G2E) platform designed to digitize the management of civil servant (ASN) affairs including rank advancement, salary adjustments, pension processing, and other personnel services (Mano, 2021).

Yet this achievement mirrors a broader pattern of SPBE implementation challenges across Indonesian regional governments. Khan and Sartika (2025), examining SPBE implementation in Bogor City's employment services, identified that even highly-rated local governments face persistent challenges in sustaining digital adoption, including system integration gaps, human resource capacity deficits, and community adoption barriers—despite achieving strong SPBE index scores. Their findings underscore that a high SPBE index reflects infrastructure readiness and policy compliance, but does not automatically translate into sustained behavioral engagement by users. This distinction between formal SPBE achievement and actual system utilization is precisely the paradox this study examines in the Gorontalo Provincial Government context.

Despite SimASN's mandatory status—formally mandated by Governor Regulation No. 43 of 2023 and reinforced by Law No. 20 of 2023 on Civil State Apparatus (Article 63 on ASN management digitalization) empirical evidence reveals a striking paradox. Preliminary observation data collected over one week in mid-2025 showed that daily active users of SimASN remained below 1,000 out of a total civil servant population of 6,105 in Gorontalo Province. Furthermore, the usage pattern showed a consistent and dramatic decline after Monday each week, indicating habitual disengagement rather than sustained utilization. This gap between formal adoption and actual continuance is compounded by documented barriers: 70% of civil servants report insufficient technology training, 60% cite resource constraints, and 45% exhibit resistance to digital change (Sudrajat, 2024). Additional operational complaints regarding system performance, slow response times, incomplete features, and absence of user guides, further undermine sustainable engagement.

The academic discourse on e-government has long been dominated by studies of initial adoption, leaving the mechanisms that govern post-adoption continuance underexplored. Yet as Bhattacherjee (2001) argued, the true return on IT/IS investment depends far more on sustained long-term use than on the initial adoption event. The success of an e-government instrument is not measured at its launch, but by the degree to which it becomes genuinely embedded in the daily work routines of its users (Luo et al., 2024; Mishra et al., 2023). The Gorontalo case exemplifies this challenge: despite achieving the highest SPBE index in Sulawesi, the province faces persistently low continuance use of its flagship G2E platform a phenomenon that existing adoption-focused models cannot adequately explain.

The Expectation-Confirmation Model (ECM), adapted by Bhattacherjee (2001) from Oliver (1980) Expectation Confirmation Theory (ECT), provides the most widely validated framework for explaining IS continuance. The ECM posits that Perceived Usefulness (PU) and Satisfaction (SA) are direct antecedents of continuance intention (CIU), while Expectation Confirmation (EC) the cognitive assessment of whether actual system performance meets or exceeds prior expectations functions as the primary upstream driver. Existing literature confirms the robustness of this framework across diverse

IS contexts (Ambalov, 2018; Luo et al., 2024; Napitupulu et al., 2024). However, a critical construct is conspicuously absent from conventional ECM applications in e-government: Trust.

In the specific context of G2E systems like SimASN, which manage highly sensitive personnel data including rank records, salary histories, career trajectories, and civil rights trust assumes particular salience. Civil servants must not only be satisfied with the system but must fundamentally believe in its data security, information accuracy, and technical integrity before committing to long-term engagement. Luo et al. (2024) demonstrated that trust functions as a key mediator between expectation confirmation and continuance intention in e-government platforms. Ahmad et al. (2025) similarly found trust to be the dominant CIU predictor in the Pakistani e-government context. These findings suggest that the conventional ECM, applied without trust integration, systematically underspecifies an essential psychological dimension of e-government continuance.

This study addresses this theoretical and empirical gap by integrating Trust into the ECM framework and empirically testing the extended model using data from 200 civil servants in Gorontalo Province, Indonesia. The research responds to Luo et al. (2024) call to extend ECM validation beyond the Chinese context and to incorporate trust as a psychological bridge between cognitive evaluations and long-term behavioral commitment. Three theoretical contributions are advanced: (1) validating the extended ECM in an Indonesian regional government context with distinct cultural and institutional characteristics; (2) demonstrating Trust as both the dominant direct predictor and the most powerful mediator of continuance intention in a mandatory G2E system; and (3) revealing that Expectation Confirmation operates exclusively through mediated pathways most powerfully via Trust, rather than exerting direct effects on continuance intention. These findings carry immediate practical implications for Gorontalo Provincial Government and, more broadly, for any public administration seeking to move beyond formal e-government adoption toward genuine, sustained digital governance.

2. Literature Review and Hypotheses Development

2.1 Expectation-Confirmation Theory and the ECM

Expectation-Confirmation Theory (ECT) was originally formulated by Oliver (1980) within the consumer behavior literature to explain customer satisfaction and repurchase intention. The theory operates through a five-stage cognitive process: (1) users form initial expectations prior to adoption; (2) they experience actual system performance; (3) they compare performance against expectations; (4) satisfaction is determined by the degree of confirmation, positive when performance meets or exceeds expectations; and (5) satisfied users develop intentions to continue use (Bhattacherjee, 2001).This framework is directly analogous to IS continuance because, like repurchase decisions, continuance decisions follow an initial adoption event, are shaped by early usage experiences, and may involve ex post reversal of the original adoption choice.

Bhattacherjee (2001) adapted ECT into the IS domain, producing the Expectation-Confirmation Model (ECM). A critical adaptation was the replacement of pre-adoption expectations with post-adoption perceived usefulness: because users have accumulated real experience at the time of continuance evaluation, their updated beliefs about system utility, rather than prior expectations—become the operative cognitive driver. The ECM thus positions Perceived Usefulness (PU) and Satisfaction (SA) as direct antecedents of Continuance Intention (CIU), with Expectation Confirmation (EC) influencing both PU and SA as the upstream cognitive trigger. Unlike pre-adoption models such as TAM or UTAUT, ECM targets experienced users who have already completed an initial adoption event and now face the decision of whether to continue or discontinue usage, precisely the condition of all ASN in Gorontalo Province who hold SimASN accounts.

The superiority of post-adoption models over pre-adoption frameworks for studying long-term system engagement has been empirically established. Mishra et al. (2023) in a meta-analysis of over 200 IS continuance studies found that ECM and its variants consistently explain 55–70% of variance in Satisfaction and 40–60% in CIU, figures substantially higher than TAM achieves in equivalent contexts. Furthermore, Mishra et al. (2023) identified the “lost traction” phenomenon, where technologies popular at launch experience sharp usage decline once initial curiosity subsides, as a systematic failure

of pre-adoption models to anticipate. This phenomenon maps precisely onto the SimASN usage data: a system formally adopted by 6,105 civil servants yet achieving fewer than 1,000 daily active users represents a textbook case of high formal adoption paired with low behavioral continuance. Ambalov (2018) meta-analysis of 70 ECM studies universally confirmed that when user expectations are confirmed, satisfaction follows, and satisfaction reliably produces continuance intention across contexts ranging from mobile applications to e-government platforms.

It is also important to note the distinction between mandated adoption and voluntary continuance (Mishra et al., 2023). In mandatory systems like SimASN where formal enrollment is required by Governor Regulation No. 43 of 2023 all ASN are administratively adopted users. Yet actual behavioral engagement remains psychologically voluntary: no real-time monitoring mechanism compels daily login. Measuring Continuance Intention in this context therefore does not measure something foregone; it captures the psychological commitment that determines whether formal compliance transforms into genuine, repeated engagement. Luo et al. (2024) argue that in public sector digital ecosystems, the gap between formal adoption and behavioral continuance is the most practically significant research question, and CIU is the construct that directly addresses it.

Reviewing prior literature, a consistent pattern emerges across ECM applications. Luo et al. (2024) in China found that PU and EC significantly and positively influence both SA and Trust toward e-government platforms, which in turn drive CIU. Napitupulu et al. (2024) in Indonesia found SA to be the strongest CIU predictor, with EC and Perceived Ease of Use as its primary antecedents, though notably PU did not significantly predict CIU directly in their sample a finding the present study does not replicate, as PU emerged as a significant direct predictor of CIU in the SimASN context. Ahmad et al. (2025) in Pakistan reported that Trust holds equal or superior status to SA as a CIU driver in e-government. Wantania et al. (2021) studying the G2E e-Kinerja application in North Sulawesi found Confirmation, PEOU, and PU all positively influence satisfaction in a government internal system context.Kumar and Natarajan (2020) extending ECM to e-health services demonstrated that privacy and security perceptions create the trust prerequisite for long-term engagement a dynamic equally present in SimASN. These converging findings across China, Indonesia, Pakistan, Thailand, Nookhao and Kiattisin (2023) establish ECM as a cross-culturally robust framework while simultaneously highlighting Trust as a consistent gap in conventional ECM applications in the public sector.

A comparable Indonesian e-government continuance study by Rahman and Pangendra (2022), examining the Jogja Smart Service (JSS) platform using an integrated IS Success and ECM framework, found that system quality, service quality, and information quality all significantly predicted user satisfaction, which in turn was the dominant determinant of continuance intention. Notably, trust emerged as a significant positive antecedent of user satisfaction in their model demonstrating that even in non-ECM-based continuance frameworks, the trust-satisfaction linkage is empirically robust in Indonesian e-government contexts. Their finding that responsive, secure service and accurate information are prerequisites for trust formation directly parallels the SimASN context, where institutional credibility in data handling constitutes the primary trust formation mechanism.

Extending this pattern to the Indonesian context specifically, Hariguna et al. (2023) integrated e-government service quality as an external antecedent into the ECM framework, testing the extended model on 360 Indonesian e-government users. Their findings confirmed that e-government quality positively and significantly influences expectation confirmation ($\beta = 0.473$), perceived usefulness ($\beta = 0.230$), and satisfaction ($\beta = 0.225$), while satisfaction emerged as the dominant direct predictor of behavioral intention ($\beta = 0.475$). This result aligns with the canonical ECM prediction that satisfaction governs continuance, yet it diverges markedly from the present study's finding that Trust ($\beta = 0.410$) surpasses Satisfaction ($\beta = 0.346$) as the primary CIU predictor in the SimASN context. This divergence is theoretically meaningful: Hariguna et al.'s sample comprised voluntary, general-purpose e-government users, whereas SimASN serves a mandatory G2E context where sensitive personnel data is at stake. The contrast suggests that when institutional vulnerability is high and exit options are unavailable, trust displaces satisfaction as the dominant psychological driver of sustained engagement

a boundary condition that the present study empirically establishes for the first time in the Indonesian G2E context.

2.2 The Role of Trust in E-Government Continuance

The conventional ECM, while robust in many is contexts, develops a critical blind spot when applied to e-government systems managing sensitive institutional data: it does not account for trust. McKnight et al. (2002) define trust in IS as the belief that a system and its administrators will behave in accordance with reasonable expectations, are reliable, and will not act against the user's interests. Gefen et al. (2003) further specify three trust dimensions: benevolence (the belief that the counterpart acts in the user's interest), integrity (the belief that the counterpart adheres to honest principles), and competence (the belief that the counterpart has the ability to fulfil its promises). All three dimensions are directly implicated in SimASN use: ASN who input personnel data are placing themselves in an institutionally vulnerable position, and their willingness to sustain that exposure constitutes the behavioral core of trust. In the e-government domain specifically, trust is multidimensional and operates on two simultaneous axes Ahmad et al. (2025): trust in government confidence in the credibility, integrity, and competence of the governmental institution managing the digital service and trust in internet infrastructure confidence in the technical security of the platform, including data encryption, network reliability, and privacy protection. A deficiency in either dimension can undermine continuance intention regardless of technical satisfaction. This finding is particularly relevant to SimASN: the Indonesian administrative context involves documented civil servant concerns about data security in government-managed systems Zainudin (2025), and any deficit in trust toward either the institutional manager or the technical infrastructure of SimASN directly impedes sustained engagement.

The theoretical basis for integrating trust into ECM rests on a well-established causal logic. Li and Xue (2021) showed that post-use trust does not directly predict CIU but works through PU and SA as mediators meaning trust amplifies the cognitive and affective benefits that users derive from system interaction. Luo et al. (2024) extended this by integrating trust as a parallel mediator alongside SA: when users experience confirmation of their expectations, they simultaneously update their affective evaluation (satisfaction) and their institutional confidence (trust), and both pathways independently channel this confirmation experience into continuance intention. Nookhao and Kiattisin (2023) in Thailand further found that trust in government was the single strongest direct predictor of e-government behavioral intention, exceeding even technical satisfaction a finding that foreshadows the dominant role of Trust uncovered in the present study. Luo et al. (2024) frame this theoretically: integrating trust into ECM is not a mechanical addition of a variable, but a theoretically necessary response to the model's failure to account for the institutional trust dynamics that are inherent to any government-citizen or government-employee digital interaction.

In the context of G2E systems, the urgency of trust integration is even more pronounced than in G2C platforms. Unlike voluntary citizen-facing services where users retain the option to revert to offline alternatives, ASN in a mandatory G2E system have no formal exit route. This absence of alternatives can generate latent resistance Oreg (2003) that is invisible in formal adoption statistics but manifests as the very low daily usage rates observed in SimASN. When civil servants lack trust in the system managing their most sensitive career data, rank records, salary histories, career trajectories their behavioral response is not outright refusal (impossible under mandatory conditions) but passive disengagement: logging in minimally, delegating system interactions to colleagues, or accessing the system only when administratively unavoidable. Measuring Trust therefore captures a psychological dimension of continuance that Satisfaction alone systematically underestimates in mandatory institutional contexts.

2.3 Research Gap and Hypotheses Development

A systematic review of 25 related studies reveals three consistent research gaps that this study addresses. First, the majority of ECM/ECT-based continuance studies focus on voluntary commercial or general IS contexts (mobile apps, mobile payment, online learning, instant messaging), with G2E systems significantly underrepresented. The few G2E studies available (Saputri & Vidya Imanuari, 2025; Wantania et al., 2021) do not employ ECM/ECT integrated with Trust. Further extending this gap,

Kusudiandaru and Umanto (2024) examined a G2E e-government system (e-office) within Indonesia's Ministry of Investment/BKPM using the DeLone and McLean IS success model, finding that system quality, service quality, and information quality all significantly influenced user satisfaction, and that system use contributed positively to organizational performance and environmental sustainability as dimensions of public value. While their study focused on a different theoretical framework and outcome variables, its Indonesian G2E context and PLS-SEM methodology are directly comparable to the present study. Importantly, their finding that service quality, not merely system quality, determines user satisfaction in G2E contexts reinforces the argument that trust and satisfaction in mandatory government employee systems depend on the quality of institutional service delivery, not technical performance alone. Their work confirms that G2E systems in Indonesia carry public value implications that extend beyond individual user experience, providing additional theoretical grounding for this study's focus on trust as a governance-level construct. Second, while ECM with Trust integration has been tested in G2C e-government contexts in China (Luo et al., 2024), Pakistan (Ahmad et al., 2025), and partially in Indonesia (Napitupulu et al., 2024), no study has applied this integrated model specifically to an Indonesian provincial government G2E system. Third, no research has examined SimASN, nor any comparable G2E system in Gorontalo Province, using any theoretical framework, representing a complete absence of evidence for the very system that achieved the highest SPBE index in Sulawesi yet faces persistently low user engagement.

Grounded in this theoretical foundation and research gap, thirteen hypotheses are advanced following Luo et al. (2024). For direct effects: H1 (PU → CIU+), H2 (EC → CIU+), H3 (PU → SA+), H4 (EC → SA+), H5 (SA → CIU+), H8 (PU → TR+), H9 (EC → TR+), H10 (TR → CIU+), and H13 (EC → PU+). For mediated effects: H6 (SA mediates PU → CIU), H7 (SA mediates EC → CIU), H11 (TR mediates PU → CIU), and H12 (TR mediates EC → CIU). The conceptual model positions EC as the primary exogenous driver that simultaneously activates PU, SA, and TR, all of which channel its influence into CIU. H13 captures the dynamic internal recalibration process, where experiencing system confirmation updates users' perceived utility beliefs, a pathway empirically confirmed in the original Bhattacherjee (2001) model and reinforced in the present data.

3. Methodology

3.1 Research Design and Sampling

This study employs a quantitative, cross-sectional survey design grounded in the post-positivist paradigm. The quantitative approach was selected because the research objective is explanatory and predictive, testing a theoretically derived structural model that specifies directional causal relationships among five latent constructs. Cross-sectional data collection is appropriate given that the study seeks to capture ASN evaluative states at a single temporal point reflecting accumulated post-adoption experiences, rather than tracking adoption trajectories over time. The research design follows the recommendation of (Hair et al., 2017; Luo et al., 2024) for variance-based structural modeling in e-government continuance research.

The target population consists of all *Aparatur Sipil Negara* (ASN) within the Gorontalo Provincial Government who have used SimASN for at least one employment related service transaction. As of October 2025, this population comprised 6,105 active ASN, of whom the largest age cohort is 41–50 years (41%, n=2,571), followed by 31–40 years (31.7%, n=1,939). All are formally obligated to use SimASN under Governor Regulation No. 43 of 2023 and Law No. 20 of 2023 on Civil State Apparatus (Article 63). Data were collected via an online questionnaire distributed through Google Forms over a designated collection period. A total of 204 valid responses were obtained; following data screening to remove incomplete submissions and patterned (straight-line) response sets, 200 responses were retained for the final analysis. To mitigate the self-selection and common-method bias inherent in self-administered Google Forms surveys, the instrument guaranteed full respondent anonymity, randomized indicator order within each construct, and applied attention-check screening during cleaning. The realized sample satisfies the minimum threshold for PLS-SEM which (Hair et al., 2021) set at ten times the maximum number of path model arrows pointing at any single construct. With Trust receiving at most three incoming paths, the 200-respondent analytic sample comfortably exceeds the required minimum, and a post-hoc power analysis confirmed statistical power above the conventional 0.80

benchmark for detecting the observed path effects. Although the sample constitutes approximately 3.3% of the 6,105-member ASN population, its demographic composition closely mirrors that population (detailed below), supporting sample representativeness. We nonetheless acknowledge that reliance on voluntary online participation means the evidence speaks most directly to actively engaged users—a boundary condition revisited in the limitations.

The respondent profile closely mirrors the broader ASN demographic composition in Gorontalo Province. Female respondents comprised 55.5% (n=111) and male 44.5% (n=89), consistent with the dominance of female functional staff in education and health sectors. The largest age group was 41–50 years (42.0%, n=84), followed by 31–40 years (38.5%, n=77), with smaller proportions aged above 50 years (10.5%, n=21) and 21–30 years (9.0%, n=18) a profile indicating predominantly experienced, non-digital-native users who have adapted to SimASN through accumulated practice. Educational background was predominantly bachelor's degree (S1: 61.0%, n=122), followed by master's degree (S2: 21.0%, n=42), diploma (D3: 12.0%, n=24), and senior secondary (SMA: 6.0%, n=12), indicating adequate digital literacy capacity. By position type, functional staff (teachers, healthcare workers) constituted the majority (54.0%, n=108), followed by executing/administrative staff (32.0%, n=64) and structural positions (14.0%, n=28). Rank distribution was dominated by Group III (76.0%, n=152), followed by Group IV (12.5%, n=25), Group II (10.5%, n=21), and Group I (1.0%, n=2), reflecting the general mid-career composition of the active ASN workforce. Crucially, 56.0% (n=112) reported using SimASN for more than four years, followed by 33.0% (n=66) with three-to-four years' experience, establishing the respondents as experienced post-adoption users whose evaluations are grounded in substantial real-world interaction with the system a necessary condition for valid ECM-based assessment.

3.2 Instrumentation

All five constructs were measured using reflective indicator scales drawn from established sources and adapted to the SimASN operational context. Scale items were sourced from Bhattacherjee (2001) for EC, PU, SA, and CIU, augmented by Luo et al. (2024) and (Mishra et al., 2023) for updated operationalizations aligned with the e-government G2E setting. Trust indicators were adapted from Ahmad et al. (2025); Luo et al. (2024); McKnight et al. (2002), covering both technical reliability and institutional integrity dimensions. Each construct was operationalized through four reflective indicators measured on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree).

The indicator operationalizations are as follows. EC indicators measure alignment between prior expectations and actual SimASN performance across functional, technical, and service quality dimensions. PU indicators assess whether SimASN provides complete government services, increases administrative effectiveness, accelerates task completion, and is generally useful for bureaucratic work. SA indicators capture satisfaction with usage experience, interface comfort, system response speed, and the overall decision to adopt the system. TR indicators reflect beliefs about data security and protection, honest data management by administrators, accuracy of information provided, and system reliability. CIU indicators assess intention to continue using SimASN in the future, to make it the primary work tool, to use it as frequently as possible, and to recommend it to colleagues. Because SimASN is a mandatory system, these items were interpreted as capturing the intensity and quality of voluntary behavioral engagement rather than the binary decision to adopt or abandon consistent with the conceptualization in Section 2.1, where behavioral continuance in mandated settings remains psychologically discretionary. The "frequency of use" and "recommendation" items, originally validated by Bhattacherjee (2001) for voluntary IS, were retained to preserve construct comparability with prior ECM research; their applicability to compulsory contexts is acknowledged as a measurement limitation in Section 5.2.

Instrument validity and reliability were assessed through a pre-test conducted with 30 respondents matching the target population profile, analyzed using SPSS 27 with Principal Component Analysis (PCA). Kaiser-Meyer-Olkin (KMO) values ranged from 0.716 (SA) to 0.850 (EC), all exceeding the 0.50 threshold. Bartlett's Test of Sphericity yielded significance of 0.000 across all constructs. Anti-Image Correlation values ranged from 0.658 to 0.895, and factor loadings from 0.701 to 0.929,

confirming that all indicators adequately represent their respective constructs. Cronbach's Alpha values ranged from 0.899 (SA) to 0.929 (PU), with Corrected Item Total Correlations ranging from 0.532 to 0.866, confirming excellent construct reliability. All 20 indicators were retained for the main analysis without modification.

3.3 Analytical Approach

Structural analysis employed Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS 4. PLS-SEM was selected over covariance-based SEM (CB-SEM) on three grounds: (1) the study's primary orientation is predictive rather than confirmatory; (2) the sample size of 200, while adequate for PLS-SEM, does not guarantee the distributional assumptions required for CB-SEM; and (3) the model includes complex mediation structures with multiple simultaneous indirect pathways, which PLS-SEM handles more efficiently through bootstrapping (Hair et al., 2021). Descriptive statistics were first computed to characterize construct-level response distributions. All constructs recorded mean scores above 4.0 on the five-point scale (PU = 4.485, SA = 4.375, CIU = 4.374, EC = 4.306, TR = 4.290), with standard deviations ranging narrowly from 0.476 to 0.576, indicating response consistency and positive overall user evaluations of SimASN.

Evaluation proceeded in two sequential stages. The first stage assessed the measurement model (outer model) through: convergent validity using outer loadings (threshold ≥0.70) and Average Variance Extracted (AVE ≥0.50); discriminant validity using Heterotrait-Monotrait (HTMT) ratios (threshold <0.90) and Fornell-Larcker criterion (diagonal AVE square root exceeding inter-construct correlations); and construct reliability using Cronbach's Alpha and Composite Reliability (rho_c), both thresholded at ≥0.70. The second stage assessed the structural model (inner model) through: Variance Inflation Factor (VIF) for multicollinearity (threshold <5.0); coefficient of determination (R^2) classified as substantial (≥0.75), moderate (≥0.50), or weak (0.25–0.49) per Hair et al. (2019); effect size (f^2) classified as large (≥0.35), medium (≥0.15), or small (≥0.02) per Cohen (1988); and path significance testing via bootstrapping with 5,000 subsamples at α=0.05 (T-statistics threshold >1.96, p-value <0.05). Model fit was assessed using SRMR (threshold <0.08).

4. Results and Discussions

4.1 Measurement Model

The measurement model evaluation proceeded through convergent validity, discriminant validity, and construct reliability assessments. For convergent validity, Table 1 presents outer loadings and AVE values for all five constructs. All outer loadings ranged from 0.846 (PU4) to 0.919 (CIU1), substantially exceeding the 0.70 threshold recommended by Hair et al. (2021). The highest individual outer loading was CIU1 (0.919), while Expectation Confirmation recorded the highest average loading across its indicators, reflecting the high internal consistency of expectation-performance comparison assessments. AVE values ranged from 0.753 (PU) to 0.812 (EC), all well above the 0.50 minimum, indicating that each construct explains at least 75% of its indicator variance a particularly strong result that minimizes measurement error concerns in subsequent structural path estimation.

Table 1 presents the convergent validity results. All outer loadings ranged from 0.846 to 0.919, well above the 0.70 threshold. AVE values ranged from 0.753 (PU) to 0.812 (EC), exceeding the 0.50 minimum. These results confirm that all constructs demonstrate strong convergent validity.

Table 1. Convergent validity results (outer loadings and AVE)

Construct	Indicator	Outer Loading	AVE	Cronbach's α	CR (rho_c)
Perceived Usefulness (PU)	PU1	0.851	0.753	0.890	0.924
	PU2	0.882			
	PU3	0.890			
	PU4	0.846			
Expectation Confirmation (EC)	EC1	0.896	0.812	0.923	0.945

	EC2	0.911			
	EC3	0.904			
	EC4	0.894			
Satisfaction (SA)	SA1	0.906	0.777	0.905	0.933
	SA2	0.870			
	SA3	0.867			
	SA4	0.884			
Trust (TR)	TR1	0.890	0.777	0.904	0.933
	TR2	0.890			
	TR3	0.896			
	TR4	0.850			
Cont. Intention to Use (CIU)	CIU1	0.919	0.796	0.914	0.940
	CIU2	0.886			
	CIU3	0.852			
	CIU4	0.911			

Discriminant validity was assessed using HTMT ratios and Fornell-Larcker criterion. The Fornell-Larcker diagonal values (CIU=0.892, EC=0.901, PU=0.868, SA=0.882, TR=0.881) consistently exceeded all inter-construct correlations. All HTMT values fell below the conservative 0.90 threshold with the single exception of SA-EC (0.925), which—while marginally above 0.90 remains comfortably within the 0.95 liberal threshold endorsed for theoretically proximal constructs. These results support adequate discriminant validity. The slightly elevated SA–EC ratio (0.925) is theoretically expected rather than problematic: Henseler et al. (2015) permit a 0.95 liberal threshold for theoretically proximal constructs, and the Fornell-Larcker criterion is unambiguously satisfied for this pair (SA diagonal = 0.882, EC diagonal = 0.901, both exceeding their cross-correlation of 0.846). The theoretical rationale for their proximity is well established in ECT: satisfaction is the direct affective outcome of expectation confirmation, making a high correlation structurally expected rather than problematic. Construct reliability results are presented in Table 1: Cronbach's Alpha ranged from 0.890 (PU) to 0.923 (EC), and Composite Reliability (rho_c) from 0.924 (PU) to 0.945 (EC), all far exceeding the 0.70 threshold and indicating excellent internal consistency across all constructs.

4.2 Structural Model Results

The structural model demonstrated strong predictive capability. Prior to path testing, multicollinearity was examined through Variance Inflation Factor (VIF) analysis. All inner-model VIF values fell below the conservative threshold of 5.0, the highest being SA → CIU (VIF = 4.548) and EC → CIU (VIF = 4.080); all indicator-level (outer) VIF values likewise remained below 4.1. These moderate values reflect the expected inter-correlation between EC and SA—an inherent structural feature of the ECM rather than a sampling artifact and, consistent with Hair et al. (2017) confirm that multicollinearity does not destabilize the path estimates. Table 2 presents R^2 and model fit values. Satisfaction (SA) achieved $R^2 = 0.755$ (substantial), indicating that EC and PU jointly explain 75.5% of variance in user satisfaction a result that underscores the dominant role of expectation-performance alignment in shaping affective responses to SimASN. Continuance Intention to Use (CIU) achieved $R^2 = 0.675$ (moderate), demonstrating that the model explains 67.5% of variance in continuance intention. Perceived Usefulness (PU) yielded $R^2 = 0.567$ (moderate) and Trust (TR) $R^2 = 0.538$ (moderate), both reflecting meaningful explanatory power of EC as the sole exogenous driver. Effect size analysis (f^2) further revealed that EC exerts a very large effect on PU ($f^2 = 1.310$), a large effect on SA ($f^2 = 0.681$), and a medium effect on TR ($f^2 = 0.295$), confirming EC as the dominant theoretical driver in the model. The SRMR of 0.060 (saturated model: 0.056) confirms good model fit, comfortably below the 0.08 threshold.

Table 2. Coefficient of determination (R^2) and model fit

Endogenous Variable	R^2	R^2 Adjusted	Category
Perceived Usefulness (PU)	0.567	0.565	Moderate
Satisfaction (SA)	0.755	0.752	Substantial
Trust (TR)	0.538	0.534	Moderate
Cont. Intention to Use (CIU)	0.675	0.668	Moderate
SRMR (Model Fit)	0.060 (Saturated: 0.056)		

4.3 Hypotheses Testing

Table 3 presents results for direct effects (bootstrapping, 5,000 subsamples). Eight of nine direct-effect hypotheses were supported. The sole rejected hypothesis was H2 (EC → CIU, β = −0.082, p = 0.492). The negative coefficient on this rejected path warrants specific interpretation: it is a statistical suppression artifact that arises when full mediation occurs once Trust, PU, and SA absorb EC's influence on CIU through their respective mediated pathways, the residual direct coefficient is forced into negative territory by the suppressive variance of the mediators. This phenomenon is theoretically consistent with Bhattacherjee (2001) original ECM specification, which never proposed a direct EC → CIU path; rather, EC was always intended to operate through SA and PU. The current model confirms and extends this by showing that Trust constitutes an equally important mediated channel operating in parallel with Satisfaction. Notably, EC → PU (H13) recorded the highest path coefficient in the entire model (β = 0.753, T = 23.418), establishing Expectation Confirmation as the principal cognitive driver of perceived system utility. Among direct predictors of CIU, TR → CIU (H10) was strongest (β = 0.410, T = 3.186, f^2 = 0.214, medium effect), followed by SA → CIU (H5, β = 0.346, p = 0.009) and PU → CIU (H1, β = 0.229, p = 0.007). The PU → SA path (H3, β = 0.299, f^2 = 0.157, medium effect) confirms perceived usefulness as a meaningful antecedent of satisfaction alongside EC. The significant SA → CIU path (p = 0.009) confirms Satisfaction retains a substantial direct contribution to continuance indeed the second-strongest after Trust even though Trust, not Satisfaction, now represents the dominant direct driver, contrary to conventional ECM expectations.

Table 3. Direct effect hypotheses testing results

H	Path	Path Coeff. (β)	T-Statistics	p-Value	Decision
H_1	PU → CIU	0.229	2.678	0.007	Accepted ✓
H_2	EC → CIU	−0.082	0.687	0.492	Rejected ✗
H_3	PU → SA	0.299	4.105	0.000	Accepted ✓
H_4	EC → SA	0.621	9.197	0.000	Accepted ✓
H_5	SA → CIU	0.346	2.601	0.009	Accepted ✓
H_8	PU → TR	0.212	2.488	0.013	Accepted ✓
H_9	EC → TR	0.561	6.496	0.000	Accepted ✓
H_{10}	TR → CIU	0.410	3.186	0.001	Accepted ✓
H_{13}	EC → PU	0.753	23.418	0.000	Accepted ✓

Table 4 presents mediation effect results. All four mediation hypotheses were supported. Trust significantly mediated PU → CIU (H11: indirect effect = 0.087, p = 0.046) and EC → CIU (H12: indirect effect = 0.230, p = 0.004), and Satisfaction likewise significantly mediated PU → CIU (H6: indirect effect = 0.103, p = 0.037) and EC → CIU (H7: indirect effect = 0.215, p = 0.013). The EC → TR → CIU pathway (0.230) constitutes the single strongest mediation effect in the model, closely followed by the parallel EC → SA → CIU pathway (0.215). Rather than a hierarchy in which one mediator eclipses the other, the comparative evidence reveals two co-equal mediating channels of similar magnitude through which expectation confirmation translates into continuance: a trust-based route reflecting institutional confidence and a satisfaction-based route reflecting affective evaluation,

with Trust holding only a marginal edge. This dual-mediation pattern reinforces the study's central argument that Trust must be modeled alongside Satisfaction—not in place of it—to fully explain continuance in mandatory G2E systems.

Table 4. Mediation effect hypotheses testing results

H	Mediation Path	Indirect Effect	T-Statistics	p-Value	Decision
H_6	SA mediates PU → CIU	0.103	2.087	0.037	Accepted ✓
H_7	SA mediates EC → CIU	0.215	2.492	0.013	Accepted ✓
H_{11}	TR mediates PU → CIU	0.087	1.999	0.046	Accepted ✓
H_{12}	TR mediates EC → CIU	0.230	2.876	0.000	Accepted ✓

4.4 Trust as The Dominant Driver of Continuance Intention

The most striking finding of this study is the emergence of Trust as the strongest direct predictor of CIU (β = 0.410), surpassing both Satisfaction (β = 0.346) and Perceived Usefulness (β = 0.229). This result both validates and extends the conventional ECM framework. It aligns with Ahmad et al. (2025), who found Trust to hold equal or superior predictive standing relative to Satisfaction in Pakistani e-government continuance, and with Phuc and Linh (2024), who identified Trust as the strongest CIU predictor in Vietnamese banking chatbot services. It also resonates with Nookhao and Kiattisin (2023), whose Thai e-government study found trust in government to be the most direct predictor of behavioral intention even outperforming technical satisfaction.

The convergence of these findings across Pakistan, Vietnam, Thailand, China, and now Indonesia constitutes meaningful cross-cultural evidence that Trust's dominance in e-government continuance is not context-specific but reflects a systematic characteristic of institutional digital services—a pattern that becomes even more pronounced in the context of a mandatory G2E system. Unlike voluntary commercial applications where dissatisfied users can simply exit, ASN operate within a closed institutional system where formal exit is unavailable. In this context, the psychologically relevant question is not whether users will use the system they must but whether they will use it actively, thoroughly, and without resistance. Mayer et al. (1995) define trust as the willingness to be vulnerable to another party's actions based on positive expectations of their behavior. An ASN who submits career, salary, and personal data through SimASN is exercising precisely this vulnerability. Fukuyama (1996) adds that institutional trust is built through the consistent, reliable performance of institutions over time not through single interactions. The mean TR score of 4.290 reflects a generally positive but demonstrably incomplete trust level, with the data security dimension (TR1) recording the lowest mean among the trust indicators at 4.205. This gap between general trust and security-specific trust suggests that while ASN broadly accept SimASN's institutional legitimacy, specific anxieties about data protection remain the most actionable barrier to stronger continuance commitment.

The dominance of Trust also carries implications for understanding the paradox documented in this study's introduction: Gorontalo Province holds the highest SPBE index in Sulawesi yet records fewer than 1,000 daily SimASN users out of 6,105 active ASN. A purely technical explanation focusing on system quality or perceived usefulness cannot account for this gap, given the positive PU mean (4.485) and acceptable SA mean (4.375). The uniformly high construct means (all above 4.0) may at first appear to contradict the documented adoption barriers insufficient training, resource constraints, and resistance to change. This apparent tension is, however, theoretically informative rather than contradictory. The survey necessarily captured the evaluations of ASN who were sufficiently engaged to complete a voluntary online instrument; the most disengaged users those embodying the sub-1,000 daily-active-user statistic are structurally underrepresented among respondents (a self-selection effect explicitly acknowledged in the limitations). The high means therefore describe how the continuing, engaged segment of the workforce evaluates SimASN, not the population-wide sentiment reflected in the

operational complaint statistics. Crucially, even within this favorably disposed segment, the lowest scores cluster precisely where the model predicts the binding constraint lies: Trust (4.290, the lowest-scoring construct) and within it the data-security dimension (TR1 = 4.205) closely followed by Expectation Confirmation (4.306). In other words, the means do not signal universal satisfaction; they localize the residual gap to security-specific trust and expectation alignment exactly the levers the structural model identifies as most consequential for continuance. The trust-dominant result suggests instead that the persistent usage gap is primarily a governance credibility problem: ASN have not yet reached the level of trust in SimASN's data handling and institutional management that would convert their formal compliance into voluntary, habitual engagement. This reframes the policy challenge from a technical improvement problem to a trust-building governance problem a distinction with significant strategic implications for the Gorontalo Provincial Government. This reframing resonates with broader governance scholarship in the Indonesian public administration context. Abdurrosyid and Eldo (2024), examining good governance implementation at a local government office in Central Java, found that citizen trust toward public services is fundamentally shaped by the consistency, transparency, and accountability of government institutions over time not merely by technical service quality. Although their study addresses offline public services rather than digital systems, the underlying governance dynamic is directly analogous: trust is a precondition for sustained public engagement, whether in traditional administrative settings or mandatory e-government platforms. The SimASN context makes this dynamic even more acute, as civil servant are not passive service recipients but active data contributors whose institutional vulnerability is greater than that of ordinary citizens.

4.5 Full Mediation of EC's Effect Through Trust

The rejection of H2 (direct EC → CIU, $\beta = -0.082$, $p = 0.492$) alongside the acceptance of H12 (indirect EC → TR → CIU, effect = 0.230, $p = 0.004$) reveals a pattern of full mediation in which EC's influence on CIU is entirely channeled through mediating constructs, with Trust as the leading though not exclusive pathway. This finding is theoretically aligned with Bhattacherjee (2001) original ECM specification, which did not propose a direct EC → CIU path: EC was designed as a cognitive antecedent that activates evaluative states (SA and PU), which then determine behavioral intention. The present model extends this logic by demonstrating that Trust constitutes a mediating channel of comparable importance to Satisfaction, with the two operating in parallel. The EC → TR pathway ($\beta = 0.561$, $f^2 = 0.295$, medium effect) reflects a theoretically coherent process: each time SimASN's actual performance confirms ASN expectations, their institutional confidence in the system's reliability and integrity is reinforced, creating an upward spiral of trust accumulation that ultimately sustains long-term behavioral commitment.

The negative direct coefficient on the rejected EC → CIU path warrants specific interpretive attention beyond mere statistical dismissal. MacKinnon et al. (2000) document that suppression effects in mediation models produce negative residual direct coefficients when (a) the mediated pathways collectively absorb more variance than is available in the direct path and (b) the mediators are strongly correlated with each other. Both conditions apply here: TR, SA, and PU collectively explain 67.5% of CIU variance, and the mediators themselves are strongly intercorrelated (EC–SA correlation = 0.846; EC–TR = 0.720; EC–PU = 0.753). The practical implication is unambiguous: efforts to increase expectation confirmation (EC) will not improve continuance intention if they do not simultaneously strengthen the mediating constructs, particularly Trust. Delivering a well-performing SimASN that merely meets expectations without building institutional credibility will not yield sustained engagement.

The EC → PU path ($\beta = 0.753$, $T = 23.418$, $f^2 = 1.310$) recorded the largest effect size in the entire model a result that deserves theoretical attention. Bhattacherjee (2001) proposed that confirmation updates users' post-adoption PU beliefs through a recalibration process: when actual performance confirms or exceeds expectations, users revise their perceived utility upward. The very large effect size

here suggests that ASN's utility perceptions toward SimASN are highly malleable they are not fixed at the point of adoption but continue to respond dynamically to ongoing experience quality. This finding carries an important practical corollary: investments in system quality that generate confirmation experiences will yield disproportionate returns on perceived usefulness, which in turn drives both TR formation (β = 0.212) and direct CIU (β = 0.229). The EC → PU → CIU chain thus represents the most leverage-efficient intervention pathway available to SimASN administrators.

4.6 Trust and Satisfaction as Parallel Mediators

The significant mediating roles of both Satisfaction (H6: p = 0.037; H7: p = 0.013) and Trust (H11: p = 0.046; H12: p = 0.004) reveal a dual-mediation structure that both replicates and extends conventional ECM findings. Ambalov (2018) meta-analysis identified Satisfaction as the single most consistent and powerful CIU predictor across all ECM studies reviewed. Napitupulu et al. (2024), in the nearest contextual comparison—Indonesian e-government continuance—found SA to be the strongest predictor of CIU and the dominant mediator. The present results confirm Satisfaction's robust mediating role, but demonstrate that in the mandatory G2E context Trust emerges as a co-equal mediating channel and the stronger direct predictor of continuance a theoretically meaningful extension rather than a contradiction of this prior work.

Two contextually grounded observations clarify this pattern. First, SimASN's mandatory institutional character elevates the behavioral relevance of trust without displacing satisfaction. In voluntary IS contexts, satisfaction is the primary affective driver of the continue-or-exit decision; in a mandatory G2E system where formal exit is unavailable, institutional trust becomes an additional and equally consequential determinant of whether compliance translates into active, voluntary engagement. Satisfaction retains a strong direct effect on CIU (β = 0.346, p = 0.009) and a significant mediating role, while Trust contributes a parallel and marginally larger channel (direct β = 0.410). Second, Trust and Satisfaction draw on a shared upstream antecedent: both are strongly shaped by EC (Satisfaction: β = 0.621; Trust: β = 0.561) and both transmit that influence onward to CIU. Rather than one mediator crowding out the other, the two operate as complementary conduits affective evaluation and institutional confidence through which expectation confirmation sustains continuance. This is precisely the dual structure that conventional, trust-free ECM cannot capture. Third, from an organizational behavior perspective, Mayer et al. (1995) argue that trust is more deeply embedded and behaviorally persistent than satisfaction: satisfaction is an affective state that can fluctuate from interaction to interaction, while trust is a stable dispositional commitment that accumulates through repeated experience. In a population of experienced users with an average usage tenure exceeding four years, Trust has had sufficient time to consolidate as the dominant psychological determinant, while episodic satisfaction variation has been averaged into a stable background state.

The robustness of both mediating pathways at n = 200 strengthens confidence that the observed dual-mediation structure reflects a genuine theoretical pattern rather than an artifact of sample size. Wantania et al. (2021), studying the G2E e-Kinerja application in North Sulawesi, found confirmation, PU, and PEOU all positively influence satisfaction—a finding replicated here—but did not test the mediation chain through CIU. Future research in comparable mandatory G2E contexts should examine how the relative weight of the trust-based and satisfaction-based mediating channels shifts across systems of differing data sensitivity, usage tenure, and institutional culture.

4.7 Perceived Usefulness and Expectation Confirmation as Cognitive Drivers

Perceived Usefulness (PU) demonstrated significant positive effects on CIU (H1: β = 0.229, p = 0.007), SA (H3: β = 0.299, p = 0.000), and TR (H8: β = 0.212, p = 0.013), confirming PU as a multi-channel cognitive driver in the extended ECM framework. The direct PU → CIU path replicates findings from multiple earlier studies (Baker-Eveleth & Stone, 2015; Oghuma et al., 2016; Ouyang et al., 2017) that

identified perceived usefulness as a fundamental continuance motivator. However, the non-significant PU → CIU finding in Napitupulu et al. (2024) underscores the context-sensitivity of this relationship: in the LAPOR e-government application studied by those authors, perceived ease of use dominated satisfaction formation, whereas in SimASN, the highly functional G2E nature of the system makes utility perceptions a more salient driver. ASN who use SimASN to process rank advancements, salary adjustments, and pension applications are engaged in consequential administrative transactions where functional adequacy is non-negotiable making utility beliefs more directly connected to behavioral commitment than in more hedonic or informational e-government platforms.

Expectation Confirmation (EC) emerged as the dominant exogenous driver with the widest causal reach in the model: it significantly influences PU ($\beta = 0.753$), SA ($\beta = 0.621$), and TR ($\beta = 0.561$) simultaneously. The EC → PU path ($f^2 = 1.310$) and EC → SA path ($f^2 = 0.681$) demonstrated very large and large effect sizes respectively, confirming that the cognitive process of comparing actual SimASN performance against prior expectations is the most powerful single mechanism driving all downstream user evaluations. This finding replicates and extends Ambalov (2018) who reported the EC → SA relationship as the strongest and most consistent in ECM meta-analysis, and Luo et al. (2024) who confirmed EC → TR as the dominant trust-formation pathway in e-government. The mean EC score of 4.306—among the lowest-scoring constructs alongside Trust also signals a highly improvable leverage point: because EC is the dominant exogenous driver, closing the gap between user expectations and actual SimASN performance would generate cascading improvements across PU, SA, and TR simultaneously, producing compounding positive effects throughout the causal chain.

4.8 Practical Implications

The model's causal structure suggests a prioritized intervention hierarchy for the Gorontalo Provincial Government. The first and most urgent priority is trust-building through data governance strengthening. Since TR is the strongest CIU predictor ($\beta = 0.410$) and the strongest single mediator (EC → TR → CIU = 0.230, with the parallel EC → SA → CIU route at 0.215), the highest-return investment is in mechanisms that increase ASN's confidence in SimASN's data security and institutional integrity. Concrete measures include: implementing advanced encryption for personnel data at rest and in transit; establishing an access notification system that alerts ASN when their data is accessed or modified; publishing quarterly transparency reports documenting data governance practices; and creating a dedicated security audit function with results communicated directly to ASN. These measures address the security trust deficit identified in the TR1 mean (4.205) and directly target the EC → TR → CIU pathway that constitutes the model's strongest mediation route.

The second priority is expectation alignment through honest communication and onboarding redesign. Given the extraordinary leverage of EC's upstream effects (EC → PU: $\beta = 0.753$; EC → SA: $\beta = 0.621$; EC → TR: $\beta = 0.561$), ensuring that SimASN consistently meets the expectations set during socialization and training is the most strategically efficient intervention. This requires two complementary actions: calibrating the expectations communicated during onboarding to realistic system capabilities (avoiding overpromising), and continuously improving system performance to match or exceed those calibrated expectations. Structured user feedback cycles—including regular satisfaction surveys with enforced response cycles—would provide the monitoring infrastructure necessary to detect expectation gaps early and correct them before they compound into trust deficits.

The third priority is functional enhancement targeted at the ASN demographic that constitutes the majority user base: experienced, mid-career professionals in functional positions (teachers, healthcare workers) aged 41–50 who are not digital natives. The digital transformation barriers documented by Sudrajat (2024)—70% insufficient technology training, 60% resource constraints, 45% resistance to change—cannot be addressed through system redesign alone. They require sustained human capital investment: structured SimASN user competency programs integrated into mandatory civil service

training requirements; dedicated help desk support with response time commitments; and peer-coaching programs leveraging the 56.0% of respondents who have used SimASN for over four years as internal champions. The "lost traction" phenomenon identified by Mishra et al. (2023) can be countered by converting early adopters into institutional advocates whose positive experience narratives reinforce trust formation among less engaged colleagues.

5. Conclusions

5.1. Conclusion

This study tested an extended ECM framework integrating Trust within the context of SimASN, a mandatory G2E e-government system in Gorontalo Province, Indonesia. From 13 tested hypotheses, 12 were supported. The key findings are: (1) Trust is the strongest direct predictor of Continuance Intention to Use ($\beta = 0.410$), followed by Satisfaction ($\beta = 0.346$) and Perceived Usefulness ($\beta = 0.229$); (2) Expectation Confirmation exerts its influence on CIU entirely through mediated pathways, with EC → TR → CIU (0.230) as the leading route, closely paralleled by EC → SA → CIU (0.215); (3) Trust and Satisfaction operate as co-equal, statistically significant parallel mediators of both PU → CIU and EC → CIU, with Trust holding a marginal edge; and (4) the model achieves strong predictive power (R^2_CIU = 0.675, SRMR = 0.060).

Theoretically, this study extends ECM by demonstrating that Trust operates as a leading psychological mechanism co-equal with Satisfaction and marginally dominant in mandatory G2E systems handling sensitive data, and that the conventional ECM without Trust underspecifies important variance in continuance intention. Practically, it provides an evidence base for prioritizing trust-building investments particularly in data security and expectation alignment as the most effective strategy for sustaining SimASN engagement among Gorontalo's civil servants.

This study has several limitations. The cross-sectional design limits causal inference. The single-province, mandatory-system context may constrain generalizability to voluntary or multi-jurisdictional e-government settings. Future research should employ longitudinal designs, test the model in voluntary G2C contexts, and further examine how the relative weight of the trust- and satisfaction-based mediating channels shifts across institutional settings of differing data sensitivity.

5.2. Research Limitations

The cross-sectional design limits causal inference. Although the ECM and its parent ECT describe a temporally unfolding process pre-adoption expectations evolving through usage into post-adoption confirmation, satisfaction, trust, and continuance the present study captures these constructs at a single point in time and therefore tests the theorized relationships among accumulated post-adoption states rather than their longitudinal evolution. This is consistent with the predominant practice in cross-sectional PLS-SEM continuance research, but it cannot establish the temporal ordering the theory implies. A second limitation concerns sampling: data were collected through self-administered Google Forms, and the 200 analyzed responses represent approximately 3.3% of the 6,105-member ASN population. While the respondent profile closely mirrors the population demographics, voluntary online participation introduces a risk of self-selection bias, such that the most disengaged users are likely underrepresented; the findings therefore generalize most safely to actively engaging ASN. Third, the Continuance Intention instrument retained two items frequency of use and recommendation to colleagues originally developed and validated for voluntary IS contexts. In a mandatory G2E setting these items are interpreted as indicators of the intensity and quality of discretionary engagement rather than of a free adopt-or-abandon choice; nonetheless, their full appropriateness to compulsory-use environments warrants refinement and re-validation in future work. The single-province, mandatory-system context may further constrain generalizability to voluntary or multi-jurisdictional e-government settings.

5.3 Suggestions and Directions for Future Research

Future research should employ longitudinal or process-oriented designs to capture the temporal evolution that ECT theorizes, test the model in voluntary G2C contexts, refine and re-validate the

continuance-intention measures for compulsory-use settings, and further examine how the relative weight of the trust- and satisfaction-based mediating channels varies with data sensitivity, usage tenure, and institutional culture.

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Author Contributions
All authors made substantial contributions to this research. FPE led the study by formulating the research concept, designing the methodology, and carrying out the data collection process. HF played a key role in shaping the research framework, performing data analysis, and refining the interpretation of the findings. Both authors have reviewed and approved the final manuscript for publication.

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