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A Citizen-Centered Multidimensional Evaluation of Electronic Public Services: Framework Development and Measurement Specification

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Abstract: The evaluation of electronic public services remains conceptually fragmented, as existing approaches often focus either on service quality attributes or on technology adoption mechanisms without fully integrating citizens' expectations and post-use evaluations. This paper addresses this gap by proposing a multidimensional evaluation framework for electronic public services that combines expectancy–disconfirmation logic with established technology acceptance theories. Drawing on the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), the framework positions adoption-related beliefs as antecedents shaping citizens' expectations and interpretations of service performance. The paper follows a conceptual and measurement-oriented approach. It systematically reviews major model families used in citizen-centered evaluation of electronic public services and synthesizes their key constructs into a coherent evaluation logic. This logic is subsequently translated into structured measurement specification (construct architecture, item blocks, and response formats) for future empirical application. The paper contributes by clarifying construct roles and separability in e-government evaluation and by providing a coherent operational template that supports diagnostic interpretation of whether negative evaluations primarily reflect weak perceived performance, unmet expectations, or their mismatch.

Keywords: citizen satisfaction; expectancy–disconfirmation; survey design; service quality measurement; adoption beliefs; trust in digital government; post-adoption evaluation; public sector digitalization

JEL Classification: D73; H11; L86; O33

1. Introduction

Digital transformation of public service delivery remains a strategic priority for governments worldwide, reflected in ongoing policy initiatives and comparative benchmarks of e-government development. In the European Union, the eGovernment Benchmark shows both progress and persistent disparities in digital service maturity across member states, underscoring the need for robust evaluation mechanisms that capture how citizens interact with and perceive digital public services across levels of public administration (European Commission, 2023). Contemporary digital government strategies

further emphasize that effective e-services are not merely technological artefacts but also require organizational change, citizen-centered design, and measurable outcomes in efficiency, transparency, and accessibility. Yet governments continue to face challenges in delivering satisfactory citizen experiences. In particular, mismatches often persist between e-government offerings and citizens' needs and preferences, frequently linked to limited user involvement and insufficient understanding of citizen expectations (Sharma et al., 2018; Patergiannaki & Pollalis, 2023).

Recent research highlights the multidimensional nature of e-government evaluation, integrating service quality, perceived value, trust, and satisfaction into broader explanatory models. Evidence suggests that service design features (e.g., usability and interactive support) shape technology-related perceptions that influence perceived service quality and continuance intentions (Chan et al., 2025), while other work links satisfaction with trust and ongoing engagement, pointing to the importance of considering both behavioral endpoints and post-use evaluative constructs (Kala et al., 2024). Despite these advances, prior research often follows either a techno-centric perspective focused on adoption models (e.g., UTAUT) or a service-centric perspective centered on generic service attributes. While useful, these approaches can blur the distinction between expectations, experienced performance, and outcomes, and may offer limited diagnostic guidance for public-sector service improvement. A public value perspective further motivates evaluation frameworks that focus on citizens' collective expectations and assessments of value created through government activity (Moore, 1995; MacLean & Titah, 2022).

This paper develops a multidimensional evaluation framework for electronic public services anchored in expectancy–disconfirmation logic and connected to a parsimonious adoption layer. The integrated logic is translated into an operationalizable measurement specification for future empirical application, and the paper concludes with implications, limitations, and directions for validation.

2. Theoretical Background

2.1. Expectancy-Disconfirmation Model

The EDM explains citizen satisfaction as the outcome of comparing prior expectations with experienced performance (Oliver, 1980). The core constructs are expectations, perceived performance, disconfirmation (expectation-performance gap), and satisfaction. Disconfirmation is positive when performance exceeds expectations and negative when performance falls short, which is why satisfaction is commonly treated as a central outcome in public service evaluation (Van Ryzin, 2006). EDM is diagnostically useful because it separates what citizens expected from what they perceived. However, results can be sensitive to how disconfirmation is measured (computed difference vs direct "met expectations" item), complicating interpretation in cross-sectional surveys (Van Ryzin, 2006). EDM also does not explicitly model broader antecedents of expectations (e.g. trust), which can matter in public-sector contexts (Morgeson, 2013). Accordingly, survey designs benefit from paired

expectation-performance items complemented by at least one direct met-expectation measure.

2.2. Technology Adoption beliefs (TAM and UTAUT)

Technology adoption theories provide a structured way to explain how citizens form evaluations of digital services and how these evaluations translate into intentions and continued use. Technology acceptance model (TAM) focuses on two parsimonious belief constructs (perceived usefulness and perceived ease of use) as key drivers of attitudes and behavioral intention (Davis, 1989). Its strength is simplicity and strong performance in survey research, with flexibility for extensions (Belanche et al., 2012). For eGovernment evaluation, however, TAM can be limited by its largely individual-level, pre-use orientation and weaker coverage of contextual constraints typical for public services.

Unified theory of acceptance and use of technology (UTAUT) broadens this lens by combining belief-based and contextual mechanisms: performance expectancy, effort expectancy, social influence and facilitating conditions predict behavioral intention and use (Venkatesh et al., 2003). This broader scope is valuable in public-sector settings where digital skills, enabling resources, and social norms may vary across citizen groups. At the same time, full UTAUT specifications can become measurement-heavy and context-sensitive, especially when moderators are included, requiring careful adaptation and adequate sample sizes (Venkatesh et al., 2003; Hujran et al., 2023). In evaluation-oriented survey designs, moderators are therefore often treated as controls capturing heterogeneity in citizens' capabilities and usage conditions.

2.3. Service Quality–Based Approaches

Service quality models specify what citizens evaluate during service interaction and provide validated measurement dimensions that are actionable for service improvement. E-S-QUAL captures routine online service quality through efficiency, fulfilment, system availability, and privacy, while E-RecS-QUAL addresses non-routine recovery experiences, responsiveness, compensation and contact (Parasuraman et al., 2005). In eGovernment context, extended instruments such as EGSQUAL incorporate attributes that are especially salient in public digital services, for example information quality, interactivity, assistance or interface features (Aljukhadar et al., 2022).

The main limitation of service quality models is that they are primarily descriptive. They identify perceived strengths and weaknesses but explain less clearly how perceptions translate into satisfaction and continued use without complementary cognitive and adoption mechanisms. For this reason, service quality measures are most informative when integrated with other models, such as EDM, TAM or UTAUT that link perceived performance to post-use outcomes (Verdegem & Verleye, 2009; Alruwaie et al., 2020).

2.4. Trust-based Approaches

In digital public administration, citizen evaluations also depend on trust in the institutions and technological infrastructure behind digital services. Trust helps reduce

uncertainty and perceived risk, strengthening links between perceived quality and behavioral intentions (Carter & Bélanger, 2005; Welch, 2004). The literature often distinguishes trust in government/institutions, trust in technology and interpersonal trust (Bélanger & Carter, 2008; Welch, 2004; Hujran et al., 2023). However, trust is context dependent and can be recursively related to satisfaction. This recursion complicates mediation claims in cross-sectional surveys and motivates treating trust primarily as a contextual control (or, at most, a cautiously interpreted moderator) when the focus is on service evaluation and questionnaire-based modelling (Bélanger & Carter, 2008; Welch, 2004; Morgeson, 2013).

3. Methodology

This paper demonstrates how technology adoption theories (TAM and UTAUT) can be used to evaluate electronic public services by developing a multidimensional evaluation framework anchored in expectancy–disconfirmation logic and operationalizing its constructs into a measurement specification (item pool, scale structure, and response formats). The study is conceptual and measurement-oriented; it does not administer a survey, conduct a pilot, or report original empirical data. The methodology therefore documents the procedure used to (i) identify relevant constructs, (ii) integrate them into a coherent evaluative logic, and (iii) translate them into an operational template suitable for future empirical application.

3.1. Evidence Base and Literature Selection Strategy

The evidence base consists of established model families widely used in research on technology adoption and citizen evaluation of digital public services: TAM, UTAUT, expectancy–disconfirmation approaches, service quality–based approaches, and trust-based approaches. Sources were prioritized when they (i) represent theoretically established constructs with frequent use in the relevant literature and (ii) provide scales or measurement practices that can be implemented concisely in a questionnaire format.

3.2. Construct Inclusion Criteria and Reduction Rules

Candidate constructs were screened using two criteria: (i) theoretical establishment and frequent use in technology adoption and eGovernment evaluation research and (ii) feasibility of concise measurement using survey scales. A reduction step was applied to maintain parsimony and avoid redundancy. Where constructs substantially overlapped across model families, they were mapped onto shared proxy dimensions to preserve explanatory coverage while keeping the operationalization feasible for future empirical studies.

3.3. Framework Synthesis Procedure

Framework synthesis proceeded in three steps: (1) Construct inventory: Constructs extracted from the selected model families were listed and provisionally grouped by their role in the evaluation process (evaluative constructs, belief-based antecedents, service-encounter attributes, and contextual factors). (2) Conceptual structuring: The groups were arranged to reflect the temporal logic of service evaluation. Service-encounter attributes were

organized into candidate, interpretable dimensions intended for subsequent empirical validation, ensuring the framework remains actionable for service improvement. (3) Minimal relationship specification: A minimal set of relationships was specified to support expectancy–disconfirmation evaluation while integrating adoption beliefs as upstream determinants, without expanding the framework into a measurement-heavy specification.

3.4. Measurement Operationalization

The framework was operationalized through construct-to-item alignment, resulting in an operational template (item pool and block structure). All attitudinal items are specified as 7-point scales. The measurement template is organized into blocks covering: (a) service context and usage conditions, (b) expectations, (c) perceived performance, (d) belief-based constructs from adoption theories, (e) self-efficacy and capability constraints, (f) a service quality item pool, (g) outcomes (with overall satisfaction as the primary dependent variable), and (h) controls, including contextual factors. To mitigate known sensitivity in expectancy–disconfirmation measurement, expectations and perceived performance are specified as matched attribute-level items enabling index construction and gap scores, complemented by at least one direct "met expectations" item.

3.5. Planned Validation in Future Empirical Application

Because the operationalization is not administered in this paper, dimensionality, reliability, and model relationships are not empirically tested here. The intended next step is empirical validation, including assessment of dimensionality and reliability (e.g., factor-analysis procedures) and robustness checks for alternative disconfirmation operationalization's (gap-based versus direct measures).

4. Results

The primary result of this study is the development of a coherent, multidimensional evaluation framework that integrates expectancy–disconfirmation logic with technology adoption theories and service quality perspectives. The framework clarifies the roles of expectations, perceived performance, and disconfirmation as core evaluative mechanisms, while positioning adoption-related beliefs as antecedents shaping how citizens interpret their service experience (Figure 1). By explicitly separating these components, the framework addresses a common limitation of prior e-government evaluation studies, which often conflate perceptions, beliefs, and outcomes into single latent constructs (Sharma et al., 2018).

A second contribution is the translation of the framework into an operationalizable measurement specification. The proposed instrument aligns adoption beliefs (benefits beliefs grounded in TAM/UTAUT) with expectation formation, while service quality attributes define the content of perceived performance. This structure enables evaluators to distinguish whether dissatisfaction arises primarily from unmet expectations, weak perceived performance, or their mismatch, which is central to public service satisfaction research (Van Ryzin, 2006; Morgeson, 2013). Trust is included as a contextual control to account for

institutional and technological legitimacy effects without conflating them with perceived service quality (Carter & Bélanger, 2005; Welch, 2004).

4.1. Evaluation Backbone: Expectancy, Performance, Disconfirmation, Satisfaction

At its core, the framework (Figure 1) adopts expectancy–disconfirmation logic and distinguishes four analytically separable constructs: expectations (E), perceived performance (P), disconfirmation (D), and overall satisfaction (S). Consistent with established applications in public service evaluation, expectations and perceived performance jointly determine disconfirmation, and disconfirmation is a central predictor of satisfaction (Van Ryzin, 2006).

A key measurement implication is that perceived performance should not be captured only as a single global impression. Instead, perceived performance is operationalized as attribute-level appraisals reflecting concrete facets of the service experience (for example usability, reliability, security, and information quality), which supports diagnostic interpretation and aligns with citizen survey practices linking facet ratings to overall satisfaction (Van Ryzin, 2006).

To address sensitivity in the measurement of disconfirmation, the framework adopts a dual operationalization. First, disconfirmation can be computed as a subtractive gap score based on matched expectation and performance measures. Second, disconfirmation is captured by at least one direct perceived confirmation/disconfirmation item (for example met or exceeded expectations). This dual approach supports interpretability when difference scores are noisy in cross-sectional survey designs (Van Ryzin, 2006).

4.2. Adoption and Behavioral Outcomes

The framework incorporates technology acceptance theory as a linking layer between post-use evaluation and behavioral outcomes (Figure 1). Consistent with UTAUT, behavioral intention is retained as the primary behavioral endpoint, and use behavior is included where feasible (Venkatesh et al., 2003).

To maintain parsimony and avoid redundancy with attribute-level evaluation, the adoption layer retains perceived benefits (usefulness/performance expectancy) as a higher-level value belief, while ease of use/effort is captured diagnostically within the matched attribute-level expectations and performance measures rather than as a separate adoption construct. Benefit beliefs are positioned as antecedents that can shape expectation formation and support interpretation of how evaluative judgements translate into behavioral intention (Venkatesh et al., 2003).

In post-use settings, behavioral endpoints may be operationalized as behavioral intention and related signals (e.g., intention to reuse or recommend), which u can see in Figure 1. Empirical evidence from online public service contexts links confirmation of expectations to intention and positive word of mouth, supporting inclusion of post-evaluation behavioral intentions in the model (Belanche et al., 2012).

4.3. Attribute-based Performance Measurement

Service quality models are incorporated as a measurement layer defining the substantive content of perceived performance and matched expectations. Accordingly, service quality attributes are treated as the operational content of E and P rather than as a competing explanatory model (Figure 1). This operationalization is consistent with E-S-QUAL, where efficiency, fulfilment, system availability, and privacy capture normal-use service quality, and complementary recovery dimensions capture non-routine problem handling (Parasuraman et al., 2005).

For governmental contexts, specialized instruments provide tailored attribute pools. In particular, EGSQUAL offers government-website-specific dimensions and validated item pools suited for evaluating public sector digital services (Aljukhadar et al., 2022).

4.4. Capability Constraints: Self-efficacy

Beyond core TAM/UTAUT belief constructs, the framework includes self-efficacy as a capability constraint relevant in heterogeneous citizen populations. Self-efficacy is operationalized as confidence in completing e-service procedures and handling difficulties independently, and it is treated as distinct from service quality attributes because it captures user capability rather than service characteristics. This approach is consistent with eGovernment evaluation studies that measure self-efficacy explicitly through survey items capturing confidence and independent task completion (Alruwaie et al., 2020).

4.5. Trust as a Control Construct

Finally, trust is included as a contextual factor relevant to eGovernment adoption and evaluation. Prior work distinguishes trust in government and trust in the Internet/technology channel as relevant beliefs associated with citizens' willingness to transact online with government (Carter & Bélanger, 2005; Welch, 2004).

However, because trust and satisfaction can be mutually reinforcing in cross-sectional self-report designs, the framework positions trust primarily as a contextual control rather than a central mediator. This choice is consistent with arguments that broader institutional predispositions can shape citizens' expectations entering the service encounter and complicate causal interpretation if treated as an endogenous mediator (Morgeson, 2013).

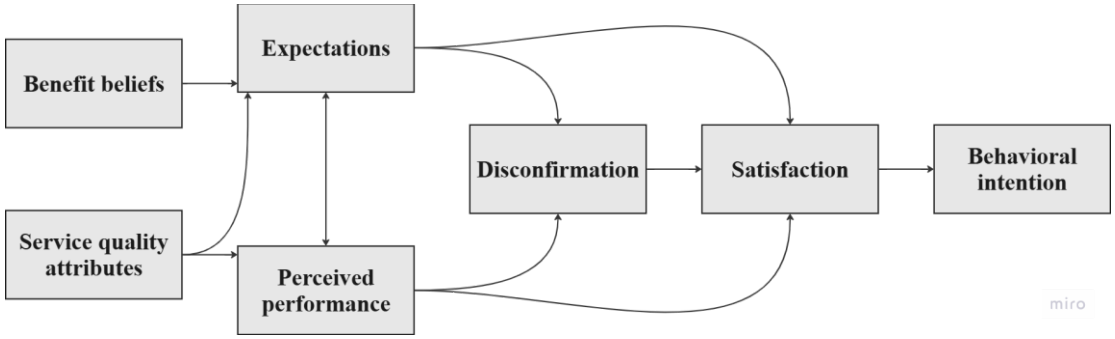

Figure 1. Evaluation framework linking expectations, performance, and behavioral intention

Note: The figure should be read from left to right; Control and contextual variables are not depicted in the figure but are specified in the measurement operationalization.

4.6. Measurement Operationalization

Tables 1 and 2 summaries the measurement operationalization of the proposed framework.

Table 1. EDM backbone: constructs and operationalization

Construct	Role in framework	Operationalization
Expectations (E)	Pre-use expectations about service attributes (baseline for later comparison).	Attribute-level expectations phrased in future/anticipated terms (matched to P items). Example format: "I expected that the service would be … (easy to use / reliable / secure)." (7-point scale)
Perceived performance (P)	Post-use appraisal of the same service attributes experienced in the encounter.	Matched attribute items phrased as perceived performance. Example: "The service was … (easy to use / reliable / secure)." (7-point scale)
Disconfirmation (D)	The (mis)match between E and P; central mechanism linking experience to satisfaction.	Two complementary approaches: (1) computed gap: (D_i = P_i - E_i) + aggregated indices; (2) direct confirmation item (global): "Overall, the service met my expectations" (7-point scale)
Satisfaction (S)	Overall post-use evaluation (primary dependent variable in the framework).	Global satisfaction item(s). Example comparative wording used in EDM work: "How satisfied or dissatisfied are you with …?" (7- point scale)

Table 2. Adoption/value layer, behavioral endpoints, capability and context

Construct	Role in framework	Operationalization
Behavioral intention (BI)	Post-evaluation behavioral endpoint	2–3 items on intention (future-oriented). UTAUT uses a 3-item intention scale. Intention to use/reuse the service or recommend to others. (7-point scale)
Benefit beliefs	Perceived value/goal attainment	2–3 global value items (7-point scale), e.g., "Using this e-service helps me complete the task effectively / saves time / improves efficiency." Not computed as a gap score and not an attribute facet.
Self-efficacy (SE)	Citizen capability/confidence to complete the service successfully (constraint layer linked to effort and support).	2-3 confidence items: Examples: "I could use eGov services if I wanted to"; "I could use eGov services if there was no one around to tell me what to do" (7-point scale)
Attribute pool for E and P (core)	Content of matched E and P	Use validated domains and select concise items per domain: Efficiency (e.g., ease of finding what is needed), System availability, Privacy, Fulfillment (7-point scale)
Attribute pool for E and P (eGov-specfic)	Context tailoring for E/P	Example items shown in instrument: "The government's website provides accurate information"; "The government's website provides personalized information"; "The government's website has an appealing design." (7-point scale)
Service context and user characteristics	Heterogeneity and boundary conditions (voluntariness, experience, skills), used mainly as controls/moderators.	Service type, channel, frequency, prior experience (7-point scale; voluntariness (7-point scale). Add demographics and digital skills items as controls.

All attitudinal indicators use 7-point scales. Expectations (E) and perceived performance (P) are measured with matched attribute-level items (including usability/effort as service

attributes), enabling disconfirmation to be captured both as a computed gap score (P – E) and via a direct confirmation/disconfirmation item to improve interpretability in cross-sectional designs (Van Ryzin, 2006). To preserve the meaning of matched E–P comparisons, the instrument is intended to evaluate one specified electronic public service (ideally one recent service encounter) per questionnaire. Possible extensions with additional control variables and behavioral endpoints are provided in Appendix (Full Table 2).

5. Discussion

This paper contributes to e-government evaluation research by integrating adoption-oriented and evaluation-oriented traditions within a single, connected evaluative logic. Technology acceptance models such as TAM and UTAUT provide robust explanations of behavioral intention and use, yet they do not explicitly represent the post-use mechanism central to public service performance assessment, namely the separation of expectations, experienced performance, and their comparison through disconfirmation (Venkatesh et al., 2003; MacLean & Titah, 2022). Embedding behavioral endpoints and parsimonious value beliefs within an expectancy–disconfirmation structure therefore offers a clearer account of how citizens arrive at satisfaction judgements and how these judgements relate to post-adoption intentions (Verdegem & Verleye, 2009; Alruwaie et al., 2020).

A key theoretical implication is improved construct separability in a domain where beliefs, perceptions, and outcomes are often collapsed into broad latent variables. In public-sector contexts, expectations are shaped not only by prior experience but also by institutional predispositions and legitimacy perceptions, which can bias subsequent evaluation (Morgeson, 2013). Treating perceived benefits (usefulness/performance expectancy) as a higher-level value belief and retaining behavioral intention as an endpoint, while operationalizing ease of use/effort primarily as attribute-level content of expectations and perceived performance, strengthens conceptual clarity and reduces redundancy in measurement. Positioning trust as a contextual control rather than a central mediator further limits endogeneity concerns and supports interpretation in cross-sectional designs (Carter & Bélanger, 2005; Welch, 2004; Morgeson, 2013).

Methodologically, the framework implies a measurement strategy prioritizing interpretability and diagnostic value. Matched expectation–performance items enable attribute-level diagnosis, allowing evaluators to locate dissatisfaction in concrete service facets rather than relying on global impressions (Van Ryzin, 2006). The dual operationalization of disconfirmation (computed gap scores complemented by a direct confirmation/disconfirmation item) addresses known sensitivity in EDM measurement and provides a practical robustness check in cross-sectional surveys (Van Ryzin, 2006). Positioning service quality scales as the attribute-level content of expectations and performance facilitates the use of validated item pools while keeping the evaluative mechanism explicit (Parasuraman et al., 2005; Aljukhadar et al., 2022). Including self-efficacy as a capability constraint further improves diagnostic interpretation by distinguishing service deficiencies from user capability barriers (Alruwaie et al., 2020).

For empirical analysis, future applications can estimate the framework using regression-based models or structural equation modelling, with confirmatory factor analysis to validate dimensionality and reliability of the measurement structure. Where feasible, linking survey responses to usage logs and employing two-wave (pre-/post-use) designs would strengthen behavioral measurement and reduce ambiguity in expectation and disconfirmation measurement (Venkatesh et al., 2003; Van Ryzin, 2006). In practice, the framework supports targeted interventions: weak perceived performance suggests redesign of usability, reliability, information quality, or support; expectation-driven dissatisfaction points to improved communication and guidance; and trust deficits indicate a need for assurance and legitimacy-building measures beyond the interface (Moore, 1995; MacLean & Titah, 2022).

5.1. Study Limitation

The study is conceptual and does not provide empirical estimates. Many applications will rely on cross-sectional self-report data, where expectations may be measured retrospectively and relationships may be affected by common-method bias. Disconfirmation is also sensitive to operationalization: gap scores (P – E) can be noisy and mechanically related to their components; therefore, robustness checks comparing gap-based and direct confirmation measures are recommended (Van Ryzin, 2006). Finally, the framework prioritizes parsimony for survey feasibility and does not model dynamic feedback processes (e.g., satisfaction shaping future expectations or trust), which would require longitudinal validation across services and contexts.

6. Conclusions

This paper proposes a multidimensional framework for evaluating electronic public services that integrates expectancy–disconfirmation logic with a parsimonious adoption layer and attribute-based service quality measurement. By combining EDM's core mechanism (expectations, perceived performance, disconfirmation, satisfaction) with benefit beliefs and behavioral endpoints from TAM/UTAUT, and by treating service quality domains as the attribute-level content of expectations and performance (including usability/effort as service characteristics), the framework clarifies how citizens form evaluations and how these evaluations translate into satisfaction and post-use intentions. The framework is translated into operationalizable measurement specification using matched attribute-level E/P items, dual disconfirmation operationalization (gap scores and a direct confirmation item), and contextual controls such as trust.

The study has several limitations. The framework is conceptual and has not yet been empirically validated, and many applications will rely on cross-sectional self-reports where expectations may be elicited retrospectively and disconfirmation is sensitive to operationalization. The proposed relationships are intentionally parsimonious to support measurement feasibility and may not capture dynamic feedback processes that require longitudinal designs.

Future research should validate the measurement structure psychometrically, assess reliability and discriminant validity, and test the implied relationships across different

service types, administrative levels, and citizen groups. Where feasible, two-wave pre-/post-use designs and linkage to usage logs would strengthen behavioral measurement and reduce ambiguity in expectation and disconfirmation measurement. Despite these constraints, the framework provides a theoretically grounded and adaptable foundation for citizen-centered evaluation and supports more precise diagnosis of whether negative evaluations arise from weak perceived performance, unmet expectations, or their mismatch.

Conflict of interest: none

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Appendix

Appendix A: Full table 2

Table 2. Adoption/value layer, behavioral endpoints, capability and context with possible extensions

Construct	Role in framework	Operationalization
Behavioral intention (BI)	Post-evaluation behavioral endpoint	2–3 items on intention (future-oriented). UTAUT uses a 3-item intention scale. Intention to use/reuse the service or recommend to others. (7-point scale)
Use Behavior (UB)	Actual usage (frequency/duration), i.e., the behavioral end of UTAUT.	Prefer objective logs when feasible; UTAUT reports usage measured as duration via system logs. If not feasible: self-reported frequency/recency (last use, number of uses in period).
Benefit beliefs	Captures goal attainment / overall value of using the e-service (does it help the citizen accomplish the task). shape expectation formation (people who believe the service is valuable may enter with higher expectations).	2–3 global value items (7-point scale), e.g., "Using this e-service helps me complete the task effectively / saves time / improves efficiency." Not computed as a gap score and not an attribute facet;
Self-efficacy (SE)	Citizen capability/confidence to complete the service successfully (constraint layer linked to effort and support).	2-3 confidence items: Examples: "I could use eGov services if I wanted to"; "I could use eGov services if there was no one around to tell me what to do"
Core e-service quality (E-S-QUAL domains)	Attribute content of P (and matched E): what exactly citizens evaluate during normal use.	Use validated domains and select concise items per domain: Efficiency (e.g., ease of finding what is needed), System availability, Privacy, Fulfillment
eGovernment-specific quality (EGSQUAL)	Public-sector specific attributes often missing from generic e-service quality (information, assistance, security, aesthetics).	Example items shown in instrument: "The government's website provides accurate information"; "The government's website provides personalized information"; "The government's website has an appealing design."
Service context and user characteristics	Heterogeneity and boundary conditions (voluntariness, experience, skills), used mainly as controls/moderators.	Service type, channel, frequency, prior experience; voluntariness can be measured on a 7-point nonvoluntary-voluntary scale (in UTAUT design). Add demographics and digital skills items as controls.
Controls	Captures heterogeneity in digital capability and context: improves interpretability and allows group comparisons.	Age, gender, education, prior experience with public services, voluntariness, mandatories.
Trust in government (institutional trust)	Context factor shaping expectations and evaluations; treated as control due to reciprocal links with satisfaction.	Example item: "I trust the government agency behind the e-government service."

Trust in technology/Internet	Confidence in the channel/infrastructure; affects risk perception and willingness to transact.	Example item: “I trust the Internet as a medium for electronic commerce.” (Adapt for eGov context: “as a medium for transacting with government”).
Social influence (SI)	Normative pressure or expectations from important others (optional extension).	Example items: “People who influence my behavior think that I should use the system”; “People who are important to me think that I should use the system.”
Facilitating conditions (FC)	Perceived availability of support/resources/knowledge enabling use (optional extension).	Example items: “I have the resources necessary to use the system”; “I have the knowledge necessary to use the system”; “A specific person (or group) is available for assistance with system difficulties.”