E-government and the reality gap: Analysis of user perceptions of the SIMANTAP application at BKPP Bojonegoro using the TAM 3 approach

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Abstrak

Rapid digital transformation has encouraged local governments to adopt e-government systems to improve efficiency, transparency, and accountability. However, many digital public service applications still face a design–reality gap that affects user acceptance and long-term adoption. This study analyzes the acceptance of the SIMANTAP (Integrated Apparatus Management Information System) application implemented by the Civil Service, Education, and Training Agency (BKPP) of Bojonegoro Regency, East Java. The research integrates the Technology Acceptance Model 3 (TAM 3), Innovation Diffusion Theory (IDT), and Digital Era Governance (DEG) to provide a comprehensive understanding of factors influencing civil servants' behavioral intentions. Using a quantitative approach, data were collected from 324 civil servants who had used SIMANTAP for at least three months and analyzed using Partial Least Squares–Structural Equation Modeling (PLS-SEM). The results indicate that perceived usefulness significantly influences behavioral intention, while perceived ease of use significantly affects perceived usefulness but not behavioral intention, reflecting the mandatory nature of system use. The findings also reveal several design–reality gaps related to system complexity, digital literacy, data integration, and organizational culture. This study contributes to e-government literature by offering an integrative analytical framework and provides practical recommendations for improving digital personnel management systems in the public sector.

Keywords: e-government, technology acceptance, TAM 3, SIMANTAP, digital governance, public sector innovation.

1. PENDAHULUAN

Rapid technological advancement has transformed how governments deliver public services, particularly through the adoption of digital platforms designed to enhance efficiency, effectiveness, transparency, and accountability. This direction aligns with Presidential Instruction No. 3 of 2003, which outlines national policies and strategies for strengthening e-government as part of realizing good governance. Nevertheless, the development of digital public service applications often does not fully correspond to the actual needs of society. As a result, gaps emerge in the form of inadequate information quality, system security concerns, privacy issues, and suboptimal interface design. These challenges persist partly because many government institutions still view websites or applications merely as administrative compliance tools rather than strategic instruments for improving service quality. Such conditions ultimately influence user acceptance and the long-term adoption of government digital systems.

In East Java Province, the 2019 evaluation of the Electronic-Based Government System (SPBE) reported a "good" rating with an index score of 3.10 (spbe.go.id). One of the regions actively developing e-government initiatives is Bojonegoro Regency. Through the Civil Service, Education, and Training Agency (BKPP), the local government launched the SIMANTAP application (Integrated Apparatus Management

Information System) on October 12, 2021. Intended to support personnel administration and provide integrated information services for civil servants (ASN), SIMANTAP represents a significant digital innovation within the regional bureaucracy. However, as a relatively new system, SIMANTAP still encounters several obstacles, including underdeveloped features, limited user socialization, and varying levels of user engagement.

These issues underscore the importance of understanding how civil servants perceive the usefulness and ease of use of SIMANTAP, as user acceptance serves as a crucial determinant of successful technology adoption. This study employs the Technology Acceptance Model 3 (TAM 3) as its primary framework. TAM 3 explains how external variables—such as system characteristics, user experience, and social influence—shape perceived usefulness and perceived ease of use, which in turn influence behavioral intention. Key indicators in TAM 3 relevant to this research include output quality, job relevance, result demonstrability, computer self-efficacy, perceptions of external control, and computer anxiety. These indicators directly correspond to the challenges faced by SIMANTAP users, particularly in terms of system performance, user capabilities, and perceived benefits in daily administrative tasks.

To provide a broader analytical lens, this study also incorporates the Innovation Diffusion Theory (IDT), focusing on indicators such as relative advantage, compatibility, complexity, and trialability, which help explain how innovations are accepted and assimilated within organizational settings. Additionally, the study draws on Digital Era Governance (DEG) to examine how digital integration, system interoperability, and public value creation influence user responses toward government digital platforms. Together, these theoretical perspectives highlight that technology acceptance is shaped not only by system attributes but also by organizational culture, digital readiness, and the perceived value generated by the technology.

A review of existing literature reveals that prior studies on SIMANTAP predominantly emphasize technical performance, system features, or administrative benefits. However, limited attention has been given to understanding civil servants' acceptance, perceptions, and behavioral intentions as direct users of the system. This represents an important research gap, as the effectiveness of e-government systems depends not merely on their availability, but on users' willingness to adopt and integrate them into their work processes. Despite its importance, an integrative analysis that combines TAM 3, Innovation Diffusion Theory, and Digital Era Governance to explain technology acceptance in a public-sector environment remains largely unexplored.

Addressing this gap, the present study aims to analyze the factors influencing civil servants' acceptance of the SIMANTAP application by integrating perception-based theories and digital governance perspectives. This integrative approach is expected to produce a more comprehensive understanding of how perceived usefulness, perceived ease of use, system innovation, and digital governance practices jointly shape user behavior toward SIMANTAP.

2. METODE

This research employs a quantitative approach because it allows the measurement of relationships among variables through statistical testing based on respondents' perceptions. The quantitative design is relevant for examining user acceptance of the SIMANTAP system by integrating constructs from Technology Acceptance Model 3, Innovation Diffusion Theory, and Digital Era Governance. All variables are measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), which is commonly used to assess perceptions and behavioral tendencies in public sector studies. The population in this research consists of civil servants (ASN) working in the Civil Service, Education, and Training Agency (BKPP) of Bojonegoro Regency who have experience using the SIMANTAP application. To ensure data accuracy, respondents must meet the criteria of being active civil servants and having used SIMANTAP for a minimum of three months. Based on an estimated population of 1,700 individuals, the sample size is calculated using the Slovin formula with a 5% margin of error, resulting in a minimum of 324 respondents. The study applies purposive sampling since the selection of respondents is based on specific usage experience relevant to the research objectives.

Data were collected through an online questionnaire distributed using Google Forms. The questionnaire was developed by operationalizing theoretical indicators derived from TAM 3, Innovation Diffusion Theory, and Digital Era Governance into 55 statement items. Before the full distribution, instrument testing was conducted to ensure measurement accuracy. Validity testing used the Pearson product-moment correlation, in which items with r-values exceeding the r-table threshold were considered valid. Reliability testing employed Cronbach's Alpha, with coefficients of 0.70 or higher indicating internal consistency. Only valid and reliable items were retained for further analysis.

Data analysis was performed using the Partial Least Squares–Structural Equation Modeling (PLS-SEM) technique with SmartPLS 3.0. This method is selected because it is suitable for complex models, does not require normally distributed data, and is widely used in studies involving technology acceptance in the public sector. The analysis process included evaluating the outer model through tests of indicator reliability, composite reliability, convergent validity using the Average Variance Extracted (AVE), and discriminant validity using the Fornell–Larcker criterion. The inner model evaluation consisted of assessing collinearity, determining the significance of structural paths, analyzing the R-square values for predictive accuracy, and examining effect sizes (f-square). Hypothesis testing was conducted using a bootstrapping procedure to determine the significance of causal relationships among constructs. Referring to the focus of this study, only three hypotheses were tested, namely: (1) perceived usefulness affects behavioral intention, (2) perceived ease of use affects perceived usefulness, and (3) perceived ease of use affects behavioral intention. These hypotheses represent the core mechanisms of technology acceptance and align with the objective of explaining the adoption of SIMANTAP among civil servants.

Tabel 1

Tabel Oprasional Definitions Of Variables

No	Variable	Indicators	Operational Definition	Scale
1	Perceived Usefulness (TAM 3 – Venkatesh & Bala, 2008)	PU1, PU2, PU3	The extent to which SIMANTAP enhances effectiveness, efficiency, and productivity in completing administrative tasks.	Likert 1–5
2	Perceived Ease of Use (TAM 3 – Venkatesh & Bala, 2008)	PEOU1, PEOU2, PEOU3	The degree to which SIMANTAP is perceived as easy to understand, operate, and navigate by users.	Likert 1–5
3	Behavioral Intention (Davis, 1989)	BI1, BI2	The intention of civil servants to continue using SIMANTAP and to recommend its use to colleagues.	Likert 1–5
4	Subjective Norm (TAM 2 – Venkatesh & Davis, 2000)	SN1, SN2	The extent to which organizational expectations and peer influence encourage the use of SIMANTAP.	Likert 1–5
5	Relative Advantage (Rogers, 2003)	RA1, RA2	The perceived superiority of SIMANTAP compared to conventional manual administrative processes.	Likert 1–5
6	Compatibility (Rogers, 2003)	COMP1, COMP2	The degree to which SIMANTAP aligns with users' work routines, needs, and job functions.	Likert 1–5
7	Transparency & Accountability (Dunleavy, 2006)	TA1, TA2	The extent to which SIMANTAP supports transparent procedures and strengthens accountability in administrative services.	Likert 1–5
8	Data Integration (Dunleavy, 2006)	DI1, DI2	The extent of SIMANTAP's integration with other personnel information systems for unified data management.	Likert 1–5

3. HASIL DAN PEMBAHASAN

A. Acceptance of the SIMANTAP Application: User Perceptions

The SIMANTAP (Integrated Apparatus Management System) application was developed as part of Bojonegoro Regency's digital transformation agenda in personnel administration. The system was designed to streamline administrative processes, improve data accuracy, and provide more accessible and integrated information services for civil servants. Its implementation was carried out in stages across government units before gradually becoming mandatory. Despite its intended role, field findings indicate that adoption did not progress uniformly. Users reported several operational challenges, including slow data integration, an

interface that was not fully intuitive, and varying levels of digital literacy that required additional training and support.

The outer model results show that user acceptance of SIMANTAP is categorized as valid and reliable, supported by loading factor values ≥ 0.5, Composite Reliability ≥ 0.7, and AVE ≥ 0.5.

Table 2. Summary of Validity and Reliability of SIMANTAP Constructs

Component	Result	Interpretation
Loading Factor	≥ 0.736–0.750	33 indicators valid
Composite Reliability	≥ 0.737–0.752	17 variables reliable
AVE	≥ 0.736–0.750	Meets convergent validity
Discriminant Validity	Achieved	Based on cross-loadings

These results indicate that civil servants' perceptions of SIMANTAP are consistently shaped by perceived usefulness, perceived ease of use, technical support, user experience, and digital readiness.

Key user perception findings include the following:

1. Perceived Usefulness significantly influences the intention to use, indicating that users recognize the benefits of streamlined administrative processes, easier access to personnel data, and increased productivity.
2. Perceived Ease of Use significantly influences perceived usefulness but does not increase behavioral intention, suggesting that use of the system was still driven by mandatory directives.
3. Perceived Enjoyment enhances perceptions of ease of use, showing that positive emotional experience supports better adaptation.
4. Perception of External Control improves ease of use through technical support and training.
5. Complexity has a negative effect on ease of use, indicating the presence of interface and navigational challenges.
6. Compatibility and Trialability significantly strengthen the intention to use SIMANTAP.
7. Experience moderates the ease–intention relationship, showing that users with less digital experience need more support.

Overall, SIMANTAP acceptance can be further improved by enhancing the system's interface, strengthening data integration, and expanding training programs.

B. E-Government and the Design–Reality Gap

E-government in this study refers to the use of digital technologies by local government institutions to enhance public service quality, improve administrative processes, and strengthen transparency and accountability. Effective e-government implementation requires alignment between system design and the organizational realities in which the system operates.

The Design–Reality Gap (Heeks, 2002) framework is used to identify discrepancies between the intended design of a digital system and the actual conditions of its implementation environment. This framework evaluates gaps in user needs, organizational capacity, workflow compatibility, human resources, digital readiness, and data structures.

A significant design–reality gap occurs when the system's conceptual design does not match real-world user capabilities, technological environments, or institutional processes.

C. E-Government and the Design–Reality Gap in User Perceptions of SIMANTAP

The analysis demonstrates that while SIMANTAP was designed to support personnel digitalization, several gaps emerged between system design and user realities. These gaps are reflected in variables that show weak or non-significant effects on user behavior.

1. User readiness gap

   The insignificant effect of Subjective Norm on behavioral intention indicates that SIMANTAP adoption was not driven by social influence. This suggests that cultural and organizational readiness for digital work practices has not fully developed.

2. System complexity gap

   The negative effect of Complexity on perceived ease of use illustrates that parts of the system interface remain misaligned with users' digital competencies, highlighting a technical design–reality gap.

3. Data integration gap

   Even though Data Integration positively influences perceived usefulness, field observations reveal delays and inconsistencies in inter-unit data synchronization. This indicates a gap in organizational data structures and system integration.

4. Training and adaptation gap

   The moderating role of Experience shows that varying levels of digital literacy create unequal adaptation speeds among users. This suggests that system design assumes a higher level of technological proficiency than what exists in practice.

Table 3. Summary of Design–Reality Gap Indicators in SIMANTAP

Aspect	Finding	Indication of Gap
System Complexity	COM → PEOU (negative)	Interface not fully aligned with user capability
Digital Literacy	EXP moderates PEOU → BI	Variations in user adaptation ability
Data Integration	DI → PU (positive, but slow implementation)	Incomplete or unstable data integration
Work Culture	SN → BI (insignificant)	Limited influence of digital work norms

These gaps influence SIMANTAP acceptance in several ways:

1. Interface gaps reduce the impact of perceived ease on behavioral intention.
2. Differences in digital literacy require intensified training to ensure equal user adaptation.
3. Limitations in data integration reduce the perceived efficiency of the system.
4. Cultural gaps indicate that digitalization has not yet fully replaced traditional work practices.

4. KESIMPULAN

The findings of this study demonstrate that the acceptance and use of the SIMANTAP application by civil servants in Bojonegoro Regency are primarily shaped by their perceptions of its usefulness, ease of use, enjoyment, facilitating conditions, and digital experience, all of which significantly support its adoption in personnel administrative services. The analysis reveals that improvements in ease of use and perceived usefulness enhance users' intention to continue utilizing the system, while adequate technical support and positive user experiences further strengthen system acceptance. Field observations indicate that although several factors effectively encourage the adoption of SIMANTAP, some constructs such as compatibility, complexity, trialability, and observability show limited influence on actual usage behavior, suggesting that these aspects may not yet be fully optimized or perceived as impactful by users. Based on these insights, it is recommended that BKPP Bojonegoro continue improving system design, strengthening data integration, expanding user training, and ensuring consistent technical assistance to enhance user readiness and satisfaction. Strengthening these areas is expected to increase system reliability, improve digital service performance, and further support the successful adoption of SIMANTAP within the region's civil service environment.

5. SARAN

The recommendations that the researcher can provide for future studies are as follows:

1. It is necessary to conduct analyses using different theoretical frameworks that may yield new insights regarding the adoption of emerging technologies.
2. Future research is expected to identify the underlying causes of non-significant relationships between variables so that subsequent studies can achieve more optimal results and better alignment with the proposed hypotheses.

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