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Socio-Technical Factors Influencing the Utilization of Integrated Mutation (I-MUT) of the National Civil Service Agency and Their Implications for the Preventive Supervision and Control of Civil Servant Management

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Abstract. Digital transformation in civil servant management depends not only on application availability, but also on regulatory certainty, institutional coordination, data quality, and user capacity. This study examines the factors affecting the utilization of the Integrated-Mutation (I-Mut) service of the National Civil Service Agency (BKN) and formulates optimization strategies. A descriptive qualitative approach was employed through document analysis, service-process observation, and in-depth interviews with 20 internal and external BKN informants. Data were analyzed through reduction, display, conclusion drawing, and SOAR analysis. The findings show that I-Mut has strengthened preventive validation, traceability, and service monitoring. However, utilization remains suboptimal because of unclear operational requirements, uneven coordination, inconsistencies between SIASN and agency personnel systems, varying operator capacity, and connectivity constraints. Priority strategies include regulatory harmonization, data cleansing and API integration, offline-online support for underserved regions, a Single Window Service, a Digital Coaching Center, SLA strengthening, and phased artificial-intelligence-based validation. The study argues that I-Mut should be developed as a merit-based preventive oversight ecosystem rather than merely an administrative application.

Keywords: Civil Service Management; Digital Transformation; GovTech; Integrated-Mutation; Merit System.

1. INTRODUCTION

Digital transformation in Civil Servant Management (ASN) has become an important part of bureaucratic reform because ASN management requires the integration of data, administrative processes, regulations, and supervision on a national scale (Republik Indonesia, 2023). Digitalization is not only directed at accelerating personnel services, but also at improving data accuracy, process transparency, decision traceability, and the consistency of Merit System implementation (Escobar et al., 2023; Republik Indonesia, 2023). Therefore, the success of digital transformation is not sufficiently determined by the availability of technology, but also by the ability to integrate technology, governance, work processes, and user capacity (Bharosa, 2022; Escobar et al., 2023).

The National Civil Service Agency (BKN) uses Integrated-Mutation (I-Mut) through SIASN to support the processes of appointment, transfer, and dismissal of ASN (Badan Kepegawaian Negara, 2024). Circular Letter of the Head of BKN Number 7 of 2024 places the NSPK of ASN Management as the basis for analysis in these processes and emphasizes data updating to support the objectivity and accountability of decisions (Badan Kepegawaian Negara, 2024). This role shows that I-Mut not only functions as a means of digital administration, but also as an instrument of supervision and control before personnel decisions

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are determined (Badan Kepegawaian Negara, 2026; Bharosa, 2022). This function makes the utilization of I-Mut important in preventing the non-compliance of personnel decisions with NSPK and supporting the implementation of the Merit System (Badan Kepegawaian Negara, 2024; Republik Indonesia, 2022, 2023).

However, the utilization of I-Mut has not been fully optimal. Based on the Recapitulation of Adoption, Preventive Supervision and Control, and Operational Data of the Integrated-Mutation (I-Mut) Service of BKN for the period November 2025 to August 2026, there are still 44 government agencies that have not used I-Mut (Badan Kepegawaian Negara, 2026). The recapitulation also shows operational problems in the form of incomplete data, differences in operator capacity, connectivity constraints, variations in understanding of procedures, and the need for coordination among units involved in personnel processes (Badan Kepegawaian Negara, 2026). This condition shows a gap between the obligation to use the system and the ability of agencies to utilize it effectively (Badan Kepegawaian Negara, 2024, 2026). This is important because utilization that is not yet optimal can limit process validation and reduce the scope of preventive supervision over decisions regarding the appointment, transfer, and dismissal of ASN (Badan Kepegawaian Negara, 2024, 2026; Republik Indonesia, 2022).

This condition indicates that the utilization of I-Mut needs to be understood through a socio-technical perspective in GovTech. This perspective views the success of government technology as the result of interactions among governance structures, institutional arrangements, technological development, users, and the context of its implementation (Bharosa, 2022). In the context of I-Mut, these factors are reflected in system quality and integration, clarity of authority and coordination, institutional support, as well as user knowledge and capabilities. Zhou et al., (2022) found that system usefulness, organizational resources, user knowledge, and social influence are related to e-HRM adoption. In the Indonesian public sector, Satispi et al., (2023) showed that technology fit, organizational resources, user knowledge, and social influence affect HRIS adoption. Thus, the utilization of I-Mut can be understood as the result of interactions among technological, institutional, organizational, and user factors.

Previous research findings show that technology adoption does not always produce the same organizational outcomes. Satispi et al., (2023) found that HRIS adoption does not directly produce significant innovation outcomes. In contrast, Theres & Strohmeier, (2024) and Zhou et al., (2022) showed a positive relationship between digital HRM and organizational performance, although the strength of the influence varies. These differences in findings

indicate that the consequences of technology adoption may differ depending on the organizational context, system characteristics, and the functions performed. Therefore, studies on digital personnel systems need to consider not only the factors that drive their adoption, but also how the systems are utilized in supporting more specific organizational functions.

Although GovTech and e-HRM studies have explained the importance of technological, institutional, organizational, and user factors in the implementation of digital systems, there are still aspects that have not been widely explained regarding the relationship between these factors and the utilization of digital personnel systems for preventive supervision functions. Previous literature has more frequently discussed technology adoption factors and their relationship with organizational outcomes in general (Satispi et al., 2023; Zhou et al., 2022). Meanwhile, the relationship between socio-technical factors, system utilization, and the implementation of preventive supervision and control functions in ASN Management is still relatively limited. This gap becomes increasingly relevant in the context of I-Mut because this system is not only used to process the administration of appointment, transfer, and dismissal of ASN, but also supports process validation, compliance with NSPK, and the prevention of non-compliance in personnel decisions (Badan Kepegawaian Negara, 2024, 2026; Republik Indonesia, 2022).

Based on this gap, this study aims to analyze the socio-technical factors that influence the utilization of Integrated-Mutation (I-Mut) BKN and to explain its implications for the preventive supervision and control of ASN Management. The novelty of the study lies in the development of an analytical relationship between technological, institutional, and user factors with the utilization of I-Mut and its function in the preventive supervision of ASN Management. I-Mut is positioned not only as a means of digital administration, but as a socio-technical system that supports the prevention of non-compliance in personnel decisions. The socio-technical perspective of GovTech is used as the main foundation to explain the factors influencing the utilization of I-Mut, e-HRM is used as a supporting foundation to understand the digitalization of personnel processes, while the Merit System serves as the substantive foundation in assessing the supervisory function over ASN Management decisions.

2. LITERATURE REVIEW

Socio-Technical GovTech

GovTech is understood as the utilization of digital technology to improve government capacity, processes, and accountability (Pribadi et al., 2024; Virnandes et al., 2024). The framework used in this study views the success of digital services through four dimensions:

governance structures, institutional arrangements, technological development, and user and context understanding (Mortati et al., 2025). These four dimensions are used as analytical categories, not as quantitative variables.

Governance structures are related to mandates, regulations, leadership, and accountability mechanisms (Kristensen & Andersen, 2023; Margariti et al., 2022). Institutional arrangements include coordination, procedures, division of authority, and compliance. Technological development includes interoperability, reliability, security, and data quality (Margariti et al., 2022).

User understanding includes operator capacity, ease of use, support, and the suitability of the system to the regional context**.**

e-HRM and the Merit System

E-HRM integrates information technology into the human resource management cycle (El Idrissi et al., 2021; Nadim Khan, 2022). In the public sector, such integration needs to be accompanied by the principles of transparency, accountability, and meritocracy (Dwibin Kannapadang et al., 2025; Dwiputrianti et al., 2024). The merit system requires that ASN career decisions be based on qualifications, competencies, performance, and integrity, rather than on subjective interests (Mahyudin et al., 2025). Thus, I-Mut can be understood as an e-HRM instrument as well as an instrument of preventive supervision and control (El Idrissi et al., 2021).

3. RESEARCH METHOD

This study uses a descriptive qualitative approach. The unit of analysis is the utilization of the I-Mut service in the supervision and control process of ASN management at BKN and government agencies as users. Primary data were obtained through in-depth interviews with 20 internal and external informants of BKN. Secondary data include regulations, BKN performance reports, SLA data, proposal recapitulations, and I-Mut operational documents. The study was conducted from August to September 2026.

Informants were selected purposively based on their involvement in policy formulation, verification, technology management, application operation, or submission of personnel proposals. Observations were conducted on the service flow and monitoring functions available in the system. To maintain credibility, data were compared through source and method triangulation. The identities of informants were anonymized and sensitive data are not presented in the article.

Data analysis was carried out through data reduction, grouping of findings, data presentation, and drawing conclusions. Furthermore, SOAR analysis was used to connect strengths and opportunities with aspirations and the results to be achieved. The resulting strategies were then prioritized based on problem urgency, implementation feasibility, service impact, and implementation risk.

This study does not claim a statistically causal relationship. The term "determining factors" is used to refer to factors that consistently emerge in the qualitative data as conditions that influence the utilization of I-Mut.

4. RESULT AND DISCUSSION

Utilization and Benefits of I-Mut

The research data show two important indicators. First, in the JPT filling process for the period January 1–March 25, 2026, I-Mut detected 118 potentially non-compliant proposals out of 5,840 proposals, or 2.02%. Second, in the operational data analyzed, 32,553 proposals, 342,859 ASN issued, and 74,844 non-JPT proposals were recorded. These figures indicate that I-Mut is used under a large service workload and has an initial screening function, but the screening results still require human verification and institutional follow-up (Badan Kepegawaian Negara, 2026).

Table 1. Utilization of I-Mut Services in Government Agencies.

Indicator	Data	Analytical Meaning
I-Mut Adoption, November 2025	551 out of 642 agencies used it; 91 had not used it (14.17%)	The adoption gap is still visible, particularly among central agencies and in some regions.
I-Mut Adoption, August 2026	44 agencies had not used it	There was progress in adoption after the November 2025 period.
JPT Screening, January 1–March 25, 2026	118 out of 5,840 proposals (2.02%) were detected as potentially non-compliant	I-Mut supports early detection before decisions are determined.
Research service workload	32,553 proposals; 342,859 ASN issued; 74,844 non-JPT proposals	System performance needs to be interpreted together with service volume and complexity.

Source: BKN, 2025-2026; Data Processed by the Researcher, 2026.

I-Mut functions as a digital tool for entering, checking, monitoring, and following up on proposals for the appointment, transfer, and dismissal of ASN. This system helps reduce dependence on manual documents and provides process records that can be used in supervision. These benefits strengthen BKN's position as the director and controller of ASN management, while user agencies obtain a service flow that is easier to trace.

Service performance data show an improvement in processing time as the system and procedures have become more mature. In 2026, the average SLA recorded in the Wasdal unit was in the range of approximately 1.4–2.8 days depending on the unit and month of observation. This improvement needs to be interpreted together with the high service workload, namely 32,553 proposals, 342,859 ASN issued, and 74,844 non-JPT proposals in the research dataset. Document completeness, case complexity, legal issues, and data quality continue to affect completion duration (Badan Kepegawaian Negara, 2026).

As a comparison, in January–February 2025, several processes still took around 5–6 working days, while the established SLA was a maximum of 4 working days. These delays were related to the volume of proposals and discrepancies in position history between agency data and SIASN. This finding reinforces that improving the SLA requires data integration, not only increased verifier capacity (Badan Kepegawaian Negara, 2026).

Determining Factors in the Utilization of I-Mut

Table 2. Determining Factors in the Utilization of I-Mut.

Dimension	Main Findings	Consequences
Governance Structure	The obligation to use the system has been established, but roles, compliance, escalation, and consequences have not yet been fully translated operationally.	Differences in commitment among agencies and adoption gaps.
Institutional Arrangements	Internal SOPs and coordination between BKN, Regional Offices, operators, and PPK are not yet uniform.	Repeated clarification and variations in implementation.
Technological Development	SIASN and SIMPEG data are not always aligned; API integration and data quality still need to be strengthened.	Slow validation, repeated input, and the risk of decisions based on outdated data.
User Understanding	Operator capacity, employee rotation, technical support, and connectivity vary across regions.	Input errors, delayed proposals, and uneven adoption.

Source: Data Processed by the Researcher, 2026.

These findings show that the barriers to I-Mut are interconnected. Regulations that are not yet operational weaken coordination. Weak coordination makes data ownership unclear. Inconsistent data increase the burden on operators and prolong the verification process. Therefore, application improvement without institutional improvement risks resulting in administrative digitalization without meaningful improvements in governance.

The Role of Preventive Supervision and Control Based on the Merit System

I-Mut supports preventive supervision and control through the examination of proposals before personnel decisions are determined. Process records in the system help BKN

trace the basis of proposals, examination status, and required follow-up. This function can reduce the possibility of procedural errors, but it does not automatically eliminate the risk of maladministration. Its effectiveness still depends on data accuracy, document quality, PPK authority, and follow-up on system findings.

Thus, I-Mut should be positioned as a merit-based decision-support tool. The system can examine initial completeness and compliance, but the final decision still requires accountability from the authorized official. This principle is particularly important when BKN develops AI-based validation so that system recommendations are not treated as automatic decisions that cannot be explained.

Optimization Strategy Based on SOAR

Table 3. Research Findings Based on SOAR.

SOAR Component	Research Findings
Strengths	Commitment of BKN leadership; preventive function; digital flow; reach of Regional Offices; initial integration with SIASN.
Opportunities	Strengthening SPBE; improvement of ASN regulations; cross-system APIs; demands for transparency; AI development; appreciation schemes.
Aspirations	National adoption; Single Window Service; Digital Coaching Center; up-to-date ASN data; explainable real-time validation.
Results	More consistent SLA; reduced data anomalies; fewer complaints and disputes; increased compliance with NSPK

Source: Data Processed by the Researcher, 2026.

Based on this synthesis, the initial strategy needs to focus on regulatory harmonization, data cleansing and API integration, as well as offline-online support for regions with limited connectivity. Further strategies may include Single Window Service, rewards and measurable corrective actions, as well as gradual AI validation. This sequence is important because AI and one-stop services will not work well if data ownership, process standards, and user readiness are not yet clear.

Implementation Implications and Leading Actor

Table 4. Leading Actor in Optimizing the Utilization of I-Mut.

Leading Actor	Implementation Role
Deputy for Wasdal BKN	• Establish guidelines, process standards, compliance indicators, and national evaluation. • Control verification, SLA, escalation, audits, and corrective actions.
Deputy for Sidigi BKN	Ensure data quality, APIs, security, performance, and technological development.
BKN Regional Offices	Serve as centers for assistance, coaching, and addressing regional gaps.
PPK, PyB, and Agency Operators	Ensure that decisions, input, data updates, and documents comply with NSPK.

Source: Data Processed by the Researcher, 2026.

This division of roles shows that optimizing I-Mut is a cross-actor agenda. BKN Headquarters, in this case the Deputy for Wasdal BKN, functions as the director, the Deputy for Sidigi BKN as the manager of the technical foundation, Regional Offices as operational links, and user agencies as data owners and process implementers. Clarity regarding action ownership is required so that every barrier has a resolution pathway and evaluation indicators

5. CONCLUSION

The utilization of I-Mut has strengthened preventive validation, proposal traceability, and the monitoring of ASN management services. However, its utilization has not yet been optimal because the issues are socio-technical in nature. The main barriers include the lack of operational clarity in regulations, institutional coordination that is not yet uniform, data discrepancies across systems, variations in user capacity, and connectivity limitations.

The optimization strategy needs to be implemented sequentially. The first stage includes regulatory harmonization, data cleansing, API integration, and support for regions with network limitations. The next stage includes service simplification, digital assistance, strengthening SLA, appreciation and proportional corrective actions, as well as AI validation that is tested on a limited basis and continues to involve humans.

The contribution of this study is to show that the success of digital personnel services cannot be assessed only from the number of users or the speed of the process. Success must also be measured from the consistency of NSPK implementation, data quality, decision traceability, equitable access, and the protection of ASN career rights.

RESEARCH LIMITATIONS

This study uses a qualitative approach with the main context focused on BKN and the user agencies interviewed. Therefore, the results are not intended to be statistically generalized to all government agencies. The findings also depend on administrative data and informants' perceptions during the August–September 2026 period. Further research needs to test the proposed strategies through longitudinal designs, comparisons across agencies, and consistent system log indicators.

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