Integration of Personnel Information Systems Between the Indonesian National Armed Forces Data and Information Processing Agency and the Indonesian National Armed Forces Personnel Administration Center in Supporting the Management of National Army Personnel Data

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ARTICLE INFO

Article history:
Received : 30 April 2026
Revised : 25 Juni 2026
Accepted : 30 Juni 2026

Keywords
Organizational Synergy;
Information Systems;
Personnel Data Management;
Digital Transformation;

Kata kunci
Sinergi Organisasi;
Sistem Informasi;
Pengelolaan Data Personel;
Transformasi Digital;

ABSTRACT

The synergy between the Indonesian National Armed Forces Information and Data Processing Service and the Personnel Administration Center of the Indonesian National Armed Forces constitutes a crucial factor in supporting the effective and efficient management of personnel data across military branches. This study aims to analyze the forms of synergy between these two institutions in managing personnel data and to identify the challenges faced in realizing an integrated information system within the environment. This research employs a qualitative approach with a descriptive method through data collection techniques, including literature review, analysis of policy documents, and examination of personnel data management systems implemented within the National Army. The results indicate that the synergy between the Indonesian National Armed Forces Information and Data Processing Service and the Personnel Administration Center of the Indonesian National Armed Forces plays a strategic role in supporting the integration of personnel data management across the three military branches: the Indonesian Army, the Indonesian Navy, and the Indonesian Air Force. Indonesian National Armed Forces Information and Data Processing Service is responsible for providing and developing information system infrastructure as well as ensuring data security, while Personnel Administration Center of the Indonesian National Armed Forces is tasked with managing administrative processes and validating personnel data. The study also identifies several challenges in implementing this synergy, including differences in data management standards across branches, limited interoperability of information systems, and the need to enhance human resource competencies in the field of information technology. Therefore, it is necessary to strengthen institutional coordination, standardize data management systems, and leverage digital technologies such as Artificial Intelligence and the Internet of Things to support organizational digital transformation.

INTRODUCTION

The development of information and communication technology has driven digital transformation across various sectors, including defense organizations. The use of information systems has become essential in improving organizational effectiveness, particularly in data management and information-based decision-making. In modern military environments, information systems serve not only as administrative tools but also as strategic instruments supporting human resource management, organizational planning, and operational readiness.

Personnel data management plays a highly strategic role in military organizations, as it relates to recruitment, placement, career development, education and training, and personnel administration. Accurate, integrated, and accessible personnel data are critical prerequisites for force planning, competency development, and timely decision-making by leadership.

Within the Indonesian National Armed Forces, personnel data and information system management involves several interconnected units with distinct roles, notably Indonesian National Armed Forces Information and Data Processing Service and the Personnel Administration Center of the Indonesian National Armed Forces. Indonesian National Armed Forces Information and Data

E-ISSN 2622 – 0253 DOI: 10.31334/transparansi.v9i1.5756

Processing Service is responsible for developing and managing information systems, data processing, and IT infrastructure, ensuring secure, integrated, and efficient data processing. Meanwhile, the Personnel Administration Center of the Indonesian National Armed Forces.manages personnel administration, including career development, appointments, transfers, promotions, and retirement processes.

The synergy between these institutions is essential to ensure optimal functioning of personnel information systems. Indonesian National Armed Forces Information and Data Processing Service provides technological infrastructure, while the Personnel Administration Center of the Indonesian National Armed Forces.serves as the primary user and data manager. This collaboration enables the creation of an integrated personnel information system that ensures accurate, consistent, and timely data access.

However, challenges remain, including differences in systems, limited integration between databases, and suboptimal coordination among units. These issues may lead to data duplication, inconsistencies, and delays in updates, ultimately affecting decision-making processes. Therefore, integrating personnel information systems between Indonesian National Armed Forces Information and Data Processing Service the Personnel Administration Center of the Indonesian National Armed Forces is essential to improve efficiency, accuracy, and strategic decision-making.

METHOD

This study uses a qualitative approach to gain an in-depth understanding of the integration of personnel information systems between Indonesian National Armed Forces Information and Data Processing Service the Personnel Administration Center of the Indonesian National Armed Forces. Data collection techniques include:

1. Literature review to examine theories of management information systems, data integration, and human resource management.
2. Interviews with personnel involved in managing information systems and personnel administration.
3. Document analysis of policies, regulations, and organizational documents related to personnel data management.

Data were analyzed using descriptive qualitative methods by identifying patterns, relationships, and issues in system integration. The study aims to provide insights and recommendations to improve the effectiveness of Indonesian National Armed Forces personnel data management.

RESULTS AND DISCUSSION

Results

1. Strategic Role of Personnel Information System Integration

The results of the study indicate that the integration of personnel information systems between the Indonesian National Armed Forces Information and Data Processing Service and the Personnel Administration Center of the Indonesian National Armed Forces has a strategic role in supporting effective, accurate, and coordinated personnel data management. The Information and Data Processing Service primarily performs functions related to information technology infrastructure, system development, application management, data processing, and information security. Meanwhile, the Personnel Administration Center is responsible for managing personnel administration and ensuring the validity and completeness of personnel data. This division of functions demonstrates that personnel information system integration is not merely a technical process involving the connection of databases or applications. Rather, it constitutes an organizational mechanism that connects technological infrastructure, administrative processes, data governance, and human resources. The findings therefore indicate that effective integration requires synchronization between the technological and institutional dimensions of personnel data management.

The integration of these two institutional functions is particularly important because personnel data constitute strategic organizational resources. Personnel information is required for various administrative and managerial processes, including personnel placement, promotion, transfer, career development, education and training, retirement, and organizational planning. Consequently, inaccurate or outdated personnel data may have implications for the quality and timeliness of managerial decision-making.

This finding is consistent with recent research on personnel information systems in Indonesia. Gulo, Dhany, and Panjaitan (2025), for example, found that digital personnel information systems can improve the efficiency and accuracy of personnel administration by providing centralized and real-time access to employee information. Similarly, research on the implementation of personnel management information systems at the Education and Culture Office of Central Buton Regency demonstrates the continuing importance of information systems in improving personnel administration. Thus, in the context of the Indonesian National Armed Forces, integration should be understood as a strategic organizational capability rather than merely an information technology project.

2. Division of Institutional Roles in Personnel Data Management

The findings show a complementary relationship between the two institutions. The Information and Data Processing Service functions as the technological enabler, whereas the Personnel Administration Center functions as the administrative and data-management authority. The Information and Data Processing Service is responsible for providing the technological environment necessary for personnel information management. Its responsibilities include maintaining information infrastructure, developing and maintaining applications, managing data processing mechanisms, and ensuring information security. Meanwhile, the Personnel Administration Center is directly concerned with the substance of personnel administration, including the management and validation of personnel information.

This division of responsibilities is important because information system integration can only function effectively when technological authority and data ownership are clearly defined. Without clear institutional roles, integration may produce overlapping responsibilities, inconsistent data management practices, and difficulties in determining accountability when errors occur.

The relationship can be illustrated as follows:

Information and Data Processing Service

a. Information technology infrastructure
b. Application development
c. Database and system management
d. Data security
e. Technical support

Personnel Administration Center

a. Personnel administration
b. Data verification and validation
c. Personnel records
d. Career and administrative processes
e. Data utilization for personnel decisions

Integrated Personnel Information System

a. Single and consistent personnel information
b. Faster data exchange
c. Improved data accuracy
d. Better administrative efficiency
e. Evidence-based decision-making

E-ISSN 2622 – 0253 DOI: 10.31334/transparansi.v9i1.5756

The findings therefore emphasize that institutional integration should be accompanied by a clear governance framework specifying data ownership, data stewardship, access authority, validation responsibilities, update mechanisms, and information security responsibilities. This is particularly relevant to the broader Indonesian experience with data interoperability. Research on the governance of interoperability in Indonesia's Satu Data Indonesia initiative demonstrates that interoperability requires governance mechanisms in addition to technological infrastructure. Research on the implementation of Satu Data Indonesia at the local government level similarly emphasizes the importance of organizational and implementation factors in achieving integrated government data management.

3. Data Standardization as a Major Requirement for Integration

One of the most important findings of this study is the existence of differences in data management standards across organizational units. Differences in data formats, structures, terminology, and administrative procedures can create obstacles to information exchange. Data integration cannot be achieved simply by connecting two or more databases. If the databases use different definitions, coding systems, data structures, or update procedures, the resulting information may remain inconsistent even though the systems are technically connected.

For example, personnel information concerning rank, position, education, assignment history, competency, and career development must have standardized definitions and coding structures. A personnel record should ideally have a consistent unique identifier that can be recognized across organizational systems. Without such standardization, the same individual may potentially be represented differently in different databases. The findings therefore suggest that the integration of personnel information systems requires at least four forms of standardization:

Data standardization, including data elements, formats, terminology, and coding. Metadata standardization, ensuring that the meaning and characteristics of each data element are clearly defined. Process standardization, particularly concerning data input, validation, updating, and correction. Reference-data standardization, ensuring that organizational units, positions, ranks, qualifications, and other classification systems use consistent references.

This finding is strongly supported by recent Indonesian research concerning Satu Data Indonesia. Adinegoro et al. identify interoperability, standardization, and collaboration as important dimensions in the implementation of integrated government data policy. Meanwhile, research on interoperability governance emphasizes that data sharing requires governance arrangements that establish common standards and mechanisms for exchanging data between systems. Accordingly, the Indonesian National Armed Forces could strengthen personnel information system integration by developing an institutional Personnel Data Standard applicable across the Army, Navy, and Air Force.

4. Limited Interoperability Between Information Systems

Another significant finding is that interoperability remains a major challenge. Existing information systems may perform their respective functions effectively, but this does not necessarily mean that they can exchange information seamlessly. Interoperability should be viewed through several dimensions:

a. Technical interoperability the ability of different systems and applications to exchange data.
b. Syntactic interoperability the ability to understand data structures and formats.
c. Semantic interoperability the ability to interpret the meaning of exchanged data consistently.
d. Organizational interoperability the ability of institutions to coordinate processes and responsibilities.
e. Governance interoperability the existence of policies and rules that regulate data sharing.

Therefore, connecting databases without addressing organizational and semantic interoperability would provide only partial integration. The finding is consistent with Indonesian research showing that government information systems are frequently developed independently by organizational units. Suhono and Al Fatta found that information systems developed by government

organizational units may remain partial and lack a strategic framework for system development, creating challenges for interoperability.

A similar issue is identified in research concerning e-government interoperability in Denpasar, where an interoperability portal was proposed to facilitate integration and resource sharing between government organizational units. In the context of the Indonesian National Armed Forces, this means that integration should not be limited to application-to-application connections. A more comprehensive enterprise information architecture is required so that personnel information systems across organizational units operate according to common architectural principles.

5. Data Accuracy, Consistency, and Timeliness

The integration of personnel information systems has a direct relationship with the quality of personnel data. The findings indicate that fragmented databases can create data duplication, inconsistencies, and delays in updating personnel information. Data quality in personnel management can be assessed through several dimensions :

Tabel 1. Implication for Personnel Management

Data Quality Dimension	Implication for Personnel Management
Accuracy	Data correctly represent actual personnel conditions
Completeness	Required personnel attributes are available
Consistency	Information is uniform across systems
Timeliness	Data are updated when personnel changes occur
Validity	Data comply with established rules and standards
Accessibility	Authorized users can obtain required information

The availability of high-quality personnel data is important because personnel decisions often involve multiple variables and organizational units. If data regarding rank, position, qualifications, training, assignment, or career history are not synchronized, decision-makers may receive different information depending on which system they access. Recent Indonesian research supports this relationship. A study of SIMPEG implementation at BKPSDM Southwest Sumba Regency describes the role of an integrated personnel information system in managing academic qualifications, rank, educational institutions, and other personnel information while improving administrative efficiency and data accuracy. Similarly, a 2025 systematic review found that personnel management information systems have an important relationship with the quality of personnel administrative services. Therefore, the integration proposed in this study should establish **data quality indicators** and periodic data-quality audits as part of system governance.

6. Human Resource Competence as a Critical Success Factor

The findings demonstrate that technological integration cannot be separated from human resource competence. Personnel responsible for information systems and personnel administration require adequate competencies in information technology, data management, cybersecurity, system administration, and digital governance. The development of sophisticated information systems without corresponding improvement in human resources may create an implementation gap. Employees may possess access to digital systems but lack the competencies necessary to manage, validate, interpret, or utilize information effectively.

This issue is particularly important in an organization with complex hierarchical structures and highly sensitive personnel information. Personnel involved in managing the system need not all become programmers; however, they must understand the principles of data governance, information security, data quality, access control, and digital workflows.

Recent Indonesian research similarly identifies human-resource competence as one of the persistent challenges in digital transformation. Research on digital transformation in government financial information systems identifies human-resource competency, technological infrastructure, and

E-ISSN 2622 – 0253 DOI: 10.31334/transparansi.v9i1.5756

organizational resistance as major challenges requiring attention. Therefore, human-resource development should be incorporated into the integration strategy through:

a. Digital competency development
b. Data governance training
c. Cybersecurity awareness
d. Information-system management training
e. Data-quality management training
f. Continuous professional development
g. Change-management programs

Discussion

1. Integration as an Organizational, Technological, and Governance Process

The findings indicate that personnel information system integration is multidimensional. From a technological perspective, integration requires compatible applications, databases, networks, APIs, security mechanisms, and data-exchange protocols. From an organizational perspective, it requires coordination between institutions and clarity regarding roles and responsibilities. From a governance perspective, it requires policies, standards, procedures, and accountability mechanisms. Consequently, the integration process can be conceptualized as:

Technology + Data + Process + Organization + Human Resources + Governance = Integrated Personnel Information System

This model indicates that technological investment alone cannot guarantee integration success. The finding is important because conventional approaches to information-system integration tend to emphasize hardware, software, and connectivity. However, contemporary digital transformation emphasizes the alignment between technology and institutional arrangements.

Ibrohim's recent study on digital transformation in Indonesian government emphasizes the continuing evolution of e-government and smart governance in Indonesian public administration. In this context, the integration of personnel systems within the Indonesian National Armed Forces can be interpreted as part of a broader movement toward digitally enabled organizational governance.

2. Institutional Synergy and Coordination

The study also demonstrates that system integration depends substantially on institutional synergy. The Information and Data Processing Service and the Personnel Administration Center have different institutional functions, but their activities are interdependent.The technological unit cannot determine the substantive accuracy of personnel data, while the personnel administration unit cannot independently provide the technological infrastructure required for large-scale integrated data management.

This creates a mutual dependency relationship:

Technical capability + Administrative authority + Data governance + Leadership coordination

Effective personnel information integration

Institutional coordination should therefore be formalized rather than relying exclusively on informal communication. Coordination mechanisms may include an inter-unit governance forum, standard operating procedures, data stewardship assignments, periodic data synchronization, and joint system evaluation.

The broader Indonesian experience confirms that institutional factors remain important in implementing data integration policies. Recent research on Indonesia's *Satu Data* initiative specifically highlights the importance of institutional dimensions, data standardization, interoperability, and stakeholder involvement.

3. Digital Transformation and the Industry 5.0 Perspective

The manuscript places the integration initiative within the Industry 5.0 context. This perspective is relevant because Industry 5.0 emphasizes human-centered technology, resilience, and sustainable technological development. Within personnel management, artificial intelligence can potentially support:

a. Personnel forecasting
b. Competency-gap analysis
c. Career planning
d. Talent identification
e. Workforce planning
f. Anomaly detection in personnel records
g. Decision-support systems

However, AI should not replace institutional authority in personnel decision-making. Instead, AI should function as a **decision-support mechanism**. Final decisions should remain subject to institutional rules, professional judgment, accountability, and applicable regulations. Likewise, IoT can support the collection and transmission of operational data in appropriate contexts, although its implementation should be carefully evaluated because personnel information within a defense organization is highly sensitive. Consequently, digital transformation in this context should prioritize **secure, controlled, human-centered digitalization** rather than technology adoption for its own sake.

4. Cybersecurity and Protection of Personnel Data

An additional implication of system integration is the increasing importance of cybersecurity. The more integrated the information environment becomes, the greater the potential consequences of unauthorized access, data leakage, manipulation, or disruption. Personnel information may contain sensitive organizational information. Therefore, system integration must be accompanied by:

a. Role-based access control
b. Strong authentication
c. Encryption
d. Audit trails
e. Data-loss prevention
f. Vulnerability assessment
g. Backup and recovery mechanisms
h. Security monitoring
i. Incident-response procedures

The security architecture should follow the principle of least privilege, meaning that users should only have access to the information required for their responsibilities. Data integration therefore creates a paradox: integration increases accessibility and efficiency, but excessive accessibility without adequate security can increase organizational risk. The appropriate solution is not to avoid integration but to implement secure integration architecture.

5. Comparison with Previous Indonesian Research

The findings of this study are broadly consistent with recent Indonesian research on personnel information systems and government digital transformation.

Tabel 2. Comparison with Previous Indonesian Research

Previous Research	Main Finding	Relevance to This Study
Gulo et al. (2025)	Personnel information systems improve efficiency, accuracy, and real-time access	Supports the importance of integrated personnel systems
Abdullah et al. (2025)	SIMPEG supports personnel administration	Supports administrative dimension
Lubis & Veri (2025)	SIMPEG contributes to administrative service quality	Supports service-quality dimension
Zannuba et al. (2024)	Implementation of One Data Indonesia requires institutional implementation	Supports governance dimension
Fajar	Interoperability requires governance mechanisms	Supports interoperability dimension
Adinegoro et al.	Standardization and interoperability are important in One Data Indonesia	Supports data-standardization dimension
Hermawan et al. (2023)	Digital transformation can be implemented through integrated personnel services	Supports digital-transformation dimension

The distinctive contribution of the present study is its focus on the integration of personnel information systems between two strategic institutional functions within the Indonesian National Armed Forces, rather than examining personnel information systems solely as administrative applications.

CONCLUSION

The integration of personnel information systems between the Indonesian National Armed Forces Information and Data Processing Service and the Personnel Administration Center plays a strategic role in improving the effectiveness, accuracy, consistency, and timeliness of personnel data management. The two institutions have complementary functions, in which the Information and Data Processing Service provides information technology infrastructure and system management, while the Personnel Administration Center manages personnel administration, data validation, and utilization of personnel information.

However, the integration has not been fully optimized due to differences in data standards and formats, limited interoperability between information systems, synchronization constraints, and the need to strengthen human-resource competencies in information technology. These conditions can result in data duplication, inconsistencies, delays in updating information, and limitations in supporting timely strategic decision-making.

Therefore, strengthening institutional coordination, establishing standardized personnel data and interoperability mechanisms, improving data governance and information security, and continuously developing human-resource competencies are essential. The utilization of advanced technologies such as Artificial Intelligence, Internet of Things, and data analytics can subsequently be directed toward personnel planning, competency development, career management, and decision support.

Overall, successful integration should be implemented not merely as a technological initiative, but as a comprehensive organizational transformation involving technology, data, processes, governance, and human resources. Optimizing this integration will strengthen the quality of TNI personnel data management and contribute to more effective, secure, and responsive strategic decision-making in supporting the digital transformation of the Indonesian National Armed Forces.

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