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*Review Article*

# Capacity Building of Government Officials in the Implementation of Electronic-Based Government Systems

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**Abstract:** This research aims to analyze the capacity building of government personnel in implementing the Electronic-Based Government System (SPBE) at the Department of Communication and Informatics of Gresik Regency, which plays a strategic role in digital governance. This study uses a qualitative approach focusing on capacity development strategies and constraints at individual and organizational levels. The findings show that capacity building is carried out through two main strategies: human resource development and organizational strengthening. In human resource development, the establishment and training of an internal assessor team serve as key instruments in supporting SPBE implementation. This team represents institutionalized capacity, enabling the organization to independently conduct monitoring, evaluation, and quality assurance processes in a sustainable manner. This approach reflects a long-term strategy to strengthen institutional independence and reduce reliance on external parties. In organizational strengthening, capacity building focuses on optimizing organizational structure, work systems, coordination mechanisms, and regulatory support, including standard operating procedures. However, several constraints were identified. At the individual level, there is an imbalance in technical competencies, especially in information technology skills. At the organizational level, the lack of optimal follow-up after training highlights the need for more integrated human resource planning. These findings indicate that capacity building in SPBE implementation requires a systemic, well-planned, and sustainable approach to achieve effective, adaptive, and responsive digital government governance in the public sector.

**Keywords:** E Capacity Building; Electronic-Based Government System; Government Digital Transformation; Human Resource Development; Organizational Strengthening.

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## 1. Introduction

Digital transformation in public governance has become an inevitability in the era of the Industrial Revolution 4.0 and the digital society. Governments are required to provide public services that are effective, efficient, transparent, and accountable through the utilization of information and communication technology. In Indonesia, the commitment to digital government transformation is reflected in the policy of Presidential Regulation Number 95 of 2018 concerning the Electronic-Based Government System, which emphasizes that the Electronic-Based Government System is the implementation of governance that utilizes information and communication technology to deliver services to users of the Electronic-Based Government System. This policy was later strengthened through Presidential Regulation Number 132 of 2022 concerning the National Electronic-Based Government

System Architecture, which emphasizes the importance of service integration, system interoperability, and the strengthening of integrated digital governance between the central government and regional governments. Normatively, this policy requires regional governments to develop structured and integrated Electronic-Based Government System governance based on improving the quality of civil servant human resources.

The importance of the Electronic-Based Government System is partly driven by the need for transparent governance and the demands of the digital era. One of its core objectives is to improve public services through the utilization of information and communication technology (Yuhefizar et al., 2019). However, empirical evidence in various countries shows that the effectiveness of digital government initiatives is often hindered by persistent competency gaps among public sector personnel. These competency gaps include technical-digital competence, managerial and digital leadership competence, cross-sector collaboration competence, and adaptive learning competence. These gaps are shaped by the interaction of individual, organizational, and systemic factors, including misaligned human resource management practices, fragmented bureaucratic structures, and limited capacity-building mechanisms (Susanto et al., 2026).

Empirical practices in various regions also indicate that the implementation of the Electronic-Based Government System still faces several obstacles. The evaluation results of the Electronic-Based Government System conducted by the Ministry of Administrative and Bureaucratic Reform show disparities in the Electronic-Based Government System index among regions, particularly in the domains of governance and service management. One of the dominant factors influencing these low achievements is the limited competence of regional government personnel in aspects of information technology management, system architecture planning, cybersecurity, and organizational change management (Ministry of PANRB, 2023).

This condition indicates that digital government transformation is not merely a matter of technological infrastructure availability but also heavily depends on institutional capacity and the competence of government human resources. From the perspective of institutional capacity theory, the success of public policy implementation is determined by technical capacity, managerial capacity, and the adaptive capacity of organizations in responding to changes in the strategic environment. Therefore, improving the capacity of government personnel becomes a key prerequisite for the successful implementation of the Electronic-Based Government System at the regional level.

In addition, the challenges in implementing the Electronic-Based Government System are also related to bureaucratic culture that remains sectoral, the low level of data integration among regional government agencies, and the limited digital literacy among personnel. These issues result in application duplication, inefficiencies in information technology budgeting, and low quality of digital-based public services. Conceptually, however, the Electronic-Based Government System aims to create an integrated digital government, a data-driven government, and public service–oriented governance.

From a theoretical perspective, the success of e-government implementation is strongly influenced by institutional capacity and human resource competence. The failure of government digital projects in developing countries is often caused by the design–reality gap, namely the mismatch between system design and the actual conditions of the organization. Thus, the limited competence of government personnel in information technology management, system architecture planning, cybersecurity, and change management becomes a crucial factor influencing the achievement of the Electronic-Based Government System in regions (Heeks, 2006).

One policy to optimize the Electronic-Based Government System through capacity building of government personnel is the continuous digital competency development program for civil servants. This is realized through technical training, certification, and digital literacy programs aimed at improving individuals' ability to operate, manage, and innovate information technology within government institutions. Capacity building is a crucial element in various aspects of life, including governance. Within government institutions, this effort is essential to strengthen the capabilities and improve the performance of personnel in carrying out their duties as public servants. Therefore, capacity enhancement is understood as a strategy to strengthen system sustainability, increase productivity, and ensure the optimal implementation of regulatory and administrative responsibilities. Organizational capability fundamentally depends on the type and quality of resources it possesses and its ability to manage them effectively.

According to Milen (2004), individual, organizational, and systemic capacity refers to the ability to carry out responsibilities appropriately, effectively, and sustainably. Meanwhile, Morgan in Milen (2004) explains that competence includes a set of abilities, knowledge, mindsets, values, networks, behaviors, motivations, resources, and conditions that enable individuals, organizations, and institutions within a broader system to achieve predetermined goals. Therefore, capacity improvement measures are generally identified systematically and continuously to ensure the effective achievement of organizational objectives.

Capacity building of government personnel becomes a key factor in ensuring optimal public services. This capacity includes not only technical aspects, such as mastery of technology and administrative procedures, but also the ability to make fair, efficient, and public-oriented decisions. Capacity improvement can be achieved through training, education, and increased work experience (Wibowo, 2018). Enhancing the capacity of public servants in public service delivery cannot be viewed as a one-sided effort but must involve the development of technical and managerial skills as well as the effective utilization of information technology. Through training, education, and managerial strengthening, government personnel are expected to provide public services that are high-quality, efficient, and responsive to community needs (Yadisar, 2025).

Capacity building is an effort to enhance the ability of people in developing countries to develop essential management and policy skills required to build cultural, socio-political, economic, and human resource structures. In a broader sense, which is currently applied in the development of governance, capacity is not only related to individual skills and abilities but also to the ability of organizations to achieve their missions effectively and sustain themselves in the long term (Grindle, 1997).

Capacity building in the public sector refers to the ability of individuals, organizations, and institutional systems to carry out governmental functions effectively and sustainably. Grindle and Hilderbrand (1995) emphasize that public sector capacity is not only related to the technical competence of personnel but also includes managerial capability, leadership, and the willingness of institutions to adapt to change. In the context of regional government, capacity building of personnel includes improving knowledge, skills, professional attitudes, and digital literacy in supporting technology-based public services.

Adequate personnel capacity becomes a determining factor in creating responsive and high-quality public services. Personnel with strong competence and digital literacy are better able to adapt to technology-based service demands and increasingly diverse societal needs. In line with this, Dwiyanto (2017) emphasizes that quality public services must be inclusive, responsive, and capable of building public trust. Ratminto and Winarsih (2016) also assert that public service management requires clear service standards, procedural certainty, and the commitment of personnel to serve the public professionally. Therefore, capacity building plays a very important role in helping organizations carry out transformation through systematically designed procedures that consider various potential problems that can be addressed through appropriate regulations or policies (Boedhi, 2000).

However, capacity building of government personnel cannot stand alone without adaptive institutional support. The new institutionalism approach emphasizes that the performance of public organizations is strongly influenced by formal rules, norms, and social practices that develop within organizations (March & Olsen, 1984). Institutions are not only understood as organizational structures but also include patterns of relationships among work units, coordination mechanisms, and work culture that shape personnel behavior. Responsive institutions are characterized by structural flexibility, openness to innovation, and the ability to adapt to external environmental changes (Dewi et al., 2023; Suryani & Diniawaty, 2024).

Several studies indicate that capacity building of government personnel plays a strategic role in accelerating digital technology adaptation in the public sector. Sari and Wibowo (2020) emphasize that capacity building is not merely technical training but must also include managerial components and mindset transformation. In this context, training that focuses on interpersonal skills, Electronic-Based Government System project management, and regulatory understanding becomes an important aspect influencing the effectiveness of Electronic-Based Government System implementation. These findings highlight that holistic training can enhance the ability of personnel to design and manage electronic-based services sustainably.

Research by Suwarlan et al. (2023) shows that the implementation of the Electronic-Based Government System in Ciamis Regency still indicates limited human resources and frequent information system security disturbances. This is due to the development of human resources which, although not yet ideal in number, are still capable of facilitating other

regional government work units. In the aspect of organizational strengthening, the budget remains limited despite efficiency measures being implemented. In terms of institutional reform, regulations are still incomplete and cross-sector data integration has not yet been fully achieved.

This research was conducted in the Gresik Regency Government. Empirically, the region still experiences obstacles, particularly related to human resources in the field of Information Technology and Computer Science, which are considered inadequate. Based on preliminary observations on the mapping of human resource competency gaps in the Department of Communication and Informatics of Gresik Regency—especially those responsible for implementing Electronic-Based Government System services—it was found that many personnel do not have educational backgrounds and competencies that align with their job responsibilities. In addition, the Strategic Plan of the Department of Communication and Informatics of Gresik Regency identifies complex problems, including the limited number of personnel with the qualifications necessary to support the implementation of their duties and functions. This condition is further supported by the absence of specific programs aimed at improving the capacity of human resources related to the Electronic-Based Government System.

Based on these considerations, this research aims more broadly to describe and analyze the capacity building of government personnel in supporting the implementation of the Electronic-Based Government System and to identify the constraints encountered in the capacity-building process of government personnel.

## 2. Literature Review

### 2.1 Capacity Building

Capacity refers to the ability of individuals, organizations, or systems to perform their functions properly in an effective, efficient, and sustainable manner (Milen, 2004). Capacity encompasses abilities, skills, understanding, attitudes, values, relationships, behaviors, motivation, resources, and conditions that enable individuals, organizations, networks/sectors, and broader systems to carry out their functions and achieve development goals over time.

Furthermore, Milen (2004) views capacity building as a specific task because it is related to factors within a particular organization or system at a certain point in time. Capacity building can be defined as follows: "Capacity building usually is understood to mean helping governments, communities, and individuals develop the skills and expertise needed to achieve their goals. Capacity building programs, often designed to strengthen participants' abilities to evaluate their policy choices and implement decisions effectively, may include education and training, institutional and legal reforms, as well as scientific, technological, and financial assistance." Capacity building is therefore generally understood as a means of assisting governments, communities, and individuals in developing their abilities and knowledge in order to achieve predetermined goals. Capacity development programs can be designed to strengthen participants' ability to evaluate policy choices and implement policies effectively, including through education and training, institutional and policy reforms, as well as support in knowledge, technology, and economic resources (Soeprapto, 2003).

Capacity building is also defined as a process of carrying out actions or a series of multi-level changes within individuals, groups, organizations, and systems in order to strengthen the adaptive capacity of individuals and organizations so that they can respond effectively to environmental changes (Marison, 2001). Based on the explanations above, capacity building is generally understood as an effort to assist governments, communities, or individuals in developing the skills and expertise required to achieve specific objectives. Capacity building programs are essentially designed to strengthen the ability to evaluate policy options and implement decisions effectively. Capacity building includes education and training, regulatory and institutional reforms, knowledge and technology development, as well as financial, technological, and scientific assistance.

In implementing individual capacity building, the level of individual competence or capacity can be measured using the concept proposed by Gross, which states that the competencies that must be possessed by government personnel in carrying out governmental and development functions are as follows (Steers, 1984):

1) Knowledge, which includes: general knowledge, technical knowledge, knowledge of work and organization, administrative concepts and methods, and self-knowledge.

2) Abilities, which include: management, decision-making, communication, planning, organizing, controlling, working with others, conflict management, intuitive thinking, communication, and learning.
3) Goals, which include: action orientation, self-confidence, responsibility, as well as norms and ethics.

There are ten indicators that constitute Capacity Building, namely (Merino & de los Ríos Carmenado, 2012)

a. Leadership is the ability of an individual to lead and motivate others in achieving common goals.
b. Technology skills refer to all abilities that help individuals interact with the digital world; having technological skills refers to proficiency in digital or technical media.
c. Political skills refer to the ability in the workplace to understand and influence others so that they act in ways that advance personal or organizational objectives.
d. Planning skills refer to the ability to forecast, design, measure, anticipate, and manage the future.
e. Management skills are a set of abilities that enable an individual to manage resources whether human resources, time, or other assets effectively and efficiently in order to achieve specific goals.
f. Participation and cooperation refer to involvement in situations mentally, intellectually, emotionally, and affectively that encourages individuals to contribute to efforts aimed at achieving predetermined common goals and to share responsibility for achieving those goals.
g. Commitment refers to the strong willingness of individuals to dedicate themselves to carrying out all activities and to be responsible for them.
h. Trust refers to an individual's belief in the goodwill of other individuals or groups in carrying out tasks and responsibilities for the common interest.
i. Network building is the process of creating, maintaining, and nurturing personal and professional relationships to expand influence and reach in a particular area, helping individuals and organizations build valuable partnerships, gain insights, and explore opportunities.
j. Teamwork refers to efforts made to enhance cooperation among members within an organization so that human resource performance becomes more effective as collaboration improves.

**2.2 Capacity Building in the Perspective of Public Administration.**

In the perspective of public administration, capacity building is a strategic and continuous process aimed at improving the abilities of individuals, organizations, and governmental systems in carrying out public service and development functions. Capacity building becomes a key instrument in bureaucratic reform, strengthening government governance, and implementing digital government. The concept of capacity building in public administration refers to a systematic process to enhance the capabilities of individuals, organizations, and governmental systems in performing functions and achieving public objectives effectively, efficiently, and sustainably. According to the United Nations Development Programme (2009), capacity building is defined as: "The process through which individuals, organizations and societies obtain, strengthen and maintain the capabilities to set and achieve their own development objectives over time." This definition emphasizes that capacity building is not an incidental activity but a long-term process oriented toward sustainability.

In public administration literature, Grindle (1997) explains that government capacity is related to the ability of public institutions to formulate policies, implement programs, and manage resources in an accountable manner. Capacity building is viewed as a key prerequisite for achieving good governance. Meanwhile, Milen (2006) states that capacity building is a continuous process that includes improving technical skills, strengthening organizational structures, and enhancing institutional support systems. In the context of public administration, capacity building refers to systematic efforts to improve the capabilities of individuals, organizations, and governmental systems so that they can achieve public objectives effectively and efficiently through improvements in knowledge, skills, attitudes, and the structural capacity of organizations. This concept is often seen as part of bureaucratic reform and good governance (Nugraha, 2004).

Improving the performance of public organizations is a primary concern in public administration. Considering that the main function of government is to serve the public, the

government must continuously strive to improve the quality of services provided by government institutions. Ilato (2017) explains capacity building as an effort to adjust policies and regulations, reform institutional structures and organizational culture, modify procedural and coordination mechanisms, improve the skills and qualifications of human resources, and transform individual value systems and attitudes as a way to achieve organizational effectiveness.

According to Yuwono (2003), capacity building offers strong prospects, particularly in realizing the objectives of governance by improving the effectiveness and efficiency of public management toward achieving expected outcomes. Several requirements must be fulfilled in the effort to develop capacity in the public sector, namely participation, innovation, access to information, accountability, and leadership. Participation refers to the involvement of all relevant actors in the programs implemented. Innovation is necessary to identify appropriate alternatives and methods in the capacity development process. Effective participation and creativity in innovation are influenced by the ease of accessing information, both internally and externally within the organization. Accountability functions as a mechanism for controlling program implementation so that desired objectives can be achieved. Leadership serves as the final requirement and plays a role as a driver, guide, and controller in every stage of program implementation. Ideal leadership should emphasize openness, acceptance of new ideas, honesty, care, respect for dignity, and respect for others.

Capacity development is the process through which individuals, organizations, and societies obtain, strengthen, and maintain the capabilities to set and achieve their own development objectives over time. Thus, capacity building is not merely the improvement of technical skills but a continuous process that enables governmental systems to achieve development goals independently and sustainably (UNDP, 2009). Capacity is understood as the ability of people, organizations, and society as a whole to manage their affairs successfully, extending the meaning of capacity to the level of social and institutional systems, making it relevant in the context of public administration and governance (OECD, 2006).

Eade (1997) states that capacity building is fundamentally an organizational characteristic closely related to participation, empowerment, civil society, and public participation. Therefore, Eade identifies three main strategies in capacity building: (1) strengthening organization and management; (2) providing resources and infrastructure; and (3) developing networks.

### 2.3 Electronic-Based Government System

The Electronic-Based Government System (SPBE) is the implementation of governance that utilizes information and communication technology to provide services to users of the Electronic-Based Government System (Awaludin, 2019). The Electronic-Based Government System represents the government's commitment to strengthening partnerships between citizens and the public sector (Arief & Abbas, 2021). Government institutions have begun to use information technology to improve government services to the public, enhance relationships with business and industry, and increase efficiency in government management (Hasan et al., 2024).

The Electronic-Based Government System is a modern initiative aimed at improving government performance and efficiency through the use of information and communication technology (ICT) (Putra, 2023). SPBE enables government administrative processes to be carried out more quickly, transparently, and in an integrated manner, thereby improving the quality of public services (Fitri et al., 2024). The technologies used in SPBE include data management, information systems, and applications that allow citizens to access government services online, reducing the need for direct interaction and shortening lengthy bureaucratic processes (Rusdy & Flambonita, 2023).

The main objective of the Electronic-Based Government System is to provide services to the public as users more efficiently, as stipulated in Presidential Regulation Number 95 of 2018 concerning the Electronic-Based Government System. Through SPBE, the government seeks to create governance that is clean, effective, transparent, and accountable, while also improving the quality of services and increasing public trust (Prawira & Kartini, 2022). The Government of Indonesia has established regulations regarding e-government through Presidential Regulation (Perpres) Number 95 of 2018 concerning the Electronic-Based Government System (SPBE). SPBE refers to the implementation of governance that utilizes information and communication technology to provide services to the public who use the system.

Article 2 of this Presidential Regulation outlines several principles that form the basis for the implementation of SPBE, including:

1) Effectiveness: Refers to the optimal utilization of resources that support SPBE so that the system can function properly according to needs.
2) Integration: Emphasizes the importance of integrating various resources that support the overall operation of SPBE.
3) Sustainability: Ensures that SPBE will continue through careful planning, gradual implementation, and adaptation to ongoing developments.
4) Efficiency: Refers to the appropriate use of resources that support SPBE to ensure maximum results with minimal resources.
5) Accountability: Ensures clarity in functions and responsibilities in the implementation of SPBE.
6) Interoperability: Refers to the ability of systems and business processes to coordinate and collaborate in exchanging data, information, or SPBE services.
7) Security: Focuses on protecting SPBE resources by ensuring the confidentiality, authenticity, and validity of the processed data and information.

To ensure optimal integration of SPBE, effective management and governance are required. SPBE is not merely about implementing applications or information systems in daily governmental operations, but it also encompasses several key domains in its implementation. First, in the government activities domain, elements include the SPBE master plan, business processes, budget management, and electronic-based data management. Second, the technology and information domain includes aspects such as integrated data centers, networks among government institutions, systems that connect government services, as well as service applications and data security. Finally, the service domain focuses on electronic-based government administrative services and public services that are also delivered through electronic systems.

## 3. Materials and Method

Based on the objectives of this study namely to describe, explain, and comprehensively present the research findings in a thorough and in-depth manner the research method used is qualitative research. The study on Capacity Building of Government Personnel in the Implementation of the Electronic-Based Government System is a qualitative study using a case study approach conducted at the Department of Communication and Informatics of the Gresik Regency Government. Yin (2015) states that a case study is a type of research particularly suitable for examining contemporary events when the relevant behaviors cannot be manipulated. The data collection techniques used in this research include interviews, observation, documentation, and literature study. The informants in this study are determined continuously using a purposive sampling technique, consisting of the Head of the Department of Communication and Informatics of the Gresik Regency Government, the Secretary of the Department, and the Heads of Divisions/Sections responsible for the Electronic-Based Government System, IT infrastructure, and human resource training.

The data analysis technique used in this research follows the approach developed by McNabb (2002), which includes: Grouping the data according to key constructs, Identifying bases for interpretation, Developing generalizations from the data, Testing alternative interpretations, and Forming and/or refining generalizable theory from the case study.

## 4. Results and Discussion

### a. Capacity Building of Government Personnel in Supporting the Implementation of the Electronic-Based Government System

Capacity building is a concept that has various meanings, and its interpretation is highly influenced by who uses it and in what context the term is applied. In general, capacity building is often associated with improvement efforts through education, training, and human resource development. However, over time, this conventional understanding has shifted. In recent years, capacity building is no longer viewed merely as improving individual competencies but is interpreted more broadly and comprehensively, encompassing social, institutional/organizational, and overall educational system dimensions (Enemark, 2006).

Capacity building of government personnel in the implementation of the Electronic-Based Government System (SPBE) at the Department of Communication and Informatics of Gresik Regency includes Human Resource Development and Organizational Strengthening.

***Human Resource Development***

Human resource development in the implementation of SPBE at the Department of Communication and Informatics of Gresik Regency is carried out through the formation and training of an internal assessor team for self-evaluation, as well as improving the technical competencies of staff in information technology management. The establishment and training of the SPBE Internal Assessor Team at the Department of Communication and Informatics of Gresik Regency are based on a Regent's decree aimed at monitoring, evaluating, and improving the quality of electronic-based government administration. This team is responsible for conducting self-assessment evaluations to promote governance that is effective, transparent, and accountable.

The Internal Assessor Team is established through the Regent of Gresik's Decree, which is periodically updated to ensure compliance with the standards of the Ministry of Administrative and Bureaucratic Reform (PANRB). This team is part of the Electronic-Based Government System Coordination Team of Gresik Regency. The function of the Internal Assessor Team is to conduct self-assessments on the implementation of SPBE across all regional government agencies, including the Department of Communication and Informatics of Gresik, to ensure compliance with SPBE indicators.

The team formed receives training related to understanding the SPBE evaluation components, methods for collecting supporting evidence, and the use of evaluation applications or tools to ensure objectivity. The formation of the internal Electronic-Based Government System assessor team at the Department of Communication and Informatics aims to conduct Self-Assessment Evaluations of Electronic-Based Government System objectively and accurately in accordance with Regulation of the Minister of Administrative and Bureaucratic Reform Number 59 of 2020. The team, established through a decree of the regional head or regional secretary, is responsible for collecting supporting evidence, completing the evaluation application, and reporting the results. Assessor training focuses on evaluation methodology, indicator substance, and ICT auditing to improve the SPBE index score.

Training programs for government personnel are frequently conducted or attended through various programs and organizers. Many of these training activities take advantage of current developments, such as online training programs, technical guidance sessions, webinars, and seminars, organized by institutions such as the National Cyber and Crypto Agency and the Ministry of Administrative and Bureaucratic Reform. Most of these programs are conducted online and are generally free, although some require payment.

These activities are considered to support work performance and enhance the knowledge of government personnel, as they include materials related to informatics standards within the scope of Electronic-Based Government System implementation, such as governance standards, management standards, auditing, implementation processes, acceleration strategies, monitoring, and evaluation. However, there are still limited activities related to specific professional certifications.

Career development at the Department of Communication and Informatics of Gresik Regency must be aligned between the regulations of the Ministry of Communication and Informatics and regional regulations. Currently, career development within the department can be considered relatively well established because functional positions have been implemented. Previously, anyone could perform certain tasks even if they were not within their specific field of expertise.

Career development at the Department of Communication and Informatics of Gresik Regency is based on a talent management and merit system, which positively influences employee job satisfaction. This development includes both functional career paths (such as computer administrators and policy analysts) and structural positions, integrated within the framework of bureaucratic reform. It also includes training programs, objective performance evaluations, and promotion opportunities, particularly supported by initiatives such as Electronic-Based Government System.

Employee career development at the Department of Communication and Informatics of Gresik Regency focuses on improving ICT technical competence, managerial competence, and socio-cultural competence to support digital transformation. This is carried out through a merit system, competency-based training, promotion opportunities, and the improvement of educational qualifications in order to enhance employee performance and productivity.

***Organizational Strengthening***

Capacity building of personnel at the Department of Communication and Informatics of Gresik Regency emphasizes organizational strengthening to improve the effectiveness of

public services, particularly through the optimization of Electronic-Based Government System, cybersecurity, and integrated data management. This strengthening includes improving personnel competence, refining procedures and standard operating procedures (SOPs), and utilizing ICT infrastructure.

Capacity building at the Department of Communication and Informatics of Gresik Regency is implemented through an organizational strengthening strategy as the main foundation for supporting the implementation of institutional duties and functions. Organizational strengthening is directed toward structural arrangement, clear division of authority, improved coordination among divisions, and refinement of work procedures that support the implementation of Electronic-Based Government System.

Through this approach, capacity development is not only focused on improving the individual competence of government personnel but also on improving organizational systems and governance so that they become more adaptive to developments in information technology and the demands of digital-based public services. Therefore, organizational strengthening becomes a strategic instrument in ensuring the sustainability of Electronic-Based Government System implementation effectively and in an integrated manner within the Government of Gresik Regency.

The research findings indicate that capacity building at the Department of Communication and Informatics of Gresik Regency is implemented through an organizational strengthening strategy as the main pillar in supporting SPBE implementation. This policy consists of several components:

a) Organizational Structure Arrangement

Adjusting the institutional structure to be more responsive to digital transformation needs, including clear division of duties and functions among divisions responsible for Electronic-Based Government System, ICT infrastructure, and data and information management.

b) Strengthening Governance and Standard Operating Procedures (SOPs)

Developing and updating SOPs that support SPBE implementation, including coordination mechanisms, information security management, and application system integration.

c) Improving Coordination and Integration Among Regional Government Agencies (OPD)

Strengthening the role of the Department of Communication and Informatics as the leading sector in coordinating SPBE across regional agencies to ensure system interoperability and alignment of digital policies.

d) Development of Organizational Human Resource Competence

Implementing education and technical training, technical guidance programs, and competency certification in the fields of information technology and digital governance.

e) Strengthening Infrastructure and Information Systems

Developing networks, data centers, and electronic-based public service applications to support organizational effectiveness.

f) Monitoring and Evaluation of SPBE Performance

Conducting periodic evaluations of the SPBE index achievements and system implementation performance to ensure the sustainability of organizational capacity development.

Thus, organizational strengthening is not only oriented toward structural aspects but also encompasses governance, human resources, and system and infrastructure support as an integrated strategy for capacity development.

**b. Identification of Constraints in the Government Personnel Capacity Building Process**

The main constraints in the capacity building of personnel at the Department of Communication and Informatics (Diskominfo) of Gresik Regency include limited budget availability, disparities in technical competencies (particularly in IT), gaps between training needs and their actual implementation, and the lack of follow-up after training activities. In addition, insufficiently competent human resources and coordination challenges also hinder effectiveness.

Another constraint is the technical competency gap in information technology (IT). The rapid development of information technology makes it difficult for personnel to keep up with required competency standards, particularly in the fields of digital infrastructure and

information security. Furthermore, there is a lack of appropriate Training Need Analysis (TNA). Training programs are sometimes not based on actual needs analysis, resulting in training outcomes that do not significantly improve performance. In addition, limited monitoring and evaluation (M&E) is another challenge, as post-training evaluations are rarely conducted in depth, causing knowledge transfer to other colleagues not to occur optimally.

Empirically and administratively, the Department of Communication and Informatics of Gresik Regency, as the leading sector in managing the Electronic-Based Government System in the region, faces challenges due to the increasing complexity of cybersecurity threats, including those targeting mobile applications used for public services. Threats such as hacking, malware, identity theft, and personal data breaches require standardized security measures starting from the stages of planning, development, testing, implementation, and maintenance of mobile applications. Without clear standard operating procedures (SOPs), the process of managing mobile application security risks failing to meet minimum security standards, being poorly documented, and becoming difficult to monitor and evaluate. This situation may disrupt the reliability of digital public services, reduce public trust, and increase the risk of legal liability for the regional government if information security incidents occur.

From a social and public service perspective, the people of Gresik Regency are increasingly dependent on digital services, including mobile applications, to obtain information, access administrative services, and submit public aspirations. The absence of adequate mobile security SOPs may lead to vulnerabilities in the data and information submitted by the public through these applications. This, in turn, may reduce the level of public participation and trust in government digital services. Therefore, the establishment of regulations governing mobile application security SOPs has become an urgent necessity to ensure that the use of information technology in public services not only focuses on ease of access but also guarantees the protection of citizens' rights to data and information security.

## 5. Discussion

Research findings indicate that: a. Capacity building of personnel in supporting the implementation of the Electronic-Based Government System at the Department of Communication and Informatics (Diskominfo) of Gresik Regency is carried out through Human Resource Development and Organizational Strengthening. Human resource development in the electronic-based government system at Diskominfo of Gresik Regency is implemented through the formation and training of an internal assessor team. This implies that the organization does not merely focus on improving the technical competencies of individual personnel, but also seeks to build sustainable institutional capacity. The establishment of an internal assessor team demonstrates a systematic effort to create human resources capable of conducting evaluation, monitoring, and quality assurance of the implementation of the Electronic-Based Government System independently. Thus, the organization does not rely entirely on external parties in the assessment process or in improving the quality of digital governance.

According to Armstrong (2006), human resources are the most important asset of an organization. Therefore, human resources must receive serious attention so that organizational goals can be achieved. One approach that managers can adopt in investing in human resources within an organization is by developing the capacity of these human resources. According to Suryanto (2006), the development of government personnel is crucial because it can improve the abilities of public officials, including their professional competence, knowledge, leadership, and dedication, which ultimately enhances organizational performance. Human resource development, particularly within government organizations, is necessary due to several factors: (1) the relatively low level of knowledge and skills of human resources; (2) an unfavorable work atmosphere or boredom caused by working too long in one position; (3) organizational demands for change; and (4) rapid developments over time (Amri, Suryono & Suwondo, 2009). Similarly, Siagian (1996) states that several key reasons necessitate human resource development: (1) the presence of new employees who do not yet possess full competence to perform their tasks; (2) the need to update employees' knowledge; (3) changes driven not only by advances in science and technology but also by shifts in socio-cultural values; and (4) the possibility of employee mobility.

Eade (1998) explains that human resource development within an organization encompasses various factors such as education and training, career planning and management, improvement of work quality and productivity, and enhancement of occupational health and safety. It also includes the development of the vision of government

personnel in providing services to the public. In line with decentralization, the development of government personnel should be directed toward building vision, innovation, and the ability of officials to adopt an entrepreneurial spirit in performing their duties.

Furthermore, CIDA (Canadian International Development Agency) as cited by Enemark (2006) states that human resource development emphasizes people both as instruments and as the ultimate goal of development. In the short term, this can be interpreted as developing education and training to meet immediate needs for technical personnel, leadership, and administrative staff. These efforts are targeted at specific groups involved in the socio-economic system of a country. Meanwhile, Emmerij (as cited in Calquit, 2006) formulates human resource development as actions involving: (1) the creation of human resources; (2) their development; and (3) the establishment of incentive or wage structures aligned with employment opportunities. These actions imply that improving the quality of government personnel must be pursued through formal education, training, and effective utilization of available resources.

The research findings also indicate that capacity building at Diskominfo of Gresik Regency emphasizes organizational strengthening to improve the effectiveness of public services, particularly through the optimization of the Electronic-Based Government System. This means that capacity development is not only understood as improving the abilities of individual personnel but also as a strategic effort to strengthen the overall system, structure, and governance of the organization. Organizational strengthening serves as the foundation to ensure that digital transformation is implemented in a directed, integrated, and sustainable manner.

Substantively, these findings show that the effectiveness of electronic-based public services depends heavily on institutional readiness, clarity of roles and functions, coordination mechanisms across regional government units, and adequate regulatory and operational support. In other words, the optimization of the Electronic-Based Government System is not merely a technological issue but rather the result of strong institutional capacity.

Another implication is that Diskominfo functions as the leading sector in orchestrating digital governance at the regency level. Therefore, organizational strengthening becomes an instrument to enhance accountability, service process efficiency, and the quality of electronic-based public services delivered to the community. The focus on organizational strengthening reflects a systemic capacity-building approach oriented toward sustainable digital bureaucratic reform, rather than merely short-term technical interventions.

This is consistent with Grindle (1997), who states that capacity building is not limited to improving individual skills but also includes organizational strengthening and institutional reform to enable institutions to perform public service functions effectively. Grindle emphasizes that institutional capacity is a key determinant of successful public sector reform. This perspective is also reinforced by the United Nations Development Programme (2009), which defines capacity development as a process through which individuals, organizations, and societies enhance their abilities to perform core functions, solve problems, and achieve development objectives sustainably. In the context of the Electronic-Based Government System, the strengthening of Diskominfo reflects the organizational and systemic dimensions of capacity development.

Moreover, Hilderbrand and Grindle (1994) state that the capacity of public organizations is influenced by institutional structures, management systems, resources, and policy environments. Therefore, optimizing the Electronic-Based Government System as a digital public service instrument is highly dependent on institutional readiness and strengthened organizational capacity. The focus on organizational strengthening in implementing the Electronic-Based Government System at Diskominfo of Gresik Regency aligns with capacity-building theory, which positions the organizational dimension as a strategic element in enhancing the effectiveness of technology-based public services.

The research findings further indicate that the main obstacles to capacity building at the Department of Communication and Informatics of Gresik Regency include limited budgets, disparities in technical competencies (particularly in IT), gaps between training needs and program realization, lack of post-training follow-up, and weak internal coordination. These findings imply that capacity development has not yet been implemented in a fully systematic and sustainable manner. Capacity building still faces challenges at three main levels:

1) Individual Level:
   The disparity in technical competencies indicates uneven capabilities among personnel, especially in responding to the demands of digitalization within the Electronic-Based Government System.

2) Organizational Level:
   Limited budgets and the lack of follow-up after training reflect suboptimal strategic planning and human resource development management.
3) System/Institutional Level:
   Weak coordination indicates obstacles in governance and policy integration.

Thus, these constraints demonstrate that the success of the Electronic-Based Government System is determined not only by the availability of technology but also by the readiness of human resources, policy support, and consistency in implementing capacity development programs. These findings are consistent with Hilderbrand and Grindle (1994), who argue that public sector capacity is influenced by resources (budget and human resources), organizational structure, management systems, and the policy environment. Budget limitations and weak coordination directly affect the effectiveness of organizational capacity development.

Furthermore, according to the United Nations Development Programme (2009), capacity development must be implemented comprehensively at the individual, organizational, and system levels. If one dimension—for example, resource support or the sustainability of training is not fulfilled, the capacity development process will not function optimally. This perspective is also supported by Christopher Pollitt and Geert Bouckaert (2011), who emphasize that public sector reforms often face obstacles such as limited resources, organizational resistance, and weak coordination among units. Without effective change management, training and administrative reforms tend to produce limited impact. Therefore, the capacity-building challenges faced by Diskominfo of Gresik Regency reflect classic challenges in public sector capacity development, namely resource limitations, competency gaps, and the lack of an integrated and sustainable human resource management system.

## 6. Conclusion

Based on the results of the research on capacity building of government personnel in the implementation of the Electronic-Based Government System (SPBE) at the Department of Communication and Informatics of Gresik Regency, it can be concluded that the development of personnel capacity is carried out through two main strategies, namely human resource development and organizational strengthening. These two strategies complement each other and indicate that capacity building is not only understood as improving the technical abilities of individuals, but also as a strategic process aimed at strengthening institutional capacity in a sustainable manner.

In the human resource development dimension, the study found that the formation and training of an internal assessor team became the main instrument in supporting the implementation of the Electronic-Based Government System. The establishment of this team represents an effort toward institutionalized capacity, in which the organization systematically develops internal resources capable of performing monitoring, evaluation, and quality assurance functions in the implementation of the Electronic-Based Government System. With the existence of an internal assessor team, the organization does not rely entirely on external parties in the evaluation process or in improving the quality of digital governance. This demonstrates a long-term orientation in building institutional independence.

Furthermore, in the organizational strengthening dimension, capacity building is directed toward improving the effectiveness of electronic-based public services through the optimization of organizational structures, work systems, and coordination mechanisms. Organizational strengthening is interpreted as the main foundation for the success of digital transformation. This study shows that the successful implementation of the Electronic-Based Government System is strongly influenced by institutional readiness, clear division of roles and functions, support from internal regulations, and the existence of adequate standard operating procedures. Therefore, digital transformation in government is not merely a matter of adopting technology, but rather a comprehensive process of organizational reform.

However, this study also found several constraints in capacity building occurring at three levels: the individual level, organizational level, and system/institutional level. At the individual level, there is a disparity in the technical competencies of personnel, particularly in the field of information technology, indicating that human resource readiness in facing digitalization demands is not yet evenly distributed. At the organizational level, budget limitations and the lack of optimal post-training follow-up reflect the need for more integrated and sustainable strategic planning for human resource development. Meanwhile, at the

system/institutional level, weak coordination among regional government units indicates obstacles in policy integration and the overall governance of SPBE.

The results of this research provide several important implications for the development of public administration theory, particularly regarding capacity building and digital governance. First, the findings reinforce the multilevel capacity-building perspective, which places capacity development at three main dimensions: individual, organization, and system/institution. Second, this research contributes conceptually to the development of studies on the Electronic-Based Government System by emphasizing that successful implementation requires integration between technical aspects and managerial–organizational aspects. Third, the results expand the understanding of capacity building as a process of institutionalizing knowledge and competencies, rather than merely short-term training activities. The establishment of an internal assessor team demonstrates that capacity development can be directed toward creating internal mechanisms that ensure the sustainability of organizational performance improvement.

Although this research has attempted to examine in depth the capacity building of personnel in the implementation of the Electronic-Based Government System at the Department of Communication and Informatics of Gresik Regency, several limitations need to be acknowledged as part of academic responsibility. First, this research was conducted within the scope of a single regional government organization, so the findings are contextual and cannot be directly generalized to all regional governments in Indonesia. Each region has different institutional characteristics, fiscal capacity, organizational culture, and levels of SPBE maturity. Second, this study focuses primarily on the perspectives of human resource development and organizational strengthening, and therefore does not explore in depth aspects such as organizational culture, resistance to change, or the dynamics of bureaucratic politics, which may influence the success of SPBE implementation. Third, this study focuses on the internal organizational dimension, and therefore has not comprehensively examined external perspectives such as public perceptions as service users, the role of technology partners, or policy support from the central government.

Based on these limitations, several future research agendas are recommended to enrich the study of public administration, particularly in the fields of digital governance and capacity building. First, comparative studies among regional governments should be conducted to compare capacity-building strategies in the implementation of the Electronic-Based Government System. Comparative studies will provide insights into best practices as well as contextual factors that influence the success of digital transformation at the regional level. Second, research using quantitative or mixed-method approaches can be conducted to empirically test the relationship between capacity building and improvements in the Electronic-Based Government System index, public service quality, and citizen satisfaction. Such approaches will strengthen external validity and contribute to the development of data-based policy evaluation models.

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