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## **Implementation of Electronic Signatures on Financial Administration Documents (A Study at the Regional Finance and Assets Agency of North Minahasa Regency)**

**Novilya Shintya Netty De Breving<sup>1</sup>, Sisca B. Kairupan<sup>2</sup>, Steven Tarore<sup>3</sup>**

Public Administration Master Program, Universitas Negeri Manado, Indonesia

Email: [novilya.de.breving@mail.go.id](mailto:novilya.de.breving@mail.go.id)<sup>1</sup>, [siscakairupan@unima.ac.id](mailto:siscakairupan@unima.ac.id)<sup>2</sup>, [steventarore@unima.ac.id](mailto:steventarore@unima.ac.id)<sup>3</sup>

**Abstract.** This study aims to analyze the implementation of Electronic Signature (TTE) on financial administration documents at the Regional Finance and Assets Agency of North Minahasa Regency. The main focus of the research is directed at two important aspects, namely communication and socialization, which determine the success of TTE implementation in the local government bureaucracy. This research used a descriptive qualitative approach with data collection techniques through in-depth interviews, observation, and documentation on 5 key informants. The results showed that the implementation of TTE still faces various challenges that are quite complex. From the communication aspect, it was found that the lack of uniformity of understanding among employees was caused by unsystematic internal communication, informal delivery of instructions, and the absence of an official communication media specifically dealing with technical issues and policies related to TTE. In terms of socialization, the activities that have been implemented have not reached all employees evenly, are one-way, and are not equipped with supporting learning media such as written guidelines and video tutorials. In addition, there is no post-socialization technical assistance system in place, which has led to employees' dependence on colleagues who understand technology better. Other obstacles are also found in the aspect of human resources, such as limited employee competence in using TTE, lack of practical training, not optimal supporting infrastructure, and ineffective coordination between units and with external parties. Based on these findings, it is recommended to strengthen the internal communication system, improve the quality and scope of socialization, provide self-learning media, and form a technical team that can assist the TTE implementation process on an ongoing basis. Effective implementation is expected to encourage the creation of modern, transparent, and accountable financial administration governance.

**Keywords.** Policy Implementation, Electronic Signature, Digitalization of Financial Administration, Regional Finance and Asset Agency

### **A. INTRODUCTION**

In the current era of digitalization, the development of information technology has driven significant changes in various aspects of governance, including in the field of regional financial administration (Supit & Lumingkewas, 2023) [1]. The central government through various regulations encourages local governments to transform digitally, one of which is by

implementing financial administration digitization in bureaucratic reform to improve efficiency, transparency, and accountability of public services. One innovation that is now widely applied is the Electronic Signature (TTE) which allows document authorization to be carried out digitally without the physical presence of the signatory.

Based on data from the National Cyber and Crypto Agency (BSSN), the use of certified TTE in the government will increase by 35% by 2022. This implementation is proven to speed up administrative processes, reduce operational costs, and support the concept of paperless office. The Central Government has implemented TTE in various strategic services, such as population administration, finance, and licensing (BSSN, 2022) [2].

At the regional level, the Government of North Minahasa Regency has shown its commitment by signing a cooperation agreement with the BSSN Electronic Certification Center (BSrE) on the Utilization of Electronic Certificates on Electronic Systems within the Government of North Minahasa Regency, Number: 800/DKIP/128/X/2021; and Number: PERJ.235/BSSN/ BS/KH.02.01/ 10/ 2021 and issuing Regent Regulation Number 12 of 2022 on the Implementation of Electronic Certificates. The Communication and Information and Standardization Office of North Minahasa Regency has also facilitated the use of TTE for OPD leaders.

However, the results of initial observations at the Regional Finance and Assets Agency (BKAD) of North Minahasa Regency show that the implementation of TTE is still limited to ordinary administrative documents and still uses conventional and semi-digital systems, which can even be said to be manual. Where the process of signing strategic financial administration documents such as Pay Order (SPM), Disbursement Order (SP2D), Payment Request Letter (SPP), Fund Provision Letter (SPD), and financial reports are still carried out manually where the letters generated by the System still have to be printed out or printed and then manually signed before they can be processed further. Financial report data for the first quarter of 2023 shows that around 18% of the fund disbursement process was delayed. It was noted that the average time required for the document signing process reached 2-3 working days due to waiting for manual signatures from the Budget User Authority (KPA) or authorized officials who were out of the area. This has an impact on the slow bureaucratic process, the risk of service delays, the potential for misuse of documents, and the high operational costs of printing, with the use of paper for financial administration per year estimated at  $\pm$  12,000 sheets, which has an impact on high stationery costs and is not environmentally friendly.

This condition contradicts the principles of effectiveness, efficiency, and accountability of regional financial management as mandated in Law Number 23 of 2014 concerning Regional Government and Government Regulation Number 12 of 2019 concerning Regional Financial Management. In fact, nationally the application of TTE has been proven to accelerate the financial administration process and bureaucracy in various agencies. Based on data from the Ministry of Communication and Information of the Republic of Indonesia, until the end of 2023, more than 510 local governments in Indonesia have implemented electronic-based services, but the utilization of TTE in financial administration is still relatively low.

Digitalization of financial administration, especially the application of TTE, is very relevant and has a strategic role in supporting the effectiveness of regional financial document management through an electronic-based government system (SPBE) and ensuring the security and validity of digital documents (Sukarsa et al., 2020) [3]. In addition to accelerating services, TTE also provides legal certainty for electronic documents because it has legal force based on Law Number 11 of 2008 concerning Electronic Information and Transactions which has been amended by Law Number 19 of 2016 [4]. Government Regulation Number 71 of 2019

concerning the Implementation of Electronic Systems and Transactions and Minister of Home Affairs Regulation Number 70 of 2019 concerning Regional Government Information Systems, encourage the acceleration of digitization of government administration, including in the regional financial management sector (Manoe et al., 2023) [5]. In line with that, BKAD North Minahasa Regency as a regional apparatus that has the main task in managing regional finances and assets, is required to innovate in digital-based financial administration governance.

Seeing these conditions, the implementation of Electronic Signatures in the BKAD of North Minahasa Regency is a strategic necessity. Besides being able to cut bureaucratic process time by more than 50%, the implementation of TTE also guarantees the legal validity of electronic documents in accordance with the provisions in Law Number 19 Year 2016 on Electronic Information and Transactions (ITE). Several regions such as Kampar Regency, Sleman Regency, and Surabaya City have successfully implemented TTE in regional financial administration, with the result of increasing work efficiency and strengthening internal control.

Therefore, this research is very important to analyze the implementation of TTE in financial administration at the Regional Finance and Assets Agency (BKAD) of North Minahasa Regency, as well as to identify the supporting and inhibiting factors, as well as to formulate optimization efforts so that TTE implementation can contribute to supporting the realization of clean, effective, transparent, and accountable governance, and encourage the acceleration of digital transformation in North Minahasa Regency.

## **B. METHOD**

The method used in this research is a qualitative method. According to Moleong (2017) Qualitative research is research that intends to understand phenomena about what is experienced by research subjects, for example behavior, perceptions, motivations, actions and others holistically and by means of descriptions in the form of words and language, in a special natural context and by utilizing various natural methods [6]. In line with this, this research is a qualitative approach research to explore and explain related to examining the Implementation of Electronic Signatures (TTE) on Financial Administration Documents at the Regional Finance and Assets Agency (BKAD) of North Minahasa Regency.

This research was conducted in North Minahasa Regency, specifically at the Regional Finance and Assets Agency (BKAD). The research informants were determined using purposive sampling technique, consisting of BKAD structural officials and staff employees in this case as implementers in the North Minahasa Regional Finance and Assets Agency (BKAD). The data collection techniques used were observation, in-depth interviews, and document studies.

The research focus is the Implementation of Electronic Signatures (TTE) on Financial Administration Documents at the Regional Finance and Assets Agency (BKAD) of North Minahasa Regency, with sub-focus or indicators: Communication, Socialization, and Obstacles to the Implementation of Electronic Signatures (TTE) on Financial Administration Documents at the Regional Finance and Assets Agency of North Minahasa Regency.

The data analysis technique used in this study is the interactive model of Miles, Huberman and Saldana (2014) in Kairupan et al. (2019), namely data collection, data condensation, data display, and conclusion drawing [7]. In order to meet the validation criteria for research findings, researchers carry out validation stages as explained by Nasution (1988: 114) in Tarore et al. (2023), that the level of trust in qualitative research is determined by the criteria: (1) credibility (internal validity); (2) transperability (external validity); (3) dependability (reliability); and (4) confirmability (objectivity) [8].

### C. RESULT AND DISCUSSION

#### Communication in the implementation of Electronic Signatures (TTE) on Financial Administration Documents

Based on the research data obtained through observation and in-depth interviews with research informants, the findings on communication indicators in the implementation of Electronic Signatures (TTE) on Financial Administration Documents are described in table 1 below:

**Table 1.** Research Findings on Communication Indicators

Focus	Indicator	Findings
Implementation of Electronic Signatures (TTE) on Financial Administration Documents at the Regional Finance and Assets Agency (BKAD) of North Minahasa Regency	Communication	Lack of Uniformity of Understanding Among Employees: There is a difference in the level of understanding among employees regarding TTE usage procedures, which is caused by uneven internal communication and instructions that are not delivered in a systematic or structured manner.
		Lack of Effective Socialization and Training: Socialization and training on TTE has not reached all employees equally and has not been conducted in an interactive manner. Many employees feel that they do not understand the technical implementation of TTE because the training is one-way or only given to some staff.
		Constraints in the Delivery of Technical Information: The delivery of technical information about TTE tends to be done briefly through informal communication media such as WhatsApp groups, without in-depth explanations, resulting in confusion for employees who do not yet understand digital technology as a whole.
		Not Optimal External Coordination: Communication with external agencies such as BPK, Inspectorate, or work partners still faces obstacles because not all parties accept or understand the legality of electronically signed documents, so employees must provide additional explanations and even reprint documents.
		Unavailability of TTE Specific Communication Media: The absence of official communication channels that specifically address technical and policy issues related to TTE means that important information is often piled up or left in general communication media, such as daily workgroups, so that it is not conveyed effectively.

*Source: Primary data processed by researchers, 2025*

The implementation of Electronic Signature (TTE) in financial administration at the Regional Finance and Asset Agency of North Minahasa Regency is one of the important steps in encouraging the digital transformation of government bureaucracy. The implementation of TTE does not only serve as an administrative tool, but also as part of a procedural policy aimed at improving efficiency, transparency and accountability in the management of regional

financial documents. However, the success of this digital transformation is largely determined by the effectiveness of internal communication within the agency.

The main problem faced in the implementation of TTE is the uneven understanding of employees on the procedures for its use. This inequality of understanding is due to the uneven pattern of information dissemination and the absence of a systematic communication flow. Some employees understand the TTE workflow thoroughly, while others still stick to conventional methods because they have not mastered how to access and use the system. As a result, there is an imbalance in task execution, which has the potential to slow down administrative processes and hamper the smooth running of public services.

One of the factors causing the low understanding of employees is the lack of interactive socialization and training activities. Socialization activities that have been carried out so far are only in the form of one-sided explanations without room for discussion or direct practice, so that many employees have difficulty understanding the technical aspects of TTE. In addition, training is not followed evenly by all employees, which results in only a small number of apparatus mastering the system, while others are left behind.

Another obstacle lies in the ineffective medium of delivering technical information. Important instructions are often only conveyed through WhatsApp groups, an informal medium where information is easily accumulated and mixed with other irrelevant messages. This makes it difficult for employees to retrace important information, so TTE implementation often suffers from errors due to different interpretations of procedures.

This situation is exacerbated by the unavailability of an official communication medium that specifically addresses TTE technical issues. The absence of formal communication channels makes it difficult for employees to find reference information or convey technical problems encountered. As a result, the information exchange process is inefficient and the handling of technical problems is slow.

On the other hand, external coordination is also a challenge. Some external parties, such as the BPK and Inspectorate, still do not fully accept the legality of electronic signed documents, so employees are forced to re-explain or even print documents with wet signatures. This disharmony of understanding between agencies adds to the workload and slows down the administrative process.

This condition illustrates that the implementation of TTE has not been supported by an effective, organized, and inclusive communication system. The sporadic dissemination of information and the lack of an internal communication strategy make the digital transformation process run not optimally. Therefore, it is necessary to establish an official communication channel that specifically handles policy, technical, and troubleshooting related to TTE. This channel can be an internal platform or a special unit tasked with providing education, assistance, and responding to problems in real time.

In addition, it is important to conduct practice-based socialization so that employees can understand first-hand the flow and use of TTE in real work situations. By strengthening internal and external communication, as well as providing relevant and easily accessible information media, the implementation of TTE is expected to run more smoothly, with equal understanding among employees, improved coordination between work units, and better acceptance from external partners. This effort is a strategic step in the success of digital transformation of regional financial administration in a sustainable manner.

Etymologically, the term policy comes from the word "polis" in ancient Greek which means city or city-state, which later developed its meaning into a regulatory system in state life (Kairupan, 2013) [9]. In the context of modern government, policies are defined as formal

decisions that are binding and taken by authorized institutions to regulate, control, and direct actions in order to achieve certain goals (Langkai, 2019) [10]. One manifestation of modern policy in the digital era is the implementation of Electronic Signatures (TTE) in local government financial administration. This policy is part of the bureaucratic transformation towards a digital system that is more efficient, accountable, and transparent.

The implementation of TTE within the Regional Finance and Assets Agency of North Minahasa Regency is a clear example of the implementation of a formal policy that requires the bureaucracy to switch from a manual system to a digital system. This view is in line with the spirit of bureaucratic reform that demands public organizations to be more adaptive to technological developments. In this case, information technology is no longer just an administrative tool, but becomes the main foundation in the process of electronic-based public services. Therefore, organizational communication plays a vital role in socializing this paradigm shift, starting from the legality of using TTE, the flow of procedures, to the benefits offered in accelerating the financial administration process.

According to Syafaruddin (2008), the policy is formal and binding, so all employees must understand and implement the policy [11]. The implementation of TTE is not just a technical instruction, but part of the transformation of organizational behavior that needs to be supported by collective understanding and active involvement of all employees. Here, internal communication serves as an educational medium as well as a means of strengthening coordination between work units so that policy implementation runs effectively.

When viewed using a systems approach (input-process-output), TTE can be positioned as a policy system that involves various elements: inputs in the form of human resources, technological devices, and supporting regulations; processes in the form of technical training, policy socialization, and strengthening coordination; and outputs in the form of legal and digitally certified financial administration documents. In this model, communication plays a strategic role to ensure all stages are synchronized and mutually supportive.

Bridgeman and Davis (2004) in Bakry (2010) explain that policies have three important dimensions, namely goals, legal actions, and hypotheses [12]. The implementation of TTE clearly has a goal to improve administrative efficiency and transparency, is part of legal action based on laws and regulations, and is based on the hypothesis that digitalization can reduce corrupt practices, speed up bureaucracy, and minimize administrative errors. In this context, communication becomes an important bridge to translate formal policies into daily work practices.

Furthermore, Anderson in Winarno (2016) views that the implementation of procedural policies must be followed by substantive policies that are in line [13]. This means that the implementation of TTE is not just a matter of changing manual signatures to electronic ones, but must also be accompanied by clarity of procedures, division of authority, and operational standards that are mutually understood. If communication does not run optimally, policy implementation risks experiencing technical obstacles and bureaucratic cultural resistance.

By regulation, Anderson categorizes the TTE policy as a regulatory policy that regulates employee behavior in the document authorization process. Communication in this policy is not only informative, but also normative, explaining the rules of the game, sanctions for violations, and inherent supervision mechanisms. In addition, this policy has a material nature because it produces tangible impacts in the form of work efficiency, cost savings, and increased document security.

Thomas Dye in Tumbel (2024) emphasizes that public policy needs to consider who benefits and who may be affected [14]. In the implementation of TTE, communication must explain that the purpose of the policy is not to make it difficult for employees, especially those who are not familiar with technology, but to build a more orderly and accountable administrative system. Thus, the communication approach should be educative, dialogical, and empathetic, so that the transition process towards digitization is smooth and accepted by all.

George R. Terry in Masengi et al. (2023) stated that policy is a comprehensive guideline, and communication is the main tool in delivering the guideline [15]. Communication about TTE must be carried out through various media such as training forums, workshops, coordination meetings, and internal digital media so that policy messages can be understood thoroughly and sustainably. Moreover, the TTE policy is a long-term strategic policy as expressed by Aminullah, so socialization and strengthening understanding need to be carried out systematically, not just a momentary ceremonial activity.

The theoretical link is reinforced by previous studies. Yusuf et al. (2023) in their research found that the implementation of TTE in the West Java Provincial government was not optimal due to weak internal communication and lack of coordination across work units. These conditions show that without structured and comprehensive communication, digitization policies will be difficult to implement even though the system tools are already available [16].

In contrast, research by Amalia et al. (2023) on the implementation of TTE within the Directorate General of Dukcapil of the Ministry of Home Affairs showed positive results. The success was supported by consistent organizational communication and a uniform understanding of the importance of document digitization. This research proves that strategic communication is key in realizing an effective digital bureaucracy [17].

From the comparison of the two studies, it can be concluded that the success or failure of TTE implementation is largely determined by the quality of organizational communication. Systematic, transparent, and participatory communication is able to build common understanding, minimize resistance, and accelerate the adoption of new technology in the bureaucratic environment.

In the context of the Regional Finance and Assets Agency of North Minahasa Regency, this research places communication as the main foundation in supporting digitalization policies. The ideal communication should be two-way, participatory and adaptive, which not only conveys technical procedures, but also builds collective awareness of the urgency of digitizing the bureaucracy.

In addition, communication also needs to be integrated in managerial processes and strategic decision-making. The preparation of clear SOPs, the establishment of inter-unit coordination flow, and the appointment of special personnel to assist TTE implementation are part of a comprehensive organizational communication strategy. Thus, communication is not only a tool for socialization, but also a means of building collective commitment, changing the mindset of conventional bureaucracy, and realizing a modern, professional, and accountable electronic-based financial administration system.

### **Communication in the implementation of Electronic Signatures (TTE) on Financial Administration Documents**

Based on the research data obtained through observation and in-depth interviews with research informants, the findings on the socialization indicators in the implementation of Electronic Signatures (TTE) on Financial Administration Documents are described in table 2 below:

**Table 2. Research Findings on Socialization Indicators**

Focus	Indicator	Findings
Implementation of Electronic Signatures (TTE) on Financial Administration Documents at the Regional Finance and Assets Agency (BKAD) of North Minahasa Regency	Socialization	<p>Socialization not yet reached all employees equally evenly: Not all employees, especially executive staff, have received official socialization on the use of TTE. Some only received information indirectly, leading to gaps in understanding among employees.</p> <p>Socialization materials tend to be general and less technical: The content of the material emphasizes more on policy aspects and benefits TTE benefits, without a detailed explanation of the technical use and workflow in the financial administration system. workflow in the financial administration system.</p> <p>The delivery method of socialization is less interactive: Socialization was conducted in a one-way manner through presentations without providing sufficient space for discussion or hands-on simulation, making it difficult for employees to understand the practical use of TTE.</p> <p>Limitations media supporting media in socialization: Unavailability of supporting media such as written guides, video tutorials, or self-learning platforms makes it difficult for employees to access the information again after the socialization took place.</p> <p>No post-socialization technical assistance: After After socialization activities, there is no technical assistance team or contact person who can help employees when they experience problems, resulting in dependence on the socialization team. dependence on coworkers who are more knowledgeable.</p>

*Source: Primary data processed by researchers, 2025*

Socialization plays a crucial role in supporting the successful implementation of digital policies, including the implementation of Electronic Signatures (TTE) on financial administration documents at the Regional Finance and Asset Agency of North Minahasa Regency. As part of the bureaucratic reform effort and transformation towards an electronic-based government system, TTE is an important instrument to improve efficiency, service speed, and transparency in administrative processes. However, the successful implementation of this policy is highly dependent on the readiness of human resources, which is realized through an effective, systematic, and equitable socialization process throughout the organization.

In the context of TTE implementation at the Regional Finance and Assets Agency of North Minahasa Regency, the implementation of socialization conducted to date has not fully met the principles of affordability and equitable distribution of information. The findings show that many employees, especially executive staff, are not directly involved in the official socialization activities held. Most only obtain information indirectly through colleagues or superiors, without getting a full and comprehensive explanation of the TTE policy and its technical use. This condition creates a gap in understanding between employees, which in turn

has the potential to cause resistance, procedural errors, and slow down the financial administration process.

The unreachability of socialization evenly reflects the weakness of the organization's internal communication strategy planning. In fact, in the digital transformation process, the success of a bureaucratic innovation is largely determined by how all elements of the organization understand, accept, and are able to operate the new system implemented. When only some employees have sufficient knowledge about the TTE policy, there will be an imbalance of information, which can lead to dependence between employees, bureaucratic obstacles, and even potential administrative errors.

In addition to outreach issues, the content of the socialization materials delivered so far has also been one of the inhibiting factors. The material presented focuses more on explaining general policies and the benefits of TTE in terms of administrative efficiency and increased accountability. Meanwhile, technical explanations on how the system works, the steps to use the TTE application, and the flow of procedures for signing financial documents electronically have not been given in detail. As a result, employees experience difficulties when faced with real situations in applying TTE to daily financial administration documents.

Effective socialization should ideally not only be informative, but also educative and interactive. This means that in addition to conveying information about policies and benefits, the socialization process should also provide opportunities for employees to understand directly through simulations, role plays, or practical case studies. Unfortunately, the socialization delivery method used so far is more one-way, such as conventional lectures or presentations, without actively involving participants in discussions, simulations, or application usage exercises. This approach makes socialization activities lose their essence as a means of transferring knowledge and skills.

Another factor that weakens the effectiveness of socialization is the limited supporting media. In its implementation, there is no supporting media such as written guidebooks, video tutorials, or self-learning modules that can be accessed at any time by employees. In fact, the existence of this media is important so that employees have a source of reference when facing technical obstacles in the process of using TTE outside of formal socialization sessions. Dependence only on face-to-face or online socialization activities will make it difficult for employees who experience difficulties at other times. With complete supporting media, employees can learn independently, deepen the material, and adapt more quickly to the new system.

Equally important, after the socialization activities, there is no adequate technical assistance system in place. When employees face technical problems while operating the TTE, there is no dedicated team or contact person who can provide assistance quickly and appropriately. As a result, employees tend to ask for help from colleagues who understand the system better, which in turn creates an unbalanced workload and slows down the completion of administrative processes. The presence of a responsive technical assistance team is needed to assist employees' adaptation process, especially in the early stages of implementing a digital system such as TTE.

These problems indicate that the implementation of TTE socialization at the Regional Finance and Assets Agency of North Minahasa Regency has not been designed strategically and thoroughly. Ideally, the implementation of socialization should be based on mapping the needs of employees by considering the background of understanding technology, position, and level of understanding of financial administration. Thus, socialization does not only function as

a medium for policy delivery, but also a means of increasing the capacity of employees to face the digital transformation of the bureaucracy.

In the theory of organizational socialization according to Edgar H. Schein in Efendi and Frinaldi (2024), the process of employee socialization in bureaucratic organizations ideally goes through several stages, namely anticipation, encounter, and change or adaptation. At the anticipation stage, employees begin to receive information about new policies that will be implemented. The encounter stage takes place when employees begin to participate in socialization activities directly and receive explanations about policies and technical implementation. The third stage is adaptation, where employees begin to apply the policy in their daily work [18].

But in this case, the process has not run optimally. Many employees did not fully participate in the anticipation stage because they were not reached by the initial information about the implementation of TTE. The meeting stage also did not take place effectively because the socialization method was one-way without any meaningful interaction. This has an impact on the adaptation stage which is not optimal, as evidenced by the gap in understanding and dependence between employees in the implementation of TTE.

In line with that, organizational communication theory according to Gerald M. Goldhaber in Tarore (2023) emphasizes that organizational communication must be open, two-way, and involve the active participation of all members of the organization [19]. In the implementation of TTE socialization, the communication that occurs tends to be vertical and closed, more in the nature of instructions from superiors to subordinates, without adequate space for dialogue. In addition, the lack of supporting media means that the information received cannot be studied independently by employees. This condition is contrary to the principles of effective organizational communication, namely clarity of information, openness, and ease of access for all members of the organization.

The results of previous research also corroborate these findings. Yusuf et al. (2023) in their research in West Java Province, found that the delay in TTE implementation was caused by weak socialization and high dependence on manual processes which are still dominant [16]. In contrast, research by Amalia et al. (2023) on the implementation of TTE in Electronic Office Manuscripts (Attandie) at the Directorate General of Population and Civil Registration showed positive results, where socialization was carried out in accordance with the provisions of the Minister of Home Affairs Regulation No. 7 of 2019 with systematic methods, complete supporting media, and active technical assistance [17].

From these two studies, it can be concluded that the quality of the socialization process determines the success of TTE implementation. Socialization that is uneven, passive, and not supported by learning media and technical assistance tends to produce bureaucratic resistance and delays in administrative processes. On the contrary, structured, interactive, and practice-based socialization can accelerate employees' adaptation to the new system.

Based on these conditions, the ideal view offered by the researcher is the importance of redesigning the TTE socialization strategy at the Regional Finance and Assets Agency of North Minahasa Regency. Socialization needs to be designed thoroughly and evenly for all levels of employees, including executive staff. In addition to conveying the policy and benefits of TTE, the socialization material should contain technical explanations about the procedures for using TTE in financial administration, document flow, and process schemes that must be carried out.

Material delivery should also be done interactively using discussion, simulation, and role-play methods so that employees are more actively involved and understand real problems

in the field. In addition, learning media such as video tutorials, guide modules, and online learning platforms that can be accessed at any time should be made available. No less important, a technical assistance team or contact person should also be formed to assist employees in dealing with post-socialization operational constraints.

With a planned, interactive, practice-based socialization approach, as well as supported by adequate learning media and technical assistance, it is expected that the implementation of TTE in the Regional Finance and Assets Agency of North Minahasa Regency can run effectively, efficiently, and sustainably. Bureaucratic digital transformation is not just a matter of adopting technology, but also about building the readiness of human resources to be able to adapt and work optimally in the implemented digital system.

### **Factors inhibiting in the implementation of Electronic Signatures (TTE) on Financial Administration Documents**

Based on the research data obtained through observation and in-depth interviews with research informants, findings related to indicators of inhibiting factors in the implementation of Electronic Signatures (TTE) in Financial Administration Documents are described in table 3 below:

**Table 3. Research Findings on Indicators of Inhibiting Factors**

Focus	Indicator	Findings
Implementation of Electronic Signatures (TTE) on Financial Administration Documents at the Regional Finance and Assets Agency (BKAD) of North Minahasa Regency	Inhibiting Factors	<p>Limited Competence of Human Resources in the Use of TTE: There are still employees who do not have sufficient understanding and technical skills related to the use of the TTE system. Lack of practical training and uneven adaptability to digital technology are barriers to effective implementation.</p> <p>Not Optimal Facilities and Infrastructure: Supporting infrastructure such as internet networks, computer devices, and TTE applications have not fully supported the efficient implementation of electronic signatures. This condition causes the administrative process to be hampered and requires manual handling as an alternative.</p> <p>Ineffective Interunit Coordination and Communication: There is a lack of synchronization in coordination between work units and also with external parties, especially in terms of understanding TTE procedures and receiving electronic documents. Lack of uniformity of information leads to confusion and delays in document approval.</p>

*Source: Primary data processed by researchers, 2025*

Factors inhibiting the implementation of Electronic Signature (TTE) on financial administration documents at the Regional Finance and Assets Agency of North Minahasa Regency is one of the important aspects that greatly affect the effectiveness of digital transformation in local governance. Digitalization of public administration, including the use of TTE, is a strategic step in efforts to reform the bureaucracy, improve service efficiency, and create a transparent and accountable administrative system. However, its implementation in the field still faces various challenges that are quite complex and layered. One of the main obstacles identified is the limited competence of human resources (HR) within the organization.

Not all employees have sufficient technical skills to use the TTE system optimally. Most employees still have difficulties in understanding the application workflow, digital security procedures, and technical steps in performing electronic signatures on financial administration documents. This condition is exacerbated by the lack of practical training that touches on technical aspects in detail. The socialization activities that have been carried out are more theoretical and have not provided sufficient space for employees to carry out simulations or direct practice. As a result, employees' adaptation to the new system has been slow, and there has been a gap in understanding among them.

This competency limitation has serious consequences for work effectiveness. One of them is the increasing dependence of employees who have not mastered TTE on colleagues who are more tech-savvy. This dependency not only slows down the workflow, but also creates an unbalanced workload among employees. Those who have not mastered TTE tend to continue using manual methods or even delay administrative processes due to ignorance in operating the available applications. If this condition is left without quick and systematic handling, it will have a wider impact on the slow process of bureaucratic reform that relies on digitalization as a driving force.

In addition to the issue of human resource competence, facilities and infrastructure that have not been optimized also become a significant obstacle in the implementation of TTE. Supporting infrastructure such as unstable internet networks, outdated computer equipment, and limited access to the TTE application system often disrupt the smooth process of digitizing financial documents. Under these conditions, employees are often forced to return to using manual methods so that the administrative process can still run according to the predetermined deadline. In fact, the main objective of TTE implementation is to create speed, efficiency and accountability in financial administration.

This inadequate condition of facilities and infrastructure also has an impact on the gap between work units. Some units that have better access to technology can implement TTE more smoothly, while other units that are technically lagging behind experience difficulties. This gap ultimately makes the implementation of TTE not uniform and creates inequality in the quality of administration between units. In the long run, such a situation has the potential to undermine public confidence in local financial governance. Therefore, policy intervention and sufficient budget support are needed to improve digital infrastructure evenly across all work units within the Regional Finance and Assets Agency.

Another important factor is the lack of coordination and communication among work units and with external parties related to TTE implementation. The administrative digitization process, especially those involving official financial documents, requires a uniform understanding between work units regarding technical procedures, usage policies, and the legality of electronic documents. But in reality, there are still differences in understanding and operational standards between units, which results in a slow process of validation and approval of documents. In addition, poor communication in responding to technical problems that arise in the field often extends the administrative completion time.

To overcome these obstacles, synergy between units is needed through efforts to equalize perceptions, create uniform standard operating procedures (SOPs), and regular communication forums that discuss the evaluation of TTE implementation. Improving internal information flow is very important so that all employees understand TTE workflow and procedures correctly and uniformly. By strengthening human resource capacity, improving digital infrastructure, and building an effective coordination and communication system, the

implementation of TTE within the Regional Finance and Assets Agency can run more optimally and support efficient, transparent, and accountable bureaucratic reform.

From a theoretical point of view, these barriers are in line with Rogers' (2003) theory of innovation adoption in Sugiono (2024), which states that technology adoption is influenced by five main characteristics: relative advantage, compatibility, complexity, testability, and observability [20]. In the context of TTE implementation, the barriers that arise show that most employees still have difficulty adopting this technology because they feel the system is too complex and not compatible enough with their technical abilities. According to Rogers, the higher the perceived complexity of a technology, the lower the adoption rate.

In addition, the Technology Acceptance Model (TAM) theory developed by Davis (1989) is also relevant in explaining this condition. According to TAM, acceptance of technology is influenced by perceived usefulness and perceived ease of use [21]. Limited training and uneven technical understanding make employees not feel easy to use TTE. As a result, the perceived usefulness of this technology is low, and resistance to its use increases. Other technical barriers such as poor network infrastructure and devices also worsen the user experience.

Kurt Lewin's (1951) change management theory in Mellita and Elpanso (2020) illustrates that the process of organizational change consists of three stages: unfreezing, changing, and refreezing [22]. Based on conditions in the field, it appears that the "unfreezing" stage has not run optimally because there are still many employees who are not mentally prepared and have not been equipped with adequate skills. The "changing" stage or the implementation of change has not gone smoothly, because there has not been full support from management, including technical facilities, training, and intensive assistance. The "refreezing" stage or strengthening new habits in using TTE has also not been achieved, because employees are still comfortable using the manual system.

On the other hand, institutional theory explains that organizational change is often hampered by deeply rooted norms, culture, and old habits (Berthod, 2016) [23]. The long-standing use of manual signatures in government is a challenge in itself. Although the TTE system is available, some employees still choose the manual method because they feel safer and are used to the old way. Therefore, changing organizational culture is an important factor in supporting digital transformation.

Several previous studies also support the findings of this study. Yusuf et al. (2023) in their research in West Java Province found that the implementation of TTE has not run optimally because it still depends on the physical presence of the leadership [16]. Meanwhile, Amalia et al. (2023) at the Directorate General of Population and Civil Registration showed that the successful implementation of TTE was strongly influenced by technical understanding and compliance with regulations. The success at the Directorate General of Dukcapil can be used as an example for the Regional Finance and Assets Agency of North Minahasa Regency [17].

Based on all of these descriptions, it can be concluded that the implementation of TTE requires a comprehensive approach, ranging from increasing HR competencies, improving infrastructure, to strengthening coordination across units. The researchers' ideal view emphasizes the importance of synergy between employees, complete facilities, and an effective communication system. TTE implementation is not just the use of new technology, but a work system transformation that requires full commitment and support from all elements of the organization so that the goals of efficiency, transparency, and accountability of financial administration management can be optimally achieved.

#### D. CONCLUSION

Based on the results of the research and discussion above, it can be concluded that the implementation of Electronic Signatures (TTE) on financial administration documents at the Regional Finance and Assets Agency of North Minahasa Regency still faces significant obstacles, both from the aspects of communication and socialization. In the communication aspect, it was found that a structured and systematic internal communication system had not been established, resulting in a gap in understanding between employees in carrying out TTE procedures. Information delivery that tends to be informal and is not supported by official communication channels has an impact on the various interpretations of the implementation procedures. Meanwhile, in terms of socialization, the activities carried out are still limited, have not touched all employees evenly, and lack space for discussion and hands-on practice. Socialization materials focus more on general policies without adequate technical explanations, plus there is no written guidance or supporting learning media that can be accessed independently. This condition causes most employees to have difficulty in understanding and implementing TTE optimally, and still depend on colleagues who understand better.

Furthermore, the results also show that there are three main factors that hinder the implementation of TTE, namely limited human resource competencies, inadequate facilities and infrastructure, and weak coordination and communication between work units. There are still many employees who do not have a technical understanding of the use of TTE due to the lack of practical training provided. In addition, supporting infrastructure such as an unstable internet network, limited computer equipment, and an unoptimized application system also slowed down the process of digitizing financial administration. Other obstacles arise from ineffective internal coordination and unsynergistic external communication with partner agencies, resulting in a lack of understanding regarding the legality procedures of electronic documents. These findings emphasize the need for a targeted improvement strategy, including strengthening human resource capacity, improving the quality of supporting facilities, and improving communication and coordination systems across units so that TTE implementation can run effectively, efficiently, and support modern, transparent and accountable local financial administration governance.

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