Digital Transformation Governance at the Organization Using IT Infrastructure Library Framework

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Abstract

Nowadays, most of our daily activities are assisted electronically due to not only time effectiveness but also activity efficiency. Processes that once could only be completed at the office are now able to be done anywhere and anytime, as long as there is internet access. One obvious example is the COVID-19 pandemic which leads to the work-from-home system. Therefore, this spurred the author on to innovation by adapting to the current phenomenon. Most of our daily activities are currently converted to digital, in which these digital users can reap abundant results. This manual-to-digital conversion is known as 'digital transformation'. The purpose of digitalization in this organization is to transform the disposition distribution of the leaders from manual to digital. The result of the study is the adoption of e-Disposisi application (paperless office) in the organization, which causes the business processes to be more effective and more efficient concerning time, human resources, document storage, and paper use. This implementation results in changes in the business processes, the reduction of time needed to distribute documents, the lower purchase of paper and tint, and the minimized employment of human resources. Generally, the research contributes to the more effortless business processes in the organization, allowing operations to continue without direct contact. Data collection was done through various methods, namely observation, interview, questionnaire, focus group discussion (FGD), and literature. The methodologies used were Soft System Management, qualitative and quantitative referring to the IT Information Library framework.

1- Introduction

Currently, digitalization processes are done in almost all areas, whether general or organizational sectors, due to the existence of business needs relying on flexibility and the advancement in digital areas. A simple example is the use of smartphones that have a strong internet connection. Through this device, all activities can be done online, and the data is managed digitally, anywhere and anytime. This digital transformation can be defined as "the total and thorough effect of digitalization on society". Khan states that digitization has made the digitalization process possible, driving bigger opportunities for transformation and changing the current business, socio-economic structures, laws and policy procedures, organizational forms, cultural changes, and so forth. Digitization (conversion), digitalization (process), and digital transformation (effects) accelerate and guide what has already existed, what has been going on horizontally, and the processes of global changes in society [1, 2]. During the pandemic, this condition significantly affected the working culture of each individual, causing a more blurred boundary between personal and professional matters because work can be done at home, even anywhere, without considering time and distance barriers [3].

The factors that led to the occurrence of digital transformation are the changes in regulations or rules, the change in the competitive landscape, the shift/change to digital forms in industries, the change in behaviors and expectations of consumers, the awareness of the benefits of digital technology, and the readiness of resources [4].

The business processes in the organization in which this study was being conducted show that, in 2020 (and the previous years), almost all activities were done manually by making use of printed papers (even handwritten). Moreover, there were many files that were stored for over 9 years that had not been converted digitally. As a result, there were challenges in arranging the old events and documents that were processed in physical forms as well as there was no clear storage. At the time, the flow of the leaders' disposition distributions was still using manual processes. Documents were downloaded from e-mails to be printed. The disposition sheets were attached, and the secretary delivered them to the leaders. After the leaders were done with the disposition, the documents were retrieved and handed to the staff. However, if in 1 (one) letter is targeted for more than 1 (one) staff, there have to be double copies according to the numbers of the staff that are in disposition. After that, the files were given to each staff, and the original documents/files (physical forms) were stored in physical storage. This process of doing the disposition distribution took a long time (one entire day). As a consequence, the other tasks were not done optimally, or in contrast, other tasks were more prioritized, so the disposition distribution was not seen as a priority. But, in fact, the two tasks were equally urgent. Besides that, there was only 1 (one) person doing this assignment. It was challenging to do this job, which demanded the management of time while also paying attention to the priorities of the leaders.

Because of this, the author initiated a digital transformation in the organization, with the objective of realizing the vision and mission of the leaders in order to achieve the organization's goals. This initiation in the form of a hybrid office operation has been implemented since 2021. The process of digital transformation that is done by the organization is the adoption of an application system known as an electronic office (e-disposition) that processes and manages the letters and dispositions of leaders well due to easy access, anywhere and anytime. With this potential for electronic governance, there should be better governance arrangements for digital transformation in the organization.

2- Literature Review

Royyana (2021) [5] explored the profound impact of technology, a catalyst accelerating progress across diverse domains encompassing both business sectors and social spheres. PT. Kimia Farma's increased adoption of Enterprise Resource Planning (ERP) signifies the organization's preparedness for digital transformation. Employing a descriptive method within the PSSI framework by Ward and Peppard, the study utilized documentation frameworks from Westerman et al. The research yielded a comprehensive blueprint for business strategy, IT management, IT strategy, and a digital transformation strategy framework. This included recommended models for digital business operations, operational processes, customer experiences, and digital transformation management strategies. These outcomes suggest multiple proposals for Digital Business Models, Process Operations, Customer Experiences, and Transformation Management applicable to businesses. The transformative operational processes encompass smart stock for supporting pharmacy marketplace operations, big data analytics to analyze diverse data sources, knowledge management systems for efficient knowledge distribution, and synchronized point-of-sale systems across outlets. The analysis indicates the company's readiness to implement digital transformation business models and submit detailed funding and calculations.

Nugroho (2019) [6] underscored the imperative need for a systematic and innovative digital transformation within BUMN to retain competitiveness, drive advancement, enhance efficiency, and align with organizational objectives. Employing a quantitative technique and a descriptive approach, the study relied on document research involving secondary sources such as firm publications from the company's website and reputable media outlets. The collected data underwent thorough compilation, examination, and discussion. The research delineated stages and levels towards a digitally evolved BUMN, emphasizing the necessity of grasping the essence of digitization. It highlighted several pivotal steps for successful digital transformation, including evaluating the current status, aligning efforts with prevailing conditions, and implementing a structured change management strategy. Descriptive statistical analysis yielded a Mean value of 39.13, signifying that the average SOE initiative had reached a Strategic maturity level, focusing on generating strategic advantages, particularly in operational efficiency, collaboration, market competitiveness, and financial performance optimization. Some companies had reached the highest level of maturity, Innovative and Adaptive, serving as models and catalysts for other organizations.

Gurning et al. (2019) [7] underscored the necessity of implementing digital transformation across library collections, particularly in instances where traditional printed materials have been digitized. Despite housing digitized books, the National Library of the Republic of Indonesia preserves ancient manuscripts and collections available for viewing in their original state. The impetus for this digital shift arises from public demand for accessing the knowledge encapsulated within these historical documents. The endeavor towards digital transformation aims to facilitate users' access to ancient manuscripts and fulfill their informational needs. Employing a qualitative descriptive methodology, this study provides comprehensive insights into the digital transformation initiatives carried out at the National Library of Indonesia, particularly focusing on the preservation of manuscripts within its archives.

According to the Putra et al. (2020) [8] study, websites have found applications across various disciplines, including government operations. In today's context, the possession of a dedicated website is deemed essential for local governmental bodies. Conceptually, the Jogja Regional Government has endeavored to uphold the principles integral to the Smart Governance concept, emphasizing ICT-based public services through its website (Information, Communication, and Technology). This research adopted a descriptive approach, focusing on the E-government revolution in communication and information technology, whereby the website functions as a means to advance smart governance under the smart city framework. The Jogjakarta Regional Administration has managed its website as a crucial step towards realizing the ideals of this concept, aligning with the prevalent trend across Indonesian cities to implement the Smart Governance concept within the broader Smart City framework. The research shares similarities in spirit with previous studies on e-Government conducted by the author.

White (2008) [9] highlighted an existing gap between IT management, university students, and decision-makers, necessitating the resolution of this disparity through the adoption of an appropriate framework. The research focused on bridging the gap between IT management and decision-makers via the application of IT governance. It also assessed students' responses following the implementation of IT governance. Leveraging the IT Infrastructure Library (Version 2) framework significantly enhanced IT service delivery, showing a notable 200% improvement. Specifically, achievements included meeting service level agreement incidents, a 200% increase in the expeditious execution of planning changes, and a 20% improvement in agency. Furthermore, the productivity of the service desk surged by 30%. These findings, utilizing a familiar framework to the author's prior research, allow for comparisons and opportunities to supplement the ongoing discussion with additional insights.

Esteves & Alves (2013) [10] illustrated instances of resistance within public organizations during the implementation of business process alterations using the ITIL framework. The study highlighted challenges arising from differences in company culture, specifically noting a stronger inclination towards ITIL implementation within public organizations in Madeira. Utilizing the ITIL framework showcased its potential to notably enhance IT quality, encompassing service improvements, cost reduction, heightened customer satisfaction, increased productivity, and improved delivery standards. The study's outcomes closely aligned with those of the authors, employing a comparable framework. Despite encountering similar issues, the research adeptly navigated these challenges, ultimately yielding anticipated results aligning with stakeholders' expectations.

Selig (2016) [11] underscores the existence of both opportunities and challenges in effectively managing and controlling IT requirements within organizations, necessitating a thorough comprehension of how to continually plan and implement IT governance and management. Utilizing a range of frameworks such as PMI, CoBiT, ITIL, Strategy Planning, select ISO Standards, CMMI, TOGAF, OPBOK, and the Balanced Scorecard allows for an exploration of their distinctions. The study's outcomes advocate for designing a comprehensive and unified IT governance framework and outlining a roadmap that aligns with the evolving best practices in the field. Given the significance of achieving effective IT alignment and management, every aspect of IT governance components must be meticulously addressed. The proposed framework serves as guidance, aiding organizations in selecting and customizing an appropriate approach based on priorities, capabilities, and available resources. The study outlines the varied frameworks available for managing IT within an organization, offering insights into their distinctions and aiding in determining the most suitable framework for research purposes.

Daminov (2022) [12] addresses the multifaceted nature of digital transformation, highlighting its various interpretations, particularly in the social sciences, where it represents diverse processes involving the shift from analog to digital technology. Additionally, the role of digital transformation varies significantly across countries, raising questions about the distinctive forms of digitalization observed within government organizations globally. Through empirical analysis encompassing showcasing, relevance, recognition, timespan, and availability, the study offers recommendations advocating the utilization of digitalization typologies and frameworks across government organizations and private sectors. These suggestions aim to enhance political and economic perspectives by focusing on centralized processes. Acknowledging the challenges in fostering comprehensive societal transformation, the study proposes government-supported digitalization processes that can dynamically impact each country's capacity movement. Different policies and regulations in various countries lead to distinct implementations of digital transformation governance, with these approaches deeply influenced by the social cultures ingrained within each nation.

Mulyana et al. (2022) [13] shed light on studies examining ineffective IT Governance (ITG). To address this issue, the authors conducted a Delphi study to validate ITG mechanisms, drawing insights from experts within Indonesia's banking and insurance industries. The Delphi study yielded a list comprising 46 validated IT mechanisms, encompassing 20 structures, 21 processes, and 5 relational mechanisms. The effects of digital transformation notably expanded this list. The research also evaluated the effectiveness and implementation simplicity of these ITG mechanisms, identifying 10 crucial ones that could serve as the bedrock for successful Digital Transformation (DT) journeys in banking and insurance organizations. The study underscores the critical relationship between leaders, IT management, and business management within organizations embracing governance through digital transformation. Similar to the ongoing study, a structural organizational relationship emerges between business processes and decision-makers.

Nadeem et al. (2018) [14] indicate that widespread digital transformation significantly impacts various industries, notably in healthcare, telecommunications, automotive, banking, and manufacturing. This transformation enables innovative practices, improved designs, novel business models, and value creation for internet-based organizations. Leveraging this evolution enables companies to strengthen customer relationships and bolster cross-sales potential through successful digital transformations. Digital transformation involves more than just acquiring and implementing technology to meet objectives; it's also a strategic approach to managing managerial issues encompassing human resources, business efficiency, and business process redesign. The methodology involves a combination of three key terms—digital business strategy, digital transformation, and business digitalization—to search for titles, abstracts, and keywords from manuscripts published between 2000 and 2017. Guided by Wolifswinkel's methodology, a systematic review and coding process are applied to identify categories, sub-categories, and main themes within the collected articles. This study explores the interconnectedness among organizational capability, digital transformation, and digital business strategy, culminating in the development of a conceptual working scheme. It elucidates how a specific set of organizational capabilities, coupled with a distinct dimension of digital business strategy, drives organizations toward successful digital transformation. The study outlines the cause-effect relationships between organizational capabilities and digital transformations, moderated by digital business strategies, offering crucial insights into fundamental managerial practices for successful digital transformations in electronic trade.

The analysis unveils a distinctive perspective on digital transformations, digital business strategies, and organizational capabilities. This study significantly contributes to the literature on digital transformations, enriching the discourse by outlining the relationships among organizational capabilities, digital transformations, and digital business strategies. It presents a unique dimension essential for comprehending digital transformation, digital business strategy, and organizational capability. The findings provide valuable insights for CEOs and CIOs seeking an effective framework that delineates the connections between digital transformation, organizational capabilities, and digital business strategy. Typically, organizations engage consultants to develop strategies based on organizational capability to drive digital business strategies, aiming for digital transformation. However, despite significant investments in digital technology, many organizations struggle to achieve effective digital transformation across their operations. Thus, this research aims to guide them in identifying and applying the appropriate organizational capabilities to lead successful digital transformation and enhance overall performance. Furthermore, stakeholders in Information Systems (IS) or Information Technology (IT) seeking to advance digital business strategy and transformation will benefit from this research. This field has garnered substantial attention, as evidenced by numerous publications across various journals, illustrating a growing awareness of the challenges associated with digital transformation. This research empowers IS researchers to gain a deeper understanding of the intricacies involved in digital transformation initiatives.

Chin et al. [15] investigated the trajectory of digital transformation (DT) within service industries, utilizing real-world case studies and pertinent journal articles. The primary objective was to delineate the progression of DT within service sectors by scrutinizing practical instances. Departing from a purely academic approach, this study analyzed how DT has been practically integrated within service industries, encompassing diverse forms and methodologies. Additionally, the researchers examined the trends in DT research by collating keywords associated with DT published between 1991 and March 4, 2022, using specific classification criteria relevant to service industries. Subsequently, the study compared the outcomes derived from case analyses (a facet of the primary objective) with existing trends in research analysis, offering insights into the evolution of DT within service sectors. This research fills a gap in the existing literature by transcending academic research limitations and identifies influential factors affecting DT implementation across various developmental stages. The study's findings offer valuable insights for devising DT strategies in service sectors, comparing and contrasting actual cases with DT research published in journals. Additionally, this research categorizes the primary contributors to DT into three evolutionary stages within service sectors. The outcomes provide theoretical and practical implications, furnishing strategic insights for planning and executing DT initiatives within service industries. Employing a comprehensive analysis of real-world cases within digital service sectors and articles from business-related journals through keyword analysis, this paper compartmentalizes DT into several stages aligned with service-related keywords and industrial classification criteria. The ultimate goal of DT within service organizations is to generate novel or augmented value by deploying advanced digital technologies across operational processes. The examination of diverse real-world DT cases in this study underscores the pivotal role of technology in shaping new business models, serving as a driving force in the evolution of DT.

García-Peñalvo (2021) [16] emphasizes that the current scenario of independent isolation and social distancing necessitates a blend of technology as a crucial tool to sustain professional, educational, and social activities. Societally, the surge in digital competency has been exponential. However, the imperative to utilize technology doesn't uniformly imply that institutions and individuals are inherently equipped to navigate a digital paradigm shift, highlighting a deficiency in strategic preparedness for comprehensive digital transformation. This inadequacy is notably evident within universities where, despite technology effectively supporting their missions, particularly in teaching, the maturity of the digital transformation process remains compromised. Due to the inherent constraints of educational journals in

disseminating public knowledge, alongside other scientific publications, the review process was somewhat delayed but eventually completed. This research aims to offer recommendations to universities, urging them to contemplate integrating technology into the teaching model, fostering advancements in hybrid teaching formats that leverage available resources and methods while retaining the strengths of face-to-face instruction over virtual settings. Consequently, there's a necessity to reassess teacher training, encompassing both content and skills promotion, tailored to the evolving teaching formats. Facilitating a more flexible model enables swift training of a larger number of individuals by amalgamating features of massive open online courses (MOOCs) with personalized training conducted by instructors open to facilitating independent learning, catering to the diverse needs of the university community.

3- Research Methodology

In conducting this research, the author utilized the IT Infrastructure Library version 3 framework. This framework was chosen due to its emphasis on IT service and its straightforward process, resulting in outcomes that align with the organization's objectives and requirements. The methodology involved a series of steps [17].

- *Service Strategy*: Service Strategy encompasses a vital approach adopted by service management to elevate the document distribution service as a valuable asset within the organization. The objective is to align this service with the organization's vision and mission, aiming to evolve the current business processes into more advanced ones. This strategy includes several components: the implementation of demand management processes to meet organizational expectations, service portfolio management to introduce new services fulfilling organizational needs, financial management to optimize the budget post-implementation of new business processes, and business relationship management fostering synergy among stakeholders within the organization.

- *Service Design*: Service Design involves planning service enhancements aligned with the organizational goals and needs, thereby optimizing the document distribution business process for increased effectiveness and efficiency. This process includes various critical components: Service Catalogue Management: This is determined by the service portfolio management to implement a design that caters to the organization's requirements. Service Level Management: It involves assessing the quality of the implemented IT service, necessitating changes from previous iterations. Supplier Management: This entails budget calculations that must be verified and assured throughout the system implementation. Capacity Management: It ensures a balance between planning and assets, aligning infrastructure and budget within the organization. Availability Management: This guarantees the readiness and seamless functioning of the implemented service. IT Service Continuity Management: It focuses on recovery strategies for occurrences like natural disasters, minimizing risks that affect IT services. Information Security Management: This emphasizes measures to prevent data leakage in the implemented system, requiring SOPs and policies for database management. Design Coordination: This involves coordination between developers and stakeholders (architects, technology experts, and business process authorities) to agree on the service system's implementation.

- The phase of shifting from the former business process to the recently implemented document digitalization process, followed by the digitization of the business process, is recognized as service transition. This phase encompasses planning, implementation, assessment, evaluation, and monitoring as its primary steps. Change management becomes crucial to alter the existing business service according to its initial intent. Service asset and configuration management act as a bridge between stakeholders' needs and the service offered by the system and infrastructure within the organization. Additionally, knowledge management plays a critical role in enhancing service quality within the new system.

- *Service Operation* involves the daily management of services to maintain quality, catering to the organization's needs and benefiting stakeholders. This process entails several key components: Event management, aimed at operational efficiency and incident prevention; Incident management, addressing and resolving incidents to ensure the smooth operation of the business process; Problem management, analyzing the root causes of incidents and promptly resolving issues; Request fulfilment, meeting stakeholder demands, such as adding service features; and Access management, ensuring user authentication and controlling system access based on users' rights and access levels.

- *Continual Service Improving* is to develop the continual service and trials if there are new service features in the system that has been implemented with the intention to improve the service.

By following the implemented steps, outcomes are expected to be generated, as outlined in the service level agreement established between the service system developer and the organization's stakeholders. The ITIL process map [18] can be referenced in Figure 1, as illustrated in the explanation above.
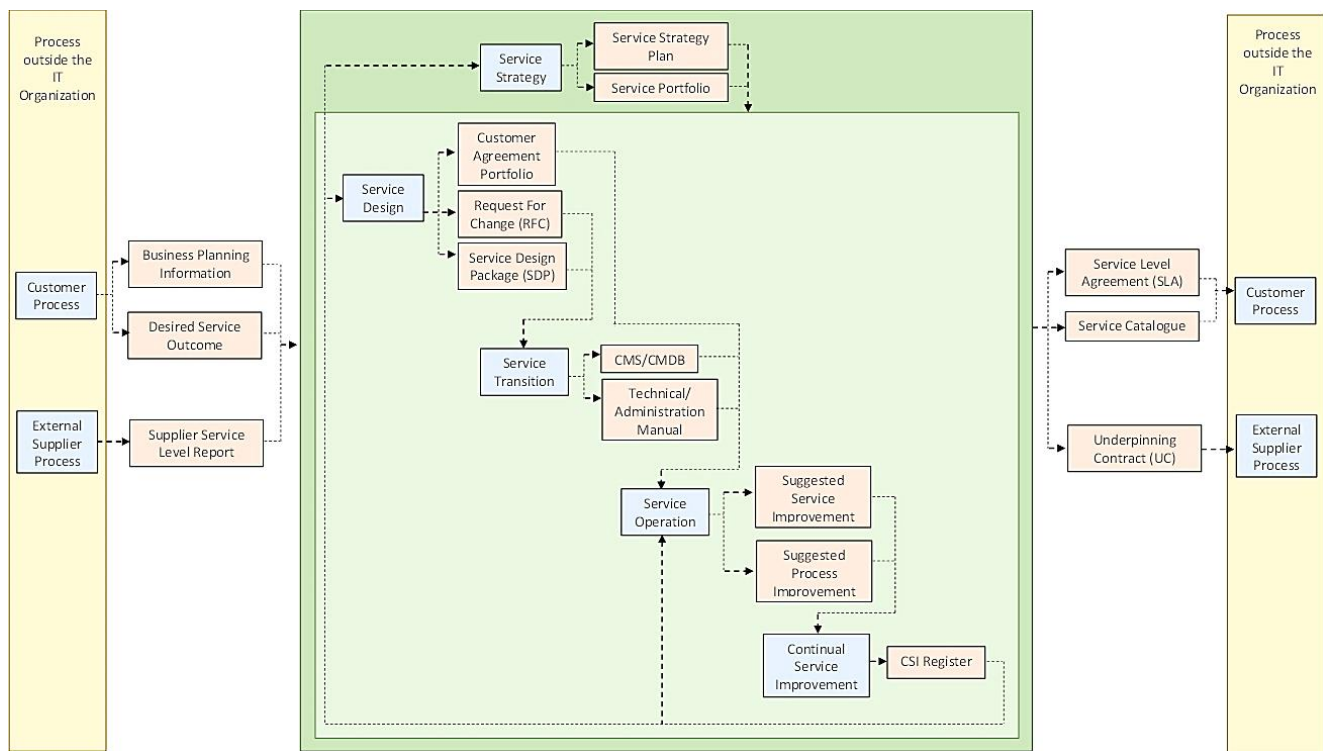
Figure 1. The ITIL Process Map

In this research, the author utilized the IT Infrastructure Library as the framework and adopted the Soft System Methodology (SSM), along with Qualitative and Quantitative Methodologies. This approach ensured a systematic and measurable investigation, maintaining the quality of data and numerical analysis. As per the Indonesian Dictionary, transformation signifies a shift toward a new condition, while digital transformation implies progress toward an improved state through electronic means. Managing digital transformation involves revising business process services via electronic systems [19].

The term "*digital*" traces its roots to the Greek word "*digitus*," denoting fingers—the human count of ten fingers. By analogy, it translates into the binary number system of 1 and 0, with 1 representing "on" and 0 signifying "off." Computer systems operate using a digital system that recognizes and processes binary digits of 1 and 0 [20]. The author selected the IT infrastructure Library framework because it is often used by organizations and enterprises and has been effectively utilized to achieve effectiveness and efficiency based on the demands of the stakeholders. This framework is adaptable to existing infrastructure and can continually improve to comply with international standards. Post-successful implementation, this framework enables evaluation and service enhancement.

The research methodology involved data collection through field observations, compiling a list of real needs, stakeholder interviews, *Likert*-scale questionnaires to gauge factors impacting the implementation process, and focus group discussions to grasp stakeholder opinions comprehensively. Upon obtaining the dataset, a classification into problem clusters ensued, followed by analysis and hypothesis formation to determine if the implemented system aligns with the organization's requirements [21].

4- Result and Discussion

Due to the lack of similar research that might have been done previously, it is difficult to compare the results of this study with other studies. However, by comparing the success factors of digital transformation governance implemented in different sectors and scales, it can be concluded that this research has successfully provided the right solution. According to the results of the research analysis, there are several criteria for the success factor of digital transformation at this organization, which are as follows:

- The e-Disposition application is an adopted application from an existing application within the organizational environment. However, previous documentation has not been done yet because it is an evolving application according to the needs of the organization that is still in the development and improvement phase. Previously, the author also implemented this application in another organization, but on a different operating system known as Linux. In this study, the author applied it to the MS Windows operating system, resulting in an application that works well.

- In the previous implementation, the application was used in locations with a stable internet connection and good infrastructure. On the other hand, in the current implementation, it is being used in a location with an unstable internet

connection and infrastructure. This led to hesitation in adopting it. Nevertheless, despite this difference, the application can still be implemented with the same successful outcome as in the previous location.

- Therefore, this organization has 100% succeeded in implementing electronic office activity in the service process for distributing incoming documents. Today, the business process at the organization is faster because, in just a few minutes, tactical elements in all functions can carry out the disposition of the leader.

- This organization has succeeded in carrying out performance effectiveness, specifically the fact that work can be done anywhere and anytime if it is connected to the internet to access disposition services.

- Based on data from the Administration section, this organization has succeeded in implementing performance efficiency, specifically the application of paperless activity, saving 150 reams of paper. This means the implementation has saved 150 trees. Thus, the budget can be allocated to other office stationery needs. In addition, the effect of this digital transformation is saving space for physical storage of files and documents.

- This organization has succeeded in securing information in digital format, which means that the Leader's disposition files and documents will not be scattered or lost because they are not stored in the system, making it easy to find the old files.

From the success achieved, there are certainly supporting and inhibiting factors in the implementation of the digital transformation. Based on the benchmarks and indicators of the theory of George D. Edward III, policy implementation is a dynamic process. There are interrelated factors that influence the implementation of policy. These factors must be shown to determine the possible effects. There are 4 (four) factors that can influence the effect of implementing the policy, such as communication, human resources, state property resources, disposition, and bureaucratic organizational structure [22].

Supporting factors for a business or activity that can encourage progress from certain conditions, in this case, support the progress of digital transformation at the organization. The supporting factor for this research is based on observations and interviews with all entities at the organization in terms of communication, namely smooth coordination among all entities and influencing business processes to run well.

The supporting resources encompass active engagement from all supporting staff members, displaying a positive attitude towards the implementation of research and embracing cultural shifts within the organization's work environment. Additionally, these resources manifest in the form of State Property, involving the procurement of dedicated computer equipment for service servers and the modernization of the local area network across the organization.

The disposition process has received robust support due to the unanimous enthusiasm displayed by all entities towards its electronic implementation, backed by the recognized validity of documented evidence. Consequently, this transition has led to increased clarity and transparency in work execution. Additionally, the bureaucratic organizational structure has lent support, marked by the presence of standardized operational procedures and appropriate policies governing service business processes. The sequence of dispositions aligns with functional and positional sequences. However, amidst these supportive factors, certain hindrances exist. Communication barriers arise from varying languages used by different entities, making it challenging to develop a system using multiple languages. As a solution, the system was customized in English, limiting its use to employees primarily engaged in core functions.

The obstacle factor in terms of resources is the fact that some local employees have not been able to accept technological changes. In response to this, there have been several socializations by leadership elements in staff meetings to use information technology in their daily work as regulated by the leader's decree regarding governance. Now there has been significant progress. Another obstacle in terms of hardware resources and communication equipment is periodic interruptions from internet providers in local areas, sometimes causing the system availability to be disrupted. The solution is to immediately contact the provider to improve the quality of the internet bandwidth at the organization.

The technical obstacle factor in terms of positioning is the identification of bugs that interfere with the performance of system services during the research, such as the disappearance of the button, such as "has been accepted" and "has carried out the disposition" of the web service and this obstacle has been resolved and has been improved from the database side. There was no search button in the function account to search for files that didn't appear on the main page in the current year and the search button has been added. The system was unable to upload large files due to system restrictions, and the system has been updated to upload a maximum of 50MB. Another obstacle was changing the year: the previous year's data didn't appear so users couldn't see the old data, but the system has been fixed so the users are now able to see the data again.

The other obstacle factor in terms of the bureaucratic organizational structure is that there are functions that develop more than one position so that the function has "access rights" of more than 1 (one) which is a bit of a hassle for the function, and it has been explained that the service is related to non-individual functions so that 1 (one) access is required for 1 (one) function due to the very dynamic function rotation.

Data validation was obtained through a direct questionnaire targeted to leaders and staff members in the organization, allowing the author to understand the organization's needs and objectives. The author presented 21 multiple-choice questions to be answered by members directly involved in the research. The multiple-choice options consisted of SD with a value of 1, D with a value of 2, N with a value of 3, A with a value of 4, and SA with a value of 5. The higher the score earned, the higher the level of success.

There were four main domain questions related to policy, communication, documentation, and human resources, which were further developed into 21 questions as follows:

- In the policy category, there were 2 questions that resulted in more than 60% agreement and less than 40% answering agree, neutral, and disagree. This demonstrates the alignment of policies related to digital transformation governance in the organization. The questions are as follows:

  o Are the results of digital transformation implementation in line with the organization's objectives?

  o What is the attitude of decision-makers regarding the use of public platforms that are more popular than government applications?

- In the strategy and planning category, there were 14 questions that were crucial in implementing digital transformation governance in the organization. The majority of respondents agreed with the strategies and plans that have been or will be implemented, with a minimum percentage score of 50%. The following are the questions:

  o Digital Transformation means that there is a change from physical to virtual matters. Does the organization plan on minimizing costs of unused assets due to the shift to virtual?

  o How is digital thinking applied to all staff and leaders in the organization?

  o What solutions facilitate the integration of individual applications used by staff with organizational applications in the digital transformation process?

  o How can the organization consistently demonstrate its digital transformation governance capability in providing products and services that meet customer requirements, laws, and regulations?

  o Digital transformation requires the qualification of Digital Leadership. The acceleration of leadership becomes mandatory. Does the organization have the necessary qualifications?

  o Has the digital transformation governance met customer needs and aimed to exceed customer expectations?

  o Is achieving consistent and predictable results more effective and efficient when activities are understood and managed as interconnected processes functioning as a coherent system?

  o Are decisions based on data and information analysis and evaluation better in achieving desired outcomes?

  o Is a successful organization focused on continuous improvement?

  o How does the organization manage its relationships with stakeholders to maintain success?

  o How does one implement the requirements for the organization to establish, implement, maintain, and continually improve its Service Management System (SMS)?

  o Does the organization have competent, empowered, and engaged individuals contributing value?

  o Are there difficulties in the implementation process of digital transformation in the organization?

  o Are there obstacles and challenges in the digital transformation implementation in the organization, and can opportunities and strengths be derived from the success of digital transformation in the organization?

- Communication is also something that must be done well in the implementation of this governance because it is essential to coordinate with various parties to ensure that information is conveyed completely. More than 60% of respondents agreed that the organization has communicated well with various parties whether or not they are directly involved. The questions are as follows:

  o Have all members of the organization communicated effectively to support the sustainability of digital transformation in the organization?

  o Has the impact of digital transformation governance in the organization been running smoothly?

- Proper documentation is necessary to store all activity records so that in case of incidents, we can refer to the documentation, including equipment, supplies, and ongoing activities. Respondents generally answered in agreement, and some even strongly agreed. The questions are as follows:

o Have the equipment and supplies used for digital transformation implementation been fulfilled?

o Is the process of activities in the organizational digital transformation carried out through planning, installation, socialization, assessment, and evaluation?

- Respondents, to the extent of 75%, agreed that KBRI Dakar has facilitated training activities for human resources involved in the implementation of digital transformation governance, both conducted at KBRI Dakar or by related parties. The question was whether the organization facilitates the necessary training and technical guidance for the digital transformation governance team?

From the questionnaires that have been distributed to all entities including the leadership elements, the following results are obtained (see Table 1: SD is Strongly Disagree with grade 1, D is Disagree with grade 2, N is Neutral with grade 3, A is Agree with grade 4, SA is Strongly Agree with grade 5, and FR is Frequency for the most answer).

Table 1. Assessment Results from 12 entities at the Organization

Questions	SD	D	N	A	SA	FR
Q1	0	0	0	7	5	A
Q2	0	1	1	7	3	A
Q3	0	0	1	6	5	A
Q4	0	0	1	7	4	A
Q5	0	0	0	7	5	A
Q6	0	0	2	7	3	A
Q7	0	0	0	8	4	A
Q8	0	0	2	7	3	A
Q9	0	0	1	8	3	A
Q10	0	0	0	7	5	A
Q11	0	0	1	5	6	SA
Q12	0	0	1	5	6	SA
Q13	0	0	1	7	4	A
Q14	0	1	2	7	2	A
Q15	0	1	2	5	4	A
Q16	0	1	1	7	3	A
Q17	0	0	1	8	3	A
Q18	0	0	2	7	2	A
Q19	0	1	2	4	5	SA
Q20	0	0	0	7	5	A
Q21	0	1	1	8	2	A

From the 21 questions about the policy, the infrastructure, the application, the safety of information, the human resource, the documentation, and training, most of the respondents' answer "Agree" and "Strongly Agree" because all the staff can experience the right business process at organization. From Table 1, it can be interpreted that the organization in terms of development has been very good because it has progressed very rapidly in digital transformation. The implementation of digital transformation has run well because all entities take an active role. From the application side, there are also many useful features adaptations in the implementation of business processes. However, on the infrastructure side, it is still on average normal due to the condition of the old building. It is necessary to upgrade the infrastructure for the renovation of the building and the internet network. Security at this organization is classified as satisfactory because the security system has been running well. The environmental aspect is still of normal value because so far, the national stability of the local area is relatively safe and under control.

Sometimes we have a problem with electricity in the local area, so the availability is interrupted for about a couple of minutes, which could affect the work of each member of staff at the organization. The data obtained from the questionnaire was processed using Pearson Product Moment Correlation and Cronbach's Alpha Reliability Test [23, 24].

Table 2. The Analysis of the Frequency of Responses from Respondents to Each Question in the Questionnaire

		Frequency	Percent	Valid Percent	Cumulative Percent
Question 1 Valid	A	7	58.3	58.3	58.3
	SA	5	41.7	41.7	100.0
	Total	12	100.0	100.0	-
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Question 2 Valid	D	1	8.3	8.3	8.3
	N	1	8.3	8.3	16.7
	A	7	58.3	58.3	75.0
	SA	3	25.0	25.0	100.0
	Total	12	100.0	100.0	-
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Question 3 Valid	N	1	8.3	8.3	8.3
	A	6	50.0	50.0	58.3
	SA	5	41.7	41.7	100.0
	Total	12	100.0	100.0	-
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Question 4 Valid	N	1	8.3	8.3	8.3
	A	7	58.3	58.3	66.7
	SA	4	33.3	33.3	100.0
	Total	12	100.0	100.0	-
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Question 5 Valid	A	7	58.3	58.3	58.3
	SA	5	41.7	41.7	100.0
	Total	12	100.0	100.0	-
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Question 6 Valid	N	2	16.7	16.7	16.7
	A	7	58.3	58.3	75.0
	SA	3	25.0	25.0	100.0
	Total	12	100.0	100.0	-
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Question 7 Valid	A	8	66.7	66.7	66.7
	SA	4	33.3	33.3	100.0
	Total	12	100.0	100.0	-
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Question 8 Valid	N	2	16.7	16.7	16.7
	A	7	58.3	58.3	75.0
	SA	3	25.0	25.0	100.0
	Total	12	100.0	100.0	-
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Question 9 Valid	N	1	8.3	8.3	8.3
	A	8	66.7	66.7	75.0
	SA	3	25.0	25.0	100.0
	Total	12	100.0	100.0	-
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Question 10 Valid	A	7	58.3	58.3	58.3
	SA	5	41.7	41.7	100.0
	Total	12	100.0	100.0	-
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Question 11 Valid	N	1	8.3	8.3	8.3
	A	5	41.7	41.7	50.0
	SA	6	50.0	50.0	100.0
	Total	12	100.0	100.0	-

		Frequency	Percent	Valid Percent	Cumulative Percent
Question 12 Valid	N	1	8.3	8.3	8.3
	A	5	41.7	41.7	50.0
	SA	6	50.0	50.0	100.0
	Total	12	100.0	100.0	-

		Frequency	Percent	Valid Percent	Cumulative Percent
Question 13 Valid	N	1	8.3	8.3	8.3
	A	7	58.3	58.3	66.7
	SA	4	33.3	33.3	100.0
	Total	12	100.0	100.0	-

		Frequency	Percent	Valid Percent	Cumulative Percent
Question 14 Valid	D	1	8.3	8.3	8.3
	N	2	16.7	16.7	25.0
	A	7	58.3	58.3	83.3
	SA	2	16.7	16.7	100.0
	Total	12	100.0	100.0	-

		Frequency	Percent	Valid Percent	Cumulative Percent
Question 15 Valid	D	1	8.3	8.3	8.3
	N	2	16.7	16.7	25.0
	A	5	41.7	41.7	66.7
	SA	4	33.3	33.3	100.0
	Total	12	100.0	100.0	-

		Frequency	Percent	Valid Percent	Cumulative Percent
Question 16 Valid	D	1	8.3	8.3	8.3
	N	1	8.3	8.3	16.7
	A	7	58.3	58.3	75.0
	SA	3	25.0	25.0	100.0
	Total	12	100.0	100.0	-

		Frequency	Percent	Valid Percent	Cumulative Percent
Question 17 Valid	N	1	8.3	8.3	8.3
	A	8	66.7	66.7	75.0
	SA	3	25.0	25.0	100.0
	Total	12	100.0	100.0	-

		Frequency	Percent	Valid Percent	Cumulative Percent
Question 18 Valid	N	2	16.7	16.7	16.7
	A	7	58.3	58.3	75.0
	SA	3	25.0	25.0	100.0
	Total	12	100.0	100.0	-

		Frequency	Percent	Valid Percent	Cumulative Percent
Question 19 Valid	D	1	8.3	8.3	8.3
	N	2	16.7	16.7	25.0
	A	4	33.3	33.3	58.3
	SA	5	41.7	41.7	100.0
	Total	12	100.0	100.0	-

		Frequency	Percent	Valid Percent	Cumulative Percent
Question 20 Valid	A	7	58.3	58.3	58.3
	SA	5	41.7	41.7	100.0
	Total	12	100.0	100.0	-

		Frequency	Percent	Valid Percent	Cumulative Percent
Question 21 Valid	D	1	8.3	8.3	8.3
	N	1	8.3	8.3	16.7
	A	8	66.7	66.7	83.3
	SA	2	16.7	16.7	100.0
	Total	12	100.0	100.0	-

Based on the results of the questionnaire from 12 respondents, it is shown that an average of 55.94% are in agreement to all the aspects asked. This is due to the alignment of the implementation that has been carried out and the satisfaction received from the quality and quantity of services provided to all staff, resulting in a high questionnaire score.

Figure 2 illustrates the process of conducting the validation test using Pearson Product Moment Correlation and Cronbach's Alpha Reliability Test using SPSS. The testing is done when the questionnaire results are collected from 12 respondents. First, the validity test using Pearson Product Moment is conducted, and if it is not valid, the process starts over (Table 3). If it is valid, the reliability test using Cronbach's Alpha is then carried out. If the data is reliable, it can be used; otherwise, the data collection process must be restarted.
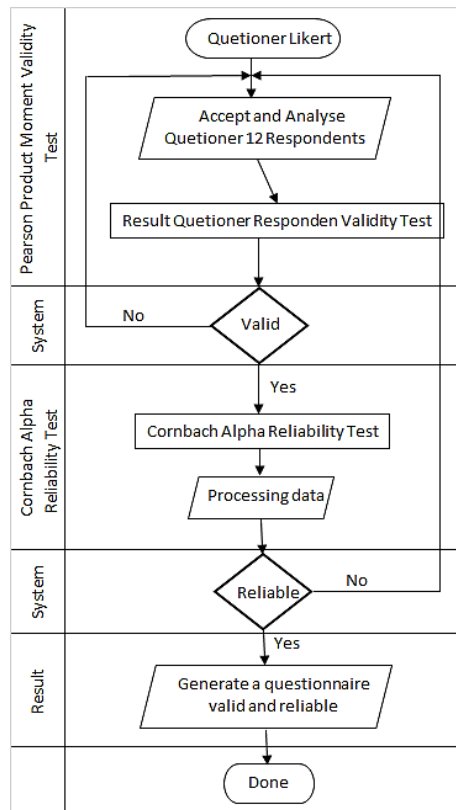
Figure 2. The Process of the Pearson Product Moment and Cronbach Alpha Reliability Validation Tests Using SPSS

Table 3. The Results of the Validity Test Using Pearson Product Moment Correlation

		X01	X02	X03	X04	X05	X06	X07	…	X19	X20	X21
	Pearson Correlation	1	0.621*	0.632*	0.497	0.657*	0.682*	0.478	…	0.449	0.314	0.315
X_{01}	Sig. (2-tailed)		0.031	0.027	0.100	0.020	0.015	0.116	…	0.143	0.320	0.318
	N	12	12	12	12	12	12	12	…	12	12	12
	Pearson Correlation	0.621*	1	0.491	0.514	.621*	0.478	0.433	…	0.287	0.414	0.134
X_{02}	Sig. (2-tailed)	0.031		0.105	0.087	0.031	0.116	0.160	…	0.366	0.181	0.677
	N	12	12	12	12	12	12	12	…	12	12	12
	Pearson Correlation	0.632*	0.491	1	0.449	0.632*	0.557	0.472	…	0.459	0.090	0.235
X_{03}	Sig. (2-tailed)	0.027	0.105		0.143	0.027	0.060	0.121	…	0.133	0.780	0.463
	N	12	12	12	12	12	12	12	…	12	12	12
	Pearson Correlation	0.497	0.514	0.449	1	.781**	0.383	.594*	…	-0.066	0.781**	0.046
X_{04}	Sig. (2-tailed)	0.100	0.087	0.143		0.003	0.219	0.042	…	0.839	0.003	0.887
	N	12	12	12	12	12	12	12	…	12	12	12
	Pearson Correlation	0.657*	0.621*	0.632*	0.781**	1	0.418	0.478	…	0.132	0.657*	-0.130
X_{05}	Sig. (2-tailed)	0.020	0.031	0.027	0.003		0.176	0.116	…	0.683	0.020	0.687
	N	12	12	12	12	12	12	12	…	12	12	12
…	…	…	…	…	…	…	…	…	…	…	…	…
	Pearson Correlation	0.315	0.134	0.235	0.046	-0.130	0.357	0.543	…	0.497	0.093	1
X_{21}	Sig. (2-tailed)	0.318	0.677	0.463	0.887	0.687	0.254	0.068	…	0.100	0.774	-
	N	12	12	12	12	12	12	12	…	12	12	12

Explanation: X01-X21 represents questions 1 to 21; N indicates the number of data obtained; *. Indicates correlations with a significance value at the 0.05 level (2-tailed); **. Indicates correlations with a significance value at the 0.01 level (2-tailed).

Table 4. Assessment Reliability Cronbach Alpha

Reliability Statistics	
Cronbach's Alpha	**No. of Items**
0.909	21

Table 5. Probability Assessment Reliability Cronbach Alpha

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
X_{01}	83.6667	68.788	0.717	0.902
X_{02}	84.0833	65.174	0.673	0.902
X_{03}	83.7500	67.477	0.680	0.902
X_{04}	83.8333	67.061	0.759	0.900
X_{05}	83.6667	68.424	0.761	0.902
X_{06}	84.0000	66.545	0.750	0.900
X_{07}	83.7500	69.659	0.642	0.904
X_{08}	84.0000	65.455	0.857	0.898
X_{09}	83.9167	66.629	0.871	0.899
X_{10}	83.6667	69.333	0.650	0.904
X_{11}	83.6667	69.152	0.501	0.906
X_{12}	83.6667	66.242	0.780	0.900
X_{13}	83.8333	67.061	0.759	0.900
X_{14}	84.2500	66.386	0.595	0.904
X_{15}	84.0833	75.902	-0.098	0.925
X_{16}	84.0833	72.083	0.163	0.916
X_{17}	83.9167	68.447	0.669	0.903
X_{18}	84.0000	66.364	0.768	0.900
X_{19}	84.0000	69.455	0.285	0.915
X_{20}	83.6667	70.970	0.454	0.907
X_{21}	84.1667	71.788	0.205	0.914

To evaluate the obtained data, a hypothesis test is conducted to make decisions regarding the implementation of digital transformation governance in organization. The testing procedure is illustrated in Figure 3.

Determine Hypothesis Zero (H_0) and Alternative Hypothesis (H_1)

Determine the Significant Level (α)

Calculate the Value of the Statistic Test

Determine the Critical Region or Reject Region (H_0)

Make a Decision, reject H_0 or Fail to Reject H_0
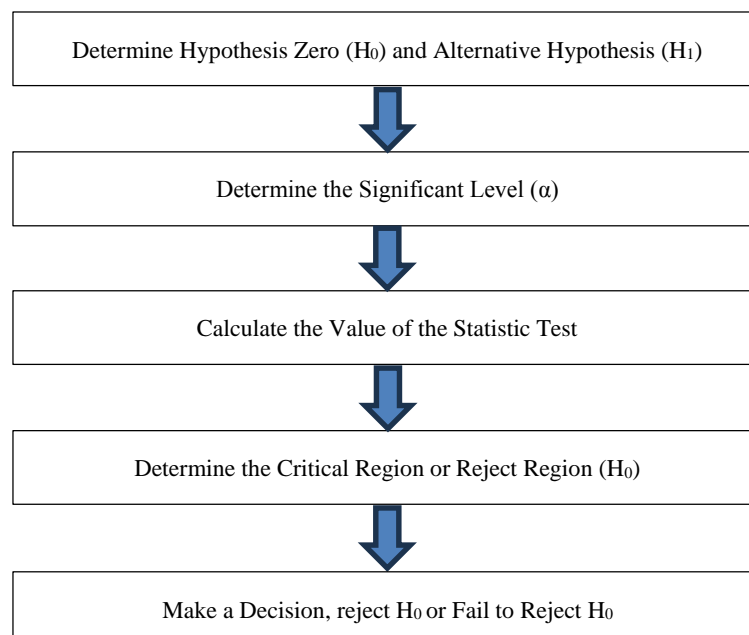
Figure 3. Hypothesis Testing Procedure

The decision-making is based on hypothesis analysis as follows:

Accept H0 if $t_{hitung} < t_{tabel}$ (the calculated t-value (t_{hitung}) is less than the tabulated t-value (t_{tabel})); otherwise reject H0 (Accept H1) if $t_{hitung} > t_{tabel}$ (the calculated t-value is greater than the tabulated t-value). Based on the data testing using SPSS, the obtained hypothesis results are as follows: the $t_{hitung} < t_{tabel}$ calculated t-values (0.937 and 0.731) are smaller than the tabulated t-values (2.179 and 3.055) from Table 6. Therefore, H0 is accepted because the $t_{hitung} < t_{tabel}$ calculated t-values are smaller than the tabulated t-values. This means that the implementation of digital transformation governance in Organization is acceptable. Detailed data can be found in Table 7.

Table 6. t table distribution statistics [30]

	α for one tail test					
	0.25	0.10	0.05	0.025	0.01	0.005
dk	α for two tail test					
	0.50	0.20	0.10	0.05	0.02	0.01
1	1.000	3.078	6.314	12.706	31.821	63.657
2	0.816	1.886	2.920	4.303	6.965	9.925
3	0.765	1.638	2.353	3.182	4.541	5.841
4	0.741	1.533	2.132	2.776	3.747	4.604
5	0.727	1.476	2.015	2.571	3.365	4.032
6	0.718	1.440	1.943	2.447	3.143	3.707
7	0.711	1.415	1.895	2.365	2.998	3.499
8	0.706	1.397	1.860	2.306	2.896	3.355
9	0.703	1.383	1.833	2.262	2.821	3.250
10	0.700	1.372	1.812	2.228	2.764	3.169
11	0.697	1.363	1.796	2.201	2.718	3.106
12	0.695	1.356	1.782	2.179	2.681	3.055
13	0.692	1.350	1.771	2.160	2.650	3.012
14	0.691	1.345	1.761	2.145	2.624	2.977
15	0.690	1.341	1.753	2.131	2.602	2.947
16	0.689	1.337	1.746	2.120	2.583	2.921
17	0.688	1.333	1.740	2.110	2.567	2.898
18	0.688	1.330	1.734	2.101	2.552	2.878
19	0.687	1.328	1.729	2.093	2.539	2.861
20	0.687	1.325	1.725	2.086	2.528	2.845
30	0.683	1.310	1.697	2.042	2.457	2.750
40	0.981	1.303	1.684	2.021	2.423	2.704
	α untuk Uji Satu Pihak (*one tail test*)					
	0.25	0.10	0.05	0.025	0.01	0.005
dk	α untuk Uji Dua Pihak (*two tail test*)					
	0.50	0.20	0.10	0.05	0.02	0.01
120	0.677	1.289	1.658	1.980	2.358	2.617
∞	0.674	1.282	1.645	1.960	2.326	2.576

Table 7. The Hypothesis Decisions for the Implementation of Digital Transformation Governance at the Organization

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Nilai	Equal variances assumed	0.733	0.412	0.937	10	0.371	5.444	5.813	-7.507	18.396
	Equal variances not assumed			0.731	2.552	0.526	5.444	7.448	-20.793	31.682

The application model before and after the adoption has the following process (Figures 4 and 5).
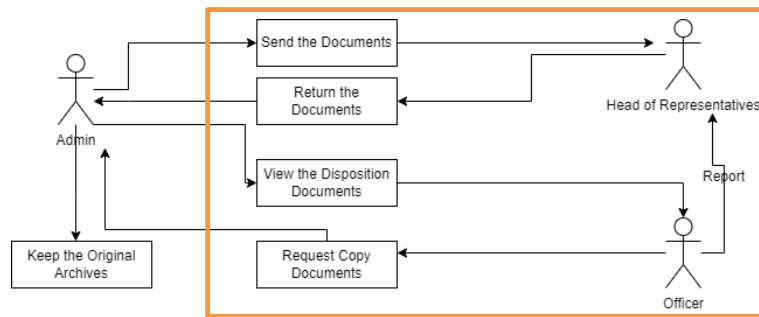
Figure 4. The process flow before the adoption

A   User Admin/Secretary

B   User Officer/Staff
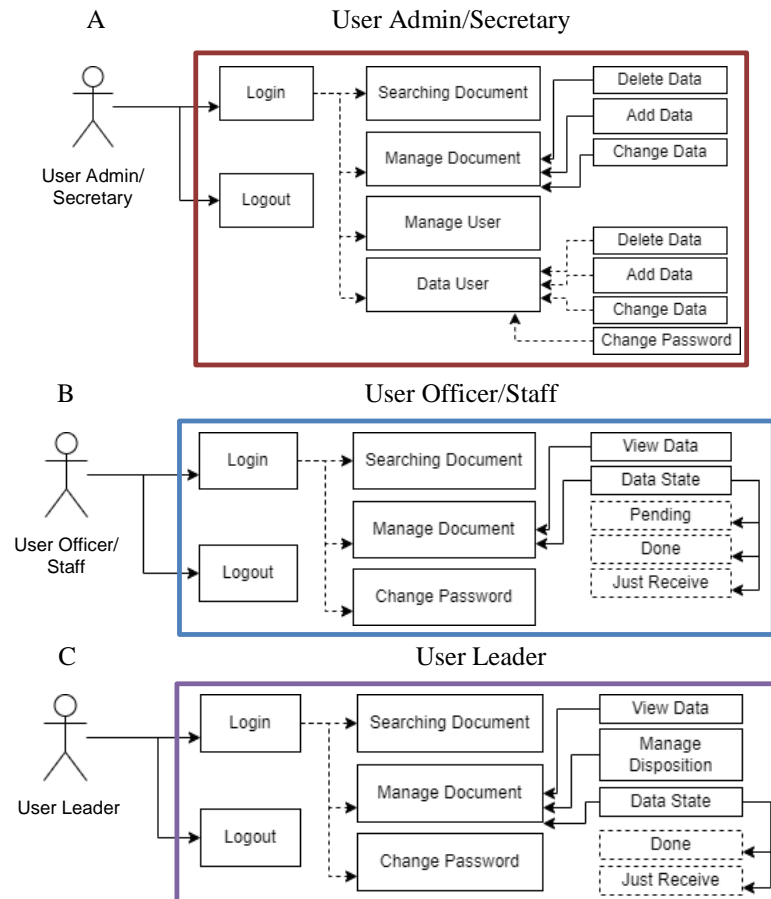
C   User Leader

Figure 5. The process flow after the adoption for A). User admin/secretary, B). User officer/staff, and C). User leader

There is a difference between the process before and after the adoption of the system. Before the adoption, Organizations used manual methods, while after the system was implemented, all documents were distributed electronically. The focus of this Data Architecture is on how to use data for business needs, business processes, and services at this organization as shown in Figure 6.

A   User Table

B   Connection Table

tbl_docs_out

archive_kd	char(20)
characteristic_kd	int(3)
docs_kd	char(50)
staff_kd	char(50)
date_docs	date
title_docs	varchar(255)
docs_file	varchar(100)
no_agenda	varchar(10)
no_page	int(5)

tbl_disposition_instruction

disposition_instruction_kd	int(11)
archive_kd	char(20)
instruction_kd	int(11)
instruction_attention	char(1)

tbl_corespondence

corespondence_id	int(5)
archive_kd	varchar(20)
user_name	varchar(255)
corespondence_comment	varchar(255)
corespondence_datetime	datetime

tbl_docs

archive_kd	char(20)
docs_kd	char(50)
type_kd	int(11)
characteristic_kd	int(3)
organization_kd	int(3)
position_sender	varchar(50)
degree_kd	char(3)
date_docs	date
date_archived	date
title_docs	varchar(255)
docs_file	varchar(100)
information	text
state_disposition	char(1)
date_disposition	datetime
docs_dispositioned	char(1)
docs_staff_disposition	int(2)
docs_input_staff	int(2)
docs_bundle_disposition	varchar(255)

tbl_detail_docs

detail_docs_id
page
organization_code
archive_kd
sp_id

tbl_docs_out_staff_kd

archive_kd	char(20)
docs_out_staff_kd	int(11)
staff_kd	char(50)

tbl_disposition_cont

disposition_cont_kd
archive_kd
disposition_cont_by
disposition_cont_notes
disposition_cont_date

tbl_disposition

disposition_kd	int(10)
archive_kd	char(20)
date_disposition	date
disposition_by	int(2)
notes	text
disposition_cont	char(1)

tbl_disposition_detail

disposition_detail_kd	int(10)
disposition_kd	int(10)
detail_staff_kd	int(2)
detail_receive	char(1)
detail_corespondence	text
detail_time	datetime
docs_state_job	char(1)
detail_attention	char(1)

tbl_disposition_cont_detail

disposition_cont_detail_kd
disposition_cont_kd
detail_user_kd
detail_receive
detail_corespondence
detail_time
docs_state_working

tbl_disposition_cont_instruction

disposition_cont_instruction_kd
disposition_cont_kd
instruction_kd

tbl_version

version_id	int(11)
version_name	varchar(255)
version_author	varchar(255)
version_description	varchar(1000)
version_release	date

tbl_type_doc

type_kd	int(11)
type_name	char(35)

tbl_instruction

instruction_kd	int(11)
instruction_name	varchar(100)
instruction_state	varchar(20)
instruction_order	int(2)

tbl_setting

version_id	int(5)
name_organization	varchar(100)
name_short_organization	varchar(100)
name_level_leader	varchar(100)
color_background	varchar(20)
address_organization	varchar(255)
email_administrator	varchar(50)
email_administrator_password	varchar(50)
user_notifikasi_email	char(1)
state_config	int(1)
type_kd	int(11)
instruction_kd	int(11)
degree_kd	char(3)
characterictic_kd	int(3)

tbl_organization

organization_kd	int(3)
organization_name	varchar(100)
country	char(50)

tbl_country

id_country	int(4)
name_country	char(20)
code_country	char(3)

tbl_degree

degree_kd	char(3)
degree_name	char(20)

tbl_characteristic

characteristic_kd	int(3)
characteristic_name	varchar(100)

tbl_staff

staff_kd	int(2)
name_staff	varchar(50)
state_staff	char(1)
disposition_staff	char(1)
staff_input	char(1)
staf_no	int(2)

tbl_user

user_kd	int(2)
user_name	char(25)
user_password	char(50)
user_fullname	char(40)
staff_kd	int(2)
user_state	char(1)
user_receive_disposition	char(1)
user_foto	varchar(100)
user_email	varchar(50)
user_notification_email	varchar(50)
coordinator_staff	char(1)
home_staff	char(1)

Figure 6. **The Data Flow of the Adoption for (A) User Table, and (b) Connection Table**

The following of Figure 7 are the data flow that occurs in the system that will be adopted at this organization.

A- User Leader

B- User Admin/Secretary

C- User Officer/Staff
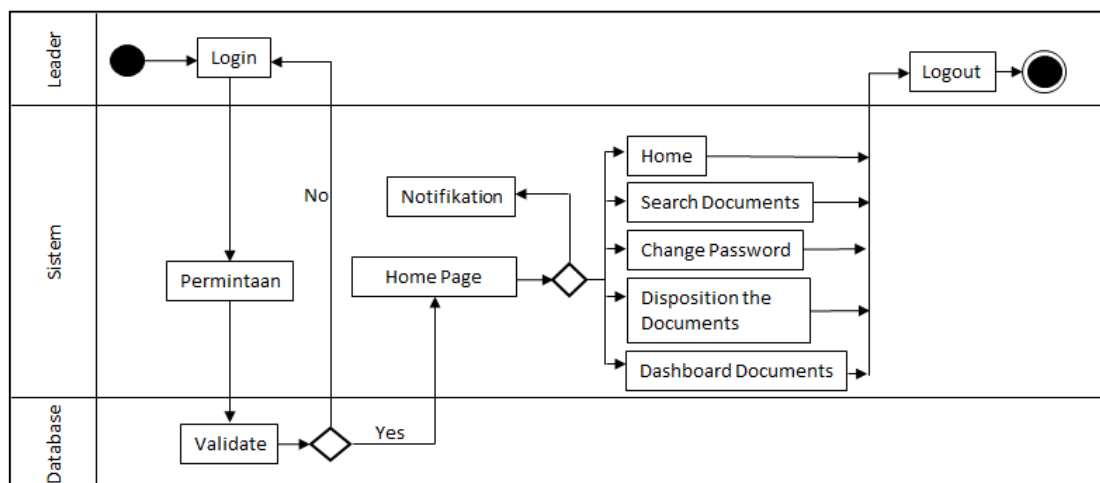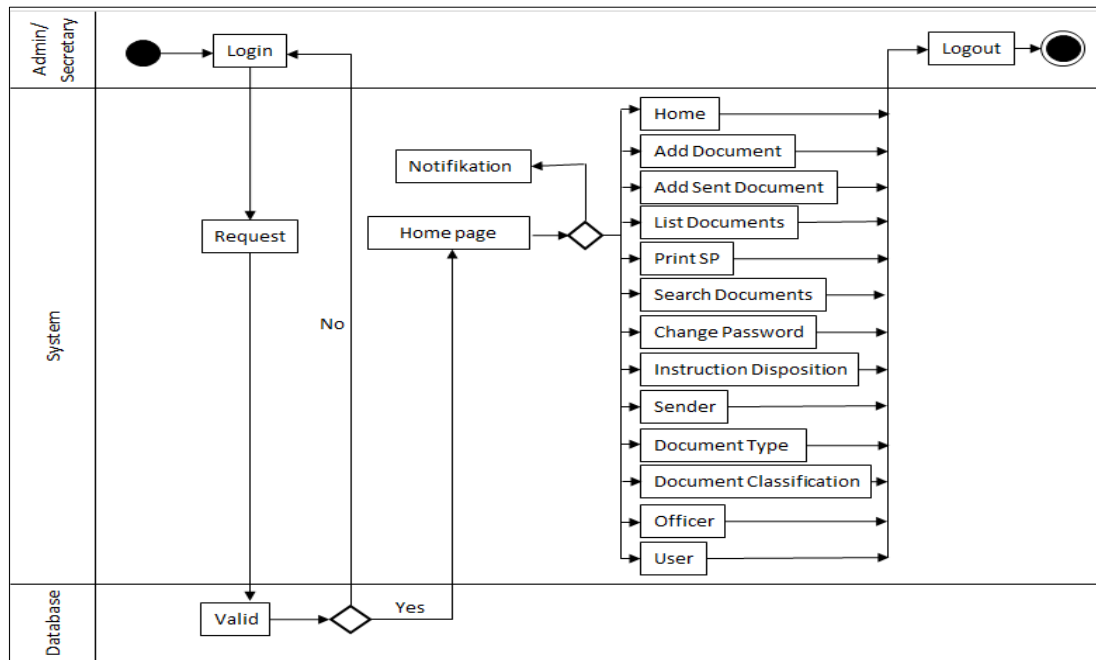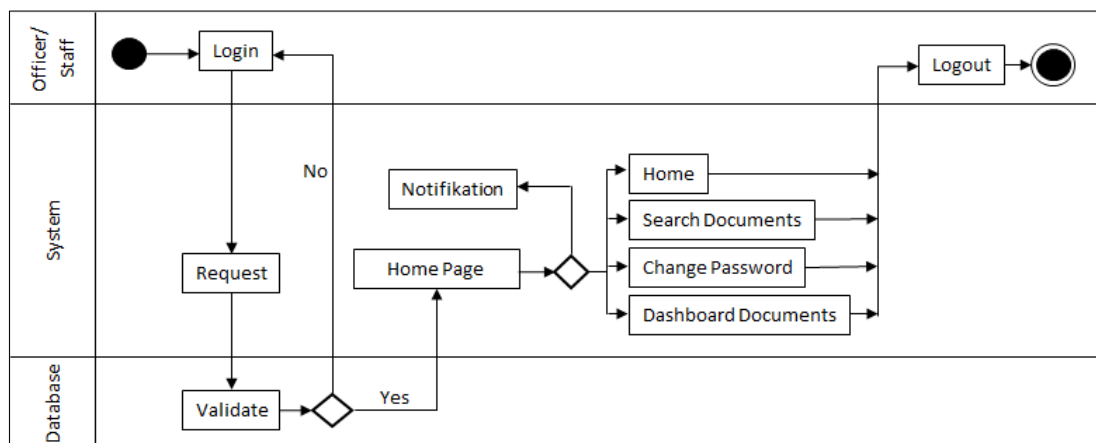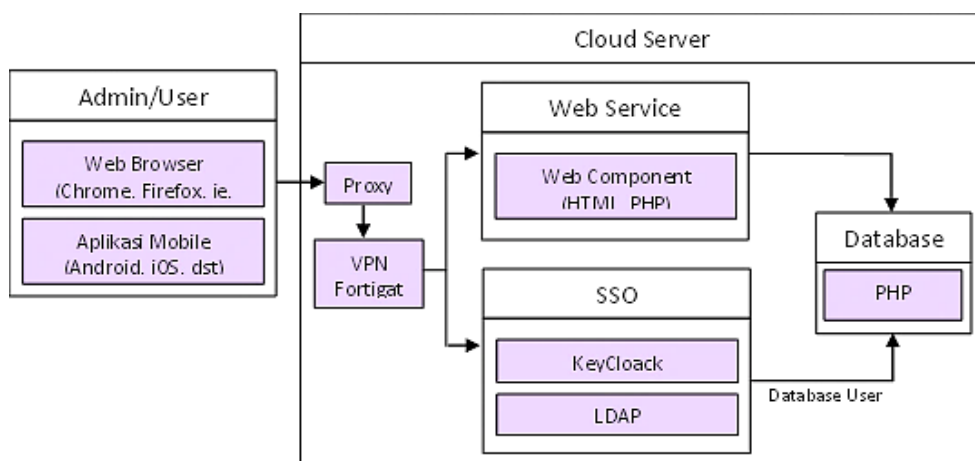

Figure 7. The Data Flow in the System of the Adoption for A). Leader, B). User Admin/Secretary, and C). User Officer/Staff

Figure 8 is a technology architecture designed to meet the needs of the organization.

Figure 8. The design of the technology architecture of the adoption

4-1- Proposed Methods

This research was designed to meet the organizational needs in the data distribution process among entities within the organization without physical meetings. Therefore, some aspects should be met: an internet connection for network communication, a web service as an interface, a database for data storage, a PC server as the hardware for data storage and running the web service, and a simple PHP programming language for the application.

Because the data distribution process is a service in its business process, therefore the proposed methods in this study is design refer to the framework that is use IT Infrastructure Library framework, that is starting with the steps of the life process of the IT Infrastructure Library framework as shown in Figure 1 that consists of service strategy, service design, service transition, service operation, and CSI, which is followed by the IT Infrastructure Library service management which includes a selecting process, that is, the choice and categorization of the needs, planning, that is planning of the activities that will be done, delivering, that is the system implementation that is in accordance with the needs of the stakeholders, and the maintaining, that is the system management that has been applied [25, 26].

Assessment is carried out as an evaluation towards the plan, that is the initiation and midstream project by doing checks and evaluating the process is only done in the business process; the evaluation of the human resources; process, and technology is done on the human resources as the users of the service and technology being used; full assessment is done across all aspects whether it be human resources, service, system, technology, security, and the surrounding environment that can affect the system [27].

Eventually, the process will generate an approach towards IT Service Management (ITSM) that can be synergized between the IT team and the service IT in relation to the stakeholders with the achievements, resulting in lower costs due to the less usage of papers, high quality IT services due to the available IT service offering an optimized document distribution process, increased business productivity with the increased results and documentation of the service quality. Moreover, there is an improved Return of Investment (RoI) in the organization that can be seen from the optimized budget that has been arranged and it can be allocated for other office purposes. It also improves resource utilization due to the change of storing and searching for data. And there is satisfaction from the stakeholders because the needs of the organization are met [28].

From the explanation above, we can see how the proposed methods are carried out in this research as shown in Figure 9, starting from implementing the IT Infrastructure Library life process, then running ITIL service management, and conducting an assessment to achieve the ITSM.
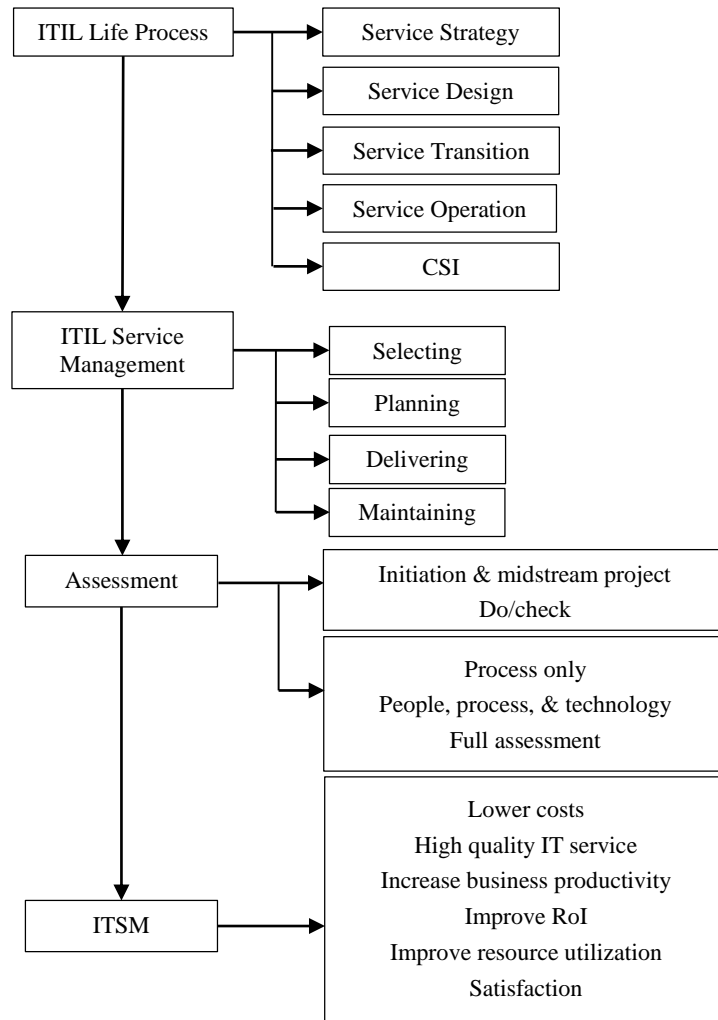
Since the data distribution process is a service in its business process, the proposed method in this study is designed based on the IT Infrastructure Library framework. Technically, the research was carried out by configuring the existing application and synchronizing it with a MySQL database. It was then activated through the web service provided by XAMPP and setting up the IP Address on the LAN network, enabling users to access the e-Disposisi application from the designated IP Address with their access rights determined according to their levels.

According to Davison et al. [29], the research activities are divided into 5 phases that similar with this study, which form a cycle:

- **Diagnosis:** Identifying the main problems present in the organization that can be made as guidance for improvements.
- **Action Planning:** Establishing shared research goals between researchers and participants to plan appropriate actions to solve the problems.
- **Action Implementation:** Implementing the action plan designed by the researchers and participants to provide solutions to problems.
- **Evaluation:** Assessing the implemented action plan to determine the level of satisfaction of all involved stakeholders.
- **Learning:** Reviewing the previous stages of the research in order to correct any mistakes and spot overlooked aspects.

Data were analyzed based on a case study through the use of these applications: MS Office Excel, Word, and SPSS for Windows. The validity test was conducted using the Pearson Product-Moment correlation method, where higher success values correspond to lower failure values.

A Focus Group Discussion (FGD) has been conducted with all entities at the organization to discuss research that has been going on for 1 (one) a year, starting from the initial discussion to the assessment of the digital transformation that has been built.

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┌──────────────────┐        ┌──────────────────────┐
│ ITIL Life Process│───────▶│   Service Strategy   │
└──────────────────┘        └──────────────────────┘
         │                  ┌──────────────────────┐
         │           ──────▶│    Service Design    │
         │                  └──────────────────────┘
         │                  ┌──────────────────────┐
         │           ──────▶│  Service Transition  │
         │                  └──────────────────────┘
         │                  ┌──────────────────────┐
         │           ──────▶│   Service Operation  │
         │                  └──────────────────────┘
         │                  ┌──────────────────────┐
         │           ──────▶│         CSI          │
         ▼                  └──────────────────────┘
┌──────────────────┐        ┌──────────────────────┐
│  ITIL Service    │───────▶│      Selecting       │
│  Management      │        └──────────────────────┘
└──────────────────┘        ┌──────────────────────┐
         │           ──────▶│      Planning        │
         │                  └──────────────────────┘
         │                  ┌──────────────────────┐
         │           ──────▶│      Delivering      │
         │                  └──────────────────────┘
         │                  ┌──────────────────────┐
         │           ──────▶│     Maintaining      │
         ▼                  └──────────────────────┘
┌──────────────────┐        ┌──────────────────────────┐
│    Assessment    │───────▶│ Initiation & midstream   │
└──────────────────┘        │        project           │
         │                  │        Do/check          │
         │                  └──────────────────────────┘
         │                  ┌──────────────────────────┐
         │           ──────▶│      Process only        │
         │                  │ People, process, &       │
         │                  │     technology           │
         │                  │   Full assessment        │
         │                  └──────────────────────────┘
         │                  ┌──────────────────────────┐
         │                  │      Lower costs         │
         │                  │  High quality IT service │
         ▼                  │ Increase business        │
┌──────────────────┐        │     productivity         │
│      ITSM        │───────▶│      Improve RoI         │
└──────────────────┘        │ Improve resource         │
                            │     utilization          │
                            │      Satisfaction        │
                            └──────────────────────────┘
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Figure 9. The IT infrastructure library proposed methods

The assessment given by the head of the representative is as follows:

- The leader is greatly helped by this disposition service because they have experienced a more effective and efficient work culture in terms of time, resources, and budget.
- Shortcomings were identified in the adopted system, prompting subsequent implementation of improvements and updates.
- The features in the e-Disposition are very user-friendly so that all staff can use them.

The assessment given by each function is as follows:

- At first it was a bit difficult to follow the change in work culture electronically, but as you are used to it, it is now easier to work using the e-Disposition system service.
- Finding data becomes easier because there is a search feature that saves data storage space on a local PC. Each function can work anywhere and anytime as long as the device is connected to the internet.
- Inconvenience occurs when the internet network in the office is disrupted but it is beyond our control.

The suggestions given by the head of the representative are as follows:

- The availability of the system is further improved so that whenever it is needed, data is always available.
- Always back up data regularly to avoid virus and malware attacks.
- In the future, physical infrastructure improvements must be done in the server room for the convenience and security of the device so that the operation can have a long-term effect.

The suggestions given by each function are as follows:

- There should be more in-depth socialization regarding this e-Disposition so that all staff can use the service properly.
- Regarding confidential data, we cannot directly store it due to security issues. If there is a possibility, we store it but under safety terms.

5- Conclusions

The conclusion of this research result is to implement this adoption system, named e-Disposition, at the organization. The author has already implemented the system for a year (since 2021). From the research that has been carried out, it can be concluded that this organization has 100% succeeded in implementing a digital transformation that focuses on disposition distribution services. The organization has implemented the adoption of the e-Disposition application well and smoothly, and although there have been bugs several times, we can handle it well. With the digital transformation at the organization, the organization has now run a paperless activity and carried out effective and efficient business processes according to the organization's vision and mission.

Digital transformation through the implementation of the adoption of the e-Disposition application, which has been carried out since 2021, has had a significant impact on the organization, which is likened to changing times from the past era to the modern era because previously all work was done manually and face-to-face. Now business processes are very flexible without space and time constraints. The leadership and all staff in the organization are very satisfied with the results because the work can run smoothly even though they are in a different place, and of course, from the financial side, there is also a change in budget allocation to reduce paper use. This digital transformation process that has been carried out can be used as a reference if other organizations have the same case, and it can even be further developed into more sophisticated and modern services according to needs.

For future research, the suggestion of the digital transformation can be carried out in a wider scope than in terms of disposition services, such as economic services and other more specific functions. Currently, the disposition service still has a separate sign-in from other services that already exist at the organization. In the future, it can be used as a single sign-on for all services at the organization. There is a need for rejuvenation of all equipment at the organization that is outdated, such as network cables, switches, and routers, for more qualified information security to support services that are already running at this organization. This local area's infrastructure needs attention because it greatly affects its stability and availability. This organization also needs to evaluate the performance of IS/IT and human resources regularly to find out the progress of performance as well as the increase and decrease in performance in all fields. There needs to be an increase in regular socialization and the capability of all employees who are still not very familiar with technological advances.

6- Declarations

6-1- Author Contributions

Conceptualization, R.H.S.M. and F.L.G.; methodology, R.H.S.M., F.L.G., and T.M.; formal analysis, R.H.S.M., F.L.G., and T.M.; investigation, R.H.S.M., F.L.G., and T.M.; writing—original draft preparation, R.H.S.M. and F.L.G.; writing—review and editing, R.H.S.M., F.L.G., and T.M. All authors have read and agreed to the published version of the manuscript.

6-2- Data Availability Statement

The data presented in this study are available on request from the corresponding author.

6-3- Funding

6-4- Acknowledgements

6-5- Institutional Review Board Statement

Not applicable.

6-6- Informed Consent Statement

Not applicable.

6-7- Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely observed by the authors.

7- References

[1] Khan, S. (2016). Leadership in the digital age: A study on the effects of digitalization on top management leadership. Master Thesis, Stockholm Business School, Stockholm, Sweden.

[2] Lankshear, C., & Knobel, M. (Eds.). (2008). Digital literacies: Concepts, policies and practices. Peter Lang, Lausanne, Switzerland.

[3] Melson, G. F., Kahn, Jr, P. H., Beck, A., & Friedman, B. (2009). Robotic pets in human lives: Implications for the human–animal bond and for human relationships with personified technologies. Journal of Social Issues, 65(3), 545-567. doi:10.1111/j.1540-4560.2009.01613.x

[4] Hadiono, K., & Santi, R. C. N. (2020). Welcoming Digital Transformation. Proceeding Sendiu, 978-979.

[5] Royyana, A. (2021). Strategi transformasi digital pada pt. Kimia farma (persero) TBK. Journal of Information Systems for Public Health, 5(2), 15. doi:10.22146/jisph.34179.

[6] Nugroho, N. (2019). Digital Operating Model dan Change Management: Menuju Tata Kelola Badan Usaha Milik Negara (BUMN) yang Unggul dalam Transformasi Digital. Institut Akuntan Manajemen Indonesia (IAMI), Jakarta, Indonesia.

[7] Gurning, T. N., Kastawa, M., & Suhartika, I. P. (2018). Digital Transformation as a Process for Preserving Ancient Manuscripts in the National Library of the Republic of Indonesia. Jurnal Ilmiah D3 Perpustakaan. (In Indonesian).

[8] Putra, B. A. P., Purnomo, E. P., & Kasiwi, A. N. (2020). E-Government Transformation Based on Communication and Information Technology Websites as an Embodiment of Smart Governance in the City of Jogja. Journal of Government and Politics, 5(1), 24-29. doi:10.36982/jpg.v5i1.1025. (In Indonesian).

[9] White, B. J. (2008). It Governance, It Service Management and the Organizing Role of the Information Technology Infrastructure Library (ITIL). Issues in Information Systems, IX(1),138-145. doi:10.48009/1_iis_2008_138-145.

[10] Esteves, R., & Alves, P. (2013). Implementation of an Information Technology Infrastructure Library Process – the Resistance to Change. Procedia Technology, 9, 505–510. doi:10.1016/j.protcy.2013.12.056.

[11] Selig, G. J. (2016). IT Governance-An Integrated Framework and Roadmap: How to Plan, Deploy and Sustain for Improved Effectiveness. Journal of International Technology and Information Management, 25(1). doi:10.58729/1941-6679.1252.

[12] Daminov, I. (2022). Roles of Government and Private Sector in Digitalization: A New Conceptual Framework and Typology. Master Thesis, Central European University, Vienna, Austria.

[13] Mulyana, R., Rusu, L., & Perjons, E. (2022). IT Governance Mechanisms that Influence Digital Transformation: A Delphi Study in Indonesian Banking and Insurance Industry. Pacific Asia Conference on Information Systems (PACIS), AI-IS-ASIA, Artificial Intelligence, Information Systems, in Pacific Asia, Virtual Conference, 5-9 July, 2022.

[14] Nadeem, A., Abedin, B., Cerpa, N., & Chew, E. (2018). Editorial: Digital Transformation & Digital Business Strategy in Electronic Commerce - The Role of Organizational Capabilities. Journal of Theoretical and Applied Electronic Commerce Research, 13(2), I–VIII. doi:10.4067/s0718-18762018000200101.

[15] Chin, H., Marasini, D. P., & Lee, D. (2022). Digital transformation trends in service industries. Service Business, 17(1), 11–36. doi:10.1007/s11628-022-00516-6.

[16] García-Peñalvo, F. J. (2021). Digital Transformation in the Universities: Implications of the COVID-19 Pandemic. Education in the Knowledge Society, 22, e25465. doi:10.14201/eks.25465.

[17] Barnabas, G. P. L. B. (2020). ITIL Service Management Cycle. Master Program. BINUS University Graduate Program, Jakarta, Indonesia. (In Indonesian).

[18] IT Process Wiki. (2022). ITIL Processes. IT Infrastructure Library ITIL, Germany. Available online: https://wiki.en.it-processmaps.com/index.php/ITIL_Processes (accessed on May 2023).

[19] Heilig, L., Schwarze, S., & Voss, S. (2017). An Analysis of Digital Transformation in the History and Future of Modern Ports. Proceedings of the Annual Hawaii International Conference on System Sciences. doi:10.24251/hicss.2017.160.

[20] Moseley, R. (2015). Digital analogies: The keyboard as field of musical play. Journal of the American Musicological Society, 68(1), 151–227. doi:10.1525/jams.2015.68.1.151.

[21] Bano, M., Zowghi, D., Ferrari, A., Spoletini, P., & Donati, B. (2019). Teaching requirements elicitation interviews: an empirical study of learning from mistakes. Requirements Engineering, 24(3), 259–289. doi:10.1007/s00766-019-00313-0.

[22] Edwards, G. C., Mayer, K. R., & Wayne, S. J. (2022). Presidential leadership: Politics and policy making. Rowman & Littlefield, Lanham, United States.

[23] Puth, M.-T., Neuhäuser, M., & Ruxton, G. D. (2014). Effective use of Pearson's product–moment correlation coefficient. Animal Behaviour, 93, 183–189. doi:10.1016/j.anbehav.2014.05.003.

[24] Jain, S., & Angural, V. (2017). Use of Cronbach's alpha in Dental Research. Medico Research Chronicles, 4(3), 285–291.

[25] Tokovska, M., Zaťková, T. Š., & Jamborová, Ľ. (2022). Digital Competencies Development in Higher Education Institutions: A Mixed Methods Research Study. Emerging Science Journal, 6, 150-165. doi:10.28991/ESJ-2022-SIED-011

[26] Cater-Steel, A., Toleman, M., & Tan, W. G. (2006). Transforming IT service management-the ITIL impact. Proceedings of the 17th Australasian Conference on Information Systems (ACIS 2006), 6-8 December, 2006, Adelaide, Australia.

[27] Ibbs, C. W., & Kwak, Y. H. (2000). Assessing Project Management Maturity. Project Management Journal, 31(1), 32–43. doi:10.1177/875697280003100106.

[28] Sallé, M. (2004). IT Service Management and IT Governance: review, comparative analysis and their impact on utility computing. Hewlett-Packard Company, 1-25.

[29] Davison, R. M., Martinsons, M. G., & Kock, N. (2004). Principles of canonical action research. Information Systems Journal, 14(1), 65–86. doi:10.1111/j.1365-2575.2004.00162.x.

[30] Abu-Bader, S. H. (2021). Using statistical methods in social science research: With a complete SPSS guide. Oxford University Press, United States.