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Strategies to Improve the Quality of Public Services with Artificial Intelligence (AI) in Indonesia

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ABSTRACT: The objectives of this study are: first, the extent of Improving the Quality of Public Services with Artificial Intelligence (AI) in Indonesia, and second, what strategies can be used to Improve the Quality of Public Services with Artificial Intelligence (AI) in Indonesia. The method used in this study is qualitative, the qualitative method is the method used by the researcher by using sentences to describe the results of the research through writing, the data used consists of primary and secondary data, Techniques for determining Informants with snowbal Sampling, Informants in this study are designers of public service studies based on artificial intelligence in Indonesia, data is collected through Observation, Interviews, FGDs and Documentation, Data analysis in this study uses data condensation data collection techniques, data presentation, verification and conclusion Triangulation of sources is used to obtain data validity, as well as the use of Analytical Techniques (SWOT) to find and determine the right strategy in improving the quality of public services with Artificial Intelligence (AI). The results of the first study show that One Dimension of Tangibel (AI) modernizes facilities, speeds up and simplifies services and facilitates real-time performance monitoring by about 20-30%. Second, it confirms that (AI) improves officer morale, ensures the proper and efficient use of tools and speeds up slow administrative processes by about 40%. Third, Responsiveness (Ai) accelerates the recognition of customer needs, automates processes, reduces procedural errors, and speeds up responses to service complaints by about 30-50%. Fourth, Assurance Use (AI) improves service time accuracy, ensures accommodation transparency, increases public trust by 20-30%. Fifth, Empathy, Service Usage (AI) helps determine service priorities, improves friendliness and courtesy, ensures fair service, and gives customer appreciation around an increase of about 20-30%. The results of the second study which is the Main Findings of the SWOT Analysis) that Effective Strategies in Improving the Quality of Public Services in Indonesia based on the results of analysis, weighting, assessment and summation that the Defensive Strategy is considered appropriate, namely by optimizing the Efficiency and Innovation of Services with the Use of More Personal and Responsive (AI), expanding accessibility and improving digital skills through officer training, and maintaining transparency and security. The belief that the quality of public services using (AI) is very appropriate and an effective strategy is a defensive strategy that is in the position of Quadrant III.

Keywords: strategy, service quality, artificial intelligence, Indonesian public service, public administration, AI-Based Innovation (AI).

I. INTRODUCTION

Changes in artificial intelligence (AI) technology have brought significant transformations in various aspects of human life, including the public sector, especially public services. AI has great potential to improve the efficiency, effectiveness, and quality of public services in Indonesia. Governments in Indonesia have recognized the importance of AI's role in public service transformation and are working to design a comprehensive national strategy for the use of AI. In the current digital era in Indonesia, there are still several problems in public services such as ineffective and slow bureaucracy and difficulties in reaching the needs of citizens quickly. There is a need for a new, more adaptive approach to improve the quality of these services. Therefore, the use of artificial intelligence (AI) technology is very important to automate procedures and improve accuracy and speed in public services. However, until now, there have not been many studies that specifically examine AI strategies to improve the quality of public services in Indonesia. This study is intended to fill the gap by analyzing and formulating an AI-based strategy in accordance with the Indonesian National Artificial Intelligence Strategy 2020-2045, in order to create a new approach in public services that is more effective and responsive to the needs of the community.

One of the important legal bases for this issue is Presidential Regulation Number 95 of 2018 concerning Electronic-Based Government Systems (SPBE). The regulation aims to achieve clean and effective governance and provide quality and trusted public services with high transparency and accountability. In achieving the vision of SPBE, artificial intelligence technology can be considered to be used to assist the government in decision-making and appropriate policy formation [14]. In addition, the Government of Indonesia has also issued Presidential Regulation Number 39 of 2019 [13] concerning Single Indonesia Data which aims to regulate the management of Single Indonesia Data so that it can be accessed collectively with full responsibility. This policy related to single Indonesia Data is very important for the Indonesian government to successfully support the acceleration of the growth of artificial intelligence innovation in Indonesia (Presidential Decree No. 39 of 2019).

To improve the quality of public services using artificial intelligence (AI), the Indonesian government must design a comprehensive and integrated plan. The plan needs to consider important aspects such as ethics and policy, human resource development, infrastructure and data, and industrial research and innovation. In addition, this plan must also be in line with Visik Indonesia in 2045 and the main national programs that have been set out in the National Medium-Term Development Plan (RPJMN) 2020 - 2024 [9].

Target 5 (Five Priorities for the Utilization of Artificial Intelligence (AI) in Indonesia includes:

1) Health Sector Services
2) Bureaucratic Reform Sector Services
3) Education and Research Sector Services
4) Food Safety and Sector Services
5) Transportation Sector Services and Smart Cities

All national strategic objectives directed at such a focus take precedence over other focuses, with the ministries or agencies involved responsible for the implementation and success of these priorities [10].

In developing and using artificial intelligence to improve the quality of its public services, the Indonesian government must pay attention to ethical principles and responsible policies. This is in accordance with the principles of Artificial Intelligence of the G20 agreed upon at the G20 Summit meeting in 2019. Inclusive development, sustainability, and well-being are some of these principles. Others include justice, human-centered values, openness, and transparency. Diligence, safety, and accountability are all important [8].

The Indonesian government needs to follow the recommendations from the G20 as a policy basis for artificial intelligence. The five recommendations include: (1) Investment in artificial intelligence research and development, (2) Building a digital ecosystem for artificial intelligence, (3) Developing a policy framework that supports artificial intelligence, (4) Increasing human resource capacity and preparing the labor market for transformation, (5) International collaboration in building trustworthy artificial intelligence however, Indonesia is faced with various challenges in the provision of public services such as complicated bureaucracy and slow performance evaluation as well as the risk of human error that can occur in it; Lack of transparency and limited response to complaints are also problems that must be addressed. Even in remote areas, there are gaps in services and a lack of data-based decision-making capabilities that exacerbate this situation. The integration of artificial intelligence can help overcome inefficiencies by accelerating these

processes and increasing the accuracy of the information obtained while facilitating communication between related parties to effectively address the number of public complaints throughout Indonesia.

In addition, the Indonesian government also needs to align the development and utilization of artificial intelligence with the values of Pancasila as the philosophical foundation of the Indonesian nation. It is important to ensure that artificial intelligence used in the public service sector is in line with the principles of humanity, justice, and well-being for all Indonesian people. The progress of the use of artificial intelligence (AI) in improving the quality of public services in Indonesia also depends entirely on the readiness of skilled human resources in the field of adequate AI. The government needs to design a comprehensive strategy to develop AI talent in Indonesia through various steps ranging from education to placement in the public sector. One of the steps that can be taken is to create an AI training and skill development program for government employees working in the public service sector with the aim of increasing their understanding and skills in using AI to improve the efficiency and quality of services provided.

In addition, government support is also needed to encourage cooperation between government agencies and the world of education and industry in developing talents in the field of artificial intelligence (AI). These efforts can be carried out through internship programs, joint research collaborations, and the preparation of a curriculum that is in accordance with the demands of the public sector. Improving and utilizing artificial intelligence in improving the quality of public services in Indonesia also requires adequate infrastructure and data assistance. Governments must design their strategies to build reliable, secure, and interconnected digital networks, and ensure the availability of quality and easily accessible data together. One of the most important programs is the comprehensive implementation of the Electronic-Based Government System (SPBE) in all government institutions. In addition, the government must also improve the Indonesian Unifying Data policy so that government information can be managed, shared, and accessed responsibly. This step will help the development of Artificial Intelligence based on accurate and complete data (Presidential Regulation No. 39 of 2019) [7].

Infrastructure development and data management need to be in accordance with the plan to move the National Capital City that is being carried out by the government to build a new capital city that is smart, environmentally friendly, and sustainable by using artificial intelligence (AI) technology to the maximum. Global trends show that the use of artificial intelligence is increasingly widespread in the public service sector in many countries with this increasing efficiency and responsiveness over time becoming a common sight today. However, Indonesia faces various unique obstacles such as high bureaucratic complexity, limited digital accessibility, and low levels of technological literacy, which can slow down the adoption of artificial intelligence. This study highlights the urgency of an AI-powered service quality strategy that can be adapted to the style surrounding Indonesia's local needs so as to provide innovative solutions to improve the quality of public services in a sustainable manner.

The purpose of this study is first, the extent to which the Quality of Public Services Improvement with Artificial Intelligence (AI) in Indonesia, and second, what strategies can be used to Improve the Quality of Public Services with Artificial Intelligence (AI) in Indonesia.

II. LITERATURE REVIEW

The study conducted by [21] discusses the use of AI to transform public services in Indonesia into digital, emphasizing how important AI is to save time, become more efficient, and make services more accessible especially related to Presidential Regulation No. 95 of 2018 concerning Electronic-Based Government Systems (SPBE), which aims to integrate digital procedures. Atamaja also emphasized how AI can help people get public services without restrictions on place and time. Therefore, it is considered more efficient compared to conventional services that are face-to-face. However, this study has not specifically examined methods that can be used to improve the quality of public services in the long term. To fill this gap, this study concentrates on developing an artificial intelligence-based implementation strategy in accordance with the Indonesian National Strategic Plan for Artificial Intelligence 2020–2045. This study not only explores the improvement of the quality of public services but also seeks to find effective strategies based on SWOT analysis that can be implemented to face obstacles in improving quality and ensure the thirst for artificial intelligence-based public service transformation in Indonesia.

The application of artificial intelligence (AI) technology in the public sector has been driven by the ability of this technology to overcome various challenges faced by the government such as the limitation of human labor and the improvement of the efficiency of public services and their accessibility. Singapore is a significant example with its adoption of its strategy in AI development in seven key areas such as public transport and health, smart cities, Public Parks, Jobs, education and border security with the goal of becoming a global leader in the AI world by 2030 [22]. The application of artificial intelligence in Singapore includes projects such as Safe Distance in Parks which helps manage crowds in parks during the COVID-19 pandemic and One Service Chatbot which is used to improve the user experience in reporting city issues [22]. The success of these programs has been seen in reducing the government's workload and improving the quality of services provided. Judging from the theoretical system, public services at a level that can satisfy the expectations and desires of consumers are referred to as service quality. Zeithaml-Parasuraman and Berry in [12], there are five dimensions of service quality, and in order for the service to be of high quality and able to satisfy customers, service providers must pay attention to the following dimensions:

1) *Tangible*: the appearance of physical facilities, technology, information space and place, example:
   - The appearance of officers to carry out services,
   - Easy access to service processes, and
   - Officers who are disciplined in serving.
2) *Reliability*: Reliability for reliable service availability, example:
   - Officers' proficiency with equipment to facilitate the service process,
   - The use of assistive devices carried out by officers in serving, and
   - The accuracy of officers in serving.
3) *Responsiveness:* The ability to provide responsive and efficient services to meet consumer needs, example:
   - Customer response to service.
   - Speed and accuracy of the officers.
   - Accuracy of service by officers.
   - Customer complaint response process.
4) *Asurance*: The ability to win the hearts of customers with friendliness and courtesy, example:
   - Punctuality in serving.
   - Service fee guarantee.
   - Guarantee of service legality.
5) *Empathy*: The firmness of employees' attention to consumers, example:
   - Priority on the customer.
   - Hospitality services.
   - Courtesy, courtesy, service.
   - Fair and non-discriminatory service,
   - Customer appreciation and appreciation.

Community satisfaction is measured as a positive result to improve the quality of service to consumers, including new users and loyal customers, based on five dimensions of service quality. Gaspersz [14] explains that the dimensions of service quality improvement include:

1) Punctuality related to wait times and processes.
2) Service accuracy is related to service and error reduction.
3) Courtesy and compassion involve interaction to build an image that engages individuals in the institution towards customers.
4) Responsibilities related to the receipt and handling of complaints.
5) Completeness related to service conditions and the availability of supporting and complementary assistance.
6) Service facilities are related to the number of officers in the service.
7) Variability in service models on innovation and patterns of services.
8) Personal services include covering and handling special requests and other aspects.
9) The comfort of the service includes facilities, location, and available facilities and infrastructure.
10) Additional attributes and other support.

11)Service user behavior can be used to identify certain factors in measuring user satisfaction with the products or services of a particular agency or organization.

According to Zeithaml [20], the forms of satisfaction of service users are as follows: 1. Commitment (compliance) 2. Provide more compensation 3. External reception 4. Internal response. Meanwhile, according to Surjadi [18] the criteria for satisfactory service, or known as excellent service, vary according to experts, but the essence of excellent service basically includes four principles, namely PRINT, which consists of Fast, Precise, Accurate, and Quality. In this context, this means for:

1) The service must be efficient. In this case, the customer does not take long.
2) Services must be accurate in various aspects including: time, cost, procedures, targets, quality, quantity, and competence of officers.
3) The service must be precise. Service products must be accurate, have certainty, legal force, and not raise doubts about their validity.
4) The service must be of high quality. Its service products are inadequate in accordance with customer expectations, unsatisfactory, impartial, and do not put the interests of customers first.

Furthermore, which is a dimension to measure the quality of service in this study refers to the opinion of Ndraha [11], namely:

1) Speed is a quick tool in meeting the needs of those who need civil service, and quickly responding to what is a public complaint.
2) Accuracy is the readiness of government officials who are always ready when needed.
3) Convenience is the ability of government officials to provide good communication and be able to meet public complaints during service delivery.
4) Justice is equality of time in completing the fulfillment of services from the community.

The quality service that the community has received so far from making certificates through land registration services for the first time can be explained through these various dimensions.

From an economic point of view, Fitzsimmons, as quoted by Saefullah [16], identifies five categories of public services, which are detailed below:

1) Business services, focus on consulting and financial services.
2) Trading services, including banking activities and sales services.
3) Infrastructure services include activities in the field of communication and transportation.
4) Social and personal services, including services in restaurants and the health sector.
5) Public administration is a government service that aims to achieve economic stability and development.

Ndraha explained that public services include public and community services or civil services that are different from public services. These services are not traded and cashed, whereas public services can be traded with control by the legislature [11].

Article 5 of Law Number 25 of 2009 concerning Public Services covers the scope, including:

1) Public goods services
   - Procurement and distribution of public goods by government agencies with the APBD as a source of funding.
   - The provision and distribution of logistics obtained by the community by tactical institutions with assets by state and regional assets separately.
   - Inventory and then distribution of civil equipment through financing outside the APBD, so that it is entirely by the APBDN with the state mission in the law.
2) Fulfillment in public services
   - The availability of agency general staff with funds from the State Budget/D.
   - Availability of public services from business entities with funds from the State Budget/D.
   - The availability of public services with funds sourced outside the State Budget/D but from state and regional wealth separately.
3) Administrative Services
   - The measures taken are in accordance with the law to realize the protection of personal, family, honor, dignity and property by the state government.

It can be concluded that public services consist of various types of diversity, depending on community participation, by covering a wide and diverse range. Public services in a government are complex affairs and

require a deep understanding from every level of society to improve the quality of services and their role as service recipients. Furthermore, related to the strategy as outlined by Chandler [1] refers to the long-term goals of an organization and how its resources are used and allocated crucially to achieve them, which is very important in designing a plan for mature goals and wants to be achieved in an organization Porter states that there are three main strategies to achieve competitive advantage: (1). Cost Leadership – where the organization offers lower prices with equally high quality; (2). Differentiation - creating a perception of added value through better product or service innovation; and (3). Focus - aiming at specific market segments to achieve more specialized advantages. "In the research entitled "Strategies for Improving the Quality of Public Services with the Utilization of Artificial Intelligence (AI) in Indonesia", it is stated that the effective application of AI as a strategy will strengthen competitive advantages in the public service sector through efficient and adaptive technological breakthroughs to support better and sustainable services.

III. MATERIALS AND METHODS

This research method is qualitative, based on the problems raised in the research that prioritize the problems of process, meaning, understanding, interaction, and complexity. According to Arikunto [2], a qualitative approach is an approach that sees the object of study as a system, meaning that the object of study is seen as a unit consisting of related elements and describing existing phenomena. then Creswell [6] that qualitative approach research is a research design used to explore and understand meanin gs that are thought to originate from social or humanitarian problems. Research resources consist of people, methods, materials, machines, markets, and money. Furthermore, the type of data in this study is clear and the data source comes from:

1) Primary data obtained from Informants
2) Secondary data is obtained from documents such as Laws and Regulations, Regional Regulations, references, statistical data, as well as official reports and study materials.

How to get informants in this study by applying the snowball sampling method in the selection of respondents can increase the transparency of the research because this approach involves references from previous respondents, forming an engagement network that can be tracked more accurately. Each respondent has the ability to provide justification for the selection of the next candidate they propose so as to establish a clear context in the selection procedure and reduce the possibility of bias in decision-making [4] are formal and informal figures.

1. DATA COLLECTION

Data collection techniques to obtain information about the actual situation occurring in the field from each information indicator are obtained through the following data collection techniques:

1) Observation. The researcher made direct observations in the field by conducting "participatory observation". In participatory observation, researchers are involved in research activities.
2) Interview. Interviews were conducted with Informants and Key Informants as well as stakeholders relevant to the research.
3) In-depth interviews, i.e. researchers conduct interviews either directly or indirectly with relevant key informants.
4) FGD (Focus Group Discussion) is a data collection technique that is generally carried out in qualitative research with the aim of finding the meaning of a theme in accordance with the definition of the Bungin group, [4]. This technique is used to express the meaning of a group based on the results of discussions centered on a particular problem. The FGD is also intended to avoid the researcher's misinterpretation of the focus of the problem being studied.
5) Documentation is research with relevant material sources that researchers find important.

2. QUALITATIVE RESEARCH DESIGN

Then in this study using the design/type of case study used in this study, namely the case study of Strategies for Improving the Quality of Public Services with Artificial Intelligence (AI) in Indonesia (Study of the National Strategy of Indonesian Artificial Intelligence in 2020-2045) characteristics of case study research:

1) More specific and in-depth case research related to research process;

2) Research through a cyclical process in a sample that tends to be strict;
3) Case research is not for generalization. This means that the results of case studies cannot be used for generalization purposes in all populations.

According to Yin [19] a research design is a plan that guides researchers in the process of collecting, analyzing, and interpreting observations. It is a logical proof model that allows researchers to take interpretations of the casual relationship between the variables under study. The design of the study also determines the possible direction of generalization, i.e. whether the interpretation reached can be generalized to a larger population or a different situation according to Bogdan and [5] the steps of the case study research are as follows:

1) Case selection: in case selection, it must be done deliberately and not explicitly. Cases can be selected by researchers by creating human, environmental, and community objects. The size and complexity of the object of study must be reasonable, so that it can be completed within the time limit and available resources.
2) Data collection: there are several techniques in data collection, but the more widely used in case research are observation, interviews and documentation analysis, the researcher as a research instrument, can adapt the data collection method to the problem and research environment, and can collect different data at the same time.
3) Data analysis: once the data is collected, researchers can begin to collect, organize, and classify the data into manageable units. Aggregation is the process of abstracting certain things into general things to find common data patterns. Data can be organized chronologically, by category or incorporated into a typology. Data analysis is carried out from the time the researcher is in the field, during data collection and after all data is collected or after completion from the field.
4) Refinement, although all data has been collected in a case study approach, new data must be refined or strengthened to the categories that have been discovered. Collecting new data requires researchers to return to the field and may have to create new categories, new data cannot be grouped into existing categories.
5) Writing a report, the report should be written in a communicative, easy-to-read manner and describe a phenomenon or social unity in Clear, making it easy for the reader to understand all the important information. This report is expected to bring readers into the situation of a person's or a group's life case.

IV. DATA ANALYSIS

The process of data analysis activities in this study is based on the results of research, interviews and (FGD) carried out from the beginning of data collection activities to the discovery of problems and drawing conclusions. The stages of the data analysis activity process are as follows:

1) Data Collection: The data that was successfully collected were in the form of interviews with related parties and observation results.
2) Data Condensation: It is a form of analysis that sharpens, classifies, directs, discards unnecessary data and organizes data, so that in this way the final conclusion can be drawn and verified. The data reduction process during the research and the presentation of the results are carried out simultaneously during the data collection process.
3) Data Presentation: The presentation of data begins with a narrative description that contains information about the activity as the basis for drawing conclusions.
4) Verification and Drawing of Conclusions: The last activity of data analysis in this study is to draw conclusions. The process of drawing conclusions is carried out carefully because it is necessary to pay attention to the flow of thought underlying the conclusion drawn.

Next is the process of determining the validity of data, in this case the Triangulation technique is interpreted as a data collection technique that combines various data collection techniques and existing data sources" [17]. In this study, the researcher used the technique of source triangulation, data collection. (data collection techniques on various data sources A, B, C).

1. SWOT ANALYSIS

SWOT stands for Internal Strengths and Weaknesses and Opportunities and Threats faced by the organization world and on this occasion the author uses SWOT as an analysis material to create a Strategy to Improve the Quality of Public Services with Artificial Intelligence (AI) Strategy In Indonesia

(Study of Indonesia's National Strategy for Artificial Intelligence in 2020-2045) Rangkuti [15] SWOT analysis is a methodical process that involves identifying a number of different aspects to develop an organizational strategy. This analysis is based on logic that has the potential to maximize opportunities and strengths while minimizing dangers and weaknesses. The strategic decision-making process is closely related to the formulation of the organization's mission, goals, strategies, and policies at all times. Therefore, strategic planners are required to conduct an analysis of the factors that govern organizational strategy (including opportunities, threats, strengths, and weaknesses) in the current environment. Situational analysis is the term for this. When it comes to situation analysis, the SWOT Analysis model is by far the most common.

A SWOT analysis looks at opportunities and threats from the outside as well as strengths and weaknesses from within:

1) Quadrant 1: Things are going very well at the moment. Organizations have the opportunity and power to take advantage of opportunities that arise. Under these conditions, the best plan is to support a rapid growth policy (growth-oriented strategy).
2) Quadrant 2: The organization is still strong inside, despite facing many dangers. Using the power to capitalize on long-term opportunities through a diversification plan is a method that needs to be used.
3) Quadrant 3: Organizations have many opportunities to grow, but they also have some internal weaknesses that are hidden by using defensive strategies. The question mark in the BCG Matrix is very similar to this situation in quadrant 3. The main goal of this organizational strategy is to minimize the company's internal problems so that it can take advantage of better market opportunities.
4) Quadrant 4: Organizations are in a very bad place because they face many internal threats and shortcomings.

2. SWOT MATRIX

The Threat, Opportunity, Weakness, and Strength Matrix (TOWS) is a useful matching tool that helps managers generate four types of plans: SO, stands for Strength-Opportunity, WO for Weakness-Opportunity, ST for Strength-Threat, and WT for Weakness-Threat. The Tows Matrix, also known as SWOT, is a way for an organization to list its strategic factors. This matrix makes it easy to see how an organization can transform the opportunities and threats it faces from the outside to match its strengths and weaknesses [15].

Table 1. SWOT matrix plan.

IFAS	STRENGTH	WEAKNESS (W)
EFAS	Decide on 5-10 factors Factor Internal weaknesses	0.30 Define 5-10 Internal strength
CHANCE (O)	FINISHED STRATEGY	WO STRATEGY
Decide on 5-10 factors External opportunities	Create a strategy that Using power to take advantage of opportunity	Create a strategy that Minimize Disadvantages for Take advantage of opportunities
THREAT (T)	ST STRATEGY	WT STRATEGY
Decide on 5-10 factors External threats	Create a strategy that Using power To overcome threat	Create a strategy that Minimize weaknesses and Avoiding threats

Source: Rangkuti, 2014

A. SO Plan Strategy This plan comes from the way the organization thinks, which is to use all its strengths to capture and make the best use of opportunities. b. ST Plan Strategy As a way to solve problems, the organization uses its strengths in this way. c. Wo Strategy This approach is used to take advantage of existing opportunities while minimizing existing weaknesses. d. WT Plan Strategy. This plan is based on defensive measures and aims to reduce shortcomings and stay away from threats.

3. ASSESSMENT CRITERIA AND SWOT ANALYSIS ASSESSMENT STEPS

3.1 Identify the Factors:

Collect data and information on internal and external factors influencing the application of AI in public services.

3.2 Internal Factor Assessment (IFAS):

- Determine the strengths and weaknesses based on the criteria that have been set.
- Give each factor a weight (1.0-0.0) and a rating (1-4).
- Calculate the total weight of the rating times (BXR) for each factor.

3.3 External Factor Assessment (EFAS):

- Determine the opportunity and threat factors using predetermined criteria.
- Give weights and ratings to each factor.
- Calculate the total BXR for these factors.

3.4 Total Score:

- For IFAS: Calculate total strength and total weakness.
- For EFAS: Calculate total opportunities and total threats.

3.5 Quadrant Analysis:

- Calculate the value x (Total Strength - Total Weakness) and the value y (Total Opportunity - Total Threat).
- Determine the location of the quadrant to identify the right strategic action based on the values of x and y.

3.6 Visualization of Results:

- Create a SWOT diagram to summarize the results of the analysis, displaying strengths, weaknesses, opportunities, and threats as well as recommended strategies based on quadrant positions.

V. YIELD AND DISCUTION

1. QUALITY OF PUBLIC SERVICES WITH ARTIFICIAL INTELLIGENCE (AI) IN INDONESIA

On this occasion, the researcher conducted research through interviews with informants who have been determined related to service quality using Service Quality Variables consisting of Five Dimensions of Service Quality in order to comprehensively find out the problem of improving service quality using artificial intelligence (AI) in Indonesia before conducting the following analysis, The following are the results of the study accompanied by findings:

1.1 Tangibel

Based on the results of research conducted by researchers related to Improving the Performance of Physical and Technological Facilities, artificial intelligence (AI) can automate and modernize public service facilities through chatbots and self-contained kiosks. Research shows that AI makes facilities more interactive and efficient to improve the user experience. Easier access in the service process is obtained with AI that makes it easier to access services by reducing manual procedures so that users can get services remotely. Studies show that AI can accelerate services through digital applications tailored to user needs. AI officers monitor officers' performance in real time to maintain discipline with the help of automated notifications and performance evaluations. Studies show that the use of AI can increase officers' productivity by making it easier for management to monitor performance and provide appropriate training, the research finds:

Table 2. Research findings 1 analysis results.

Finding 1	
Problem	**Findings**
Improving the Appearance of Physical and Technological Facilities	AI modernizes public facilities through automation, making services more interactive and efficient.
Easier Access in Service Processes	The use of AI speeds up access and makes it easier for users to get remote services through digital applications.
Maintaining Officer Discipline	AI helps monitor agent performance in real-time, improving productivity and discipline through automated evaluations.

Source: prepared by the author, 2024

1.2 Reliability

Based on the findings from research through interviews and focus group discussions (FGDs), it was found that first, the use of artificial intelligence (AI) and officers operating AI can improve the reliability of officers by providing data-driven guidance to support quick and appropriate decision-making during the public service process. In addition, its use can also ensure that tools are used more appropriately through an automation system that can monitor and provide tool recommendations as needed based on real-time data analysis, it can be concluded that the presence (AI) of generative artificial intelligence (AI) has the potential to develop skills Alzubi, AAF [3] Here are the findings of the study:

Table 3. Research findings 2 analysis results.

Finding 2	
Problem	**Findings**
AI and Agent Reliability	AI improves agent reliability by providing data-driven guidance, reducing errors, and speeding up service response.
Use of Assistive Devices	AI ensures the proper and efficient use of tools, saving officers time and resources.
Timeliness	AI speeds up administrative processes, improving service timeliness and customer satisfaction.

Source: prepared by the author, 2024

1.3 Responsiveness

The results of the research from Interviews and FGDs concluded that AI and Response to Customer Needs are very helpful in understanding customer needs faster. With the help of algorithms that are able to analyze such usage data, it allows us to provide a more personalized and responsive service. It can also be concluded that AI improves service efficiency significantly. Previously, many manual procedures took a long time, but with AI, tasks such as data input or application processing can now be done automatically. The findings from the research on the Benefits of AI in Services are that AI can help reduce errors in services when there are many requests to be processed. In addition, AI can also help respond to customer complaints quickly and efficiently through chatbots so that it can alleviate delays in handling customer complaints, here are the findings of the research:

Table 4. Research findings 3 analysis results.

Finding 3	
Problem	**Findings**
Customer Needs Response	AI accelerates the recognition of customer needs, enabling friendlier service.
Improved Service Efficiency	AI process automation, reducing previous manual service time.
Service Process Rigor	AI reduces errors by ensuring procedures are followed at every stage of the service.

Response to Customer Complaints	AI chatbot speeds up complaint handling, providing temporary solutions without delay.

Source: prepared by the author, 2024

1.4 Warranty

Based on the results of research from the first interview and the FGD on Service Time Guarantee, it shows that AI can improve the performance of officers in providing proper service time assurance by using an automated scheduling system. For example, AI algorithms are able to analyze historical data and estimate the time required for each type of service so that agents can be more consistent in meeting customer needs. In addition, the use of AI in public services has proven effective in ensuring transparency and clear costs. Artificial intelligence-based systems can provide customers with direct and clear information about costs to reduce confusion regarding the costs they have to spend, thus building trust and satisfaction among the general public. High public trust in the role of AI in increasing public confidence in the legality and security of services by implementing an automatic verification system as an example of the use of blockchain technology to store transaction data and service information can ensure that all procedures run safely and transparently so that people feel more confident in using public services. The findings of the research:

Table 5. Research findings 4 analysis results.

Findings 4	
Problem	**Findings**
Service Uptime Guarantee	AI improves the ability of agents to provide accurate service times with automated scheduling systems, allowing for more accurate time estimates based on historical data.
Fee Transparency	The use of AI ensures transparency and assurance of public service costs by providing real-time cost information, reducing confusion, and increasing public trust.
Public Trust	AI increases confidence in the legality and security of services through automated verification systems, such as blockchain technology, which ensure security and transparency in every transaction.

Source: prepared by the author, 2024

1.5 Empathy

Based on the results of interviews and the first Focused Group Discussion on Customer Priority Identification, it shows that artificial intelligence (AI) can be used to determine customer priorities in public services through careful data analysis. By utilizing machine learning algorithms, AI systems can understand customer behavior patterns and preferences to tailor services to their specific needs. In addition, the use of AI can also support the improvement of officers' friendliness and courtesy through AI-based training. By simulating the interaction between agents and customers using AI technology, it can improve the communication skills of agents thereby creating a more positive experience for customers. Three Advantages of Fair and Non-Discriminatory Service By using artificial intelligence (AI), public services can be ensured to be fairer and non-discriminatory, directly or indirectly, basically democratizing data and reducing bias in public services as well as providing recommendations to officers to increase equality in handling each customer regardless of customer background. Rewards and Recognition for Customers that Artificial Intelligence (AI) can reward and recognize customers in a more effective way through personalized loyalty programs to provide better and more satisfying service to customers. By carefully examining transaction information and customer responses, Artificial Intelligence (AI) can provide customers with appropriate incentive program suggestions, increasing their sense of recognition and engagement with public services. The following is an example of a table of research results:

Table 6. Research findings 5.

5 findings	
Problem	**Findings**

Identify Customer Priorities	AI helps in understanding customer priorities by analyzing data and behavioral patterns, so that services can be tailored to specific needs.
Increased Officer Friendliness	AI plays a role in improving officers' friendliness and courtesy through interaction, simulation-based training, which improves their communication skills.
Fair Service	AI ensures fairer and non-discriminatory services by identifying potential biases and providing recommendations to improve equality in services.
Customer Appreciation	AI can provide appreciation and rewards to customers through personalized loyalty programs, increasing customer engagement and satisfaction.

Source: prepared by the author, 2024

Research findings related to improving the performance of physical facilities and technology by using AI in public services:

Table 7. Comparison of efficiency and reliability of public services.

Aspects	Before AI Implementation	After AI Implementation	Percentage Increase
Average Service Process Time (minutes)	30	10	66.67%
Number of Users Served per Day	100	250	150%
User Satisfaction Rate (%)	60%	90	50%
Number of Service Process Errors	15	3	80%

Source: prepared by the author, 2024

Furthermore, Service Process Flow Diagram Before and After AI Implementation.

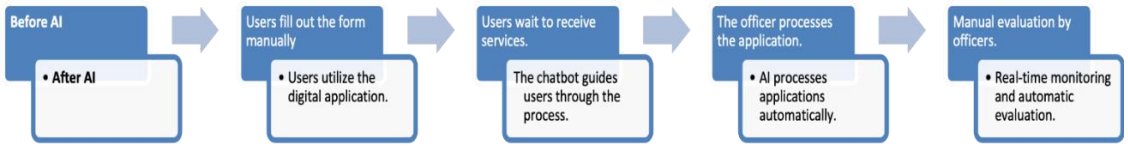

FIGURE 1. Flow diagram 1 before and after AI service process.

Table of Results of Measuring Officer Discipline Before and After AI.

Table 8. Measurement of officer discipline.

Criterion	Before AI Implementation	After AI Implementation
Attendance Rate (%)	75%	95%
Average Timely Actions (%)	65%	90%
Number of Alerts	10	2

Source: prepared by the author, 2024

Further User Satisfaction Level with Public Services:

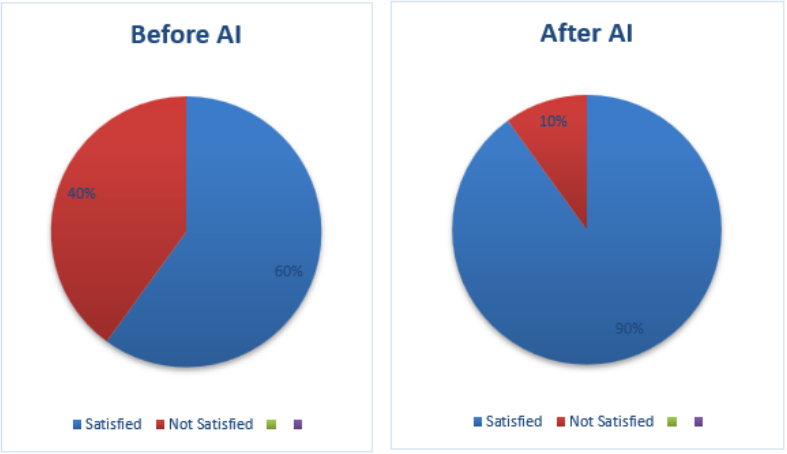

FIGURE 2. User satisfaction levels before and after AI.
Source: prepared by the author, 2024

In the context of Indonesia's artificial intelligence (AI) strategic plan 2020-2045, the use of AI in public services provides a significant opportunity to improve the quality of services to the community. In healthcare, AI speeds up the process of diagnosing and predicting diseases, so patients can get treatment faster. In the bureaucratic sector, automation of administrative governance makes services more efficient by reducing data processing time and the risk of human error. In the world of education, the presence of AI helps in the formation of a curriculum that is tailored to the needs of students, thereby optimizing the teaching and learning process. In public transportation, Artificial Intelligence (AI) can help regulate traffic more effectively, reduce congestion, and improve road safety. In addition, chatbots that use AI can respond quickly to people's questions to make it easier to access public services, even in remote areas. However, the application of this technology needs to be done with care to maintain data confidentiality and ensure accurate services. With this right approach, AI has the potential to create a responsive and reliable public service system, thus forming a solid foundation for digital transformation in Indonesia.

2. STRATEGIES THAT CAN BE USED TO IMPROVE THE QUALITY OF PUBLIC SERVICES WITH ARTIFICIAL INTELLIGENCE (AI) IN INDONESIA

The findings regarding the use of AI in Indonesia's public services are similar to practices in other developing countries such as India and Kenya, especially in the health and financial inclusion sectors. A robust data infrastructure and specialized training in the field of AI that has been implemented in Brazil can be a valuable basis for Indonesia to improve the effectiveness of AI-based public services. Policy recommendations include digital training programs for government employees, investing in more reliable AI infrastructure, and ethics guidance to ensure transparency and accountability. Although the study has limitations in terms of the local situation and the evaluation of the views of its society is generally identified in this study; future longitudinal research can investigate the effects of AI on service transparency and uncover the benefits of cross-category collaboration, providing more advanced insights into the contribution of AI to the long-term quality of public services in Indonesia.

Furthermore, the researcher conducted research to find the right strategy for Improving the Quality of Public Services with Artificial Intelligence (AI) in Indonesia by separating (IFAS and EFAS) and filling in the Weights 1.0-0.0) and Score (1-4) then adding up to the total score or Total BXR=Total and the information provided then determining the Internal and External Score axes, here is the IFAS table:

Table 9. Summary of internal strategic factors analysis (IFAS).

NO	Strength	Weight (B)	Rating(R)	Total (BXR)
1	Increased Efficiency	0,25	4	1,00

2	Enhanced User Experience	0,23	4	0,9
3	Performance Monitoring	0,22	3	0,66
4	Transparency and Trust	0,25	4	1,00
	Total Strength			2,58
NO	Weakness Factors	Weight (B)	Rank(R2)	Total (BXR)
1	Dependence on Technology	0,24	2	0,48
2	Implementation Costs	0,21	2	0,42
3	Lack of Digital Skills	0,20	2	0,40
4	Change resistance	0,20	2	0,40
	Total Weaknesses			1,70
	Quantity (SW)			4,28

Source: prepared by the author in 2024

To summarize the total strength and weakness scores in the application of AI in public services, we can do the following calculations:

To get the value of x, it is necessary to know the difference between total strength and total weakness using the following formula.

Total Strength–Total Weakness = x
S–W=x
2,58-4,28
X= 1.7

Next to get the y-value is to calculate the BxR and get the added Total Score and the Opportunity minus the threat, i.e. the following y-value is EFAS:

Table 10. Summary of external strategic factors analysis (EFAS).

NO	Opportunity Factors	Weight (B)	Rating(R)	Total (BXR)
1	Service Innovation	0,28	4	1,12
2	Improved Accessibility	0,27	4	1,08
3	Data Analysis	0,22	4	0,88
4	Community Involvement	0,23	3	069
	Number (O)			3,77
NO	Threat Factors	Weight (B)	Rating(R)	Total(BXR)
1	Data Security	0,22	2	0,44
2	Algorithm Bias	0,18	2	0,36
3	Customer Dissatisfaction	0,18	2	0,36
4	Policy Changes	0,22	2	0,44
	Entire			1,60
	TOTAL ()+T)	1.00		5,37

Source: prepared by the author in 2024

The table above shows the value obtained from the difference from the total threat opportunity so that the value y can be obtained by the following formula

OT=y
3,77-5,37
y= -1.6

After obtaining each of the x and y values from the above factors, the location of the quadrant is determined by a diagram so that you can know the actions of the correctly selected strategy, here is a SWOT analysis diagram of strategies that can be used to improve the quality of public services with artificial intelligence (AI) in Indonesia, here is a diagram based on the researcher's processing

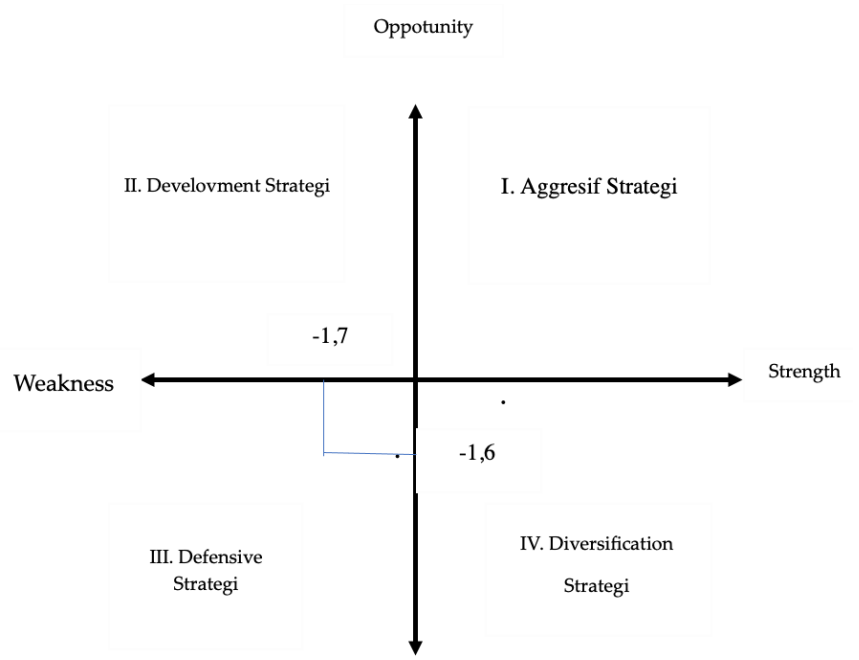

FIGURE 3. SWOT analysis diagram.

Source: author's preparation, 2024

Based on the results of the analysis in the diagram above based on the weights and calculations above, it can be seen that the right strategy is the Defensive Strategy which is the Second Quadrant so that the alternative strategy is the right strategy for S/T. so that the determination of the strategy uses the Strengths, Weaknesses, Opportunities and Threats Factor and will be realized in the form of the following SWOT matrix is the Strategy Matrix Table:

Table 11. SWOT matrix.

External / Internal	**Strength** Increased Efficiency Enhanced User Experience Performance Monitoring Transparency and Trust	**Weakness** Dependence on Technology Implementation Costs Lack of Digital Skills Change resistance
Opportunity Service Innovation Improved Accessibility Data Analysis Community Involvement	S/O Strategy Increased Efficiency + Service Innovation: Leveraging the power of AI to improve operational efficiency to create more innovative services, such as automated and personalized services that are more affordable for the community. Enhanced User Experience + Enhanced Accessibility:	W/O Strategy Reliance on Technology + Service Innovation: Reducing the risk of dependence on technology by developing backup systems and increasing service innovations that also involve human interaction so that services remain functional when technology experiences disruptions.

	Integrating chatbots and standalone kiosks with AI-based services to expand access to public services, especially for people in remote or underserved areas. Performance Monitoring + Data Analytics: Using AI capabilities to monitor agent performance in real-time as well as analyze customer behavior and needs data to improve the quality and personalization of public services. Transparency and Trust + Community Engagement: Using AI to ensure transparency in service costs and time, as well as leveraging technology to gather feedback from the public more easily, ultimately increasing public trust.	Implementation Costs + Improved Accessibility: Addressing the cost challenges of AI implementation by leveraging public-private partnerships or government assistance programs to fund more inclusive public service accessibility improvements. Lack of Digital Skills + Data Analytics: Addressing the lack of digital skills by providing training to public officials, so that they can effectively use AI systems and analyze data for continuous service improvement. Resistance to Change + Community Engagement: Reduce resistance to change by engaging the public and public officials in the transition to AI-based services, as well as improving understanding of the benefits of these technologies for better services.
Challenge (Threat) Data Security Algorithm Bias Customer Dissatisfaction Policy Changes	S/T Strategy Improved Efficiency + Data Security: Uses proven AI systems to strengthen data security in public services through data encryption and automatic monitoring of network activity. Improved User Experience + Algorithm Bias: Ensure a more responsive and fair user experience by conducting regular audits of AI algorithms to avoid bias in public service delivery. Performance Monitoring + Customer Dissatisfaction: Use real-time performance monitoring to ensure consistent service quality and promptly respond to customer dissatisfaction through immediate improvement in the field.	W/T Strategy Dependency on Technology + Data Security: Reduce reliance on a single technology by implementing a backup system that can ensure data security, even when the main system is disrupted. Implementation Costs + Policy Changes: Develop a flexible and sustainable implementation plan, so that implementation costs can be reduced by adapting technology according to evolving government policy changes. Lack of Digital Skills + Algorithmic Bias: Provide ongoing training to public officials on digital skills to avoid mistakes in the use of AI that can lead to bias in service. Resistance to Change + Customer Dissatisfaction: Overcoming resistance to

	Transparency and Trust + Policy Change: Develop more transparent services with AI so that people can understand and adapt to changes in government policies, and build trust with easily accessible systems.	change with a participatory approach to the digitization of public services, as well as improving communication with the public to reduce dissatisfaction with the application of AI.

Source: prepared by author, 2024

Based on the SWOT Matrix above, the Strategy for Improving the Quality of Public Services in Indonesia can use an alternative S/T strategy in the Defensive Strategy because based on the results of the X and Y weightings show that it is in the position of Quadrant III, with the priority of optimizing efficiency and service innovation with AI for more personalized and responsive public services. Expanding accessibility and improving digital skills through officer training. Maintain transparency and data security to build public trust. Reduce technology dependency with backup systems. Overcome resistance to change by involving the public and officials in the adoption of AI.

VI. CONCLUSION

After discussing the two objectives of the research above, it can be concluded that the first dimension of Tangibel (AI) modernizes facilities, speeds up and simplifies services and makes it easier to monitor performance in real time. Second, it confirms that (AI) improves officer morale, ensures the proper and efficient use of tools and speeds up slow administrative processes. Third, Responsiveness (Ai) accelerates the recognition of customer needs, automates processes, reduces procedural errors, and speeds up responses to service complaints. Fourth, Assurance Use (AI) improves service time accuracy, ensures akomodaso transparency, increases public trust. Fifth, Empathy, Use of Service (AI) helps determine service priorities, improve friendliness and courtesy, ensure fair service, and provide customer appreciation. The results of the second study that the Effective Strategy in Improving the Quality of Public Services in Indonesia based on the results of analysis, weighting, assessment and summation that the Defensive Strategy is considered appropriate, namely by optimizing Efficiency and Innovation of Services with the Use of AI that is more personalized and responsive, expanding accessibility and improving digital skills through officer training, and maintaining transparency and security.

This study contributes through a SWOT evaluation of the application of artificial intelligence in the public service sector in Indonesia which explains in detail the advantages and challenges faced in integrating this technology. The results of the study show that artificial intelligence can improve the efficiency and transparency of public services such as in faster and more accurate data processing (Advantages). However, obstacles such as limited infrastructure and lack of workforce skills (Shortages) are obstacles to optimal implementation. The (opportunity) of service automation to improve the user experience is affirmed in this study while highlighting the importance of paying attention to risks to data security and privacy that need special attention (threats). The end result of this study could provide valuable guidance for decision-makers who want to ensure the strategic integration of artificial intelligence (AI).

As a follow-up, the study recommends concrete steps that policymakers and public administrators can take. One of them is to start a pilot project in the health and education sectors to test the effectiveness of AI on a small scale. Collaboration between the government and the private sector can help overcome existing technical obstacles. In addition, it is also necessary to develop a training program for public employees so that they are ready to use this technology properly and correctly. The existence of clear data policy standards, especially for privacy and security, is also important to build public trust in AI-based systems. In this way; Indonesia can encourage the use of AI that is responsible and focuses on the interests of the community.

In the future, it is recommended to explore the influence of artificial intelligence on community satisfaction through longitudinal studies that compare user perceptions over time. Additional research can also investigate differences in the application of artificial intelligence in urban and rural areas and identify the factors that hinder and make more appropriate policies to reduce the digital divide. In addition, considering the ethical

and social impacts of artificial intelligence in public services such as privacy protection and the risk of algorithmic bias will support the fair and sustainable application of the technology in Indonesia.

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Author Contribution

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Conflict of Interest Statement

The authors agree that there will be no conflict of interest that could disadvantage any party.

Data Availability Statement

Data for this study is sourced from official national documents and is reliable. However, the analysis reflects the researchers' perspective and accessible insights on the phenomenon in a realistic context.

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