

Can digital transformation improve the transparency and accountability of Indonesian public governance?**M. Irwan Tahir^{a*}, Ani Martini^a, Anak Agung Ngurah Gunawan^b, Yogi Makbul^c, Nirma Yossa^d, Wisber Wiryanto^e, Moch Fahrudin^f and Rahmat Ilyas^g**^a*Institut Pemerintahan Dalam Negeri, Bandung, Indonesia*^b*Departement of Physic, Universitas Udayana, Bali, Indonesia*^c*Institut Teknologi Bandung, Indonesia*^d*National Research and Innovation Agency (Badan Riset dan Inovasi Nasional – BRIN), Indonesia*^e*National Research and Innovation Agency (Badan Riset dan Inovasi Nasional - BRIN), Indonesia*^f*Universitas 17 Agustus 1945 Semarang, Indonesia*^g*IAIN Syaikh Abdurrahman Siddik Bangka Belitung, Indonesia***CHRONICLE****ABSTRACT***Article history:*

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The development of information technology is currently growing rapidly, affecting all aspects of life. There are various benefits obtained from advances in information technology, one of which is the ease of communicating and accessing information. This transformation is an opportunity to increase accessibility in various sectors, such as government, health, education, social, economic and other sectors. This research aims to analyze the relationship between digital transformation and public accountability, digital transformation with public transparency and transparency with public accountability. The research uses quantitative methods to test the relationship between variables. The respondents of this research were 478 government public service office employees who were determined using a simple random sampling method. Research data analysis uses structural equation modelling (SEM) partial least squares (PLS) with research data analysis tools using SmartPLS 3.0 software. Based on the results of data analysis, it is concluded that digital transformation had a positive and significant relationship to public accountability, digital transformation had a positive and significant relationship to public transparency and transparency had a positive and significant relationship to public accountability. The process of digital transformation in public administration greatly influences how public services are delivered and how government functions. Leveraging digital technology is an opportunity to increase accessibility in various fields such as government, health, education, economics, social and politics. Public administration can increase transparency, efficiency, public participation and data-based decision-making. Organizations pursuing digital transformation must be flexible, innovative and able to adapt quickly. Several important benefits of transparency include preventing corruption, making it easier to identify weaknesses and strengths of a policy, and increasing accountability in the delivery of public services by government agencies. In addition, a transparent attitude will increase trust in government institutions to decide on certain policies, as well as being able to encourage a conducive investment climate and increase business certainty.

1. Introduction

The development of information technology is currently growing rapidly, affecting all aspects of life. According to Matasick (2017), there are various benefits obtained from advances in information technology, one of which is the ease of communicating and accessing information. This transformation is an opportunity to increase accessibility in various sectors, such as government, health, education, social, economic and other sectors. Based on data released by wearesocial.com, the implementation of digitalization in Indonesia in early 2023 will reach 212.9 million internet users with a penetration of 77.0%.

* Corresponding author.

E-mail address irwan.tahir@pps.ipdn.ac.id (M. I. Tahir)

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Furthermore, there are 167.0 million social media users out of 60.4% of the total population. Then, around 353.8 million people are actively using cellular networks with an average of 128.0% of the total population in Indonesia. From this data, it can be judged that most people have opened themselves up to implementing digital in their daily lives. The collection, analysis and exchange of information has undergone significant changes because of the integration of advanced information and communications technologies. This can speed up the decision-making process and increase the effectiveness and transparency of administrative processes. The Internet of Things (IoT), cloud computing, big data, and artificial intelligence (AI) have all changed the way people learn, connect, conduct business, and even engage in politics in this era of digitalization. Therefore, to remain relevant and encourage better governance, the government has begun to implement various information technologies (Adeusi et al., 2024). Digital change is the process of adopting and implementing digital technology through an organization to create new or modified products, and services, and conduct affairs using digital formats. Digital transformation is not only about technology but also about people and culture. This prioritizes digital and is customer-based in all aspects of the business such as analysis models, customer experience, and implementation processes.

The use of digital technology creates new experiences for users, rapid product creation, and new business models in response to change. Digital transformation brings fundamental changes in the traditional ways public administration is carried out. According to Mumladze (2023), digital transformation includes the application of information and communication technology in all aspects of public administration, from data collection, analysis, and decision-making to efficient public services. Digital transformation is a multifaceted strategy that goes beyond simply converting analogue public services to digital or developing online forms. Digital transformation does not only include new technology but also changes in company culture and attitude. The business world that adopts digital transformation must be ready to innovate, change quickly and adapt. Increased productivity, better customer service, flexibility, and operational efficiency are just some of the benefits of the digital transition. Apart from that, implementing digital transformation can give birth to new opportunities to create cutting-edge goods and services (Corojan & Criado, 2012). Online-based applications, e-government systems, and big data analysis in the realm of public administration provide the government and society with digital opportunities to provide public services. Both internal and external parties have a significant impact on the digital transformation process, requiring continuous adjustments to processes, services and products to meet external needs.

According to Natision et al. (2022), digital transformation makes it easier for people to access various types of information through services, data and solutions supported by technology. Digital transformation provides opportunities for people to innovate using online applications. Data security and privacy are important assets in digital transformation. The biggest challenge is protecting data from cyber threats such as hacking, malware and phishing attacks as well as the privacy issues that arise due to the storage, collection and use of personal data. In addition, dependence on digital technology poses a risk for organizations, governments and society in the form of vulnerability to system disruption or failure, power outages that can stop technology operations, addiction to the internet, and neglect of social interactions. The digital transformation of public administration may cause a digital divide, which may limit people's access to technology and information. These gaps may impact the adoption of digital services in the public sector (Chinedu & Hussaini, 2018). Therefore, the analysis of the digital transformation of public administration: opportunities and challenges find an important relationship between technology use and identification. Digitalization of public services means adopting information and communication technology in the delivery of public services. This can be done by utilizing various digital applications and platforms, such as websites, mobile applications, social media, and instant messaging services. Digitalization of public services is seen as being able to increase the efficiency of public service delivery, as well as facilitate public access to public services (Utomo et al., 2023). By digitizing public services, people can obtain information and carry out transactions quickly and easily, without having to physically come to a public service office. Apart from that, the digitalization of public services can also increase transparency and accountability in the implementation of public services, as well as strengthen public participation in decision-making. Thus, the digitalization of public services is one way to improve the quality and accessibility of public services, as well as strengthen relations between government and society. Currently, the application of information technology in government has been carried out globally by governments in many countries. The public has the right to interact with public administration and the government must build an e-government system that allows the public to interact with the government sector via the Internet to ask questions, carry out transactions, and obtain information. According to Natision et al. (2022) Digitalization of public services is a technological innovation that can have a positive impact on increasing the efficiency and effectiveness of public services. Digitalization of public services can help the government speed up administrative processes, reduce bureaucracy, increase accessibility, and improve the quality of public services.

Management competence and service capabilities are needed to overcome the challenges faced when implementing digital public services. If these two competencies are combined, there will be superior service quality. This superior service quality can be demonstrated by the satisfaction of service users, especially residents. In efforts to implement the digitalization of public services, public organizations must immediately improve the capabilities and skills of their human resources (Dobrolyubova et al., 2019). This can be achieved through in-house training or on-the-job training to use digital technology to achieve high productivity and competitiveness. By doing this, public organization resources will perform high and be able to innovate in the Industrial Revolution 4.0. The legal basis for implementing electronic-based government in Indonesia is regulated in concerning electronic-based government systems. As the era of digitalization continues to develop, public administration is also experiencing significant transformation. In administrative science, both in the public and private sectors, the basic product is efficiency. The fundamental goal of administrative science is the achievement of work with the least amount

of human and material expertise (Adeusi et al., 2024). Efficiency is thus the first point on the scale of administrative values. Public administration as the work of government has a very vital role or influence in a country. The dynamics of public government greatly influence a country's economy. The application of information and communication technology has opened up new opportunities in the delivery of public services, increasing efficiency and expanding the accessibility of services for the community. Not only that, changes in people's mindsets and expectations regarding public services have also influenced the evolution of public administration towards more modern and adaptive governance. The public now expects public services that are responsive, transparent and easily accessible via digital platforms. This encourages the government to continue to innovate in providing public services, both through developing technology-based applications and strengthening digital infrastructure. Thus, understanding these changes is important in designing policies and strategies to meet the demands of an increasingly complex and diverse society. Public services in Indonesia are currently still considered poor (ElMassah & Mohieldin, 2020). The public problems faced center on the unclear basis for legal services, their requirements, system mechanisms and processes, completion schedules, and costs and fees. As a result, many anomalies in public services were exposed, including long delays, procedural irregularities, biases, restrictions, demands for money, goods, or services, failure to provide services, and handling of penalties. Due to numerous anomalies, slow service procedures, expensive manufacturing and transportation costs, rampant corruption, and fake taxes resulting in government bureaucracy has earned a bad reputation. One of the main causes of the decline in public trust in the government is poor public services. This trust problem manifests itself in the form of unhealthy demonstrations and demonstrations, which show the public's disappointment with their government.

2. Literature Review

2.1 Digital transformation

Digital transformation is the process of utilizing existing digital technology such as virtual technology, mobile computing, cloud computing, artificial intelligence, and integration of all existing systems in the organization (Escobar et al., 2023). The concept of digital transformation for public sector organizations is adapted from the definition of digital transformation which refers to the adoption process and practices to help public organizations provide social value in an increasingly digital world. The development of information technology is a very important moment in the sustainability of social life and an opportunity to improve quality in various fields. The industrial era 5.0 which prioritizes revolution or change in the human resources sector, requires humans to work and live side by side with increasingly sophisticated and continuously developing technology (Purwanto et al., 2023). The rapid pace of technology in various parts of the world has an impact on people's life patterns and public administration governance in Indonesia so actors or public administration actors must follow dynamic technological developments (Escobar et al., 2023). The use of information technology includes two activities related to improving the quality of digital services, namely: 1) Data processing, information management, management systems and electronic work processes; and 2) utilizing advances in information technology so that public services can be accessed easily and cheaply by people in all regions of the country. Digital transformation in public administration describes significant adjustments made to the way government organizations use digital technology to increase productivity, transparency and the quality of services provided to the public. This shift requires the use of digital technology and system integration to improve decision-making, administrative procedures, and public involvement (Kurniawan & Soediantono, 2022).

The digital transformation of public administration is assisted by various digital technologies. E-government is a term that refers to the use of information and communication technology to increase the effectiveness and transparency of public service delivery. Open government includes transparency, participation, and collaboration between government and society in the decision-making process, in line with Big Data Analytics which identifies relevant patterns and trends in decision-making through data analysis. According to O'Regan et al. (2022), obile Government is used to provide government services that can be accessed via mobile devices, such as smartphones. Cloud computing offers a scalable and adaptable infrastructure for managing and storing data. Pattern recognition, process automation, and intelligent decision-making are all examples of artificial intelligence (AI) applications. Real-time data sharing can be done between devices via the Internet of Things (IoT). Public administration is experiencing change and adaptation in facing the challenges and opportunities offered by information and communication technology. Digitalization brings public administration to blend with technology related to the management, administration and implementation of public policies, programs and services organized by the government to achieve certain goals in providing services to the community. Public administration aims to achieve efficiency, effectiveness and accountability in the implementation of public services and government policies. It can be said that public administration cannot be separated from change (Eom & Lee, 2022). Therefore, the opportunities and challenges faced are one measure of success in making changes that can have an impact on every area of public administration, especially in service delivery.

2.2 Public transparency

Transparency in this case is defined as the openness of information by government officials that can be accessed by the public. With this open information, it will certainly make it easier for the public to respond to, monitor and evaluate government performance (Lopez & Fontaine, 2019). In summary, it can be said that the public's demand for transparency as a form of public supervision of government organizations, one of the important elements in realizing open state administration is the public's right to obtain information by statutory regulations. According to Otia and Bracci (2022) The right to information is very important because the more open state administration is to public scrutiny, the more accountable state administration

will be. The Law on Openness of Public Information is a form of transparency which has implications for the government's ability to realize good governance. Where the government can provide detailed information on the forms of public service activities clearly so that the public can be involved and monitor these activities directly. In addition, openness of information and transparency can form a check and balance, making it easier for the public to know and monitor practices in the field (Gherasim & Ionescu, 2019).

Through this electronic-based service, we invite the public to participate in monitoring government officials. Through this community supervision, it is hoped that public officials and State Civil Apparatus (ASN) in carrying out government tasks will truly be carried out transparently and accountably. According to Olayinka and Osariemen (2019) The digital transparency system makes it easier for the public to participate in monitoring government governance, and they will speak out if they receive information about irregularities from unscrupulous public officials or ASNs who commit acts that are suspected of being fraudulent. For example, through e-budgeting it will be seen whether the budget for an activity or program is by the results obtained. Through e-procurement, the public can also assess whether tenders in the procurement of goods/services comply with the rules, or whether there is collusion between the procurement committee and tender participants (Gherasim & Ionescu, 2019). Likewise in the licensing process and provision of other public services. In the end, transparency in the digital era should not be just a slogan but must be implemented consistently in line with the demands of society itself. On the other hand, it shows that digital traces always leave an impression and are not easily removed, so they can constitute permanent transparent data that can be used as information for various purposes (Gherasim & Ionescu, 2019).

2.3 Public Accountability

Public Accountability can be interpreted as a form of obligation to be accountable for the success or failure of implementing the organization's mission in achieving predetermined goals and targets, through a medium of accountability that is carried out periodically (Lopez & Fontaine, 2019). Accountability is the provision of information and disclosure regarding financial activities and performance to interested parties. The government, both central and regional, must be able to be the subject of providing information to fulfil the public's rights, namely the right to know, the right to be informed, and the right to have their aspirations heard. The dimensions of public accountability include legal accountability and honesty, managerial accountability, program accountability, police accountability, and financial accountability. According to Putra (2020) Accountability refers to the obligation to be responsible for actions, decisions and results of activities carried out. In the context of government, accountability refers to the responsibility that officials or institutions have towards the community or stakeholders. This involves conveying accurate information, transparent management of funds and resources, and the ability to answer questions or criticism related to the policies or programs produced. In the implementation of public services, the principle of accountability guarantees the certainty and timeliness of public services. With this legal basis, the government and public institutions are responsible to the people they serve and ensure that services are provided by established standards and periods. Accountability is an important principle for realizing a clean government system with integrity. According to Ramírez and Tejada (2019) by publishing work processes and results of government programs through digital archives, government agencies have provided space for the public to get involved and participate in monitoring government performance. Ultimately, this accountable system will increase public trust.

Accountability in government administration is an effective way to suppress opportunities for abuse of office for personal gain. With a transparent accountability system and high levels of community participation, various acts of fraud can be more easily detected. This is an important basis for realizing clean government in the future. Accountability as an ethical concept that is close to public administration and government has a meaning that is sometimes used synonymously with the concept of accountable, questionable, blaming), and which has non-freedom, including other terms that are related in the hope of being able to explain one aspect of it. from public administration. In a broad sense, political accountability involves public institutions and bureaucracy to control various expectations originating from within and outside the organization. Four types of public accountability are bureaucratic accountability, political accountability, professional accountability and legal accountability. An important determinant that shapes a public accountability system depends on how to control various public expectations. Thus, public accountability is related to how public bureaucracy can realize public expectations. According to Saengchaia et al. (2020) The principle of accountability stipulates that every activity and result of government administration activities through the public bureaucracy must be accountable to the public. The characteristics of an accountable government are (1) able to present information on government administration openly, quickly and accurately to the public, (2) able to provide satisfactory services to the public, (3) able to explain and account for every policy to the public, (4) able to provide space for the community to be involved in the development and governance process and (5) as a means for the public to assess government performance. Bureaucratic accountability is often used as a mechanism for managing public agents. The function of bureaucratic accountability mechanisms includes formal and organized relationships between superiors and subordinates with the need to follow the provisions that must be complied with as well as monitoring and standardizing the clarity of regulations that will be implemented. According to Singh et al. (2023) Legal accountability is related to the existence of legal mechanisms or specifically developing policies such as laws that can be utilized by the public to challenge bureaucratic policies and the behavior of public officials. This legal accountability mechanism occurs due to increased interaction between the public and government agents and the dysfunctional impact of secrecy in government institutions in the context of their efficiency and effectiveness (Gherasim & Ionescu, 2019).

2.4 The relationship between digital transformation and accountability

Digital transformation has many positive impacts on the business world. From increasing operational efficiency to product innovation, digital transformation can help companies stay competitive in this digital era (ElMassah & Mohieldin, 2020). However, it is important to remember that digital transformation is not an easy process. According to Shin et al. (2020) Digital transformation makes it possible to be more efficient, easier and faster in solving various problems and meeting needs. Digital transformation offers various benefits such as increased productivity, reduced costs, improved service quality, and improved customer experience. According to Sarker et al. (2018), digital technology also allows the government to implement more efficient reporting mechanisms. For example, governments can develop mobile applications or online platforms that allow citizens to report acts of corruption, violations of the law, or non-compliance with policies (Praditya, 2024). This makes the community play an active role in monitoring the government and exposing violations. Apart from that, digitalization can help increase the government's responsiveness to problems and complaints submitted by the public. Based on previous research and theoretical studies, the following hypothesis is formulated:

H₁: *Digital transformation has a positive and significant relationship to public accountability.*

2.5 The relationship between digital transformation and transparency

According to Triko and Nurmasari (2023) Transparency in the decision-making process One important aspect of democracy is transparency in the decision-making process. Digitalization has played an important role in increasing this transparency. Through social media, online platforms, and electronic government applications, relevant information can be easily accessed by the public. According to Viale et al. (2020) This allows individuals to gain a better understanding of the political decision-making process and keep abreast of current developments. In addition, blockchain technology is also emerging as a potentially revolutionary tool for ensuring transparency and integrity in political processes. By using this technology, data and decisions taken can be recorded openly and cannot be changed. This gives confidence to the public that the decision-making process is not influenced by corruption or manipulation. Based on previous research and theory studies, the following hypothesis is formulated:

H₂: *Digital transformation has a positive and significant relationship to public transparency.*

2.6 The relationship between transparency and accountability

Transparency is open so that it can be accessed by everyone who needs it. Accountability means that every process and result of public services must be accountable to the public, while participatory means that a public service will only be optimal if there is public participation. So, accountability is responsibility for the management of resources in implementing policies that achieve predetermined goals. Transparency is a form of openness carried out by the government to provide information to parties who need information According to Wang (2023) transparency has an important role in developing public accountability because by realizing transparency the government has at least made it easier for citizens to know their actions, and the rationality of those actions, and compare them with the existing value system (ElMassah & Mohieldin, 2020). Based on previous research and theory studies, the following hypothesis is formulated:

H₃: *Transparency has a positive and significant relationship with public accountability.*

3. Method

This research uses quantitative methods to test the relationship between variables. The respondents of this research were 478 government public service office employees who were determined using a simple random sampling method. Research data analysis uses structural equation modelling (SEM) partial least squares (PLS) with research data analysis tools using SmartPLS 3.0 software. Research data was obtained by distributing online questionnaires via social media, respondents were given a series of written questions to answer. A questionnaire is a good way to collect data if the researcher knows what variables need to be measured and what the respondent expects. The questionnaire is designed using a 7-point Likert scale. A 7-point Likert scale can minimize measurement errors and be more precise. (Munshi, 2014). The Likert scale used in this research is (1) strongly disagree, (2) disagree, (3) quite disagree, (4) Neutral, (5) quite agree, (6) agree, (7) Strongly agree. The independent variable of this research is digital transformation, and the dependent variable is public accountability and public transparency. In this data processing research, SEM and PLS programs were used with the partial least squares method and there were three stages for PLS analysis, namely: Outer Model Analysis, Inner Model Analysis and hypothesis testing.

Transparency indicators consist of, (1) The existence of openness in the budget framework, especially in the budget process, (2) The announcement of every budget policy, (3) The existence of good budget documentation which contains several fiscal indications, (4) The disclosure of information about actual expenditure, (5) There is openness of information during the budget preparation process, (6) There is an opportunity for the public to participate in the budgeting process. There are 5 indicators to measure the success of digital transformation: 1. Realization of Sustainable Business Value, 2. Percentage of Cloud-Based Business Processes, 3. Innovation Successfully Accepted by the Market, 4. Percentage of Business Processes Enabled by AI, 5. Employee experience and productivity. The accountability dimension consists of, (1) Legal accountability and honesty

accountability, (2) Process accountability, (3) Program accountability, and (4) Policy accountability. accountability indicators consist of, (1) The decision-making process is made in writing, available to citizens who need it, with every decision taken meeting ethical standards and applicable values, and by administrative principles. correct, (2) Accuracy and completeness of information relating to ways to achieve the targets of a program, (3) Clarity of policy targets that have been taken and communicated, (4) Feasibility and consistency of operational targets and priorities, (5) Dissemination information about a decision through the mass media, (6) Public access to information about a decision after the decision is made and a public complaint mechanism, (7) Management information system and monitoring of results.

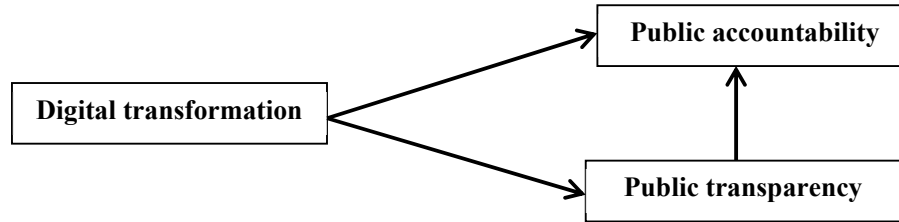


Fig. 1. Research Model

4. Result and discussion

4.1 Data analysis method

To discuss the main questions of the research, researchers used statistical tests. The Partial Least Square (PLS) method with SmartPLS is used for data management in this research. PLS is a component- or variance-based structural equation model (SEM). The statistical discipline known as structural equation modelling, or SEM, can evaluate a collection of relationships that are relatively challenging to measure simultaneously. In this data processing research, SEM and PLS programs are used with the partial least squares method. There are three stages for PLS analysis, namely: 1. Outer Model Analysis. 2. Inner Model Analysis. 3. Hypothesis Testing.

4.2 Outer Analysis Method

The relationship between the index and latent variables is described in this model. Or it could be said that each indicator's relationship with its latent variable is determined by an extrinsic model. The outer model check is Convergent Validity. The convergent validity value is the loading factor value on the latent variable with indicators. A loading factor value > 0.7 is said to be ideal and a loading factor value > 0.5 is still acceptable. Discriminant Validity. By comparing the load on the structure in question, which must be greater than the load on other structures, to this value, the cross-load factor can be used to determine whether a structure is sufficiently discriminating. Average Variance Extracted (AVE). Expected AVE value > 0.5 . 4. Composite Reliability. Data that has Composite Reliability > 0.7 has high reliability. 5. Cronbach Alpha. The reliability test can be strengthened by utilizing the Cronbach alpha value. A variable can be said to be solid or meets Cronbach alpha if it has a Cronbach alpha value > 0.70 . The results of the analysis in Table 1 show the AVE value > 0.5 , Composite Reliability > 0.7 and Cronbach alpha value > 0.70 . The results of the analysis in Fig. 2 show that a loading factor value > 0.7 is considered ideal and a loading factor value > 0.5 is still acceptable.

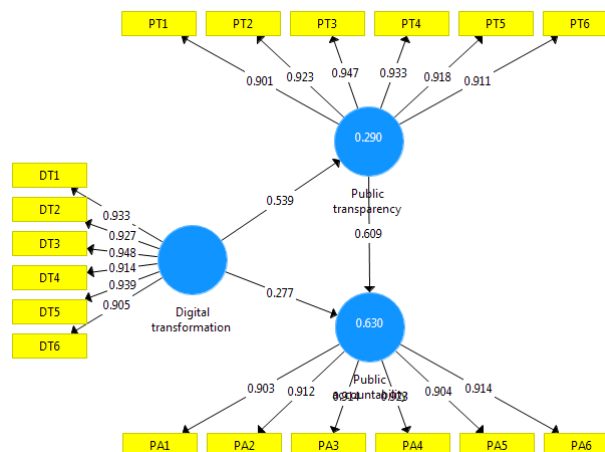


Fig. 2. Loading factors

Table 1
Discriminant Validity

Variable	AVE	Composite Reliability	Cronbach alpha
Digital Transformation	0.678	0.875	0.812
Public transparency	0.645	0.812	0.802
Public accountability	0.645	0.856	0.834

4.3 Inner Model Analysis

The purpose of inner model analysis, also known as structural model analysis, is to guarantee the correctness and strength of the structure being built. The internal model ranking can be seen from several indicators, including 1. R Square (R²) is used to assess the extent to which the model can explain variations in the dependent variable. An R Square value of 0.67 indicates strength, an R Square value of 0.33 indicates moderate strength and an R Square value of 0.19 indicates weak strength. 2. Q Square Using the Blindfolding method, Q Square is carried out to assess prediction accuracy. The Q Square value can be classified as small, namely 0.02, medium, namely 0.15, or large, namely 0.35. 3.5.2.3.

Table 2
R Square (R²)

Variable	R Square (R ²)
Public transparency	0.290
Public accountability	0.630

4.4 Hypothesis test

The next step is to test the hypothesis after evaluating the inner model and outer model using various methods. To explain the direction of the relationship between variables, hypothesis testing is used. The level of significance can be used statistically to determine whether a hypothesis is accepted or rejected.

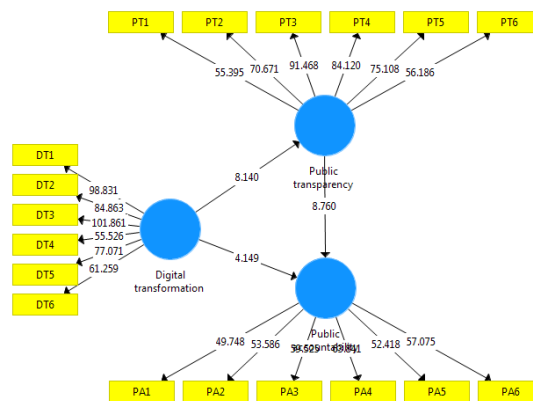


Fig. 3. Hypothesis testing

In this research, the significance level is 5% or 0.05. The following criteria are used to make decisions: • P-value < 0.05 : H0 is rejected then Ha is accepted • P-value ≥ 0.05 : H0 is accepted then Ha is rejected

Table 3
Hypothesis testing

Hypothesis	T value	P value	Result
Digital transformation → public accountability	4.149>1.96	0.000<0.050	Supported
Digital transformation → public transparency	8.140>1.96	0.000<0.050	Supported
Public transparency → public accountability	8.760>1.96	0.000<0.050	Supported

4.3 The relationship between digital transformation and public accountability

Based on the results of structural equation modelling (SEM) analysis using SmartPLS 3.0 software, the p-value of 0.000 is smaller than 0.050, so a significant relationship is obtained. Digital transformation has a positive and significant relationship to public accountability. Digital transformation has great potential to improve the efficiency of public services from a public administration perspective. By adopting digital technology in various aspects of public administration, internal processes such as data management, archiving and communication between units can be increased in efficiency. Apart from that, the application of digital technology in public services can speed up the service process and increase the accessibility of services for

the public. According to Todoruț and Tselentis (2018), from a management perspective, digital technology enables more efficient management of human and financial resources through an integrated management system. In addition, the adoption of digital technology also enables more accurate performance measurement and more effective monitoring of various aspects of public services. Thus, digital transformation in public administration can significantly increase the efficiency of public services, accelerate responses to community needs, and improve overall service efficiency (Lopez & Fontaine, 2019).

In the era of modern technology, the use of technology can significantly increase the efficiency of public services (Mader et al., 2018). Thanks to technological advances such as digital platforms, mobile applications, and information systems, governments and public institutions can now provide public services faster, cheaper, and more easily accessible. With the help of this technology, people no longer need to visit physical locations to get public services. The government must provide training and technical guidance to improve employee abilities and skills; this can be realized in the form of technical guidance (Lombardi & Secundo, 2021). Meanwhile, research conducted by Digitalization will have a significant impact on both society and the bureaucracy, such as: Increasing the knowledge of bureaucrats or the public about advanced information technology; budget and service efficiency; availability of open information; reduction of corruption, collusion and nepotism; and efficient data storage, without requiring a long time to open documents (Lombardi & Secundo, 2021). The use of information technology, either for office purposes or as a service to the community, can encourage effective, easy and fast government performance, and the impact of the use of this technology can be felt by the community and the government itself.

All leaders should know about technological advances. Leaders must be role models for others because they are always looked up to. Character education for public officials is a means to achieve leadership in the technological era because it is part of the glue that unifies the nation and the embodiment of society (Lindquist & Huse, 2017). Character education for officers is not immediate but takes time through clean training, learning, communities of practice, work culture and competency development. In the current technological era, people want all their management to run faster, more efficiently and effectively. Therefore, public administration administrators are expected to have many options to provide great support for public services. To increase the efficiency and effectiveness of services, the local government has not yet implemented digital services. As a result, many people do not understand standard operating procedures (SOP) and rules for managing correspondence documents, so they cannot complete their business that day. People who live far from the office often complain about having to sacrifice time to get to the office (Ljungholm, 2015). The implementation of digital services can significantly help the public in getting efficient services. Based on previous research, the application of digitalization of public services to achieve service efficiency is a challenge at this time, especially in regional government to village government (Purwanto & Juliana, 2022). The government must overcome limited human resources in the IT sector because human resources must be ready and understand information and communication technology. Apart from that, there must be supporting facilities such as the necessary computer hardware because the village office only has one computer. To simplify and speed up the procedure, it is necessary to add computer hardware. Then, so that it is not slow when carrying out administrative activities online, internet (WIFI) speed must be increased. Next, capital and budget. According to Viale et al. (2020), achieving digital-based service efficiency requires paying attention to several things. First, from a technological perspective, efficiency can be measured by how well a digital system can automate processes, reduce human error, and increase service speed. This can provide benefits to the community in the form of faster and more accurate services. Apart from that, the system integration aspect is also important to ensure that various systems can interact efficiently, to avoid data duplication and speed up the service process (Lindquist & Huse, 2017).

4.4 The relationship between digital transformation and public transparency

Based on the results of structural equation modelling (SEM) analysis using SmartPLS 3.0 software, the p-value of 0.000 is smaller than 0.050, so a significant relationship is obtained. Digital transformation has a positive and significant relationship to public transparency. Implementing digitalization of public services requires good coordination in formulating, implementing and managing public services provided digitally. According to Aryatama et al. (2024) In formulating digital public services, coordination needs to be carried out between various related parties, such as the government and the community, to ensure that the services provided meet community needs. In implementing digital public services, it is also necessary to coordinate between various government agencies and the private sector in developing digital applications and platforms that are reliable and easy for the public (Lino et al., 2022). Also, in managing digital public services, it is necessary to coordinate between various government agencies to ensure that the services provided are continuously updated and improved according to community needs. With good coordination, the digitalization of public services can significantly increase the efficiency and quality of public services. In general, the application of digitalization can improve the quality and efficiency of public services. Digitalization allows administrative processes to become more efficient by reducing bureaucracy, speeding up data processing processes, and reducing human errors. This can reduce the time required to complete administrative processes and increase (Matheus et al., 2021). The implementation of digitalization allows for better accessibility for society because services can be accessed digitally from anywhere and at any time. This can increase responsiveness to community needs. Digitalization can also increase transparency and accountability because data and information can be accessed more easily by related parties and the public. Thus, the application of digitalization can significantly improve the quality and efficiency of public services, providing benefits to the government and society. The adoption of digital technology in public services can bring efficiency in various aspects of public administration. From a public administration perspective, this is an important step in improving the quality of public services and achieving efficiency. According to Al Sulaimani and Ozuem (2022), with

the adoption of digital technology, the government can provide public services online, allowing the public to access these services quickly and easily without having to physically visit government offices. In addition, digital technology also allows the government to collect and analyze data more effectively, reduce operational costs, and increase transparency and accountability in public services. Therefore, the adoption of digital technology in public services can bring efficiency and improve the overall quality of public services (Manenji & Marufu, 2016). The implementation of digital-based services in Indonesia is currently still in the development stage and needs to continue to be improved. Even though there have been several public service digitization initiatives carried out by the government, which enable the public to process population documents online, there are still many obstacles that need to be overcome. Some of the obstacles faced include inadequate technological infrastructure, there are still people who do not understand the technology and people who are concerned about the security of their data. Apart from that, there are still several regions in Indonesia that have not implemented comprehensive digitalization of public services (Marques et al., 2020).

4.5 The relationship between public transparency and public accountability

Based on the results of structural equation modelling (SEM) analysis using SmartPLS 3.0 software, the p-value of 0.000 is smaller than 0.050, so a significant relationship is obtained, public transparency has a positive and significant relationship to public accountability. Discussion Opportunities opened up through digital transformation include ease of transactions, shopping and communication. The process of implementing digital technology can change existing processes, opening up opportunities to discover new things, values, or ways that can provide new experiences for people as consumers. This concept includes transparency of government actions, access to government services and information, and responsiveness to new ideas and needs from society. According to Agostino et al. (2022) these aspects contribute to accountability, increased policy success, and inclusive socio-economic development. Big data is a big opportunity in the digital transformation of public administration by providing large and diverse data resources. The use of big data technology can help governments make smarter, evidence-based decisions. Data from various sources, such as sensors, smartphones and social media, can help the government understand community conditions, behavior, needs and problems faced by society (Matheus et al., 2021). In-depth data analysis can help governments direct public policy appropriately. Cybersecurity is both an opportunity and a challenge in the digital transformation of public administration. Implementation of cybersecurity policies and regulations, increasing awareness of government employees, training on good security practices, use of advanced security technologies, and good identity and access management can protect people's personal data and public infrastructure from the risk of cyber-attacks. Human resource development and increasing cyber literacy are key factors in optimizing opportunities opened through digital transformation (Marques et al., 2020). The application of information and communication technology by paying attention to security and privacy aspects can have a positive impact on organizational governance and public services. A strong desire and commitment from the leadership of public sector organizations is the key to success in realizing digital transformation and meeting the needs and desires of society. In the context of public administration, E-government is the main element of digital transformation which is faced with several (Mawansyah, 2024). Digital transformation has a significant impact on organizations, with the emergence of opportunities and challenges that can change several aspects of the organization into something new (Asbari et al., 2020). These obstacles require joint attention and efforts to achieve success in implementing digital transformation in public administration. The existence of transparency in the implementation of governmental tasks is useful in creating reciprocity between government and society. According to Alla and Filonych (2020), several important benefits of transparency include preventing corruption, making it easier to identify weaknesses and strengths of a policy, and increasing accountability in the delivery of public services by government agencies. In addition, a transparent attitude will increase trust in government institutions to decide on certain policies, as well as being able to encourage a conducive investment climate and increase business certainty. The rapid development of information technology in today's digital era also requires us to utilize it in implementing government governance. The public's demand to obtain information quickly and easily, in line with the implementation of public information disclosure, has required all government agencies, both central and regional, to develop electronic-based information systems. The scope of government services is carried out computerized by utilizing advances in information and communication technology, thereby providing opportunities for the realization of transparent, participatory, innovative and accountable government administration. Various government services have been implemented electronically, such as e-Budgeting for budget preparation, and e-Procurement for procurement of goods/services. For public complaints, there are e-complaints, e-Licensing for licensing processes, and so on. According to Al Sulaimani and Ozuem (2022), digitalization can also be used to strengthen prevention against corrupt practices and abuse of power. The government can use electronic audit technology, financial transaction tracking systems, or blockchain technology to ensure that the process of managing public funds is transparent and accountable. This technology creates a recordable and verifiable trail, making corrupt practices more difficult and improving government integrity. Overall, digitalization has great potential to increase government accountability in democracies. By adopting digital technology, the government can provide better information accessibility, improve reporting mechanisms, increase responsiveness to the public, and strengthen preventive measures against corruption. However, it is important to maintain data security and privacy and ensure appropriate regulations for digitalization to function. Digitalization can also increase government accountability in a democratic context. By adopting digital technology, the government can improve reporting mechanisms, speed up responses to problems that arise, and strengthen the prevention of corrupt practices. One way digitalization increases government accountability is through providing information accessibility and transparency. Governments can use online platforms and official websites to provide relevant information about public policies, budgets and other government activities. Thus, the public can easily access this information

and understand how decisions are made and how public budgets are used. Apart from that, digital technology also allows the government to implement more efficient reporting mechanisms.

Digital transformation has changed the understanding, concepts and ways of society, nation and state at the global level. The debate at the level of theory and practice regarding the future of democracy in the digital era continues to grow. Highlighted results of the discussion include, although the level of trust in traditional representative institutions and political actors has decreased, individuals through digital technology are willing to engage in public spaces, citizens participate in online conversations, consultations and deliberations; contribute online to causes they support, including financially; and share their input through digital platforms that help hold public institutions accountable. Every procurement process creates the potential for corruption which will occur if the government does not swiftly create a strict mechanism. Therefore, transparency and accountability are needed so that procurement carried out by the government can be by needs in the field (Manita et al., 2020). Several important benefits of transparency include preventing corruption, making it easier to identify weaknesses and strengths of a policy, and increasing accountability in the delivery of public services by government agencies. One of the concrete efforts to realize transparency and accountability in state financial management is the submission of government financial accountability reports that meet timely principles and are prepared by following generally accepted government accounting standards. According to Al Sulaimani and Ozuem (2022), transparency is the key in government accounting. All financial transactions must be recorded and accessible to the public. This creates a sense of trust and accountability in the management of public funds. There are several important benefits of transparency, including preventing corruption, making it easier to identify weaknesses and strengths of a policy, and increasing accountability in the delivery of public services by government agencies. This is what was stated by the United Nations Development Program, namely the relationship between accountability and transparency. without transparency there will be no accountability, without accountability transparency will be meaningless, transparency is a requirement for the implementation of the principle of accountability openness or transparency is defined as the submission of financial reports transparently and fairly to the public with the assumption that the public has the right to know all accountability reports of regional officials in managing public resources by complying with applicable regulations. Openness is the key for officials as stewards in every report given based on stewardship theory. Openness (transparency) can be realized if government financial reports are presented appropriately, and accurately and can be accounted for by the public. Increased public transparency indicates that the public is satisfied with the performance of regional officials. Accountability is the government's responsibility in managing resources, providing reporting, and conveying all activities and programs related to resource utilization to the community as trustees. Broadly speaking, accountability includes several criteria, namely liability, transparency, responsibility, controllability and responsiveness. Accountability refers to the role of supervisors and the role of employees in being able to shape the flow of program plans and budgets well. Based on stewardship theory, stewards will act in the interests (responsibilities) of the organization, not in the interests of individuals. So, accountability in regional government officials aims to achieve maximum public service which is then expected to improve the quality of work of regional officials. The research results conclude that there is an influence between public accountability and government performance. If an agency has a high level of responsibility in disclosing and presenting reports on government activities, this will have an impact on increasing more optimal government performance (Mahmood, 2016).

5. Conclusion

Based on the results of data analysis, it is concluded that digital transformation has a positive and significant relationship to public accountability, digital transformation has a positive and significant relationship to public transparency and transparency has a positive and significant relationship to public accountability. The process of digital transformation in public administration greatly influences how public services are provided and how the government functions. Leveraging digital technology is an opportunity to increase accessibility in various fields such as government, health, education, economics, social and politics. Public administration can increase transparency, efficiency, public participation and data-based decision-making. Organizations pursuing digital transformation must be flexible, innovative and able to adapt quickly. Digital transformation opens opportunities to increase community involvement and participation through digital platforms such as e-government. Apart from that, there is also open government which can collaborate between the government and the community. Through digitalization, the government can build public trust with transparency such as information that is easy to access and understand and increase government accountability. Even though it provides many opportunities, digital transformation brings challenges in the form of data security and privacy, budget and human resources who are not yet technologically literate. So, the government needs to provide digital literacy to the public and be committed to protecting the public's sensitive data, as well as maintaining the security of information systems for the public. In the era of digital transformation, public administration plays a key role in improving the efficiency of public services. By adopting digital technology, internal public administration processes such as data management, communication and archiving can increase their efficiency, speed up service processes, reduce bureaucracy and increase service accessibility for the public. In addition, a deep understanding of the basic concepts of public administration, such as efficiency, fairness, innovation and collaboration, is key to providing better and more effective public services, so that they can meet people's needs and improve their quality of life. By implementing the digitalization of public services, the government needs to ensure good coordination between various related parties, both from the government and the private sector, in formulating, implementing and managing public services provided digitally. This will ensure that the services provided are in line with community needs, as well as ensuring that the digital systems used can run well and

provide maximum benefits for the community. Thus, a deep understanding of public administration and the application of digital technology is key to ensuring efficiency, transparency and better quality of public services for the community.

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