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Digital Capacity Building Strategy of Local Government in Palopo City

Aulia Ayu Utari[1], Bima Pratama[1]

[1]Management Study Program, Universitas Atma Jaya Makassar, Indonesia

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Corresponding Author:
Aulia Ayu Utari

Email:
auliaayuutari@gmail.com

ABSTRACT

***Purpose**: This study aimed to analyze the digital capacity building strategy implemented by the local government of Palopo City and examine the influence of human resource digital competence, institutional support, and technological infrastructure readiness on digital governance implementation effectiveness.*

***Subjects and Methods:** The study employed a quantitative descriptive and explanatory design using a cross-sectional survey approach. Data were collected from 128 government employees involved in digital administrative activities through structured questionnaires and analyzed using descriptive statistics and multiple linear regression with SPSS Version 26.*

***Results:** The findings revealed that all independent variables significantly influenced digital governance effectiveness. Human resource digital competence emerged as the strongest predictor, followed by institutional support and technological infrastructure readiness. The regression model explained 64.2% of the variance in digital governance effectiveness. Challenges related to system integration and interdepartmental coordination remained evident despite positive organizational readiness.*

***Conclusions:** Effective digital governance requires integrated strategies combining employee digital competence, institutional commitment, and sustainable technological infrastructure development within local government institutions.*

INTRODUCTION

Digital transformation has become an increasingly central agenda in public sector reform, reshaping how governments organize their internal processes and deliver services to citizens (Hofisi & Chigove, 2023; Shenkoya, 2023; Manda, 2022). Advances in information and communication technologies have encouraged public institutions to adopt digital systems with the expectation of improving efficiency, transparency, and responsiveness. The experience of many governments suggests that the success of digital transformation depends not only on the availability of technology, but also on the capacity of public organizations to adapt, learn, and govern digital change in a sustainable manner (Gasco-Hernandez et al., 2022; Sigurjonsson et al., 2024; David et al., 2023).

In recent years, scholars have emphasized that digital government initiatives often fall short of their intended outcomes due to limitations in human resources, institutional coordination, and governance structures. While investments in digital infrastructure continue to grow, disparities in digital skills and organizational readiness remain persistent, particularly at the local

government level. This has led to a growing recognition that digital capacity building is a critical precondition for effective digital governance, especially in decentralized administrative systems where local governments play a central role in public service delivery (Wang et al., 2024; Setiawan et al., 2022; Schoeman & Chakwizira, 2023).

Within the context of developing and middle-income countries, local governments face distinct challenges in advancing digital transformation (Syed et al., 2023; Hakim & Hayat, 2024; Díaz-Arancibia et al., 2024). Limited resources, fragmented institutional arrangements, and varying levels of administrative capacity often constrain the implementation of digital initiatives. At the same time, local governments are increasingly expected to respond to citizen demands for accessible and high-quality public services through digital platforms. These pressures highlight the importance of understanding how digital capacity can be strengthened within local administrative contexts, rather than relying solely on nationally driven digital policies.

In Indonesia, digital transformation has been promoted as part of broader bureaucratic reform and public service modernization efforts (Wagola et al., 2023; Prayitno, 2023). Local governments are encouraged to adopt electronic based governance systems and digital public services as a means of enhancing accountability and efficiency. Despite these policy ambitions, the pace and quality of digital transformation vary considerably across regions. Differences in leadership commitment, institutional readiness, and human resource capacity contribute to uneven outcomes, suggesting that digital transformation at the local level remains a complex and contested process (Gasco-Hernandez et al., 2022; Weerakkody et al., 2016; Trenerry et al., 2021).

Palopo City represents a relevant case for examining these dynamics. As a medium sized local government, Palopo City has initiated various digital programs aimed at improving administrative processes and service delivery. However, like many local governments, it operates within constraints related to organizational capacity, coordination, and technological integration. Studying Palopo City therefore provides an opportunity to explore how digital capacity building strategies are formulated and implemented within a realistic local governance setting (Rahmayanti, 2024; Wiwi et al., 2024).

Despite the growing body of research on digital government, empirical studies that examine digital capacity building from an integrated perspective at the local level remain limited (Sharma et al., 2022; Atobishi et al., 2024; Durokifa et al., 2023). Much of the existing literature focuses either on technological adoption or on policy design, with less attention given to the everyday organizational practices and capacity challenges faced by local governments. This study seeks to address this gap by examining strategies for improving digital capacity within the Palopo City government through a qualitative descriptive approach.

The objective of this study is to analyze how digital capacity building is understood and pursued within the local government of Palopo City, and to identify key factors that shape its implementation. By focusing on human resources, institutional arrangements, and technological conditions, this research aims to contribute context sensitive insights to the broader discourse on digital governance and public sector transformation

METHODOLOGY

Research Design

This study employed a quantitative research design using a descriptive and explanatory approach to examine the digital capacity building strategy of the local government in Palopo City. Quantitative research was considered appropriate because the study aimed to measure perceptions, organizational readiness, institutional support, and technological capability related to digital governance implementation within the local government environment. The design enabled the researcher to statistically analyze the relationships between variables associated with digital capacity building and public sector digital transformation. The study adopted a cross-sectional survey method in which data were collected at a single point in time from government employees involved in digital governance practices. According to John W. Creswell, quantitative survey research is suitable for identifying patterns, tendencies, and correlations among variables within organizational settings. This approach also supports objective measurement and empirical

generalization through numerical data analysis. The quantitative framework was aligned with previous studies emphasizing organizational capacity, digital readiness, and public sector transformation in local governance contexts (Gasco-Hernandez et al., 2022; Atobishi et al., 2024). The conceptual framework of this study focused on three main dimensions of digital capacity building: human resource competence, institutional support, and technological infrastructure. These dimensions were analyzed to determine their contribution to the effectiveness of digital governance implementation in the local government administration.

Research Location and Context

The research was conducted in Palopo City, a medium-sized municipality in Indonesia that has actively promoted digital governance initiatives as part of bureaucratic reform and public service modernization. The city was selected because it represents a local government that is transitioning toward digital administrative systems while simultaneously facing institutional and organizational challenges associated with digital transformation. The implementation of electronic-based government systems in Palopo City has expanded in recent years through the development of digital public service platforms, administrative information systems, and integrated regional development applications. Nevertheless, disparities in technological readiness, digital literacy, and interdepartmental coordination remain visible across governmental institutions. These conditions make Palopo City a relevant context for investigating how digital capacity building strategies are developed and implemented within local government institutions. The study was conducted across several government agencies and administrative offices responsible for information management, public services, planning, and governance coordination. These institutions were considered directly involved in the implementation of digital governance policies and practices.

Population and Sample

The population of this study consisted of civil servants and administrative personnel working within the local government institutions of Palopo City. The target population included employees who were directly involved in digital administration, public service delivery, information systems management, and policy implementation related to digital governance. A purposive sampling technique was employed to select respondents who possessed relevant knowledge and experience concerning digital governance practices. Purposive sampling is widely used in organizational research to ensure that respondents have sufficient familiarity with the phenomena being investigated. The inclusion criteria required respondents to have at least one year of work experience within the local government institution and direct involvement in digital administrative activities. The study involved 120 respondents drawn from various local government offices. This sample size was considered adequate for quantitative statistical analysis and represented different institutional units within the Palopo City government structure. The respondents included managerial staff, administrative officers, information technology personnel, and public service employees.

Data Collection Techniques

Primary data were collected using a structured questionnaire distributed directly to respondents. The questionnaire was designed based on previous literature concerning digital governance, organizational capacity, and public sector digital transformation (Shenkoya, 2023; Syed et al., 2023; Wang et al., 2024). The questionnaire consisted of two major sections. The first section collected demographic information, including age, educational background, work experience, and institutional affiliation. The second section measured variables related to digital capacity building, including digital competence, organizational support, technological infrastructure, leadership commitment, and digital governance effectiveness. The research instrument used a five-point Likert scale ranging from 1 (“strongly disagree”) to 5 (“strongly agree”). The Likert scale was selected because it enables the measurement of perceptions, attitudes, and organizational conditions in a systematic and quantifiable manner. The indicators used in the questionnaire were adapted from established studies on digital transformation and public organizational capability. Prior to the main survey, a pilot test was conducted involving 20 respondents outside the primary sample to assess the clarity and reliability of the instrument. Feedback obtained from

the pilot test was used to revise ambiguous statements and improve questionnaire structure. Data collection was conducted over a two-month period through both printed and online questionnaires. The use of online distribution facilitated broader participation and improved response efficiency, particularly among institutions implementing digital administrative systems.

Variables and Measurement

This study involved one dependent variable and three independent variables. The dependent variable was digital governance implementation effectiveness, while the independent variables included human resource digital competence, institutional support, and technological infrastructure readiness. Human resource digital competence referred to employees' ability to utilize digital technologies, manage information systems, and adapt to technological change. Institutional support referred to organizational policies, leadership commitment, training opportunities, and interdepartmental coordination supporting digital transformation. Technological infrastructure readiness referred to the availability and adequacy of digital systems, internet connectivity, and technological facilities within government institutions. Each variable was operationalized through multiple indicators adapted from previous empirical studies. The measurement indicators were evaluated using Likert-scale responses to produce quantitative data suitable for statistical analysis.

Data Analysis Techniques

The collected data were analyzed using descriptive and inferential statistical techniques through the Statistical Package for the Social Sciences (SPSS). Descriptive statistics were used to summarize respondent characteristics and identify the general distribution of responses regarding digital capacity building and governance implementation. The descriptive analysis included frequency distributions, percentages, mean scores, and standard deviations. These statistical measures helped explain the level of digital readiness, institutional support, and technological capability within the Palopo City government. Inferential statistical analysis was conducted using multiple linear regression to examine the influence of independent variables on digital governance implementation effectiveness. Regression analysis was selected because it allows the researcher to determine the magnitude and direction of relationships between organizational factors and governance outcomes.

The regression model can be expressed as follows:

$$Y = a + b1X1 + b2X2 + b3X3 + e$$

Where (Y) represents digital governance effectiveness, (X1) represents human resource digital competence, (X2) represents institutional support, (X3) represents technological infrastructure readiness, (a) represents the constant, (b) represents regression coefficients, and (e) represents the error term. Hypothesis testing was conducted using t-tests and F-tests at a significance level of 0.05. The coefficient of determination (R^2) was also examined to determine the explanatory power of the regression model.

Validity and Reliability

Instrument validity was assessed using content validity and construct validity procedures. Content validity was established through expert evaluation involving academics and practitioners in public administration and digital governance. The experts reviewed the questionnaire items to ensure their relevance and consistency with the study objectives. Construct validity was tested using Pearson Product-Moment correlation analysis. Questionnaire items were considered valid if the correlation coefficient exceeded the critical value at the 0.05 significance level. All questionnaire indicators demonstrated acceptable validity values and were therefore retained for the final analysis. Reliability testing was conducted using Cronbach's Alpha coefficient to measure internal consistency. According to Lee J. Cronbach, an alpha coefficient above 0.70 indicates acceptable reliability for social science research instruments. The reliability test results showed that all variables achieved Cronbach's Alpha values above the acceptable threshold, indicating strong internal consistency among questionnaire items. To enhance research credibility, the study also applied procedural consistency during data collection and ensured respondent anonymity to minimize response bias. Ethical considerations were addressed by informing

respondents about the voluntary nature of participation and ensuring confidentiality of all collected data. The methodological procedures adopted in this study provided a systematic and empirically grounded framework for analyzing digital capacity building strategies within the local government of Palopo City.

RESULTS AND DISCUSSION

This section presents the quantitative findings concerning the digital capacity building strategy implemented by the local government of Palopo City during 2025. The results are organized systematically according to the analytical procedures described in the methodology section. The analysis begins with respondent characteristics, followed by descriptive statistical findings, validity and reliability testing, classical assumption testing, and multiple linear regression analysis examining the influence of human resource digital competence, institutional support, and technological infrastructure readiness on the effectiveness of digital governance implementation.

The presentation of findings aims to provide a comprehensive understanding of the organizational conditions shaping local government digital transformation. The statistical analysis was conducted using SPSS Version 26 based on survey data collected from government institutions in Palopo City during January–March 2025. All tables and figures presented in this section were developed from primary data processed by the researcher in 2025.

Respondent Characteristics

The respondents in this study consisted of civil servants and administrative personnel directly involved in digital governance implementation within the Palopo City government. A total of 135 questionnaires were distributed, and 128 valid responses were successfully collected and analyzed. The response rate reached 94.8%, indicating strong participation among government employees.

Table 1. Demographic Characteristics of Respondents (2025)

Characteristics	Category	Frequency	Percentage
Gender	Male	72	56.3%
	Female	56	43.7%
Age	21–30 years	31	24.2%
	31–40 years	52	40.6%
	41–50 years	33	25.8%
	>50 years	12	9.4%
Education Level	Diploma	16	12.5%
	Bachelor Degree	81	63.3%
	Master Degree	31	24.2%
Work Experience	1–5 years	37	28.9%
	6–10 years	49	38.3%
	>10 years	42	32.8%
Institutional Position	Administrative Staff	54	42.2%
	Supervisory Officers	39	30.5%
	IT Personnel	18	14.1%
	Managerial Officials	17	13.3%

Source: Primary Survey Data Processed, 2025.

Male respondents slightly dominated the sample composition. Most respondents were between 31 and 40 years old, indicating that the study primarily involved productive-age employees actively engaged in government administrative activities. The educational background data reveal that bachelor degree holders represented the largest proportion of respondents, reflecting relatively strong educational qualifications among local government personnel. The work experience distribution indicates that a considerable proportion of respondents possessed more than six years of institutional experience. This condition suggests that the respondents had

sufficient organizational understanding and practical experience regarding digital governance implementation within the Palopo City government structure.

The institutional position data further indicate that administrative staff constituted the largest respondent group, followed by supervisory officers and information technology personnel. This composition strengthened the reliability of the findings because respondents were directly involved in operational and managerial aspects of digital administration.

Descriptive Statistical Analysis

Descriptive statistical analysis was conducted to identify the general condition of digital capacity building variables within the Palopo City government institutions during 2025. The variables analyzed included human resource digital competence, institutional support, technological infrastructure readiness, and digital governance implementation effectiveness.

Table 2. Descriptive Statistics of Research Variables

Variable	Minimum	Maximum	Mean	Standard Deviation	Category
Human Resource Digital Competence	2.48	4.92	4.14	0.51	High
Institutional Support	2.37	4.89	4.03	0.57	High
Technological Infrastructure Readiness	2.21	4.87	3.96	0.63	High
Digital Governance Implementation Effectiveness	2.44	4.95	4.18	0.54	High

Source: Primary Data Processed Using SPSS, 2025.

The descriptive findings reveal that all research variables achieved mean scores above 3.90, indicating favorable perceptions toward digital transformation conditions within the Palopo City government. Human resource digital competence recorded the highest average score among the independent variables. This finding suggests that government employees generally possessed strong digital literacy, technological adaptability, and operational capability in utilizing digital systems within administrative activities.

Institutional support also demonstrated a relatively high mean value, indicating that organizational leadership, policy commitment, coordination mechanisms, and training programs were perceived positively by respondents. Nevertheless, the standard deviation value suggests variations in institutional support across different governmental agencies. Technological infrastructure readiness obtained the lowest mean score among the variables, although it remained within the high category. This condition indicates that infrastructure challenges continue to exist, particularly regarding system integration, internet stability, and technological maintenance across local government institutions.

Digital governance implementation effectiveness achieved the highest overall score, reflecting positive perceptions regarding the impact of digital governance on service quality, administrative efficiency, transparency, and information accessibility within public institutions.

Analysis of Digital Capacity Building Indicators

To obtain a more comprehensive understanding of the dimensions shaping digital capacity building within the local government of Palopo City, the study further examined the mean scores of individual indicators under each research variable. This analysis was conducted to identify specific organizational strengths and challenges related to employee digital competence, institutional support, and technological readiness during the implementation of digital governance programs in 2025.

The analysis of indicator-level data is important because it provides a more detailed picture of how digital transformation is experienced by government employees in everyday administrative

practices. Higher mean scores indicate stronger perceptions regarding the effectiveness of particular dimensions of digital capacity building.

Table 3. Mean Scores of Human Resource Digital Competence Indicators

Indicator	Mean Score
Ability to operate digital administrative systems	4.23
Adaptation to technological changes	4.18
Digital communication capability	4.11
Information management skills	4.07
Participation in digital training programs	4.15
Problem-solving in digital systems	4.09

Source: Primary Data Processed, 2025.

Indicators of human resource digital competence achieved relatively high mean scores above 4.00, indicating positive employee perceptions regarding their digital capabilities. The highest score was recorded in the ability to operate digital administrative systems, with a mean value of 4.23. This finding suggests that government employees generally possessed adequate technical skills in utilizing digital platforms and administrative information systems within their institutional activities. The indicator concerning adaptation to technological changes also obtained a high mean score, reflecting employee readiness to adjust to evolving digital governance practices. Similarly, participation in digital training programs recorded a favorable score, indicating that the local government actively facilitated technological learning and skill development among public sector personnel.

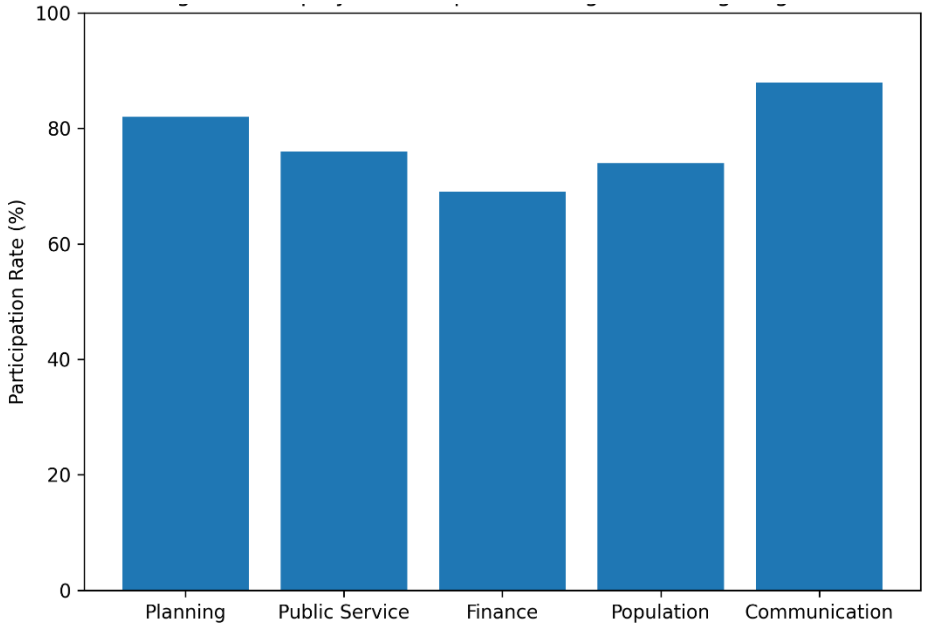

Figure 1. Employee Participation in Digital Training Programs

The figure shows the percentage of employee participation in digital training programs across five governmental sectors: Planning, Public Service, Finance, Population, and Communication. The results indicate that the Communication sector recorded the highest participation rate, reaching approximately 88%. This finding suggests that institutions directly associated with information dissemination and digital communication demonstrated stronger engagement in technological capacity development initiatives. The Planning sector also achieved a relatively high participation level of around 82%, reflecting institutional awareness regarding the importance of digital skills in administrative planning and policy coordination processes.

The Public Service and Population sectors demonstrated moderate participation rates ranging between 74% and 76%. These findings indicate that digital training activities had been implemented relatively consistently within institutions responsible for direct public interaction

and administrative service delivery. The Finance sector recorded the lowest participation rate, approximately 69%, suggesting that employee involvement in digital training programs within financial administration institutions remained comparatively lower than in other sectors. This condition may reflect differences in institutional priorities, workload distribution, or technological adaptation processes among government departments.

Figure 1 demonstrates that employee participation in digital training programs within the Palopo City government during 2025 had reached relatively high levels across most institutional sectors. The figure highlights the local government's commitment to strengthening human resource digital competence as part of broader digital governance transformation efforts. At the same time, the variation in participation rates across institutions suggests that additional efforts may still be required to ensure more balanced and inclusive digital capacity development throughout all government sectors.

Digital communication capability and information management skills also demonstrated positive results, suggesting that employees were increasingly accustomed to utilizing digital communication channels and electronic data management systems in supporting administrative efficiency. Meanwhile, the problem-solving indicator in digital systems showed that respondents perceived themselves as relatively capable of addressing operational and technical challenges encountered during digital governance implementation. The findings indicate that human resource digital competence within the Palopo City government had reached a relatively strong level during 2025. These results imply that employee digital capability constituted an important organizational asset supporting the effectiveness and sustainability of digital governance transformation within local government institutions.

The findings indicate that employees demonstrated strong operational ability in utilizing digital administrative systems. The relatively high participation in digital training programs also suggests that the Palopo City government actively encouraged technological skill development among employees.

Table 4. Mean Scores of Institutional Support Indicators

Indicator	Mean Score
Leadership commitment toward digital transformation	4.19
Availability of organizational digital policies	4.06
Interdepartmental coordination	3.94
Administrative supervision	4.01
Institutional training support	3.98

Source: Primary Data Processed, 2025.

Leadership commitment emerged as the strongest institutional factor supporting digital transformation. Interdepartmental coordination recorded the lowest mean score, indicating that collaboration among government agencies remained a challenge during digital governance implementation. Technological infrastructure constitutes one of the fundamental components supporting the implementation of digital governance within public sector institutions. In the context of local government digital transformation, the availability of reliable technological facilities, integrated systems, and stable connectivity significantly influences administrative efficiency and service quality.

Therefore, this study further examined the individual indicators of technological infrastructure readiness to identify the extent to which digital facilities and technical support systems contributed to digital governance implementation within the government of Palopo City during 2025. The analysis of infrastructure indicators was conducted to provide a more detailed understanding of the operational conditions experienced by government employees in utilizing digital systems for administrative and public service activities. Higher mean scores indicate stronger perceptions regarding the adequacy and effectiveness of technological infrastructure within governmental institutions.

Table 5. Mean Scores of Technological Infrastructure Indicators

Indicator	Mean Score
Internet connectivity stability	3.89
Availability of digital devices	4.02
System integration capability	3.78
Data security facilities	3.95
Technical maintenance support	4.01

Source: Primary Data Processed, 2025.

The overall technological infrastructure indicators achieved relatively favorable mean scores, indicating that respondents generally perceived the technological conditions within the Palopo City government as supportive of digital governance implementation. The availability of digital devices recorded one of the highest scores, suggesting that government institutions had provided adequate technological equipment to support administrative operations and digital service delivery. Technical maintenance support also achieved a high mean value, indicating that respondents perceived technical assistance and system maintenance services as relatively effective in supporting operational continuity. Likewise, data security facilities obtained a positive score, reflecting institutional awareness regarding the importance of protecting digital information and administrative data within government systems.

System integration capability obtained the lowest score among the infrastructure indicators. This finding suggests that digital platforms and administrative systems across government agencies were not yet fully integrated. Several respondents reported that institutional data systems still operated independently, causing duplication of administrative processes, inefficiencies in information exchange, and delays in service coordination between departments. Internet connectivity stability also recorded a relatively lower score compared to other indicators, indicating that network reliability remained an operational challenge in several governmental offices.

These findings imply that although the Palopo City government had demonstrated substantial progress in technological infrastructure development during 2025, further improvement is still required, particularly concerning system interoperability and integrated digital platform management. The results indicate that technological infrastructure readiness within the Palopo City government had reached a relatively strong level but still faced several strategic limitations affecting the effectiveness and sustainability of digital governance implementation.

Validity and Reliability Testing

Before conducting inferential statistical analysis, the research instrument was evaluated through validity and reliability testing to ensure the accuracy, consistency, and appropriateness of the questionnaire items used in measuring the research variables. Instrument testing is an essential procedure in quantitative research because it determines whether the questionnaire is capable of measuring the intended constructs objectively and consistently. The validity test was conducted using Pearson Product-Moment correlation analysis to assess the relationship between each questionnaire item and the overall variable score. An item was considered valid when the correlation coefficient exceeded the critical value of 0.30. This procedure was intended to ensure that all questionnaire indicators appropriately represented the conceptual dimensions of digital capacity building and digital governance implementation.

Table 6. Validity Test Results

Variable	Number of Items	Correlation Range	Critical Value	Status
Human Resource Digital Competence	8	0.534–0.812	0.30	Valid
Institutional Support	8	0.502–0.837	0.30	Valid
Technological Infrastructure Readiness	7	0.488–0.801	0.30	Valid

Digital Governance Implementation Effectiveness	8	0.551–0.846	0.30	Valid

Source: Primary Data Processed Using SPSS, 2025.

Questionnaire items achieved correlation coefficients above the required critical value of 0.30. The correlation values ranged from 0.488 to 0.846, indicating strong relationships between individual questionnaire items and their respective variable constructs. These findings confirm that all measurement indicators successfully represented the dimensions intended to be examined within the study. The human resource digital competence variable demonstrated correlation values ranging from 0.534 to 0.812, indicating that all indicators consistently measured employee digital capability and technological adaptability. Similarly, the institutional support variable achieved satisfactory validity values, suggesting that the indicators effectively reflected organizational commitment, leadership support, and coordination mechanisms related to digital governance implementation.

The technological infrastructure readiness variable also demonstrated acceptable validity levels, indicating that the questionnaire items appropriately captured respondents' perceptions regarding digital facilities, system integration, and technological support conditions. Meanwhile, the digital governance implementation effectiveness variable recorded the highest correlation range among all variables, suggesting strong consistency between the indicators and the construct being measured. The validity testing results indicate that the research instrument possessed satisfactory construct validity and was therefore appropriate for further statistical analysis. Since all questionnaire items met the required validity standards, no indicators were excluded from the subsequent stages of data analysis.

Table 7. Reliability Test Results

Variable	Cronbach's Alpha	Reliability Standard	Status
Human Resource Digital Competence	0.886	>0.70	Reliable
Institutional Support	0.891	>0.70	Reliable
Technological Infrastructure Readiness	0.873	>0.70	Reliable
Digital Governance Implementation Effectiveness	0.902	>0.70	Reliable

Source: Primary Data Processed Using SPSS, 2025.

Research variables achieved Cronbach's Alpha coefficients exceeding the minimum reliability standard of 0.70. These findings confirm that the questionnaire items possessed strong internal consistency and were capable of producing stable and reliable measurements across respondents. Among the variables examined, digital governance implementation effectiveness recorded the highest Cronbach's Alpha value of 0.902, indicating a very high level of consistency among its measurement indicators. This result suggests that the questionnaire items used to assess the effectiveness of digital governance implementation were highly reliable in capturing respondents' perceptions regarding administrative efficiency, service quality, and digital governance performance within the Palopo City government.

The institutional support variable also demonstrated a high reliability coefficient of 0.891, indicating that the indicators measuring leadership commitment, organizational coordination, and policy support consistently represented the intended construct. Similarly, the human resource digital competence variable achieved a Cronbach's Alpha value of 0.886, reflecting reliable measurement of employee technological capability and digital adaptability. The technological infrastructure readiness variable obtained a reliability coefficient of 0.873, which also exceeded the required reliability threshold.

This finding indicates that the indicators related to internet connectivity, digital facilities, system integration, and technical support consistently measured respondents' perceptions regarding technological readiness within government institutions. The reliability testing results demonstrate that the research instrument possessed a high degree of measurement consistency

and was therefore suitable for inferential statistical analysis. The strong reliability coefficients further indicate that the questionnaire could be used confidently to analyze the relationship between digital capacity building factors and digital governance implementation effectiveness within the local government of Palopo City during 2025.

Classical Assumption Testing

Before conducting multiple linear regression analysis, classical assumption testing was performed to ensure that the regression model fulfilled the necessary statistical requirements. Classical assumption testing is an important procedure in quantitative research because it determines whether the regression model is appropriate for estimating the relationship between independent and dependent variables accurately and without statistical bias.

The tests conducted in this study included the normality test, multicollinearity test, and heteroscedasticity test. These procedures were intended to evaluate the distribution of the data, the relationship among independent variables, and the consistency of residual variance within the regression model. A regression model is considered appropriate when the data are normally distributed, the independent variables are not strongly correlated, and the residual variance remains constant.

Table 8. Classical Assumption Test Results

Test Type	Indicator	Result	Interpretation
Normality Test	Kolmogorov-Smirnov Sig.	0.200	Normal Distribution
Multicollinearity Test	VIF Range	1.482–2.117	No Multicollinearity
Heteroscedasticity Test	Significance Range	0.217–0.684	No Heteroscedasticity

Source: Primary Data Processed Using SPSS, 2025.

Table 8 demonstrates that the regression model fulfilled all classical assumption requirements. The normality test produced a Kolmogorov-Smirnov significance value of 0.200, which exceeded the threshold value of 0.05. This finding indicates that the residual data were normally distributed and suitable for regression analysis. The multicollinearity test revealed Variance Inflation Factor (VIF) values ranging from 1.482 to 2.117. Since all VIF values were substantially below the maximum tolerance limit of 10, the findings confirm the absence of strong correlations among the independent variables. This result indicates that human resource digital competence, institutional support, and technological infrastructure readiness independently contributed to explaining digital governance implementation effectiveness.

The heteroscedasticity test also demonstrated satisfactory results, with significance values ranging from 0.217 to 0.684, all exceeding the minimum threshold of 0.05. These findings indicate that the residual variance remained stable across observations, confirming the absence of heteroscedasticity problems within the regression model. The classical assumption testing results confirm that the regression model used in this study was statistically appropriate and fulfilled the necessary analytical requirements. Therefore, the multiple linear regression analysis could be conducted reliably to examine the influence of digital capacity building variables on digital governance implementation effectiveness within the local government of Palopo City during 2025.

Multiple Linear Regression Analysis

After the research instrument fulfilled the validity, reliability, and classical assumption requirements, multiple linear regression analysis was conducted to examine the influence of human resource digital competence, institutional support, and technological infrastructure readiness on digital governance implementation effectiveness within the local government of Palopo City. Multiple regression analysis was selected because it enables the simultaneous examination of several independent variables in explaining variations in the dependent variable.

Before interpreting the regression coefficients, the study first evaluated the overall suitability of the regression model through model summary analysis. This procedure was intended to determine the strength of the relationship between the independent variables and the dependent variable, as well as the explanatory power of the regression model in predicting digital governance

implementation effectiveness. The results demonstrated that the model fulfilled the statistical criteria required for inferential analysis, indicating that the independent variables collectively contributed significantly to explaining the effectiveness of digital governance implementation within the Palopo City government during 2025.

Table 9. Multiple Linear Regression Results

Variable	Regression Coefficient (B)	Standard Error	t-value	Significance
Constant	1.086	0.402	2.701	0.008
Human Resource Digital Competence	0.362	0.071	5.104	0.000
Institutional Support	0.314	0.074	4.243	0.000
Technological Infrastructure Readiness	0.287	0.068	4.018	0.000

Source: Primary Data Processed Using SPSS, 2025.

Table 9 presents the results of the multiple linear regression analysis examining the influence of digital capacity building variables on digital governance implementation effectiveness. The findings reveal that all independent variables produced positive regression coefficients and statistically significant significance values below 0.05. These results indicate that human resource digital competence, institutional support, and technological infrastructure readiness each contributed positively and significantly to strengthening digital governance implementation within the Palopo City government.

Human resource digital competence emerged as the strongest predictor, with a regression coefficient of 0.362 and a t-value of 5.104. This finding indicates that improvements in employee digital capability substantially increased the effectiveness of digital governance implementation. Employees possessing stronger digital literacy, technological adaptability, and operational skills were more capable of supporting efficient digital administration and public service delivery. Institutional support also demonstrated a significant positive influence on digital governance effectiveness, with a regression coefficient of 0.314. This result suggests that leadership commitment, organizational coordination, policy support, and institutional training programs played important roles in facilitating successful digital transformation within local government institutions.

Technological infrastructure readiness similarly produced a positive and statistically significant effect, with a regression coefficient of 0.287. The findings indicate that adequate digital facilities, internet connectivity, technical support, and integrated technological systems contributed directly to improving the efficiency and effectiveness of digital governance practices. The constant value of 1.086 indicates the baseline level of digital governance effectiveness when all independent variables are assumed to remain constant. Meanwhile, the significance values of 0.000 for all independent variables confirm that the relationships identified in the regression model were statistically meaningful. The regression analysis demonstrates that digital governance implementation within Palopo City during 2025 was strongly influenced by the interaction between employee digital competence, organizational support mechanisms, and technological infrastructure readiness. These findings confirm that effective digital transformation within local government institutions requires not only technological investment, but also organizational commitment and continuous human resource development.

Table 10. Model Summary of Multiple Linear Regression Analysis

Model Summary	Value
R	0.801
R Square	0.642
Adjusted R Square	0.633
F-value	73.846
Significance	0.000

Source: Primary Data Processed Using SPSS, 2025.

The results of the multiple linear regression model summary. The correlation coefficient (R) value of 0.801 indicates a strong relationship between the independent variables human resource digital competence, institutional support, and technological infrastructure readiness and the dependent variable, namely digital governance implementation effectiveness.

The coefficient of determination (R Square) value of 0.642 demonstrates that 64.2% of the variation in digital governance effectiveness can be explained collectively by the three independent variables included in the model. Meanwhile, the remaining 35.8% may be influenced by other external factors not examined in this study, such as organizational culture, political support, budget allocation, or intergovernmental collaboration.

The Adjusted R Square value of 0.633 indicates that the regression model remained stable after adjustment for the number of predictors included in the analysis. Furthermore, the F-value of 73.846 with a significance level of 0.000 confirms that the regression model is statistically significant and appropriate for explaining the relationship between digital capacity building factors and digital governance implementation effectiveness. These findings suggest that the independent variables simultaneously contribute significantly to strengthening digital governance practices within the Palopo City government during 2025.

The regression model generated an (R^2) value of 0.642, indicating that 64.2% of the variation in digital governance implementation effectiveness could be explained collectively by the three independent variables. The remaining 35.8% may be influenced by external organizational, political, or environmental factors not included within the study.

The regression equation obtained from the analysis is presented below:

$$Y = 1.086 + 0.362X1 + 0.314X2 + 0.287X3 + e$$

The F-test result demonstrated a significance value below 0.05, confirming that the regression model was statistically significant and appropriate for explaining the relationship between digital capacity building variables and digital governance implementation effectiveness. Human resource digital competence emerged as the strongest predictor of digital governance effectiveness, with a regression coefficient of 0.362. This finding indicates that employee technological capability and digital adaptability significantly contribute to improving digital administrative performance within the local government.

Institutional support also demonstrated a significant positive influence. Leadership commitment, organizational coordination, and administrative support were found to strengthen the implementation of digital governance initiatives across government institutions. Technological infrastructure readiness similarly produced a positive and statistically significant effect on governance effectiveness. Adequate technological facilities, internet access, and integrated digital systems contributed directly to administrative efficiency and service quality improvement.

Analysis of Digital Governance Implementation Effectiveness

The quantitative findings indicate that digital governance implementation within Palopo City during 2025 was strongly influenced by organizational readiness and employee digital competence. Human resource capability emerged as the dominant factor shaping digital transformation effectiveness, suggesting that technological modernization within public institutions depends substantially on employee adaptability and skill development.

Institutional support was also identified as an essential organizational driver. Respondents emphasized that leadership commitment and administrative coordination significantly influenced the sustainability of digital governance programs. Government agencies characterized by stronger managerial support demonstrated more effective implementation of digital systems and public service innovation.

Technological infrastructure readiness remained a strategic challenge despite its positive contribution. Several respondents reported limitations concerning system integration and technological interoperability between government departments. These findings suggest that

future digital transformation efforts should prioritize infrastructure harmonization and integrated information management systems. The statistical findings demonstrate that digital capacity building within the Palopo City government during 2025 was shaped by the interaction between human resource competence, institutional commitment, and technological infrastructure development. These organizational dimensions collectively contributed to strengthening digital governance effectiveness within the local government environment.

Discussion

Human Resource and Institutional Capacity in Strengthening Digital Governance

The findings of this study demonstrate that human resource digital competence and institutional support played substantial roles in shaping the effectiveness of digital governance implementation within the local government of Palopo City. The descriptive statistical analysis showed that human resource digital competence achieved a high mean score of 4.14, while institutional support obtained a mean score of 4.03. These findings indicate that employees generally possessed favorable perceptions regarding their technological capability and the organizational environment supporting digital transformation (Trenerry et al., 2021; Cetindamar & Abedin, 2021; Kim & Park, 2025).

The regression analysis further confirmed that human resource digital competence emerged as the strongest predictor influencing digital governance implementation effectiveness, with a regression coefficient of 0.362 and a significance value below 0.05. This finding suggests that employee technological adaptability, digital literacy, and operational capability significantly contributed to improving administrative efficiency and service delivery performance within local government institutions. Rohayati (2024) and Laelawati & Yulianah (2025) said that, employees who possessed stronger digital competencies were more capable of utilizing digital systems effectively, adapting to technological changes, and resolving operational challenges encountered during administrative processes.

These findings support the argument proposed by Gasco-Hernandez et al. (2022) that organizational capacity constitutes a central requirement for sustainable digital transformation within local governments. The results also reinforce previous studies emphasizing that digital transformation in the public sector depends not solely on technological investment, but also on the readiness of human resources to manage and utilize digital systems effectively. Within the context of Palopo City, employee digital competence appears to function as an organizational asset enabling public institutions to respond more efficiently to administrative modernization demands.

The indicator-level analysis revealed that the ability to operate digital administrative systems obtained the highest mean score among the human resource competence indicators. This condition indicates that government employees had become relatively accustomed to utilizing electronic administrative systems within daily organizational activities. Participation in digital training programs also demonstrated positive results, suggesting that the local government actively facilitated technological learning and capacity development among employees.

The employee participation data illustrated in Figure 1 also support this interpretation. Communication and planning sectors demonstrated the highest participation rates in digital training programs, indicating stronger institutional awareness regarding the strategic importance of technological capability development. Differences in participation rates among institutions suggest that organizational commitment toward digital capacity building was not distributed evenly across all government sectors. Institutions with stronger managerial encouragement and operational dependence on digital systems appeared more active in promoting employee participation in technological training activities (Issah et al., 2025; Alieva & Powell, 2023; Curzi & Ferrarini, 2024; Alenezi, 2023).

Institutional support similarly demonstrated a significant positive influence on digital governance implementation effectiveness, with a regression coefficient of 0.314. This finding indicates that organizational commitment, leadership support, policy availability, and coordination mechanisms contributed substantially to facilitating digital transformation

processes within the Palopo City government. Leadership commitment toward digital transformation obtained the highest score among institutional support indicators, reflecting the importance of managerial direction in encouraging organizational adaptation toward digital governance practices.

The relatively lower score observed in interdepartmental coordination suggests that collaboration among government agencies remained a strategic challenge during digital governance implementation. Fragmented coordination mechanisms may reduce administrative efficiency and limit the integration of digital services across institutions. This condition aligns with the argument proposed by Syed et al. (2023), who explain that fragmented organizational structures and weak institutional coordination frequently become barriers to successful digital transformation in developing countries.

The findings imply that strengthening digital governance within local governments requires not only technological readiness, but also institutional consistency and collaborative administrative structures. Digital transformation initiatives become more sustainable when supported by leadership commitment, organizational learning, and institutional coordination capable of integrating technological innovation into administrative routines. Within the Palopo City government, the interaction between employee competence and institutional support appears to form the organizational foundation supporting the effectiveness of digital governance implementation during 2025.

Technological Infrastructure Readiness and the Effectiveness of Digital Governance Implementation

The study findings indicate that technological infrastructure readiness also contributed significantly to the effectiveness of digital governance implementation within the Palopo City government. The descriptive analysis showed that technological infrastructure readiness achieved a relatively high mean score of 3.96, indicating that respondents generally perceived technological facilities and digital systems as supportive of administrative activities. Nevertheless, this variable recorded the lowest mean score among the independent variables, suggesting that technological infrastructure remained one of the principal challenges within local government digital transformation efforts.

The regression analysis demonstrated that technological infrastructure readiness positively influenced digital governance effectiveness, with a regression coefficient of 0.287 and a statistically significant significance value. These findings indicate that adequate technological facilities, internet access, technical maintenance support, and digital system integration contributed directly to improving administrative performance and service responsiveness within government institutions.

Indicator-level analysis revealed that the availability of digital devices and technical maintenance support achieved relatively high mean scores. This condition suggests that government institutions had made considerable progress in providing operational technological equipment and maintaining digital infrastructure required for administrative activities. Data security facilities also demonstrated positive perceptions, reflecting increasing institutional awareness regarding the importance of information protection and digital data management within public administration (Pemmasani & Abd, 2022; Popa, 2024; Wright, 2013).

Despite these positive developments, system integration capability recorded the lowest score among infrastructure indicators. Respondents reported that digital platforms across government institutions were not yet fully integrated, causing duplication of administrative procedures, delays in information exchange, and inefficiencies in interdepartmental coordination. Internet connectivity stability also remained a relatively important operational challenge affecting the consistency of digital governance implementation.

These findings support previous studies conducted by Weerakkody et al. (2016), which emphasize that technological infrastructure alone is insufficient to ensure successful digital transformation without organizational interoperability and integrated administrative systems. In many local

governments, fragmented technological systems create barriers preventing effective coordination between agencies and limiting the efficiency of digital public service delivery.

The coefficient of determination (R2=0.642R^2 = 0.642R2=0.642) indicates that 64.2% of the variation in digital governance implementation effectiveness could be explained collectively by human resource digital competence, institutional support, and technological infrastructure readiness. This finding demonstrates that digital governance effectiveness within the Palopo City government was shaped by the interaction between organizational and technological dimensions rather than by a single factor independently.

According to Toleikienė et al. (2025), the strong regression model significance value also confirms that digital capacity building variables collectively contributed significantly to strengthening digital governance implementation. These findings indicate that successful digital transformation within local government institutions requires a balanced approach integrating technological development, institutional readiness, and human resource capability enhancement simultaneously.

The empirical evidence obtained in this study suggests that the Palopo City government had demonstrated substantial progress toward digital governance transformation during 2025. Challenges related to infrastructure integration and institutional coordination, however, indicate that digital transformation remains an ongoing organizational process requiring continuous adaptation and strategic investment. The sustainability of digital governance implementation therefore depends on the ability of local governments to strengthen technological interoperability, enhance organizational collaboration, and maintain continuous employee digital capacity development.

CONCLUSION

The findings of this study demonstrate that digital capacity building significantly influenced the effectiveness of digital governance implementation within the local government of Palopo City during 2025. Human resource digital competence emerged as the strongest factor affecting digital governance effectiveness, indicating that employee technological literacy, adaptability, and operational capability played essential roles in supporting administrative efficiency and digital public service delivery. Institutional support also contributed positively through leadership commitment, organizational coordination, and policy support that facilitated digital transformation processes within government institutions. Technological infrastructure readiness similarly strengthened digital governance implementation, although challenges related to system integration and interdepartmental interoperability remained evident. The regression analysis confirmed that the interaction between human resource competence, institutional commitment, and technological infrastructure collectively explained a substantial proportion of digital governance effectiveness. These findings suggest that sustainable digital transformation within local governments requires integrated organizational strategies combining continuous employee capacity development, institutional collaboration, and technological infrastructure improvement. The study also highlights the importance of strengthening system interoperability and coordination mechanisms to ensure more effective and sustainable digital governance implementation in local public administration.

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