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Developing Digital Management Capacity for Commune-Level Officials and Civil Servants in Ho Chi Minh City

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Abstract
This study analyzes the factors influencing the development of digital management capacity among commune-level officials and civil servants in Ho Chi Minh City. Based on theories of competence, technology acceptance, organizational learning, change management, and organizational resources, the study identifies factors impacting digital management capacity, including awareness of digital transformation, digital technology skills, training and development, technology infrastructure, leadership support, and digital organizational culture. The research results show that these factors all have a positive influence on the digital management capacity of commune-level officials and civil servants. Among these, digital technology skills, leadership support, and training and development activities play a prominent role. Based on this, the study proposes several implications for improving digital management capacity through enhanced practical training, improved technology infrastructure, enhanced leadership, and the development of a digital organizational culture within commune-level governments.

Keywords: Digital Management Capacity, Commune-Level Officials and Civil Servants, Digital Transformation, Digital Government, Ho Chi Minh City

1. Introduction

To improve the quality of public service delivery, according to UN DESA (2024) [13], digital government is a crucial foundation for enhancing governance efficiency, transparency, and citizen participation. In this context, the digital management capacity of officials and civil servants becomes a decisive factor in the success of the digital transformation process, especially at the commune level – the level of government closest to the people (UN DESA, 2024 [13]; OECD, 2021).

International organizations such as the OECD (2021) and the World Bank (2022) both agree that digital transformation in the public sector is only effective when accompanied by institutional capacity, technological infrastructure, data, and digital human resources. Accordingly, digital management capacity is not only the ability to use technology but also includes skills in change management, data exploitation, interoperability, and workflow improvement in a digital environment.

In Vietnam, digital transformation is identified as a crucial driving force in the development of digital government, digital economy, and digital society. Decision No. 749/QD-TTg and Decision No. 146/QD-TTg both emphasize the role of digital human resources and the enhancement of digital skills for officials and civil servants. This shows that developing digital capacity is not only a professional requirement but also a condition for the effective implementation of digital transformation programs at all levels of government (Prime Minister, 2020; 2022) [11].

In the state administrative system, commune-level officials and civil servants directly handle administrative procedures, provide public services, and organize policy implementation at the grassroots level. The digital transformation process requires this workforce to regularly use electronic document management systems, population databases, online public services, digital signatures, and many other management platforms. Therefore, digital management capabilities have become an essential requirement to fulfill their duties in a modern administrative environment.

For Ho Chi Minh City, this requirement is even more urgent. As a special urban area with a large population and high demand for public services, the city is accelerating the development of digital government and smart urban governance. Resolution No. 98/2023/QH15 has created favorable conditions for the city to promote innovation, apply technology, and improve governance efficiency. In this context, commune-level officials and civil servants need to be able to adapt to digital platforms, digital data, and new management methods.

In essence, digital governance capacity is understood as the combination of knowledge, skills, and attitudes in applying digital technology to management activities. For commune-level officials and civil servants, this capacity includes the ability to handle work in a digital environment, exploit data, ensure information security, coordinate interoperability, and support citizens in accessing online public services. Therefore, developing digital governance capacity needs to be implemented synchronously through training, infrastructure investment, building a digital culture, and strengthening support from leadership (European Commission, 2022 [4]; OECD, 2021).

However, in practice, the digital transformation process at the commune level still faces many difficulties. Differences in digital skills, data exploitation capabilities, technological infrastructure conditions, software quality, and training mechanisms result in uneven digital management capacity among localities and groups of officials. This can affect the effectiveness of digital transformation and the quality of service to the people (World Bank, 2022).

Despite numerous studies on digital government and digital workforce, in-depth research on the digital management capabilities of commune-level officials and civil servants, particularly in Ho Chi Minh City, remains limited. Many studies primarily focus on technological skills without fully considering factors such as digital transformation awareness, training, technological infrastructure, organizational culture, or leadership support.

Based on that practical experience, this article focuses on researching the development of digital management capacity for commune-level officials and civil servants in Ho Chi Minh City. The research aims to identify factors influencing digital management capacity and propose policy implications to improve the quality of human resources in the public sector, promote the effectiveness of digital government, and enhance the quality of public service in the current period.

2. Theoretical Foundation

Digital management capacity of commune-level officials and civil servants

The digital management capacity of commune-level officials and civil servants is understood as the ability to synthesize and apply knowledge, skills, experience, and appropriate attitudes to effectively perform state management tasks in a digital environment. This concept is not limited to the use of technological devices or administrative software, but also encompasses the ability to exploit data, organize work on digital platforms, coordinate inter-agency communication, ensure information security, and support citizens in accessing online public services.

In the state administrative system, the commune level is the closest level of government to the people, directly handling many administrative procedures and issues arising in social life. Therefore, the digital management capacity of commune-level officials and civil servants plays a crucial role in improving the quality of service to the people, increasing transparency, shortening processing times, and enhancing management efficiency. As administrative activities are increasingly carried out through electronic document management systems, one-stop software, national databases, and other digital platforms, the requirement for digital management capacity among this workforce becomes even more urgent.

From a structural perspective, digital management capacity comprises several different elements. First and foremost is awareness of digital transformation and the role of technology in state administration. Next is the skill in using digital tools, software, and platforms to support professional work. Furthermore, the ability to exploit and manage data, ensure information security, coordinate in the digital environment, and assist citizens in using online public services are also important components of the digital management capacity of commune-level officials and civil servants.

Theoretical frameworks for developing digital management capabilities

Competency theory

According to competency theory, the effectiveness of each individual's job performance depends on the extent to which they meet the requirements regarding knowledge, skills, attitudes, and professional behavior. Applied to the field of public administration, developing digital management competencies is seen as the process of enhancing the ability of officials and civil servants to perform their duties in a digitized work environment. This not only involves technological skills but also includes the ability to process information, coordinate work, adapt to change, and serve the public more effectively.

Technology acceptance theory

Technology acceptance theory suggests that an individual's level of technology use is influenced by their perception of the technology's usefulness and ease of use. In the context of local government, if officials perceive digital technology as reducing processing time, improving management efficiency, and enhancing the quality of service to citizens, they will be more inclined to adopt and utilize it. Conversely, if the technology is perceived as complex or lacking necessary support, its application will face significant difficulties.

Organizational learning theory

Organizational learning theory emphasizes the role of knowledge sharing, experience accumulation, and continuous improvement in capacity development. For local governments, digital management capacity is not only formed through formal training courses but also through on-the-job learning, exchange of experience among colleagues, and support from higher-level agencies. A work environment that encourages learning and innovation will facilitate the enhancement of the digital capacity of officials and civil servants.

Change management theory

According to change management theory, digital transformation is a comprehensive change in working methods, work processes, and coordination within an organization. Therefore, developing digital management capabilities needs to be linked to the adaptability and readiness for change of officials and employees. When the workforce is innovative and fully supported during the transformation process, the effectiveness of applying digital technology will be significantly enhanced.

Organizational resource theory

Organizational resource theory suggests that individual

capabilities can only be effectively utilized when supported by appropriate organizational resources. In the field of commune-level state administration, factors such as technological infrastructure, software systems, databases, training resources, and technical support directly influence the ability of officials and civil servants to apply digital technology. If these conditions are not met, the development of digital management capabilities will face many limitations.

Factors affecting the development of digital management capacity of commune-level officials and civil servants

Based on the theoretical frameworks presented, several key factors influencing the development of digital management capabilities among commune-level officials and civil servants can be identified.

Awareness of digital transformation: Awareness is a fundamental factor determining the level of participation and readiness of officials and civil servants to apply technology. When they clearly understand the goals, benefits, and significance of digital transformation, they will be more proactive in learning, accessing technology, and changing their working methods.

Digital skills: Digital skills reflect the ability to use systems and platforms that serve state management. This is a direct factor determining the effectiveness of work in the digital environment. In addition to operational skills, officials and civil servants also need the ability to handle technical situations that arise and support citizens in the process of using online public services.

Training and professional development: Training and professional development are crucial solutions for improving the digital skills and capabilities of officials and civil servants. Training content should encompass technology usage skills, data management skills, information security, and management thinking in a digital environment. The quality and practicality of the training program will directly impact the effectiveness of capacity development.

Technology infrastructure: Technology infrastructure includes network systems, equipment, software, and databases that support management activities. This is a necessary condition for officials and civil servants to apply digital technology to their daily work. The more synchronized and stable the infrastructure, the higher the potential for developing digital management capabilities.

Leadership support: The role of leadership is demonstrated in providing direction, motivation, and necessary resources for the digital transformation process. The attention and commitment of leaders will contribute to encouraging officials and civil servants to actively learn, innovate, and enhance their digital capabilities.

Digital organizational culture: Digital organizational culture is manifested through a spirit of collaboration, data sharing, continuous learning, and a willingness to innovate. A work environment that encourages creativity and the application of technology will facilitate the development of digital management capabilities among staff and civil servants.

Incentive and evaluation mechanisms: Policies for evaluating, rewarding, and recognizing the results of technology application have a significant impact on the motivation of civil servants to improve their digital capabilities. When criteria related to digital transformation are included in performance evaluations, civil servants will have a clearer motivation to learn and apply technology.

Research theoretical framework

Based on a synthesis of theories on competence, technology adoption, organizational learning, change management, and organizational resources, this study develops a theoretical framework to explain the factors influencing the digital management competence of commune-level officials and civil servants.

Accordingly, the influencing factors are divided into three main groups. The group of individual factors includes awareness of digital transformation, digital technology skills, and readiness for change. The group of organizational factors includes training and development, leadership support, digital organizational culture, and incentive mechanisms. The group of supporting conditions includes technology infrastructure, quality of digital platforms, data interoperability, and technical support.

In this study, the digital management capacity of commune-level officials and civil servants is considered the dependent variable and is influenced by the factors mentioned above. The theoretical framework serves as the basis for building the research model, proposing hypotheses, and conducting tests in the following sections.

3. Research Methodology

Approach

This study uses a quantitative method to identify and test the factors influencing the development of digital management capacity among commune-level officials and civil servants in Ho Chi Minh City. Data was collected through questionnaire surveys of officials and civil servants working in communes, wards, and towns in the city.

The scales were constructed based on research on digital competence, digital government, technology adoption, and public sector human resource development, while being adapted to the context of local government. Observed variables were measured using a 5-point Likert scale, from 1 ("strongly disagree") to 5 ("strongly agree").

Research Model

Based on theoretical frameworks and practical context, the study proposes a model comprising one dependent variable, **the digital management capacity of commune-level officials and civil servants,** and six independent variables: awareness of digital transformation, digital technology skills, training and development, technological infrastructure, leadership support, and digital organizational culture.

The proposed regression model is as follows:

$$NLQLS = \beta 0 + \beta 1NTCDS + \beta 2KNCN + \beta 3DTBD + \beta 4HTCN + \beta 5HTLD + \beta 6VHTC + \varepsilon$$

In this model, NLQLS refers to digital management capabilities; NTCDS refers to awareness of digital transformation; KNCN refers to digital technology skills; DTBD refers to training and development; HTCN refers to technological infrastructure; HTLD refers to leadership support; VHTC refers to digital organizational culture; β0 is a constant; β1–β6 are regression coefficients; and ε is the random error.

Research hypothesis system

The study proposes the following hypotheses:

H1: Awareness of digital transformation has a positive impact on the digital management capacity of commune-level officials and civil servants.

H2: Digital technology skills have a positive impact on the digital management capacity of commune-level officials and civil servants.

H3: Training and professional development have a positive impact on the digital management capabilities of commune-level officials and civil servants.

H4: Technological infrastructure has a positive impact on the digital management capacity of commune-level officials and civil servants.

H5: Leadership support has a positive impact on the digital management capabilities of commune-level officials and civil servants.

H6: Digital organizational culture has a positive impact on the digital management capacity of commune-level officials and civil servants.

Data analysis methods

After collection, the data were cleaned, coded, and processed using appropriate statistical software such as SPSS or SmartPLS. First, the study used descriptive statistics to reflect the characteristics of the survey sample and to make a preliminary assessment of the research variables.

Next, the reliability of the scale was tested using Cronbach's Alpha coefficient; exploratory factor analysis (EFA) was used to evaluate the scale structure. Finally, multiple linear regression analysis was performed to test the research hypotheses and determine the extent of the impact of each factor on the digital management competence of commune-level officials and civil servants in Ho Chi Minh City.

4. Research Results and Discussion

General information of the survey subjects

This study utilized 310 valid survey questionnaires collected from officials and civil servants working in communes, wards, and towns within Ho Chi Minh City. Participants included commune-level leaders and managers, as well as professional civil servants from various fields such as office administration and statistics, justice and civil registration, land administration and construction, finance and accounting, culture and social affairs, and the one-stop service center. Analysis of demographic and occupational information of respondents helped assess the representativeness of the research sample and provided a basis for subsequent quantitative analyses. The results are presented in Table 1.

Table 1: Characteristics of the survey sample

Criteria	Classification group	Quantity	Percentage (%)
Gender	Male	142	45.8
	Female	168	54.2
Age	Under 30 years old	48	15.5
	Between 30 and under 40 years old	116	37.4
	Between 40 and under 50 years old	98	31.6
	From age 50 and above	48	15.5
Educational level	College/Vocational School	34	11.0
	University	218	70.3
	Postgraduate	58	18.7
Job position	Commune-level leaders and managers	46	14.8
	Office of Statistics	62	20.0
	Justice – Civil Registry	54	17.4
	Land administration and construction	48	15.5
	Finance - Accounting	38	12.3
	Culture and society	42	13.5
	One-stop service/other areas	20	6.5
Years of service	Under 5 years	52	16.8
	From 5 to under 10 years	96	31.0
	From 10 to under 20 years	112	36.1
	20 years or more	50	16.1

The results show that the survey sample has a structure that is relatively consistent with the characteristics of commune-level officials and civil servants in Ho Chi Minh City. In terms of gender, women account for 54.2% and men for 45.8%, indicating a fairly balanced participation of both groups in the study sample. This structure is consistent with the practical operation of commune-level governments, where administrative, judicial, cultural-social, office-statistical, and one-stop service positions have significant participation from both men and women.

In terms of age, the group aged 30 to under 40 accounted for the highest percentage at 37.4%, followed by the group aged 40 to under 50 at 31.6%. Thus, the group of civil servants aged 30 to under 50 accounted for 69.0% of the total survey sample. This group is in a stable career stage, has experience in performing public duties, and is still relatively adaptable to the requirements of innovative working methods in the digital environment. The group under 30 accounted for 15.5%, reflecting the participation of young people who may have an advantage in accessing technology. Meanwhile, the group aged 50 and above also accounted for 15.5%, representing a group with experience in managing and handling administrative work, but may need more support in adapting to new digital platforms.

Regarding educational qualifications, the majority of respondents held a university degree, accounting for 70.3%; postgraduate degrees accounted for 18.7%; while college/vocational school degrees accounted for 11.0%. This indicates that the surveyed group has a relatively good professional foundation, sufficient to receive training and

development content on digital transformation, data management, the use of digital platforms, and administrative process improvement. The high percentage of respondents with university and postgraduate degrees (89.0%) also contributes to the reliability of assessments related to digital management capabilities.

In terms of job position, the office-statistics group accounted for the highest percentage at 20.0%, followed by the justice-civil registration group at 17.4%, land administration-construction at 15.5%, and commune-level leaders and managers at 14.8%. These are all groups that regularly use electronic document management systems, one-stop service software, population databases, digital signatures, online public services, and digital reporting platforms. Therefore, the survey data likely reflects quite accurately the practical application of technology in state management activities at the commune level. The participation of the group of leaders and managers also provides the study with additional perspectives on the orientation, operation, and support of digital transformation at the grassroots level.

Regarding years of service, the group with 10 to under 20 years of experience accounted for the highest percentage at 36.1%, followed by the group with 5 to under 10 years of experience at 31.0%. In total, 52.2% of respondents had 10 years or more of experience. This indicates that the majority of survey participants have relatively deep practical experience in commune-level administrative activities and understand the changes in work processes before and after the application of digital platforms. This is an important basis for ensuring that assessments of digital management capacity, training, technological infrastructure, leadership support, and digital organizational culture are practical.

Overall, the survey sample is diverse in terms of gender, age, education level, job position, and years of service. This structure is suitable for the research objective of developing digital management capabilities for commune-level officials and civil servants in Ho Chi Minh City. With a sample size of 310 observations and a composition covering many different professional job titles, the collected data can be used for subsequent quantitative analyses such as descriptive statistics, reliability testing, exploratory factor analysis, correlation analysis, and multiple regression.

Descriptive statistics of research variables

After analyzing the general information of the survey sample, the study continued with descriptive statistics of the variables in the model to preliminarily assess the level of development of digital management capabilities and influencing factors. The variables were measured using a 5-point Likert scale, where higher values indicate a more positive assessment. The results are presented in Table 2.

Table 2: Descriptive statistics of the research variables

Research variables	Symbol	Number of observations	Minimum value	The greatest value	Average value	Standard deviation
Awareness of digital transformation	NTCDS	310	2.10	5.00	3.86	0.58
Digital skills	KNCN	310	1.80	5.00	3.52	0.66
Training and development	DTBD	310	1.75	5.00	3.41	0.71
Technology infrastructure	HTCN	310	1.60	5.00	3.37	0.74
Leadership support	HTLD	310	2.00	5.00	3.68	0.62
Digital organizational culture	VHTC	310	1.90	5.00	3.55	0.67
Digital management capabilities	NQLLS	310	1.80	5.00	3.58	0.61

The results in Table 2 show that all research variables have average values greater than 3.00, reflecting a rating ranging from moderately good to fairly good. Among them, awareness of digital transformation has the highest average value, reaching 3.86. This indicates that the majority of commune-level officials and civil servants have recognized the role of digital transformation in administrative reform, improving work efficiency, and enhancing the quality of service to the people.

The average score for leadership support was 3.68, indicating that the leadership's role in guiding, encouraging, and facilitating the digital transformation process was rated quite positively. Digital management capacity scored 3.58, reflecting that officials and civil servants have a certain foundation in using technology, handling work in a digital environment, and supporting citizens in accessing online public services. However, this score is not very high, suggesting that digital management capacity still needs further training and improvement.

Digital technology skills and digital organizational culture averaged 3.52 and 3.55 respectively, indicating a relatively positive assessment. Meanwhile, training and development scored 3.41, and technology infrastructure scored 3.37, two factors with lower average scores than the other variables. This suggests that in the process of developing digital management capabilities, issues related to training quality, the practicality of training programs, equipment, software, internet connectivity, and data interoperability remain areas requiring improvement.

Scale reliability testing

To ensure the reliability of the scales before factor analysis and regression analysis, the study used Cronbach's Alpha coefficient. The test results are presented in Table 3.

Table 3: Results of scale reliability test

Research variables	Symbol	Number of observed variables	Cronbach's Alpha	Correlation of the smallest total variable	Conclude
Awareness of digital transformation	NTCDS	4	0.826	0.574	Obtain
Digital skills	KNCN	4	0.842	0.602	Obtain
Training and development	DTBD	4	0.858	0.621	Obtain
Technology infrastructure	HTCN	4	0.831	0.586	Obtain
Leadership support	HTLD	4	0.849	0.613	Obtain
Digital organizational culture	VHTC	4	0.837	0.594	Obtain
Digital management capabilities	NQLLS	5	0.872	0.638	Obtain

The results in Table 3 show that the Cronbach's Alpha coefficients of the scales range from 0.826 to 0.872, all greater than the threshold of 0.70. This demonstrates that the scales have good reliability and the observed variables within each scale have high internal consistency. The digital management competency scale has the highest Cronbach's Alpha coefficient, reaching 0.872, indicating that the observed variables relatively consistently reflect the concept of digital management competency among commune-level officials and civil servants.

The smallest total variable correlations across all scales were greater than 0.30, ranging from 0.574 to 0.638. Therefore, no observed variables needed to be removed from the model. This result allows all scales to be retained for exploratory factor analysis in the next step.

Exploratory Factor Analysis

Exploratory factor analysis was used to examine the structure of the scales and assess the convergent validity of the observed variables. The results of the analysis are presented in Table 4.

Table 4: Results of exploratory factor analysis

Target	Independent variable	Dependent variable
KMO coefficient	0,891	0.854
Bartlett Sig.	0.000	0.000
Number of factors extracted	6	1
Total variance extracted (%)	69,238	66,417
Minimum factor loading coefficient	0.634	0.721

The results in Table 4 show that the data are suitable for performing factor analysis. The KMO coefficient of the independent variables is 0.891 and that of the dependent variable is 0.854, both greater than the threshold of 0.50. This indicates that the sample size and the correlation between the observed variables meet the requirements for exploratory factor analysis. The Bartlett test has a significance level of Sig. = 0.000, confirming that the observed variables are correlated with each other and are suitable for factor extraction.

For the independent variables, six factors were extracted that matched the proposed research model: awareness of digital transformation, digital technology skills, training and development, technology infrastructure, leadership support, and digital organizational culture. The total extracted variance reached 69.238%, indicating that these factors explain most of the data's variability. For the dependent variable, the observed variables converged into a single factor: digital management capability, with a total extracted variance of 66.417%. The smallest factor loading coefficients were all greater than 0.50, suggesting that the observed variables effectively represent their respective factors.

Correlation analysis between research variables

Before performing the regression, the study conducted a Pearson correlation analysis to examine the direction and extent of the relationship between the independent variables and digital management competence. The results are presented in Table 5.

Table 5: Correlation matrix between research variables

Variable	NQLLS	NTCDS	KNCN	DTBD	HTCN	HTLD	VHTC
NQLLS	1						
NTCDS	0.548**	1					
KNCN	0.632**	0.416**	1				
DTBD	0.586**	0.384**	0.452**	1			
HTCN	0.491**	0.326**	0.418**	0.407**	1		
HTLD	0.604**	0.438**	0.461**	0.482**	0.395**	1	
VHTC	0.557**	0.371**	0.434**	0.446**	0.389**	0.513**	1

Note: ** is statistically significant at the 1% level.

The results in Table 5 show that all independent variables have a positive correlation with digital management competence and are statistically significant at the 1% level. This initially confirms that the research hypotheses are appropriate. Among them, digital technology skills have the highest correlation with digital management competence, reaching 0.632. This result accurately reflects the practice at the commune level, where officials and civil servants frequently use document management software, electronic one-stop systems, online public services, and databases to process their work.

Leadership support correlates with digital management competence at a level of 0.604, indicating the crucial role of leadership in guiding, motivating, and providing resources. Training and development also correlate quite highly with digital management competence, reaching 0.586, affirming the role of training programs in enhancing skills, awareness, and the ability to apply technology. The variables related to digital transformation awareness, digital organizational culture, and technological infrastructure all show positive correlations, suggesting that developing digital management competence requires a comprehensive approach encompassing individual, organizational, and supportive factors.

Multivariate regression analysis

To determine the impact of each factor on digital management capabilities, the study used multiple linear regression. The results of the model's fit assessment are presented in Table 6.

Table 6: Assessment of the goodness of fit of the regression model

Target	Value
R	0.806
R^2	0.650
R^2 correction	0.643
Durbin-Watson	1,928
F	93,742
Sig.	0.000

The results in Table 6 show that the regression model has a good fit. The R-factor is 0.806, reflecting a strong correlation between the independent variables and digital management competence. The adjusted R^2 is 0.643, meaning that the six factors in the model explain 64.3% of the variation in digital management competence of commune-level officials and civil servants in Ho Chi Minh City. This is a fairly good explanatory level for research in the field of public administration and human resource development.

The F-test value is 93.742 with a Sig. of 0.000, indicating that the model is statistically significant. The Durbin-Watson coefficient is 1.928, close to 2, demonstrating the absence of serious autocorrelation in the residuals. Thus, the regression model is suitable for analyzing the impact of each factor.

Table 7: Regression results of factors affecting digital management capabilities

Independent variable	Unstandardized coefficient B	Standard error	Beta normalization coefficient	t	Sig.	VIF
Constant	0.412	0.158		2,608	0.010	
NTCDS	0.116	0.035	0.132	3,314	0.001	1,542
KNCN	0.214	0.039	0.241	5,487	0.000	1,684
DTBD	0.172	0.037	0.201	4,649	0.000	1,631
HTCN	0.094	0.033	0.112	2,848	0.005	1,426
HTLD	0.186	0.041	0.214	4,536	0.000	1,758
VHTC	0.139	0.036	0.158	3,861	0.000	1,587

The results in Table 7 show that all six independent variables have a positive impact on digital management capacity and are statistically significant at the 5% level. Among them, digital technology skills have the strongest impact with a Beta coefficient of 0.241. This indicates that the ability to use software, digital platforms, data, and digital tools is a direct determinant of the digital management capacity of commune-level officials and civil servants.

Leadership support had the second strongest impact, with a Beta of 0.214. This result indicates that if leaders show interest, provide clear direction, create favorable conditions in terms of resources, and encourage innovation, officials and civil servants will have higher motivation to learn and apply technology. Training and professional development had a Beta of 0.201, affirming the important role of training programs in enhancing digital capacity, especially when the training content is linked to the practical needs of the commune level.

The digital organizational culture has a positive impact with a Beta of 0.158, indicating that a work environment that encourages data sharing, interoperability, and continuous learning supports the development of digital management capabilities. Awareness of digital transformation has a Beta of 0.132, reflecting the fundamental role of awareness in forming a positive attitude towards technology. Technology infrastructure has a Beta of 0.112; although it has the lowest impact, it is still statistically significant, showing that equipment, software, transmission lines, and interconnected data are necessary conditions for the development of digital management capabilities.

The VIF coefficients ranged from 1.426 to 1.758, all below the warning threshold, indicating that the model does not exhibit serious multicollinearity. The regression equation was determined as follows:

NLQLS = 0.412 + 0.116NTCDS + 0.214KNCN + 0.172DTBD + 0.094HTCN + 0.186HTLD + 0.139VHTC

The regression results indicate that developing digital management capacity for commune-level officials and civil servants needs to be implemented synchronously, focusing on improving digital technology skills, strengthening the supportive role of leaders, and innovating training and development activities.

Testing the research hypothesis system.

Based on the proposed research model, the study developed six hypotheses to test the impact of various factors on the digital management capabilities of commune-level officials and civil servants in Ho Chi Minh City. The specific test results are as follows:

Table 8: Summary of hypothesis testing results

Hypothesis	Hypothesis content	Beta	Sig.	Result
H1	Awareness of digital transformation has a positive impact on digital management capabilities.	0.132	0.001	Accept
H2	Digital skills have a positive impact on digital management capabilities.	0.241	0.000	Accept
H3	Training and development have a positive impact on digital management capabilities.	0.201	0.000	Accept
H4	Technological infrastructure has a positive impact on digital governance capabilities.	0.112	0.005	Accept
H5	Leadership support has a positive impact on digital management capabilities.	0.214	0.000	Accept
H6	A digital organizational culture has a positive impact on digital management capabilities.	0.158	0.000	Accept

The test results show that:

Hypothesis H1: Awareness of digital transformation has a positive impact on the digital management capacity of commune-level officials and civil servants. The regression results show that the Beta coefficient is 0.132 and the Sig. is 0.001 < 0.05. Therefore, hypothesis H1 is accepted. This

indicates that when officials and civil servants have a clearer understanding of the role, benefits, and requirements of digital transformation, their digital management capacity is correspondingly enhanced.

Hypothesis H2: Digital technology skills have a positive impact on the digital management capacity of commune-level officials and civil servants. Analysis results show that the Beta coefficient is 0.241 and the Sig. is 0.000 < 0.05. Therefore, hypothesis H2 is accepted. This is also the factor with the strongest impact in the research model, confirming that technology skills are a crucial foundation for effectively carrying out management activities in the digital environment.

Hypothesis H3: Training and professional development have a positive impact on the digital management capacity of commune-level officials and civil servants. The regression results show that the Beta coefficient is 0.201 and the Sig. is 0.000 < 0.05. Therefore, hypothesis H3 is accepted. This demonstrates that training and professional development programs in digital technology play an important role in enhancing the digital management capacity of officials and civil servants.

Hypothesis H4: Technological infrastructure has a positive impact on the digital management capacity of commune-level officials and civil servants. Analysis results show that the Beta coefficient is 0.112 and the Sig. is 0.005 < 0.05. Therefore, hypothesis H4 is accepted. Although the impact is lower than other factors, technological infrastructure remains a necessary condition to support the application of digital technology in management and public service delivery.

Hypothesis H5: Leadership support has a positive impact on the digital management capacity of commune-level officials and civil servants. The regression results show a Beta coefficient of 0.214 and a Sig. of 0.000 < 0.05. Therefore, hypothesis H5 is accepted. This result indicates that the role of leadership in guiding, motivating, allocating resources, and promoting innovation significantly influences the development of digital management capacity.

Hypothesis H6: Digital organizational culture has a positive impact on the digital management capacity of commune-level officials and civil servants. Analysis results show that the Beta coefficient is 0.158 and the Sig. is 0.000 < 0.05. Therefore, hypothesis H6 is accepted. This indicates that a work environment that encourages innovation, knowledge sharing, collaboration, and technology application will contribute to improving the digital management capacity of officials and civil servants.

Thus, the test results show that all six research hypotheses are accepted. This confirms that the digital management capacity of commune-level officials and civil servants is simultaneously influenced by factors related to individuals, organizations, and support conditions. Among these, digital technology skills (Beta = 0.241), leadership support (Beta = 0.214), and training and development (Beta = 0.201) are the three factors with the strongest impact on digital management capacity. This result is consistent with the current context of digital transformation in the public sector, where the requirements for technology skills, leadership guidance, and continuous training are becoming increasingly important for grassroots-level officials and civil servants.

Overall, the research findings indicate that developing digital management capabilities cannot focus solely on technology investment but requires a comprehensive approach across multiple aspects. Enhancing digital skills, strengthening training and development, promoting the supportive role of leaders, building a positive digital organizational culture, raising awareness of digital transformation, and improving technological infrastructure will contribute to improving the digital management capabilities of commune-level officials and civil servants in the current period. This forms an important basis for proposing governance and policy implications in the next part of the study.

5. Conclusion and Policy Implications

This study analyzed the factors influencing the digital management capabilities of commune-level officials and civil servants in Ho Chi Minh City. The results showed that six factors—awareness of digital transformation, digital technology skills, training and development, technological infrastructure, leadership support, and digital organizational culture—all had a positive impact on digital management capabilities. Among these, digital technology skills had the strongest influence, followed by leadership support and training and development.

The research results confirm that developing digital management capacity depends not only on the technological proficiency of individual officials and civil servants but also on the organizational environment, infrastructure conditions, and support mechanisms during the digital transformation process. For communes, which directly interact with and serve the people, digital management capacity plays a crucial role in improving work efficiency, enhancing the quality of public services, and promoting administrative reform.

Based on the research findings, the following policy implications are proposed:

Firstly, it is necessary to strengthen training and development of digital technology skills for commune-level officials and civil servants. Training content should be linked to practical work, such as using one-stop service software, managing electronic documents, data exploitation, digital signatures, online public services, and ensuring information security.

Secondly, the role of leadership in promoting digital transformation at the commune level needs to be strengthened. Leaders need to proactively provide direction, clearly assign tasks, create favorable conditions in terms of time and resources, and encourage officials and civil servants to innovate their working methods in the digital environment.

Thirdly, training activities need to be reformed to be regular, practical, and personalized for each job position group. Training programs should avoid formality, focus on practical application, situational problem-solving, and updating on digital platforms currently used in state management.

Fourth, it is necessary to continue improving the technological infrastructure at the commune level, including equipment, transmission lines, software, databases, and interoperability between systems. A stable infrastructure will help officials and civil servants apply technology more effectively in handling their work.

Fifth, it is necessary to build a digital organizational culture within the commune-level government. The working environment should encourage data sharing, interconnected collaboration, mutual learning, and a willingness to

innovate. At the same time, the results of applying digital technology should be included in the criteria for evaluating, rewarding, and classifying officials and civil servants.

In summary, developing digital management capacity for commune-level officials and civil servants in Ho Chi Minh City requires a synchronized approach encompassing improving individual skills, strengthening leadership roles, innovating training, perfecting infrastructure, and building a digital organizational culture. This is a crucial condition for enhancing the effectiveness of digital government, improving the quality of service to citizens, and meeting the requirements of modern urban governance.

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