Digital Capacity of Vietnamese Civil Servants and Citizen

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Abstract

The Fourth Industrial Revolution (Industry 4.0) has had a profound impact, transforming the methods of state governance and leading to the formation and development of digital governments in various countries. Digital governments operate in a digital environment, placing demands on digital capabilities for civil servants and citizens participating in state administration. When civil servants and citizens possess the necessary basic digital skills, becoming digital civil servants and digital citizens, the performance of their duties and the interaction between them will be facilitated in the digital environment, saving time and costs for both the government and the people. Therefore, developing the digital capacity of civil servants and citizens is a fundamental and necessary condition for building and operating a digital government. This study analyzes the characteristics of digital government and the role/influence of developing the digital capacity of civil servants and citizens on the construction and operation of a digital government. The theoretical framework consists of a scale/dependent variable "Digital government" (DG) and independent scales/variables "Digital capacity of civil servants" (CCS) and "Digital capacity of citizens" (DCC). The author surveyed 210 commune-level government leaders from 50 selected communes in three provinces of Vietnam: Bac Ninh province (Northern), Nghe An province (Central), and An Giang province (Southern). The survey results showed that the digital capacity of citizens was rated at a lower level. Based on this research conclusion, the author suggests appropriate policy solutions to develop digital capacities in the context of Vietnam's digital society.

Keywords: Digital government; Digital capacity of civil servants; Digital capacity of citizens; Vietnam.

1. Introduction

In the context of the Fourth Industrial Revolution, Vietnam has promptly adapted to change its state governance methods, building and operating a digital government to better serve its citizens. In 2019, the policy of "promoting national digital transformation, focusing on developing the digital economy, building smart cities, e-government, and moving towards digital government" was officially defined in the political document (CPV, 2019). By 2020, the government's policy on digital transformation affirmed "developing a digital government, improving the effectiveness and efficiency of state management; developing the digital economy, enhancing the competitiveness of the economy; developing a digital society, narrowing the digital divide" (PM, 2020).

These policies and guidelines have been implemented smoothly and achieved positive results, promoting modern state governance based on the application of digital technology. This is an important condition for Vietnam to carry out administrative reform in 2025 towards streamlining the state apparatus: Abolishing the three-tiered local government model (provincial, district, and commune levels) and establishing a two-tiered local government model, comprising provincial and commune levels (CPV, 2025). As a result, the streamlined two-tiered local government model includes 34 provincial-level localities and 3321 commune-level localities (GN, 2025), reducing provincial-level administrative units by 47% and commune-level administrative units by 67%.

In Vietnam's current new model of local government, many tasks at the commune level have been inherited from those of the former district level. This increases pressure on commune-level officials in the performance of their duties; it also increases pressure on communes to build and operate a digital government to better serve the people. Therefore, understanding the digital capabilities of officials and citizens in the context of a digital government is necessary, attracting the attention of many researchers and managers, and is also the reason for the author's interest in this study.

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2. Literature review

Digital government is characterized by operating in a digital environment, with all activities conducted securely in a digital environment (MIC, 2021). It is a new management method that is being developed and widely applied in state administration at the national and local levels. Accordingly, the operations of state agencies are redesigned and operated based on digital data and technology; shifting from operating in a physical environment to a digital environment, and having the ability to provide higher quality services, make more timely decisions, issue better policies, and use resources more optimally. Vuong, L.D. (2024) and Chen, L. (2024) also share the same view and affirm that digital government operates in a digital environment, allowing entities (public officials, citizens) the right to access and use data and information, thereby creating economic and social benefits; Mobilizing greater public participation, aiming towards the common development goals of the nation, locality, and community.

Further analysis reveals that the studies explain digital government from the perspective of the internal operation of the components within the organizational system of state agencies, and the interaction mechanisms of entities participating in state governance; all carried out on a digital data and digital technology platform with an accurate and transparent cycle in the digital environment. This helps government and local agencies make timely and effective policy decisions; it also helps the process of providing public services to be faster, more accurate, and more transparent, serving and satisfying the people. Based on inheriting and developing the views of MIC (2021), Vuong, L.D. (2024), and Chen, L. (2024), this study identifies the content of digital government focusing on the application of digital technology and activities and interactions in the digital environment. Thes cale "Digital government" (DG) is constructed to reflect the content of digital government, explaining it according to the following aspects: Digital technology is applied in state administration processes - data is fully digitized, accurate, and publicly available (DG1); A digital operating model is built - professional activities and work are carried out securely in the digital environment (DG2); Citizens have the right to access and utilize digital data publicly, securely, and are satisfied when transacting and interacting with the government in the digital environment (DG3).

Given the characteristics of a digital government—operating in a digital environment and having all activities securely conducted there—a digital platform (digital technology, digital data) is essential for implementing a digital government. However, the digital capacity of the stakeholders participating in the digital government (civil servants; citizens) plays a crucial and decisive role in operating and transforming digital technology to create the new values that the digital government aims for. Therefore, developing the digital capacity of civil servants and citizens directly impacts the construction and operation of a digital government.

- Firstly, for civil servants, as subjects performing public duties in the digital environment, the requirement for digital competence becomes a basic standard in the context of digital transformation and the implementation of digital government goals. According to MIC (2021), civil servants must be equipped with basic digital knowledge and skills necessary to achieve digital transformation goals and build and develop a digital government. Hoan, D.M. (2024) emphasizes that in addition to being equipped with digital knowledge and skills, civil servants need to proactively update and supplement their knowledge to adapt to the rapid development of digital technology in order to effectively transact, interact, and perform assigned tasks in the digital environment. Similarly, Khanh, T.T.B. (2025) affirms the digital competence of civil servants in the aspects of advising and implementing work; directing, managing, inspecting, and supervising work; To guide citizens and handle their applications in the digital environment safely, quickly, and accurately, thereby building trust and satisfaction among citizens. Studies by MIC (2021), Hoan, D.M. (2024), Khanh, T.T.B. (2025) have summarized the scale "Digital capacity of civil servants" (CCS) and the author inherits and develops it in this study, implying the basic contents, including: Civil servants possess the basic digital knowledge and skills necessary to meet the requirements and goals of building and developing a digital government (CCS1); Civil servants perform their professional duties, receive and process citizens' applications in the digital environment proficiently, ensuring the quality and timeliness of assigned tasks (CCS2); Civil servants interact with citizens in the digital environment proficiently, guiding citizens to access digital information and data thoughtfully, building trust and confidence among citizens (CCS3).

- Secondly, citizens are the beneficiaries of policies, but also the subjects participating in the local policy process. In the context of digital government, citizens need digital competence, becoming digital citizens to work together with digital civil servants to successfully achieve the goals of digital government. According to MIC (2021), citizens must have basic digital knowledge and skills necessary to conduct social interactions and participate in policy processes, and to handle administrative documents in the digital environment. Tam, D.T.

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(2023) affirms that the goal of digital government is successful when each citizen actively participates in policy processes in the digital environment and actively participates in social interactions in the digital environment. Similarly, Hanh, L.H. (2023) assesses the digital competence of citizens in their ability to access digital information sources; The ability/skills to transact and interact in the digital environment to perform activities such as buying and selling goods, requesting administrative documents, and providing policy feedback... Studies by MIC (2021), Tam, D.T. (2023), Hanh, L.H. (2023) have summarized the scale "Digital capacity of citizens" (DCC) and the author inherits and develops it in this study, implying the basic contents, including: Citizens possess basic digital knowledge and skills to proactively access digital information sources (DCC1); Citizens possess basic digital knowledge and skills to proactively interact with the government in the digital environment when participating in local policy-making processes (DCC2); Citizens possess basic digital knowledge and skills to proactively interact with the government in the digital environment when requesting the resolution of administrative documents (DCC3).

Digital government is becoming a developing trend and is gradually becoming an effective method of state governance; therefore, the requirement for digital competence among civil servants and citizens is a fundamental issue. Because each civil servant and citizen has the ability to access digital data and conduct digital transactions, they will be active participants in achieving the goals of digital government. With that in mind, this study hypothesizes that: Digital capacity of civil servants (H1) and Digital capacity of citizens (H2) are necessary requirements and directly influence the goals of Digital government.

Through a comprehensive review, a theoretical framework was developed, comprising two independent scales/variables: "Digital capacity of civil servants" (CCS) and "Digital capacity of citizens" (DCC), and one dependent scale/variable: "Digital government" (DG). These scales consist of nine observed variables, designed by the author as nine survey questions and measured using a 5-point Likert scale: 1 - Strongly disagree; 2 - Disagree; 3 - Neutral; 4 - Agree; 5 - Strongly agree (Table 1, Figure 1).

Table 1. Theoretical framework

No	Scales	Encode	Rating levels				
			1	2	3	4	5
I	**Digital capacity of civil servants**	**CCS**					
1	Civil servants possess the basic digital knowledge and skills necessary to meet the requirements and goals of building and developing a digital government	CCS1					
2	Civil servants perform their professional duties, receive and process citizens' applications in the digital environment proficiently, ensuring the quality and timeliness of assigned tasks	CCS2					
3	Civil servants interact with citizens in the digital environment proficiently, guiding citizens to access digital information and data thoughtfully, building trust and confidence among citizens	CCS3					
II	**Digital capacity of citizens**	**DCC**					
4	Citizens possess basic digital knowledge and skills to proactively access digital information sources	DCC1					
5	Citizens possess basic digital knowledge and skills to proactively interact with the government in the digital environment when participating in local policy-making processes	DCC2					
6	Citizens possess basic digital knowledge and skills to proactively interact with the government in the digital environment when requesting the resolution of administrative documents	DCC3					
III	**Digital government**	**DG**					

No	Scales	Encode	Rating levels				
			1	2	3	4	5
7	Digital technology is applied in state administration processes - data is fully digitized, accurate, and publicly available	DG1					
8	A digital operating model is built - professional activities and work are carried out securely in the digital environment	DG2					
9	Citizens have the right to access and utilize digital data publicly, securely, and are satisfied when transacting and interacting with the government in the digital environment	DG3					

Source: Compiled by the author through the review
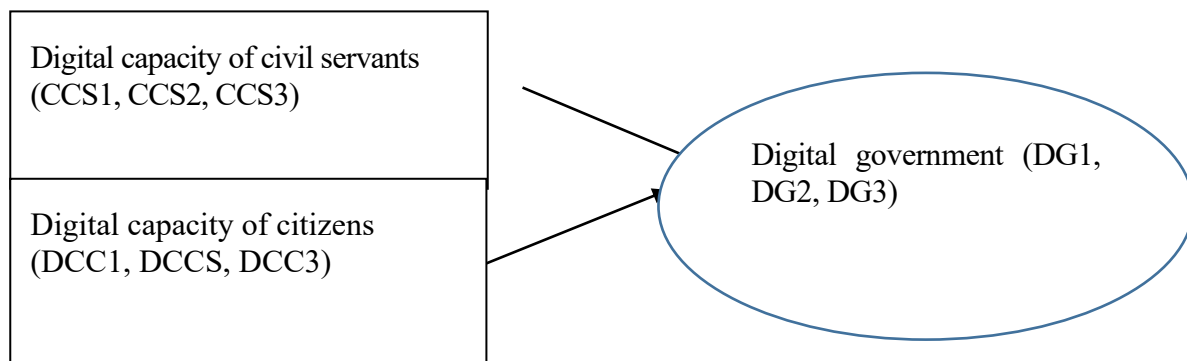
Research model

Figure 1. Research model

3. Research methods

This study was conducted using a combination of qualitative and quantitative methods. The qualitative method involved collecting and analyzing secondary data to develop the theoretical framework and model. The quantitative method involved conducting surveys to collect and analyze primary data and draw research conclusions.

The author selected the survey sample based on scientific principles. According to Hair, J.F. et al. (2009), the minimum sample size required for exploratory factor analysis and regression analysis of the model with 3 scales and 9 observed variables in this study is N = 9*5 = 45. In practice, the author surveyed with a sample size of N = 210 (N > 45) of commune-level government leaders from 50 selected communes in 3 provinces of Vietnam, including: Bac Ninh province (Northern), Nghe An province (Central), and An Giang province (Southern).

The survey was conducted selectively, including local leaders with at least three years of management experience. Questionnaires were distributed based on preliminary interviews and the respondents' consent. The results showed 210 out of 210 valid responses, achieving a 100% response rate.

4. Research results and discussion

Based on the survey results, the author tested the reliability of the scales and observed variables in the research model to serve as a basis for further analysis. According to Hair, J.F. et al. (2009), scales and observed variables have reliability when they meet the standard conditions: Cronbach's alpha > 0.6; Corrected Item-Total Correlation > 0.3. The test results show that all 3 scales and 9 observed variables have reliability when they meet the above standard conditions (Table 2).

Table 2. Statistical results and testing results of the scale

Scales	Observed variables	N	Min	Max	Mean	Std. Deviation	Cronbach' Alpha	Corrected Item-Total Correlation

1. Digital capacity of civil servants (CCS)	CCS1	210	1	5	4.14	.711		CCS1 = .531
	CCS2	210	1	5	4.07	.683	.725	CCS2 = .615
	CCS3	210	1	5	3.97	.706		CCS3 = .497
2. Digital capacity of citizens (DCC)	DCC1	210	1	5	4.02	.724		DCC1 = .451
	DCC2	210	1	5	3.95	.679	.676	DCC2 = .384
	DCC3	210	1	5	3.97	.683		DCC3 = .423
3. Digital government (DG)	DG1	210	1	5	4.15	.688		DG1 = .627
	DG2	210	1	5	4.11	.716	.712	DG2 = .545
	DG3	210	1	5	4.12	.694		DG3 = .496
Valid N (listwise)		210						

Source: Author's survey results

Table 2 data shows that observations of the "Digital capacity of civil servants" (CCS), "Digital capacity of citizens" (DCC), and "Digital government" (DG) scales are all rated at a mean of ≥ 3.95, which is statistically significant according to the Likert scale (1-5). The evaluation opinions are concentrated, contributing to the affirmation of: Firstly, the digital government is operated at the local level, helping to ensure that work is carried out safely in the digital environment; citizens have the right to access and exploit digital data openly, safely, and are satisfied when transacting and interacting with the government in the digital environment; Secondly, civil servants have basic digital knowledge and skills necessary to meet the requirements and goals of building and developing the digital government; transactions and guidance for citizens to access digital information and data ensure quality and progress of assigned work, creating trust and confidence of the people; Thirdly, citizens possess basic digital knowledge and skills to proactively access digital information sources and actively interact with the government in the digital environment when participating in local policy-making processes or when requesting the resolution of administrative documents. This survey result also contributes to explaining the initial successes of digital transformation and the development of digital government in Vietnam. This is also confirmed in the assessment report of a Vietnamese government agency: The rate of online applications nationwide is 45.7% (MST, 2025).

Specifically, the observed variables of the "Digital capacity of citizens" (DCC) scale were rated at lower average values compared to the observed variables of the "Digital capacity of civil servants" (CCS) scale, namely: Mean (CDS1) = 4.02, Mean (CDS2) = 3.95, Mean (CDS3) = 3.97. This also indicates that although many citizens possess basic digital knowledge and skills, they still do not interact and transact proficiently and effectively in the digital environment when participating in local policy processes or when requesting the resolution of administrative documents. This is a problem that directly affects the effectiveness of government operations, because besides civil servants, citizens are also direct participants in the local government's digital governance process. Furthermore, the goal of digital government is to serve citizens quickly, accurately, and efficiently. Therefore, the successful operation of digital government depends on citizens' proficiency in conducting transactions digitally when participating in local government administration processes. Consequently, developing digital knowledge and skills for citizens is crucial for the development of a digital society alongside the development of digital government, aiming towards building a modern government and a civilized society.

With the test results meeting the standards, all three scales and nine observed variables in the model were used for further analysis. The author conducted exploratory factor analysis with Varimax rotation to preliminarily assess the unidimensionality, convergent validity, and discriminant validity of the scales and to test the fit of the theoretical model.

Table 3. Total Variance Explained

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.747
Bartlett's Test of Sphericity	Approx. Chi-Square	2572.733
	df	36

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Sig.		.000

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.470	38.551	38.551	3.470	38.551	38.551	2.960	32.892	32.892
2	2.952	32.803	71.354	2.952	32.803	71.354	2.797	31.080	63.972
3	1.088	12.087	83.440	1.088	12.087	83.440	1.752	19.469	83.440
4	.508	5.647	89.088						
5	.479	5.324	94.411						
6	.184	2.044	96.456						
7	.158	1.755	98.211						
8	.114	1.266	99.477						
9	.047	.523	100.000						
Extraction Method: Principal Component Analysis.									

Source: Author's survey results

Table 4. Rotated Component Matrix

Rotated Component Matrix[a]

Scales	Observed variables	Component		
		1	2	3
1. Digital capacity of civil servants (CCS)	CCS1	.862		
	CCS2	.766		
	CCS3	.881		
2. Digital capacity of citizens (DCC)	DCC1		.832	
	DCC2		.852	
	DCC3		.743	
3. Digital government (DG)	DG1			.848
	DG2			.731
	DG3			.772
Extraction Method: Principal Component Analysis.				
Rotation Method: Varimax with Kaiser Normalization.				
a. Rotation converged in 5 iterations.				

Source: Author's survey results

Survey data shows: KMO = 0.747 > 0.5, confirming that exploratory factor analysis is appropriate for the dataset; Bartlett's test has an observed significance level Sig. = 0.000 < 0.05, indicating that the observed

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variables are linearly correlated with the representative factor; Total Variance Explained with Cumulative % = 83.440% > 50%, showing that 83.440% of the variation in the representative factors is explained by the observed variables (Table 3). All observed variables have Factor Loading > 0.5 (Table 4), indicating that the observed variables are statistically significant.

Initial Eigenvalues stop at 3 factors with Eigenvalues > 1 (Table 3), indicating that the observed variables were extracted into 3 factors corresponding to the 3 original factors. Thus, the original research model is preserved and is scientifically appropriate; confirming the suitability of the theoretical research model on digital government, digital competence of civil servants, and digital competence of citizens, with 3 scales and 9 observed variables as constructed.

Based on the exploratory factor analysis results above, all three scales and nine observed variables have good reliability and statistical significance. Further multivariate regression analysis will be conducted to examine the relationships between the scales in the research model: two independent scales/variables, "Digital capacity of civil servants" (CCS) and "Digital capacity of citizens" (DCC), and one dependent scale/variable, "Digital government" (DG).

Table 5. Multivariate regression results

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	VIF
		B	Std. Error	Beta			
1	(Constant)	1.102	.232		11.239	.000	
	1. Digital capacity of civil servants (CCS)	.521	.376	.502	10.745	.000	1.732
	2. Digital capacity of citizens (DCC)	.464	.338	.399	9.532	.000	1.897
a. Dependent Variable: Digital capacity of citizens (DCC)							
R^2 = 0.727; Durbin-Watson = 2.106							

Source: Author's survey results

Table 5 data shows:

+ R^2 = 0.727 confirms that the "Digital capacity of civil servants" (CCS) and "Digital capacity of citizens" (DCC) scales explain 72.7% of the variation in the "Digital government" (DG) scale; VIF = 1.732 and VIF = 1.897 (1 < VIF < 2) indicate that the regression model does not exhibit multicollinearity; Durbin-Watson = 2.106 (1 < d < 3) indicates that the regression model does not exhibit autocorrelation, confirming that the "Digital capacity of civil servants" (CCS) and "Digital capacity of citizens" (DCC) scales are independent and influence each other on the "Digital government" (DG) scale, thus confirming the suitability of the theoretical research model to the survey dataset.

+ The regression coefficients of the two independent variables "Digital capacity of civil servants" (CCS) and "Digital capacity of citizens" (DCC) are both statistically significant (Sig). = 0.000 (Sig. < 0.05) and positive values: B(CCS) = 0.521 and B(DCC) = 0.464, confirming a positive correlation between the two independent variables "Digital capacity of civil servants" (CCS), "Digital capacity of citizens" (DCC) and the dependent variable "Digital government" (DG); hypotheses H1 and H2 are accepted; the initial research model continues to be confirmed as appropriate. The regression model of this study is as follows: DG = 1.102 + 0.521*CCS + 0.464*DCC. The correlation levels of the independent and dependent variables in decreasing order are: "Digital capacity of civil servants" (CCS), "Digital capacity of citizens" (DCC).

The results of the regression analysis (Table 5), along with the analyzed statistical results (Table 2), further confirm the empirical findings in Vietnam, that:

- Firstly, digital government operates at the local level, ensuring that tasks are carried out safely in the digital environment; citizens have the right to access and utilize digital data openly, securely, and with satisfaction

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when transacting and interacting with the government in the digital environment. Public officials possess the basic digital knowledge and skills necessary to meet the requirements and goals of building and developing a digital government; they conduct transactions and guide citizens in accessing digital information and data, ensuring the quality and progress of assigned tasks, thereby building trust and confidence among the people. Citizens have basic digital knowledge and skills to proactively access digital information sources and proactively interact with the government in the digital environment when participating in local policy processes or when requesting the resolution of administrative documents.

- Secondly, despite possessing basic digital knowledge and skills, many citizens still lack proficiency and efficiency in interacting and transacting digitally when participating in local policy-making processes or requesting administrative services, directly impacting the effectiveness of government operations. This is because citizens are also direct participants in local government administration in the digital environment; the goal of digital government is to serve citizens quickly, accurately, and efficiently. Therefore, the successful operation of digital government depends on citizens' proficiency in digital transactions when participating in local government administration processes. Consequently, developing digital knowledge and skills for citizens needs to be implemented to develop a digital society in parallel with the development of digital government, aiming towards building a modern government and a civilized society.

Based on these conclusions, this study suggests solutions for developing the digital capacity of the people in the context of Vietnam's digital society. First, localities should diversify their communication about the digital society and digital government; support people in learning, updating, and supplementing basic digital knowledge and skills to adapt to the development trends of the digital society and digital government. Next, localities should coordinate with the education and training sector to research and implement programs to popularize digital knowledge and skills suitable for each educational level, aiming to proactively develop a digital workforce capable of adapting to the development trends of the digital society and digital government.

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