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# DEVELOPING DIGITAL HUMAN RESOURCES TO ACHIEVE THE GOALS OF THE DIGITAL GOVERNMENT IN VIETNAM

Truong Dinh Hai Thuy<sup>1</sup>, Nguyen Thi Tran Loc<sup>2</sup>, Nguyen Thi Minh Tram<sup>3</sup>, Truong Xuan  
Huong<sup>4</sup>, Huynh Ngoc Thanh Trung<sup>5</sup>, Nguyen Thanh Truong<sup>6</sup>, Duong Thi Phuong Lien<sup>7</sup>

<sup>1,2,3,4,5,6,7</sup>University of Finance - Marketing, Ho Chi Minh City, Vietnam.

<sup>1</sup>Email: [tdh.thuy@ufm.edu.vn](mailto:tdh.thuy@ufm.edu.vn); <sup>2</sup>Email: [ntt.loc@ufm.edu.vn](mailto:ntt.loc@ufm.edu.vn); <sup>3</sup>Email: [tramnguyentran@ufm.edu.vn](mailto:tramnguyentran@ufm.edu.vn); <sup>4</sup>Email: [tx.huong@ufm.edu.vn](mailto:tx.huong@ufm.edu.vn); <sup>5</sup>Email: [hnttrung@ufm.edu.vn](mailto:hnttrung@ufm.edu.vn); <sup>6</sup>Email: [nt.truong@ufm.edu.vn](mailto:nt.truong@ufm.edu.vn); <sup>7</sup>Email: [duonglien@ufm.edu.vn](mailto:duonglien@ufm.edu.vn)

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Corresponding Author: Nguyen Thi Tran Loc  
([ntt.loc@ufm.edu.vn](mailto:ntt.loc@ufm.edu.vn))

## ABSTRACT

Digital government is becoming a global trend, characterized by a model of government operating in a digital environment, shifting from a physical to a digital one, and applying information technology in state administration to make policy decisions and provide high-quality public services, better serving the people. The emergence of digital government has created a demand for the development of digital human resources, including both the workforce directly performing public duties – the subjects carrying out state administration tasks (civil servants) – and the workforce participating in state governance (citizens). Developing digital human resources to achieve the goals of digital government means developing the digital capabilities of civil servants and citizens to form digital civil servants and digital citizens. In this study, the author constructs a theoretical framework of digital government and designs a theoretical model to analyze the impact of developing digital civil servants and digital citizens on achieving the goals of digital government. Based on the theoretical framework and model developed, the author surveyed 210 local leaders at the commune level (N = 210) to collect information and conduct empirical analysis and evaluation of digital human resource development in Vietnam within the context of the current digital government. The survey results show that the development of digital civil servants and digital citizens is being implemented alongside the development of the digital government; the digital capacity of civil servants is assessed at a higher level, but still needs improvement; the digital capacity of citizens is assessed at a lower level, requiring appropriate solutions to ensure that digital human resource development meets the goals of the digital government.

**KEYWORDS:** Digital civil servant; Digital citizens; Digital government; Vietnam.

## 1. INTRODUCTION

The Fourth Industrial Revolution (Industry 4.0) emerged in 2016 and has developed rapidly and widely, signifying a technological revolution and smart manufacturing based on the achievements of artificial intelligence, the Internet of Things, etc. (Phuong, L.Q., 2017). The impact of Industry 4.0 in practice is clearly evident, changing the way people live, work, and interact with each other. In particular, digital technology is applied in social activities and in various types of organizations, creating breakthroughs in production, social activities, and state governance.

In this context, Vietnam has proactively participated in the 4.0 revolution, adapting to the rapid development of digital technology and building a digital government to better serve the people (CPV, 2019). The National Digital Transformation Program, officially promulgated in 2020, is the first policy of the central government with the main tasks of developing a digital government, developing a digital economy, and developing a digital society (PM, 2020). This is an important policy, affirming a change in the mindset of state governance, applying digital technology to build a modern, professional, and efficient administration aimed at serving the people and developing the economy and society.

Vietnam's proactive participation in the Fourth Industrial Revolution has placed it on the list of countries that adapt quickly to technology and achieve positive results in the development of digital government. However, this is an unprecedented issue, posing significant challenges to state governance in the face of rapid changes and developments in digital technology, increasing pressure on civil servants and citizens participating in state governance processes in the context of a digital government. This has attracted the attention of many researchers and managers, and is also the reason for the author's interest in this study.

## 2. LITERATURE REVIEW

According to the current popular understanding, digital government is a model of government operating in a digital environment, shifting from a physical to a digital environment, applying information technology in state governance to make policy decisions and provide high-quality public services, better serving the people. According to Janowski, T. (2015) and MIC (2021), a characteristic of digital government is that activities are carried out securely in a digital environment, including the official duties of civil servants, citizen requests, and

online public services. Luca, T. et al. (2021) and Que, N.D. et al. (2022) affirm that a government model designed and operated based on the application of digital technology and digital data will create breakthrough changes in state governance through the optimal use of resources and the ability to provide better services.

These studies also emphasize the role of digital government in state governance, creating a favorable environment for citizens to participate in economic and social development; effectively addressing major issues in social development governance; helping to formulate better policies; and mobilizing/attracting citizens to actively and substantively participate in state governance processes - proposing initiatives, discussing policies more effectively. The scale "Digital Government" (DGO) was developed with several key implications: The government model is designed and operated on a digital platform, operating securely in the digital environment (DGO1); Government operations are transparent, data is fully and accurately digitized, and public services are provided online (DGO2); Civil servants and citizens can easily access digital data and perform transactions and professional tasks in the digital environment (DGO3).

Thus, the development of digital government aims at the effectiveness, efficiency, and service of government agencies. To achieve this goal, the development of digital human resources - the subjects implementing and participating in digital government processes - plays a crucial and direct role. This is because when the government is designed to operate in a digital environment; digital technology is applied, and digital infrastructure is built, but digital human resources are limited - the digital capacity of civil servants and citizens is limited - then the goal of developing digital government is difficult to achieve. Therefore, developing digital civil servants and digital citizens is a fundamental requirement and a constant issue, running parallel to the development of digital government. With this in mind, this study conducts an empirical analysis of the development of digital government, digital civil servants, and digital citizens in Vietnam with the hypothesis that: Developing digital civil servants (H1) and Developing digital citizens (H2) directly and positively influence the achievement of digital government goals.

As public servants in the context of digital government, they directly participate in state administration processes in the digital environment. Therefore, according to Toan, N.Q. et al. (2022) and

Trung, N.B. (2023), equipping and updating digital knowledge and skills to form digital capacity and develop digital civil servants is a regular solution for government agencies. Khanh, T.T.B. (2025) explains in detail that digital civil servants are demonstrated through their ability to advise and implement work in the digital environment; their ability to transact and guide citizens on administrative documents in the digital environment; and the proactive learning of civil servants to update and supplement digital knowledge and skills, which is significant and plays an important role. The scale "Digital civil servant" (DS) was developed with several key implications: Civil servants are trained/encouraged to develop digital skills to work in a digital environment, meeting the requirements of digital government (DS1); Civil servants have digital work skills, demonstrated through their ability to advise and implement work in a digital environment (DS2); Civil servants have digital work skills, demonstrated through their ability to conduct transactions and guide citizens through administrative procedures in a digital environment (DS3).

As subjects participating in state governance in the context of digital government, citizens have the right to proactively/be mobilized to participate in state governance processes in the digital environment. Citizens' digital capacity is a necessary requirement for them to become digital citizens, exercising their right to provide feedback, critique policies, or request the resolution of administrative procedures in the digital environment. According to Nga, Q. (2023) and Huong, D.T.T. (2025), developing

digital citizenship is an important foundation for promoting economic growth, creating cohesion and dynamism in society. Therefore, it is necessary to disseminate information on digital transformation, and to cultivate/encourage the development of digital knowledge and skills to form digital capacity for citizens. The scale "Digital citizens" (DC) is constructed with several key implications: Citizens are provided with basic digital knowledge and skills to participate in digital social activities and achieve national digital transformation goals (DC1); Citizens are trained to develop digital capacity to proactively participate in policy-making processes in the digital environment (DC2); Citizens are trained to develop digital capacity to proactively conduct transactions/request the resolution of administrative documents in the digital environment (DC3).

Through a review of research, numerous studies have highlighted the characteristics of digital government and the digital competency requirements for civil servants and citizens to become digital civil servants and digital citizens. Based on this, this study constructs a theoretical framework and model comprising two scales/independent variables: "Digital civil servant" (DS) and "Digital citizens" (DC), and one scale/independent variable: "Digital government" (DGO). The scales consist of nine observed variables, designed by the author as nine questions in a survey questionnaire 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
<b>I</b>	<b>Digital civil servant</b>	<b>DS</b>					
1	Civil servants are trained/encouraged to develop digital skills to work in a digital environment, meeting the requirements of digital government	DS1					
2	Civil servants have digital work skills, demonstrated through their ability to advise and implement work in a digital environment	DS2					
3	Civil servants have digital work skills, demonstrated through their ability to conduct transactions and guide citizens through administrative procedures in a digital environment	DS3					
<b>II</b>	<b>Digital citizens</b>	<b>DC</b>					
4	Citizens are provided with basic digital knowledge and skills to participate in digital social activities and achieve national digital transformation goals	DC1					
5	Citizens are trained to develop digital capacity to proactively participate in policy-making processes in the digital environment	DC2					
6	Citizens are trained to develop digital capacity to proactively conduct transactions/request the resolution of administrative documents in the digital environment	DC3					
<b>III</b>	<b>Digital government</b>	<b>DGO</b>					

7	The government model is designed and operated on a digital platform, operating securely in the digital environment	DGO1				
8	Government operations are transparent, data is fully and accurately digitized, and public services are provided online	DGO2				
9	Civil servants and citizens can easily access digital data and perform transactions and professional tasks in the digital environment	DGO3				

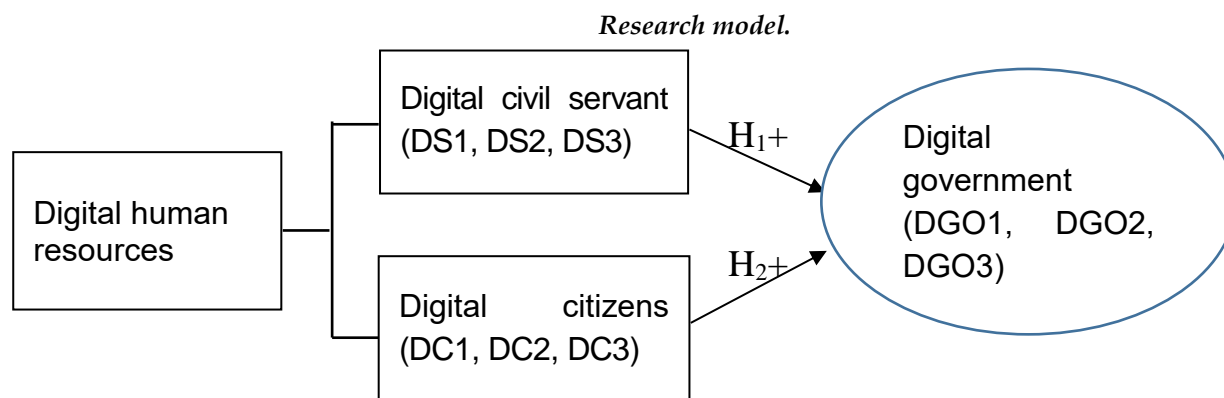


Figure 1: Research model

**3. RESEARCH METHODS**

- Qualitative research method: The author used a qualitative research method through the collection and analysis of secondary data to build a theoretical framework and model. The theoretical framework and model include two scales/independent variables “Digital civil servant” (DS), “Digital citizens” (DC) and one scale/independent variable “Digital government” (DGO) (Table 1, Figure 1).
- Quantitative research method: The author uses a quantitative research method through surveys to collect and analyze primary data and draw empirical conclusions about the practical development of digital government, digital civil servant, and digital citizens in Vietnam.

In quantitative research, according to Hair, J.F. et al. (2009), the minimum sample size required for exploratory factor analysis and regression analysis is  $N = 5 \cdot m$  ( $m$  is the total number of observed variables). In this study, the minimum sample size

required is  $N = 9 \cdot 5 = 45$ . In practice, the author surveyed local leaders at the commune level in three provinces across three regions of Vietnam: Thai Nguyen province (Northern), Dak Lak province (Central), and Tay Ninh province (Southern). The survey was conducted with the consent of the respondents; the results showed 210/210 valid responses, achieving a 100% response rate.

**4. RESEARCH RESULTS AND DISCUSSION**

First, the author tested the reliability of the scales and observed variables in the research model to serve as a basis for conducting further analyses. In quantitative research, scales and observed variables are considered reliable when they meet the standard conditions: Cronbach's alpha  $> 0.6$ ; Corrected Item-Total Correlation  $> 0.3$  (Hair, J.F. et al., 2009). The test results with the survey dataset of  $N = 210$  local leaders at the commune level showed that all 3 scales and 9 observed variables were reliable when they met the standard conditions of Hair, J.F. et al. (2009), as shown in Table 2 below.

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 civil servant (DS)	DS1	210	1	5	4.21	.701	.783	DS1 = .542
	DS2	210	1	5	4.16	.705		DS2 = .564
	DS3	210	1	5	4.11	.668		DS3 = .533
2. Digital citizens (DC)	DC1	210	1	5	4.02	.695	.722	DC1 = .529
	DC2	210	1	5	4.04	.684		DC2 = .498
	DC3	210	1	5	3.98	.702		DC3 = .511
3. Digital government (DGO)	DGO1	210	1	5	4.11	.678	.778	DGO1 = .521
	DGO2	210	1	5	4.14	.704		DGO2 = .543
	DGO3	210	1	5	4.10	.695		DGO3 = .489
Valid N (listwise)		210						

*Source: Author's survey results*

Statistical data in Table 2 shows that the observations of the scales "Digital civil servant" (DS), "Digital citizens" (DC), and "Digital government" (DGO) were all rated at a mean of Mean  $\geq 3.98$  and Mean  $\leq 4.21$ , which are statistically significant according to the Likert scale (1-5). This indicates that the evaluation opinions are concentrated, contributing to the confirmation that the scales and observed variables in the theoretical model are suitable for empirical research - good structural validity. The survey results help to demonstrate that:

- Firstly, the digital government in Vietnam is built and operates transparently and securely in a digital environment; data is fully and accurately digitized, and public services are delivered online.

- Secondly, digital human resources are a component that develops alongside the development of digital government. Civil servants and citizens are trained to develop their digital capabilities; they can easily access digital data and conduct transactions and professional tasks in the digital environment.

However, the observed variables of the "Digital citizens" (DC) scale were rated at the lowest average values: Mean (DC1) = 4.02, Mean (DC2) = 4.04, Mean (DC3) = 3.98. This also contributes to showing that, although citizens have been provided with basic digital knowledge and skills to participate in digital social activities and achieve national digital transformation goals, many citizens still do not effectively participate in policy processes in the digital environment; they are not yet proficient in conducting transactions/requesting the resolution of administrative documents in the digital environment.

This reality directly impacts the effectiveness of state governance and the goal of building a digital government. Because citizens are the main actors participating in local government governance in the digital environment; and when citizens possess basic digital knowledge and skills, they can access digital information sources and conduct social transactions on digital platforms. This allows for smoother governance and development of society, and the national digital transformation will achieve its goals. Therefore, solutions to develop citizens' digital capabilities are crucial so that they become active participants in achieving digital transformation and developing a digital government.

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.		.738
Bartlett's Test of Sphericity	Approx. Chi-Square	4194.299
	df	36
	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	3.467	38.522	38.522	3.467	38.522	38.522	3.156	35.063	35.063
2	3.044	33.818	72.341	3.044	33.818	72.341	2.953	32.806	67.869
3	1.101	12.235	84.575	1.101	12.235	84.575	1.504	16.706	84.575
4	.498	5.531	90.106						
5	.455	5.051	95.158						
6	.152	1.684	96.841						
7	.130	1.447	98.289						
8	.095	1.055	99.343						
9	.059	.657	100.000						

Extraction Method: Principal Component Analysis.

*Source: Author's survey results.*

**Table 4. Rotated Component Matrix**

Rotated Component Matrix <sup>a</sup>				
Scales	Observed variables	Component		
		1	2	3
1. Digital civil servant (DS)	DS1	.792		
	DS2	.713		
	DS3	.752		
2. Digital citizens (DC)	DC1		.744	
	DC2		.752	
	DC3		.772	
3. Digital government (DGO)	DGO1			.849
	DGO2			.784
	DGO3			.721

Extraction Method: Principal Component Analysis.  
 Rotation Method: Varimax with Kaiser Normalization.  
 a. Rotation converged in 5 iterations.

**5. EXTRACTION METHOD: PRINCIPAL COMPONENT ANALYSIS.**

**5.1. Rotation Method: Varimax with Kaiser Normalization.**

a. Rotation converged in 5 iterations.

Source: Author’s survey results

Survey data shows:  $KMO = 0.738 > 0.5$ , 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 variables are linearly correlated with the representative factor; Total Variance Explained with Cumulative % =  $84.575 > 50\%$ , showing that 84.575% of the variation of 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 stopped at 3 factors with Eigenvalues  $> 1$  (Table 3), indicating that the observed variables were extracted into 3 factors corresponding to the 3 initial factors. Thus, the original research model was retained, consisting of 2 scales/independent variables “Digital civil servant” (DS), “Digital citizens” (DC) and 1 scale/independent variable “Digital government” (DGO) with a total of 9 observed variables that are statistically significant and can be further analyzed. The author conducted correlation analysis to examine the relationship between the scales in the model. The results of the correlation analysis are shown in Table 5, which forms the basis for the author's research conclusions.

**Table 5. Correlation analysis results of the scales.**

Correlations				
		DS	DC	DGO
Digital civil servant (DS)	Pearson Correlation	1	.166	.431**
	Sig. (2-tailed)		.000	.000
	N	210	210	210
Digital citizens (DC)	Pearson Correlation	.166	1	.371**
	Sig. (2-tailed)	.000		.000
	N	210	210	210
Digital government (DGO)	Pearson Correlation	.431**	.371**	1
	Sig. (2-tailed)	.000	.000	
	N	210	210	210

\*\*. Correlation is significant at the 0.01 level (2-tailed).

Source: Author’s survey results.

Table 5 data shows:

+ The correlation coefficients of the scales reached

a value of  $0 < r < 1$ , indicating a positive correlation between the two independent scales/variables “Digital civil servant” (DS), “Digital citizens” (DC) and the one dependent scale/variable “Digital government” (DGO); hypotheses H1 and H2 are accepted; the theoretical framework and the initial theoretical model are confirmed to be suitable for the survey dataset.

+ Based on the  $r$  values [ $r$  (DS) = .431 and  $r$  (DC) = .371], it can be concluded that the correlation between the independent and dependent variables, in decreasing order, is: “Digital civil servant” (DS), “Digital citizens” (DC).

Based on the above analysis and verification results, the author concludes the following empirical research findings on digital government in Vietnam:

1. Digital government in Vietnam is built and operates transparently and securely in a digital environment; data is fully and accurately digitized, and public services are delivered online. Digital human resources are a component that has developed alongside the development of digital government.
2. Civil servants and citizens are being trained to develop their digital capabilities; they can easily access digital data and conduct transactions and professional tasks in the digital environment. However, many citizens still do not effectively participate in policy processes in the digital environment; they are not yet proficient in conducting transactions/requesting the resolution of administrative documents in the digital environment. Therefore, solutions to develop

digital capabilities for citizens are urgently needed so that they become active participants in achieving the goals of digital transformation and developing digital government.

Based on the conclusions of this study, the author discusses solutions aimed at developing digital human resources to meet the goals of digital government in Vietnam. Accordingly, Vietnamese localities, in addition to communicating about digital transformation and the development of digital government, need to diversify the training of digital knowledge and skills for citizens to develop digital citizens and achieve the goal of developing a digital workforce. Training methods can be diversified through models such as: Organizing concentrated classes in residential communities to guide citizens on online public service applications in specific fields; Building community-based digital technology groups to proactively train citizens in digital knowledge and skills.

In fact, citizens are the main actors participating in the state governance process at the local level in the digital environment. When citizens have basic digital knowledge and skills, they can access digital information sources and conduct social transactions on digital platforms. This allows for smoother social development and governance on digital platforms, and the national digital transformation will achieve its goals. Therefore, diversifying the training of digital knowledge and skills for citizens to develop digital citizens and achieve the goal of developing digital human resources to meet the objectives of digital government is a feasible solution.

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