

# IDENTIFYING FACTORS AFFECTING DIGITAL TRANSFORMATION IN VIETNAM

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## **Abstract**

*The entire world is now witnessing the Fourth Industrial Revolution and Artificial Intelligence (AI) is indeed altering the lives of the many in both developing and developed countries. Massive digital transformations are affecting the economies of those countries and are bringing with them many promised merits, as well as many challenges to face. This paper aims to focus on analyzing, identifying and measuring the factors affecting digital transformation in Vietnam. Research results show that there are five factors: policy system, leader's vision, network security, sustainable development of the economy and digital knowledge and skills. From there, the article recommends policy implications for state management agencies and other organizations that can help digital transformation in Vietnam will be more effective.*

**Keywords:** *factor, affect, digital transformation, Viet Nam.*

## **1. Introduction**

According to the report "Southeast Asia Digital Economy 2019", Vietnam's digital economy in 2019 was worth 12 billion USD (contributing 5% of national GDP in 2019), 4 times higher than the value of 2015. and is expected to reach 43 billion USD by 2025.

The digital shifts underway are reshaping economies and societies today and will continue to do so in the future. The ongoing digitalisation of the economy and society holds many promises to spur innovation, generate efficiencies, and improve services throughout the economy. Moreover, the successful transition to a digital economy is a necessary condition for boosting more inclusive and sustainable growth and enhancing overall well-being.

This paper seeks to study the factors affecting digital transformation for some countries. The paper is interested in examining the impacts of digital transformation upon the sample of some countries and accordingly come up with relevant and interesting implication for those countries.

Hence, the paper aims to add to the existing literature regarding some factors affecting digital transformation in the world. The implications of those factors are of

significant importance to policy makers regarding how much support should be given to encourage the digital transformation and the promotion of artificial intelligence.

There are many different definitions of digital transformation that shown in the table:

**Table 1. Definitions of the term “digital transformation”**

Source	Definition
European Commission (2019)	“Digital transformation is characterized by a fusion of advanced technologies and the integration of physical and digital systems, the predominance of innovative business models and new processes, and the creation of smart products and services.”
OECD (2018)	“Digital transformation refers to the economic and societal effects of digitization and digitalization. Digitization is the conversion of analog data and processes into a machine-readable format. Digitalization is the use of digital technologies and data as well as their interconnection which results in new or changes to existing activities.”
Ismail, Khater, and Zaki (2017)	[Digital transformation is a] “process through which companies converge multiple new digital technologies, enhanced with ubiquitous connectivity, with the intention of reaching superior performance and sustained competitive advantage, by transforming multiple business dimensions, including the <i>business model</i> , the <i>customer experience</i> (comprising digitally enabled products and services) and <i>operations</i> (comprising processes and decision-making), and simultaneously impacting <i>people</i> (including skills talent and culture) and <i>networks</i> (including the entire value system).”
Schwertner (2017)	“the application of technology to build new business models, processes, software and systems that result in more profitable revenue, greater competitive advantage, and higher efficiency.”
Deloitte (2018)	“Digital transformation is the use of technology to radically improve the performance or reach of an organization. In a digitally transformed business, digital technologies enable improved processes, engaged talent, and new business models.”
Bloomberg (2018)	“Digital transformation requires the organization to deal better with change overall, essentially making change a core competency as the enterprise becomes customer-driven end-to-end. Such agility will facilitate ongoing digitalization initiatives but should not be confused with them.”

(Source: authors’ compilation)

There are many kinds of digital transformation frameworks and these common patterns in most frameworks:

- Digitized business model
- Talent enhancement within the enterprise
- Customer-centric products and services
- Innovative culture
- Collaborative leadership

## **2. Literature Review**

Pervasive and ubiquitous digitalization has brought new disruptive changes to the economy (Yoo, 2013), and environmental conditions are undergoing rapid change due to digital technology and digitalization (Hartl and Hess, 2017; Porter and Heppelmann, 2014). Digital technology, digital innovation, and digitalization are fundamentally altering business processes, products, services, and relationships (Karimi and Walter, 2015), and organizations need to fundamentally change the way they do business and employees' mindset, as well as restructure to survive (Hartl and Hess, 2017)

United State history shows that the state did not only facilitate the digital knowledge economy but also actively created it with a bold vision, enabling policies and targeted investments. For example, an in-depth examination of all the key technologies that make iPhone so smart were government funded: Internet, GPS, touch screen display, and SIRI voice-activated personal assistant (Mazzucato, 2013, chapter 5).

Organizations must have an e-leadership model in place to promote successful strategic change related to digital transformation and provide a level of much-needed stability during the change process (Li, Liu, Belitski, Ghobadian, & O'Regan, 2016). Any digital transformation requires a strategic model which will lead to a successful implementation and improved outcomes once the change is complete (Berman, 2012).

In the research Identifying Security Risks of Digital Transformation - An Engineering Perspective of Nguyen Anh Duc and Aparna Chirumamilla (2018) showed that the role of security in digital transformation, included mobile security, cloud storage security, securing big data and securing internet of things.

Early neoclassical models like Solow (1956) treated technical change as an exogenous variable, illustrating how long-run economic growth only depended on (exogenous) technical change. Arrow (1962), who endogenized technology by assuming learning by doing, stated that it grew at a constant rate, and found that long-run economic growth crucially depends on population growth. Other important contributions in the 1960s were made by Uzawa (1965), Phelps (1966), Conlisk (1967, 1969) and Shell (1967) among

others, who all related technology growth to some specification based on labour resources devoted to the development of new technologies and ideas

In the research Digital Knowledge and skills of Natalija Kokolek, Bozidar Jakovic & Tamara Curlin (2015) showed that Digital transformation as a driver of positive and radical changes represents a complex issue which affects all segments of the society and the whole economy. Digital knowledge and skills implies the ability to operate in the digital economy on a professional and personal level. It means having in-depth understanding of the environment and the nature, role and opportunities generated by the digital environment in any aspect of your life.

### 3. Method

#### 3.1. Model building and developing hypothesis research

Based on previous studies, the article proposes hypotheses affecting digital transformation in Vietnam: state policies, leader's vision, network security, the sustainable development of the economy and digital knowledge and skills.

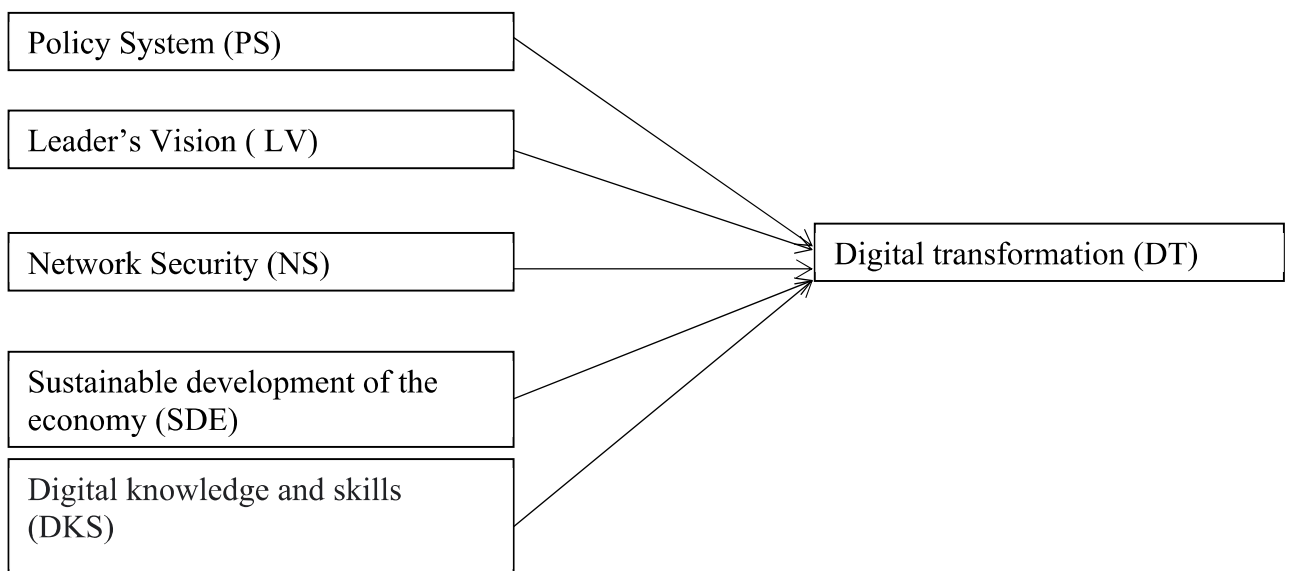
**H1:** A complete and clear policies and laws of the state will benefit digital transformation.

**H2:** The good national leader's vision will have a positive influence to digital transformation.

**H3:** The network security will ensure for digital transformation.

**H4:** The sustainable development of the economy will support digital transformation.

**H5:** Digital knowledge and skills will advantage digital transformation.



### **3.2. Variables and measures**

Through qualitative research results, the author has built some of scale. Likert's scale with 5 levels (1 to 5) is suitable for measuring research.

#### **- Build the scale and describe the independent variable**

Policy system: the scale of this variable inherits from the study of Mazzucato (2013). The author has adjusted and added some of scales, the results have 5 observed variables.

Leader's Vision: the scale of this variable inherits from the study of Li, Liu, Belitski, Ghobadian, & O'Regan (2016). The author has adjusted and added some of scales, the results have 5 observed variables.

Network Security: the scale of this variable inherits from the study of Nguyen Anh Duc and Aparna Chirumamilla (2018). The author has adjusted and added some of scales, the results have 4 observed variables.

Sustainable development of the economy: the scale of this variable inherits from the study of Conlisk (1967, 1969). The author has adjusted and added some of scales, the results have 4 observed variables.

Digital knowledge and skills: the scale of this variable inherits from the study of Natalija Kokolek, Bozidar Jakovic & Tamara Curlin (2015). The author has adjusted and added some of scales, the results have 5 observed variables.

Build the scale and describe the dependent variable: Digital transformation (DT). The dependent variable in the research model is self-built by the author, based on collecting expert opinions from the case study method and background theory.

### **3.3. Data collection method**

- Respondents: Professionals, leaders working in different organizations
- Survey method: The survey form for this research is surveyed in two ways: The questionnaires are sent directly to the respondents and collected after the survey is completed; Email individuals that match the sample selection criteria.

### **3.4. Primary data collection**

In a total of 378 responses, there are:

- 211 experts, employees and 167 administrators of different organizations;
- 198 males (52,4%) and 180 females (47,6%)

## **4. Results**

### **4.1. The results of reliability and variables**

By using SPSS 20.0 software to analyse data and obtained the results of the synthesis

of Cronbach Alpha coefficient as well as the correlation coefficient of the total variable, the reliability test of the independent variables all showed that the coefficients are large. more than 0.6 and all observed variables for the variables in the model, including the independent and dependent variables, have a reliable variable correlation coefficient. In addition, when analyzing the combined reliability and extracted variance, the combined reliability coefficients are all greater than 0.7 and the variance extracted for the factors is all greater than 0.5. Thus, it is possible to confirm the necessary reliability of the scales.

**Table 2. Summary of Cronbach's alpha coefficient results**

<b>Independent Variables</b>	<b>Cronbach's coefficient Alpha</b>
Policy System (PS)	0,861
Leader's Vision ( LV)	0,874
Network Security (NS)	0,789
Sustainable development of the economy (SDE)	0,801
Digital knowledge and skills (DKS)	0,842
<i>Dependence variable DT</i>	0,882

*(Source: authors' compilation)*

#### **4.2. Exploratory factor analysis results**

**Table 3. KMO and Bartlett's Test**

<b>KMO and Bartlett's Test</b>		
Kaiser- Meyer-Olkin Measure of Sampling Adequacy		0,952
Bartlett's Test of Sphericity	Approx. Chi-Square	2863.393
	Df	213
	Sig.	.000

*(Source: authors' compilation)*

The results in Table 2 show that the KMO index of 0.952 is very close to 1.0, showing that the factor analysis is appropriate and the significance level is sig. if .000 is less than 0.05, it is statistically significant.

#### **4.3. Linear regression analysis results**

##### Correlation coefficient test (*r*)

**Table 4. correlation matrix**

		PL	LV	NS	SDE	DKS	DT
<b>PL</b>	Pearson Correlation	1	.359**	.377**	.428**	.407**	.567**
	Sig. (2- tailed)		.000	.000	.000	.000	.000
	N		228	228	228	228	228
<b>LV</b>	Pearson Correlation		1	.164*	.119	.298**	.447**
	Sig. (2- tailed)			.013	.074	.000	.000
	N			228	228	228	228
<b>NS</b>	Pearson Correlation			1	.295**	.175**	.406**
	Sig. (2- tailed)				.000	.008	.000
	N				228	228	228
<b>SDE</b>	Pearson Correlation				1	.429**	.455**
	Sig. (2- tailed)					.000	.000
	N					228	228
<b>DKS</b>	Pearson Correlation					1	.462**
	Sig. (2- tailed)						.000
	N						228
<b>DT</b>	Pearson Correlation						1
	Sig. (2- tailed)						
	N						228

(Source: authors' compilation)

The correlation t matrix shows that the correlation coefficient between the "obstructing factor" and the variables is as follows: with the variable "Policy system" (Pearson = 0.567), the variable "Leader's vision" (Pearson = 0.447), variable "Network security" (Pearson = 0.406), variable " Sustainable development of the economy " (Pearson = 0.455), variable "Digital knowledge and skills" (Pearson = 0.462). Therefore, it can be concluded that the independent variables can be included in the model to explain the factors affecting university governance in the condition of educational autonomy including 5 independent variables

#### Regression analysis

The results of the linear regression test are shown in Table 4

**Table 5. Linear regression test results**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.705 <sup>a</sup>	.697	.686	.63049	2.013

a. Predictor: (Constant), PS, LV, NS, SDE, DKS

b. Dependent Variable: QTDH

Model	Unstandardize Coefficients		Standardize Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	-.895	.302		-2.967	.003		
PS	.370	.085	.243	4.369	.000	.644	1.752
LV	.284	.059	.232	4.871	.000	.833	1.501
NS	.225	.065	.185	3.489	.001	.834	1.099
SDE	.222	.067	.168	3.329	.001	.712	1.005
DKS	.196	.065	.199	3.026	.003	.724	1.382

(Source: authors' compilation)

The result shows that the adjusted R2 coefficient is 0.697. This means that the research model explains 69.7% of the variation of the dependent variable by the independent variables in the model. The VIF (Variance Inflation Factor) coefficients of the independent factors in the model are all low and less than 2.2 (from 1.005 to 1.752). This shows that there is no multicollinearity between the independent variables in the model (Nguyen Dinh Tho, 2011). Also the Sig coefficient. of the independent factor coefficients in the model are all less than 0.05. Therefore, all 5 factors affect the dependent variable.

The normalized regression model shows a simple linear relationship between the variables:

$$DT = 0,243*PS + 0,232*LV + 0,185* NS + 0,168* SDE + 0,199* DKS$$

The variable "Policy system" with Beta coefficient is 0.243 with high statistical significance >99.99% when the Sig index. reach 0.000; Similar variable "Leader's Vision" with Beta coefficient is 0.232 with statistical significance Sig. has a value of 0.000. Next are the variables "Network security" with Beta coefficient of 0.185 and Sig statistical significance. is 0.001, the variable "Sustainable development of the economy" with 2 values Beta and Sig. are 0.168 and 0.001 respectively. Finally, the variable "Digital Knowledge and skills" with a Beta value of 0.199 has a Sig statistical significance. is 0.003.

The results of this study show that the factor that has the strongest influence on university governance in the context of autonomous education is the policy-legal system. deciding on university governance, next is the organizational culture factor, the



organizational model in the university also greatly affects the university administration and finally the cognitive factor of the staff. management in changing management

## **5. Discussion and Conclusion**

### **5.1. Recommendations**

#### **- Policy System**

The range of these roles includes setting national policies and priorities for the digital economy; supporting research and development of promising technologies; regulating and complementing market forces to ensure affordable access to the Internet; investing in human and organizational complements and institutional learning across all sectors and divides; leading public services transformation and governance; and creating state capabilities and institutions to plan, fund, and implement national digital transformation strategies. We elaborate only on a few.

State policy roles in the digital age extend to various forms of content and media platforms. The media is increasingly central to the functioning of markets and democracy. State policy aims to regulate, increasingly in a multi-platform environment, obligations, roles, and responsibilities of media service and content providers while creating, aggregating, and making available audiovisual content. Similarly, the state must work with stakeholders to set policies and regulations for data protection. The aim is to regulate data subjects' rights and data controllers and processors' obligations while collecting, processing, and using personal data. It also regulates transfer of data across national boundaries and roles and responsibilities in data-processing value chains.

Governments are required to manage the growing risks of concentration, inequality, and control that can undermine the promised shared prosperity. When the Internet and digital platforms deliver scale economies, but without competitive environment, the outcome could be excessive concentration and monopolies. When tasks are fast and automated but workers' skills are not continuously upgraded, the outcome will be greater inequality. When digital technologies help overcome information scarcity, but governments remain unaccountable, the outcome will be greater control rather than citizen empowerment and inclusion.

Continue to implement strong digital transformation in Party Committees, National Assembly, Government, Viet Nam Fatherland Front and socio-political organizations to ensure unity, interconnection and synchronization.

The Ministry of Public Security needs to speed up the development of a decree on personal data protection.

Ministries and local authorities need to step up the settlement of administrative procedures in the electronic environment, concentrate resources, increase the rate of online public service delivery at level 3 and level 4 and integrate service provision. on the National Public Service Portal.

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- ***Leader's vision:***

Leader's vision is a key factor to support digital transformation. The government considers the digital economy to be an important development driver to bring Vietnam to fast progress, taking shortcuts in development. vision to 2030 Vietnam becomes a digital, stable and prosperous country, pioneering in testing new technologies and models. This program aims at the dual goal of developing a digital government, a digital economy, and a digital society, as well as forming Vietnamese digital technology enterprises capable of going global. Awareness of digital transformation in parallel with advanced countries.

- ***Network security:***

In order to ensure information security and contribute to the development of information technology, according to experts, in the coming time, it is necessary to drastically and synchronously implement many solutions. State management agencies need to raise awareness about ensuring information security, this is an important and regular task of the entire Party and community.

Enhancing education, fostering and raising awareness of officials and people; focus on propagating and disseminating to students about the risks and threatening factors that cause information insecurity. So that, raising the awareness of using information services, especially from abroad; improve the ability to recognize, receive information, self-defense ability, "immunity" against fake, bad and malicious information. Beside, the state will invest to modern infrastructure, bandwidth is wide enough to overcome attacks causing network congestion, and have a backup storage system. Regularly review, detect and fix security "holes" throughout the system, add specialized equipment and software capable of checking and controlling information security and safety in the telecommunications network environment. communication, internet, radio frequency...

The establishment of a cyber safety monitoring center will be a solid stepping stone for Vietnam to master network safety equipment, aiming to ensure a safe cyberspace. At the same time, effectively respond to various types of cyber attacks, avoid exposing and leaking information of users, financial institutions - banks, enterprises...

- ***Sustainable development of the economy***

It is necessary to transform the growth model from breadth to depth, clarify issues of economic theory in order to clearly explain and give specific instructions for the economic management process. Apply forms of GDP measurement through full calculation of benefits, costs, development of clean energy, renewable energy. Develop and implement a green growth strategy. Use energy economically and efficiently, develop clean energy, renewable energy to ensure national energy security.

Sustainable development of regions and localities should focus on prioritizing development before key economic regions, and at the same time pay attention to less developed areas and have more difficult conditions in order to create balanced development.

Improve growth quality, ensure macroeconomic stability, especially financial and monetary policies.

Establish a healthy and fair competitive business investment environment, select good factors for the economy with investors, do business effectively, fire weak business organizations.

#### **- *Digital Knowledge and skills***

To be successful in digital transformation, state management agencies have policy system to support citizens in learning and developing skills to meet the requirements of national digital transformation. Accordingly, the state needs to widely propagate digital transformation knowledge to the people as well as develop projects to support organizations in developing digital skills for employees. In addition, the Ministry of Education and Training directs all levels of training to change training programs to suit digital transformation. Education implements the transcoding of thinking from instinct to meaning of development. "Learning to change the world, learning to write for hope" - these are also interesting and scientific suggestions from the above studies that become the premise to build a framework for transferring skills - from school level Preschool is social emotional learning, higher education includes critical thinking skills, creativity, communication. Transfer skills change, including computational thinking, is not to encourage students to become "robots" but to learn, a way of thinking that connects background skills with the ability to find problems, analyze problems and solve that problem in accordance with life: helping high school students prepare to connect learning with practice, between academic knowledge in school and the reality and requirements of the digital era that sometimes at times currently unknown.

#### **5.2. Conclusion**

Digital transformation has been developing strongly in Vietnam. For successful digital transformation, the state needs to have synchronous policies and solutions. In addition, the government needs to realize the long-term vision of digital transformation activities affecting the country, creating a healthy, solid and safe security environment. Furthermore, there must be some solutions for sustainable economic development and equipping citizens with knowledge and skills to be able to adapt to the digital environment

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