

Assess the Effect of Factors on the Digital Transformation Decision of Businesses in Vietnam

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Abstract

The study examines the factors affecting the digital transformation decision of enterprises in Vietnam. Based on behavioral theoretical models and empirical studies on digital transformation, the research team collects and analyses data using SMARTPLS software. The research results have shown five positive factors and one negative impact on the intention of enterprises to convert digitally in Vietnam. In addition, the research team conducts an additional assessment of the influence level of the factors through statistics that describe the average value of the elements. The outcome of the analysis and evaluation is the foundation for proposing solutions to promote businesses in Vietnam to implement digital transformation.

Keywords: digital transformation, influence level, digital transformation decision, enterprises, Vietnam

1. Overview and research model

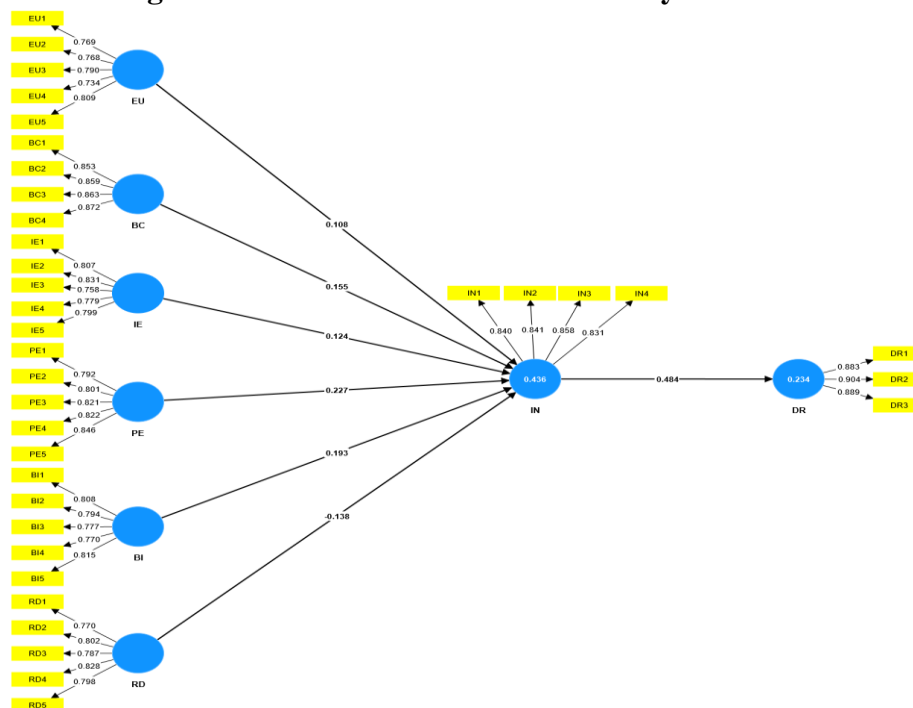
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In this study, digital transformation is understood as the acceptance and utilization of technology and the application of the model developed by Viswanath Venkatesh, Michael G. Morris, Gordon B. Davis, and Fred D. Davis (2003) based on eight component models/theories from the perspective of the research group will aid in identifying comprehensive factors. This will provide a foundational model and scale for reference. The component models/theories include Theory of Reasoned Action (TRA - Fishbein & Ajzen, 1975), Theory of Planned Behavior (TPB - Ajzen, 1991), Technology Acceptance Model (TAM - Davis, 1989), Motivational Model (MM - Davis, Bagozzi & Warshaw, 1992), Combined TAM and TPB Model (C - TAM - TPB - Taylor & Todd, 1995), Personal Computer Usage Model (MPCU - Thompson, Higgins & Howell, 1991), Innovation Diffusion Theory (IDT - Moore & Benbasat, 1991), and Social Cognitive Theory (SCT - Compeau & Higgins, 1995). Furthermore, digital transformation also carries inherent risks that businesses must confront. Some studies have indicated risks in technology adoption, such as Chen & Lu (2002), Pikkarainen (2004), Tan, M., and Teo (2000)... In conjunction with examining empirical studies by Hung, T.X (2020); Quyet, N.D (2021); Quyet, C.B (2021); Huong, N.T.M, Sen, B.T (2021); Anh, N.T.K (2022); Thao, N.K, Minh, L.T.H (2022); Phuong, N.N.D, Truong, H.V (2022); Chi, D.M (2022); Anh, K.T, Anh, N.T.P, Hang, T.T.M, Ly, C.N.L (2022), the research group investigates the influence of six factors: (i)

Perceived ease of use; (ii) Perceived behavioral control; (iii) Social influence; (iv) Expected effectiveness; (v) Facilitating conditions; (vi) Risks in digital transformation, on the digital transformation intention and decision of businesses in Vietnam. With 37 observed variables requiring factor analysis, the minimum sample size is $37 \times 5 = 185$ observations. From the perspective of ensuring measurement stability, a larger sample size is preferred. The research group selected a sample size of $n > 400$ based on sampling feasibility. To ensure the study's sample size, the research group distributed 460 survey questionnaires and received 455 completed surveys, of which 451 valid responses were included in the analysis. By conducting tests and analysis using SmartPLS software, the results indicate five positively influencing factors and one negatively impacting aspect of the digital transformation intention of businesses in Vietnam. The positively influencing factors include the “Perceived Ease of Use (EU)” with a coefficient of 0.108; “Perceived Behavioral Control (BC)” with a coefficient of 0.155; “Social Influence (IE)” with a coefficient of 0.124; “Perceived Effectiveness (PE)” with a coefficient of 0.227; and “Facilitating Conditions (BI)” with a coefficient of 0.193. The negatively influencing factor is “Risks in Digital Transformation (RD)”, with a coefficient of -0.138. The characteristic “Digital Transformation Intention” has a coefficient of 0.484 towards the factor “Digital Transformation Decision”.

Figure 1. Linear Structural Model Analysis Results



Source: Smart PLS validation results from the research group

To complement the validation results and propose solutions for promoting digital transformation within businesses in Vietnam, considering the influencing factors on a Likert 5-point scale, the research group conducted an additional assessment of the impact of these factors through descriptive statistics of the mean values of each element as well as the mean values of each scale within the aspect.

The range value is calculated as follows: $\text{Range} = (\text{Maximum} - \text{Minimum}) / n = (5-1)/5 = 0.8$

The calculated average values of the factors fall within the following ranges:

- 1.00 - 1.80: Strongly Disagree.
- 1.81 - 2.60: Disagree.
- 2.61 - 3.40: Neutral.
- 3.41 - 4.20: Agree.
- 4.21 - 5.00: Strongly Agree

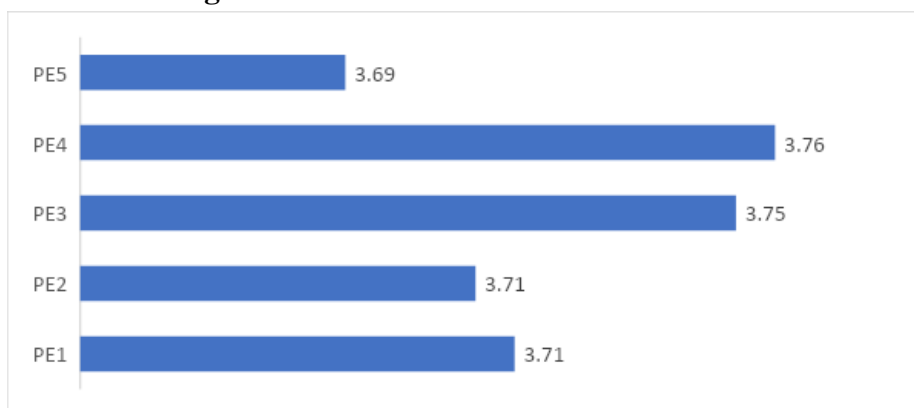
The factors are considered based on the results of quantitative analysis, starting from the element with the most decisive impact to the one with the weakest impact (based on the absolute value of the impact

coefficient). The results of the evaluation analysis serve as the basis for proposing solutions to promote digital transformation among businesses in Vietnam.

2. Evaluating the impact of factors on the digital transformation decision of businesses in Vietnam

The factor “Perceived Effectiveness” with a linear structural model impact coefficient of 0.227 indicates that an increase of 1 unit in perceived effectiveness will lead to an increase of 0.227 units in the digital transformation intention of the business. The mean value of this factor is 3.724. Among the observed variables, “Digital transformation will help save costs, time, and effort” (PE1) scores 3.71; “Digital transformation will increase productivity and work quality” (PE2) scores 3.71; “Digital transformation facilitates quick information processing and connectivity” (PE3) scores 3.75; “Enhances business competitiveness” (PE4) achieves 3.76; and “Overall, digital transformation is useful and convenient” (PE5) scores 3.69. All scales fall within the range of respondents agreeing that expected benefits from digital transformation will encourage its implementation within businesses. Therefore, communication and training are essential to help enterprises perceive the benefits and receive support in applying digital transformation.

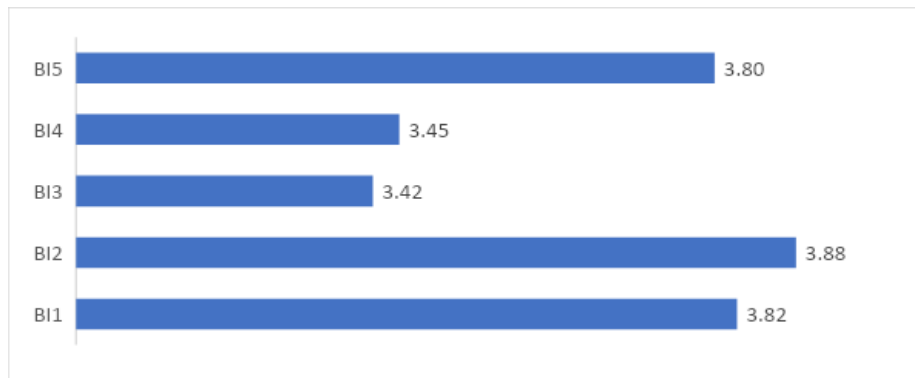
Figure 2. Factor "Perceived Effectiveness"



Source: Survey results from the research group

The factor “Facilitating Conditions” with a linear structural model impact coefficient of 0.193 indicates that when facilitating conditions increase by 1 unit, it will lead to an increase of 0.193 units in the digital transformation intention of the business. The mean value of this factor is 3.674, making it the second-strongest influencing factor according to the quantitative analysis results for the “Digital Transformation Intention”. Among the observed variables, “Availability of IT platforms for business selection” (BI1) scores 3.82; “Good IT infrastructure” (BI2) scores 3.88; “Business receives support from governmental agencies for digital transformation” (BI3) scores 3.42; “Increasing online shopping on e-commerce platforms” (BI4) scores 3.45; “Easy software application updates” (BI5) scores 3.80. All observed variables reach values indicating agreement with the notion that these are favorable conditions for digital transformation within businesses in Vietnam. Therefore, there is a need for solutions that leverage these facilitating conditions to promote the digital transformation process within firms.

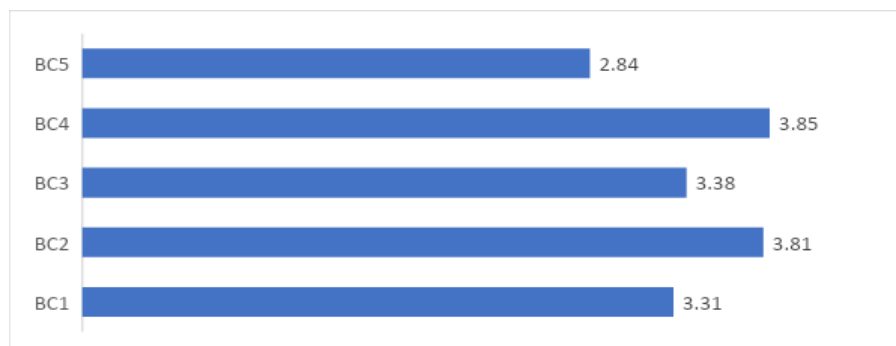
Figure 3. Factor “Facilitating Conditions”



Source: Survey results from the research group

The factor “Perceived Behavioral Control” with a linear structural model impact coefficient of 0.155 indicates that when perceived behavioral control increases by 1 unit, it will lead to an increase of 0.155 units in the digital transformation intention of the business. Therefore, according to the quantitative analysis results, this factor is the third-strongest influencing factor on the “Digital Transformation Intention”. Among the observed variables, “Business is ready with necessary resources for digital transformation” (BC1) scores 3.31; “Business is equipped with necessary knowledge for digital transformation” (BC2) scores 3.81; “Business has the capability for digital transformation” (BC3) achieves 3.38; “Digital transformation is part of the business strategy” (BC4) scores 3.85; “Business is prepared for continuous technological changes” (BC5) scores 2.84 (Note: BC5 was excluded from the model due to having outer loadings <0.7). Across the remaining four scales from BC1 to BC4, the mean scores all fall within the range of respondents agreeing with these statements. This demonstrates that businesses have developed a mindset that recognizes the benefits and shows determination in implementing digital transformation.

Figure 4. Factor "Perceived Behavioral Control"

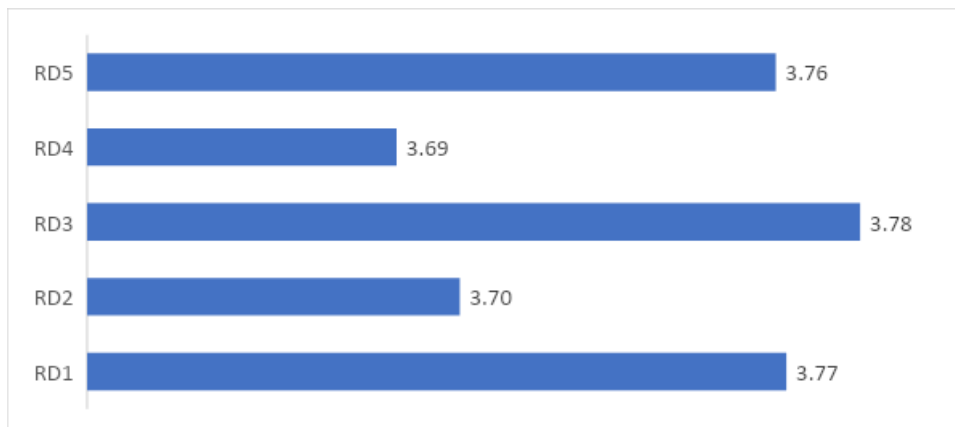


Source: Survey results from the research group

The factor "Risks in Digital Transformation" with a linear structural model impact coefficient of -0.138 indicates that when risks in digital transformation increase by 1 unit, it will decrease the digital transformation intention of the business by 0.138 units. The mean value of the "Risks in Digital Transformation" factor is 3.74. According to the quantitative analysis results, this is the only factor negatively influencing the "Digital Transformation Intention". Among the observed variables, "Digital transformation requires users to be tech-savvy" (RD1) scores 3.77; "Digital transformation may divert investment opportunities" (RD2) scores 3.70; "Digital transformation increases short-term operational costs for businesses" (RD3) scores 3.78; "Digital transformation can lead to the exposure of personal information of suppliers, customers, and businesses" (RD4) scores 3.69; "Digital transformation reduces the cohesion

between departments within businesses" scores 3.76. All observed variables have mean values within the agreement range. This indicates that the risk issues mentioned in the survey have received agreement, and the risk factor negatively impacts the intention and decision to implement a digital transformation, as hypothesized. Therefore, companies should take measures to mitigate risks and promote the implementation of digital transformation within businesses.

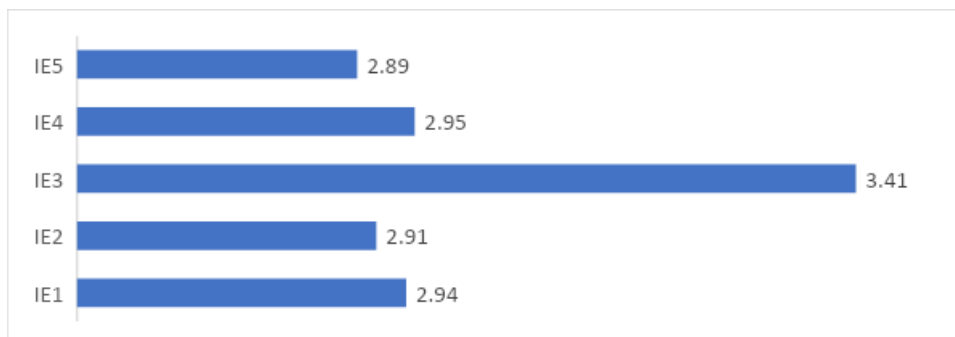
Figure 5. Factor “Risks in Digital Transformation”



Source: Survey results from the research group

The factor “Social Influence” with a linear structural model impact coefficient of 0.124 indicates that when social influence increases by 1 unit, it will increase the digital transformation intention of the business by 0.124 units. The mean value of this factor is 3.02, making it the fifth-strongest influencing factor according to the quantitative analysis results. Among the observed variables, “Digital transformation is an inevitable trend in the current context” (IE1) scores 2.94; “Digital transformation is to be compatible with supplier systems” (IE2) scores 2.91; “Digital transformation is to meet the needs and usage habits of customers” (IE3) scores 3.41; “Digital transformation is due to competitive rivals also implementing it” (IE4) scores 2.95; “Digital transformation meets the requirements of government regulatory agencies” (IE5) scores 2.89. Except for the IE3 variable, which falls within the agreement range, the remaining four variables have mean values in the neutral range. This indicates that “Social Influence” does not impact the intention and decision to implement digital transformation among businesses in Vietnam. Therefore, there is a need for communication and training to help companies to understand the necessity, benefits, and readiness for digital transformation.

Figure 6. Factor “Social Influence”

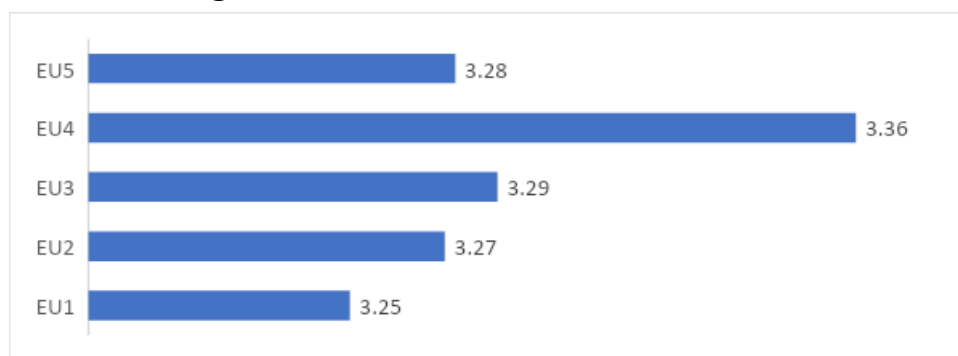


Source: Survey results from the research group

The factor “Perceived Ease of Use” with a linear structural model impact coefficient of 0.108 indicates that when perceived ease of use increases by 1 unit, it will increase the digital transformation intention of the business by 0.108 units. The mean value of this factor is 3.29, making it the aspect with the most negligible

influencing effect on the “Digital Transformation Intention” according to the quantitative analysis results. Among the observed variables, “Ease of learning to use modern digital technology products” (EU1) scores 3.25; “Simple and understandable digital transaction execution” (EU2) scores 3.27; “Able to use digital technology products proficiently” (EU3) scores 3.29; “Clear and understandable process of using digital technology products” (EU4) scores 3.36; “Easy control of operations when using digital technology products” (EU5) scores 3.28. All five observed variables have mean values within the neutral range. This indicates that in terms of usage, learning, execution, and control of digital technology products, businesses find it difficult, and they still need to fully develop trust in the ability to apply and control technology. Therefore, there is a need for training workshops and support in implementing modern technology to facilitate digital transformation within businesses.

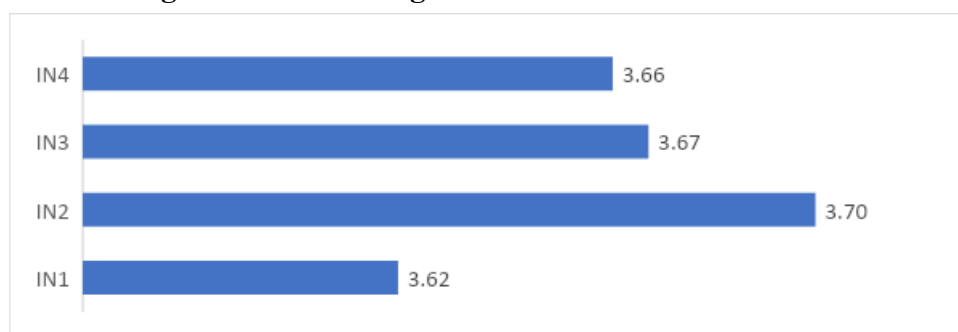
Figure 7: The factor “Perceived Ease of Use”



Source: Survey results from the research group

The average value of the “Digital Transformation Intention” factor is 3.66, with all observed variables achieving values at the agreement level. This demonstrates that the surveyed businesses unanimously agree with the following statements: Digital transformation is a good idea (IN1), scoring 3.62; Businesses intend to enhance resources for digital transformation (IN2), scoring 3.7; Businesses intend to invest more in digital transformation (IN3) scoring 3.67; and Businesses intend to undertake comprehensive digital transformation (IN4) scoring 3.66.

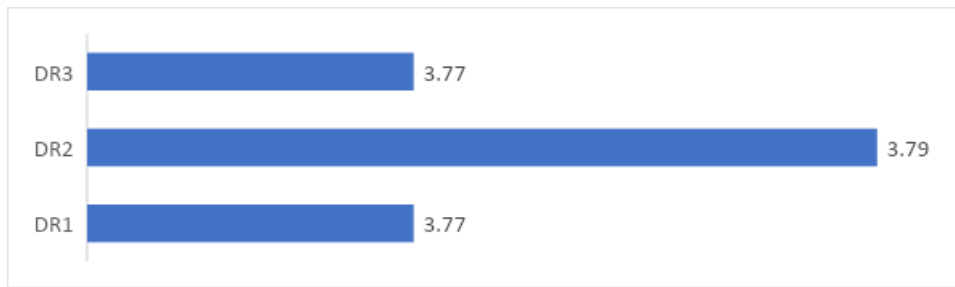
Figure 8. Factor “Digital Transformation Intention”



Source: Survey results from the research group

The average value of the “Digital Transformation Decision” factor is 3.78, where all scales achieve values at the agreement level. This demonstrates that the surveyed businesses all concur with the statements: Satisfied with digital transformation (DR1) at 3.77; Digital transformation is a reasonable decision (DR2) at 3.79; Digital transformation is a wise and intelligent decision (DR3) at 3.77.

The factor “Digital Transformation Decision”



Source: Survey results from the research group

The analysis of factors influencing digital transformation in businesses in Vietnam reveals that the surveyed subjects hold various agreements with the statements provided in the survey. However, there are also opinions expressing “Neutral” regarding certain statements the research group presents for consideration.

From the quantitative research results and a specific examination of the average scores of each observed variable within each factor surveyed, particular issues arise that need to be addressed to enhance the level of digital transformation in businesses. Within the scope of this article, the research group proposes several solutions to promote digital transformation in companies in Vietnam.

3. Solutions to Promote the Digital Transformation of Businesses in Vietnam

3.1. Solutions to Support SMEs in Digital Transformation from the Perspective of State Management Agencies

Impact on Awareness:

Enhance communication about the benefits of digital transformation to ensure that state management agencies, citizens, and businesses clearly understand the benefits and effectiveness of digital transformation. Actively engage and reap the benefits of digital transformation. Strengthen guidance and support for businesses using online public services, efficient digital utilities, and secure online transactions.

Assist businesses in recognizing the positive impact of digital transformation on business management and the effective implementation of digital transformation to enhance the competitive capacity of enterprises. Encourage organizations and individuals to invest, sponsor digital transformation, and accept digital products, solutions, services, and business models: Foster new management approaches, innovation, digital culture, cybersecurity, and personal data protection. Establish testbeds for technology-driven enterprises.

Policy Mechanism Enhancement:

Focus on refining mechanisms, policies, and effective National Digital Transformation Strategy implementation. Develop a synchronized approach to institutional framework, digital infrastructure, digital platforms, and human resources. Implement solutions to improve Vietnam's rankings in E-Government, Innovation, and Global Competitiveness according to international criteria.

Increase the proportion of online administrative procedures. Enhance the quality of online public services. Concentrate on implementing the Population Data, Identification, and E-authentication Application Development Project for national digital transformation during 2022-2025, with a vision towards 2030. Avoid compartmentalizing information and data to prevent loss of benefits and conflicts.

Infrastructure Investment:

Continue to invest in infrastructure, develop high-quality broadband infrastructure, expand national, regional, and international internet connectivity, and build Internet of Things (IoT) network infrastructure. Develop digital platforms such as the national e-identification and e-authentication system, electronic payment technology, cloud computing technology, and versatile digital media. Develop smart data and applications to serve digital transformation in enterprises.

Supportive Measures:

Implement training courses and programs on digital transformation for businesses; provide consultation and support for digital transformation. Organize workshops and conferences, and collaborate with government ministries, agencies, localities, associations, and relevant entities to support and promote enterprises.

Implement comprehensive development solutions to enhance the quality of digital human resources and foster innovation, scientific application, and technology use. Prioritize skill training that aligns with the market and meets the requirements of national digital transformation.

Support access to credit; Support tax and accounting; Support production facilities; Support technology and incubation facilities, co-working spaces; Support market expansion; Provide legal advisory information; Provide training for workforce development; Support business conversion to enterprises; Provide funding for digital signature authentication services and initiation, installation of electronic invoices...

3.2. Business-Side Solutions

Change in Perception:

Businesses need to understand digital transformation's benefits, values, and laws and overcome obstacles in strategy, organizational culture, and human resource development. This will lead to rapid changes, increased labor productivity, improved labor value, enhanced efficiency, and improved customer experience.

Businesses should expedite shifting production and business activities to a digital environment and establish effective digital service delivery channels, especially e-commerce and online payment systems. Strengthen investment in digital infrastructure, especially shared digital infrastructure; focus on research and development; enhance international cooperation in digital transformation. Ensure balanced benefits among the state, citizens, and businesses.

From Thinking to Action:

- **For Process Transformation:**

Digitize all business administrative processes. Businesses can design workflow diagrams, easily set permissions for individuals and departments, and manage personnel information to optimize waiting time, working time, and work performance. In addition to these benefits, this system brings convenience and ease of searching and retrieval when needed, minimizing errors and ensuring data security during processing.

- **Work Management:**

In the context of using numerous platforms for task assignments, which leads to missed, delayed, or overlooked tasks and missed deadlines, the task management system helps focus and centralize task management on a single platform. Additionally, it supports task assignment, supervision, and real-time reporting. This system also aids managers in setting up tasks systematically and applying modern digital processes, helping leaders manage work progress through four chart forms: kanban, tables, Gantt charts, and calendars.

- **Document Management:**

Documents are centrally managed in a single system, facilitating retrieval, search, and utilization while ensuring document security and business confidentiality. On average, businesses lose 30% of total losses annually due to manual document storage, including theft, damage, printing costs, and storage costs, not to mention the physical space taken up by manual document storage. Therefore, to optimize company management, this system helps make document retrieval more of a nightmare for employees when faced with a pile of books and papers.

Document management can also help employees report and provide detailed statistics on individual work and department participation and evaluate the quality of work, promoting transparency and objective employee assessment based on accurate data rather than subjective emotion. Work management is like a second office, encompassing all business activities.

- **Training Activities:**

Transform thinking through training activities, build digital human resources through various forms of training such as on-site training, online training (e-learning-school), and e-coaching training. When deciding on a technology system, whether hardware or software, or adopting a new model after consulting, businesses and their teams need to be able to apply and use it effectively to improve business performance. Companies need to study the market to apply IT products effectively and also need information exchange and comparison to make appropriate choices.

- **Building and Developing Product Ecosystems:**

Build and develop ecosystems for digital products and services; deploy effective technology solutions in business such as analysis tools, applications including extensive data analysis, mobile devices, and mobile applications; platforms built on base platforms that can be shared, such as cloud computing, application stores; social networking tools and online Internet marketing applications, including intelligent devices... with a focus on deploying centralized application platforms, shared connections, and sharing to help businesses improve, optimize, and automate operations, enhance labor productivity, and improve work efficiency. Special attention is given to high-application technologies that benefit businesses and quickly integrate with the booming digital economy.

Digital transformation takes time, and businesses need to choose a phased approach. They need to address accounting, invoices, and integration with banks. Mid-sized businesses should focus on unified company management across departments... Different types of businesses will have other digital transformation platforms...

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