

# Vietnam's economic growth in the age of digital transformation: opportunities and challenges

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ORIGINAL ARTICLE

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**Abstract.** Vietnam is one of the leading countries in Southeast Asia in the digital transformation process and is among the developing countries that face both opportunities and challenges associated with this change. This research examines Vietnam's digital transformation owing to the country's quick adoption of new technologies and the pressing requirement to solve related structural limitations. Key prospects are examined, including innovation-driven development and global market integration, while facing issues including the digital divide, cybersecurity flaws, and possible economic displacement. This study uses a mixed-method approach, analyzing qualitative information from case studies and policy evaluations in addition to quantitative data from national and international official sources. The results highlight Vietnam's capacity to use digital transformation for sustainable and equitable growth while pointing out important areas that need attention. Creating strong digital regulations, encouraging collaborations between the public and business sectors, and expanding digital literacy initiatives are some examples of practical suggestions.

**Keywords:** digital transformation; economic development; Vietnam's economic growth; global integration; regulatory reforms; cybersecurity

**JEL codes:** O10, O14

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## Introduction

Vietnam's vibrant economy and youthful, tech-savvy population exemplify a developing nation emerging from the challenges of the digital age. The country has purposely taken advantage of both the demographic dividend and its thriving innovation ecosystem, thus becoming a central digital player in Southeast Asia. The ICT sector contributed over 60% of the digital economy in Vietnam and raised around 16.5% of the GDP in 2023<sup>1</sup>. This above-average performance is due to the concentrated efforts of the Vietnamese government in propelling digital transformation, inducing technology-driven policies, and generating technology-related foreign investment. The rapidly growing e-commerce platforms and growing accessibility of mobile internet also add credence to Vietnam's digital economy.

Vietnam's digital economy has been established as the fastest-growing in Southeast Asia for the last two consecutive years, growing at impressive rates of 28% in 2022 and 19% in 2023 – again, three times faster than GDP<sup>2</sup>. This supercharged growth is demonstration of Vietnam's proactive transition into digital transformation and expanding powers in forming the region's technology-centric future. The developments show how quickly digital technology is being adopted.

Nevertheless, Vietnam stands, in all its might, against obstacles that hindering digital transformation: the capability to engage, accommodate those digital changes, and then introduce adjustments during and

<sup>1</sup> *The next wave of Vietnam's digital economy.* Source: <https://vneconomy.vn/techconnect//lan-song-tiep-theo-cua-kinh-te-so-vietnam.htm> (accessed on 15.03.2025)

<sup>2</sup> *Digital economy expected to reach 18.6 per cent of Vietnam's GDP.* Source: <https://vietnamnet.vn/en/digital-economy-expected-to-reach-18-6-per-cent-of-vietnam-s-gdp-2342337> (accessed on 25.03.2025)

after that. Even if for decades there have been educational reiterations around the expanded ownership of economic abilities and skill sets, these remain basically aligned to today's preponderantly «heavy» realities<sup>3</sup>. Limited capabilities in labor and the national economy create a differentiation for Vietnam in its transition behaviors that can provide varying challenges and constraints.

The aims of the study are to gain an accurate understanding of the relationship between digital transformation and economic growth in Vietnam. It discusses the progress made on the road to the use of digital technologies in the country, highlights impediments levelling growth, and provides some recommendations to overcome these impediments in a successful manner. The research adds to the groundbreaking discussion about the power of digital transformation in achieving sustainable development goals in developing countries, as is the case of Vietnam.

### *Literature Review*

In recent decades, the idea of digital transformation has drawn a lot of interest, especially because of its potential to reshape economies, stimulate innovation, and improve competitiveness globally [12; 1; 17]. Business models and working environment have changed as a result of the COVID-19 pandemic, and digital technologies are essential for facilitating resilience and flexibility [16; 18]. Under these circumstances, in order to continue corporate operations and guarantee sustainable production and consumption practices, institutions should help firms by improving their resources and capacities, allowing them to embrace digital transformation [2]. Additionally, to ensure the successful implementation and long-term sustainability of digital transformation, it is essential to adopt developing techniques and tactics that can effectively guide and manage its complexity [11; 3].

In emerging economies, entrepreneurship and digital transformation, particularly blockchain, can accelerate economic development and promote innovation and expansion [4]. Furthermore, by changing the way capabilities are developed and improving learning opportunities for the workforce, digital transformation has an influence on numerous aspects of life, especially in human resources through higher education [14]. However, although digital transformation is quickly gaining popularity and offers many benefits and opportunities, it also comes with a number of drawbacks, especially for slower and developing nations [8]. Therefore, in developing nations like South Africa, the 4.0 Industrial Revolution will only succeed if governmental, corporate, and social leaders work together [13].

In Vietnam, digital transformation is a crucial driver of socioeconomic growth since it increases productivity, competitiveness, and innovation in a number of economic sectors [6; 5; 15]. Together with green investment and financial development, digital transformation may significantly improve the sustainability of Vietnam's existing high rates of economic growth [10]. For the cultural industry, digital transformation and entrepreneurship present new possibilities, skills, and difficulties that will change how it operates and foster an environment that is conducive to the expansion and advancement of Vietnamese culture [20]. Human capital, digital transformation, and startup success are strongly correlated. In Vietnam, entrepreneurs use human capital development to promote digital transformation, which improves company performance [7].

Although Vietnam is making progress and recognizes the significance of the digital revolution, it still has obstacles that must be overcome if it is to reach its full potential [22]. The differences of preparedness for digital transformation among Vietnamese businesses underscores the necessity of improving labor potential and economic and environmental efficiency to guarantee long-term company success [9]. Major obstacle facing Vietnam in the process of digital transformation, especially in logistics companies, is the lack of knowledge among management, the skills of the workforce, and the high implementation costs [21]. Additionally, the successful adoption and integration of digital technology is hindered by a number of obstacles, including governmental limitations like outdated regulations and inconsistent application [19].

The literature on digital transformation in developing nations, including Vietnam, emphasizes the potential as well as the difficulties that these nations confront. Although Vietnam has made great progress in embracing digital technology, it is stressed that a comprehensive strategy is required to overcome structural

<sup>3</sup> *Challenges and opportunities in Việt Nam's digital transformation process. Source: <https://vietnamnews.vn/opinion/1687242/challenges-and-opportunities-in-viet-nam-s-digital-transformation-process.html#> (accessed on 28.03.2025)*

obstacles. The foundation for comprehending Vietnam's distinct digital transformation journey is laid out in this review, which also provides insights for building strategies and policies in other developing countries. This study adds to the conversation on how digitalization might support fair and sustainable growth in developing countries by placing Vietnam in a global perspective.

## Main Part

### *The digital transformation process in Vietnam*

In the past three decades, Vietnam's economy has transitioned from a centrally planned economy to a vibrant market economy. Country has recorded an average GDP growth of 6.3% from 2000-2024, making Vietnam one of the fastest growing economies globally. Vietnam continued to develop positively during the COVID-19 pandemic where the economy posted a GDP growth of 2.9% in 2020, one of the highest rates worldwide during the pandemic. As per IMF, Vietnam's economy will continue growing rapidly to produce the highest economic growth of any emerging country in Southeast Asia with an acceleration of growth of 6.8% in 2025<sup>4</sup>. This rapid economic growth illustrates the growing economic foundations in Vietnam, as well as its key role in the overall development of the region.

From 2013 to 2023, Vietnam emerged as one of the nations with the quickest rates of growth in the Global Innovation Index (GII). In 2013, Vietnam came in at number 76 on this list. In 2023, ten years later, the country has climbed to 46th rank, securing a spot among the top 50 nations. Out of the 37 lower-middle-income countries, Vietnam's economy is now the second most creative<sup>5</sup>. A strong network of both local and foreign venture capital activity is estimated to boost the valuation of startups in Vietnam to close to \$2 billion in 2022. There are over 3,800 startups in the nation, 11 of which are worth more than \$100 million. Vietnam also has 100 startup incubators and 200 venture capital companies, which together support the country's expanding entrepreneurial environment<sup>6</sup>.

This dynamic innovation landscape has been accompanied by significant digital economic growth, particularly in terms of its contribution to the national GDP (Table 1).

**Table 1** – The added value contribution of the digital economy to GDP (2020-2023)

Sector	2020	2021	2022	2023	2024
Total	12.66	12.87	12.83	12.87	13,17
Agriculture, Forestry, and Fisheries	0.05	0.05	0.05	0.06	0.06
Industry and Construction	6.08	6.22	5.90	5.81	5.96
Services	6.53	6.6	6.88	7.00	7.15

Source: General Statistics Office of Vietnam, 2020-2024<sup>7</sup>

It is demonstrated that the services sector led and grew sustainably, reaching from 6.53 to 7.15% in 2024, while the overall contribution of the digital economy reached more than 13% of the national GDP. Over the years, the agricultural, forestry, and fisheries sectors stayed extremely small at 0.05-0.06%. In contrast, the building and industry sectors saw a slight decline, from 6.08% in 2020 to 5.96% in 2023. This trend highlights

<sup>4</sup> International Monetary Fund. 2025. *World Economic Outlook: A Critical Juncture amid Policy Shifts*. Washington, DC. April. Source: <https://www.imf.org/en/Publications/WEO/Issues/2025/04/22/world-economic-outlook-april-2025> (accessed on 22.03.2025)

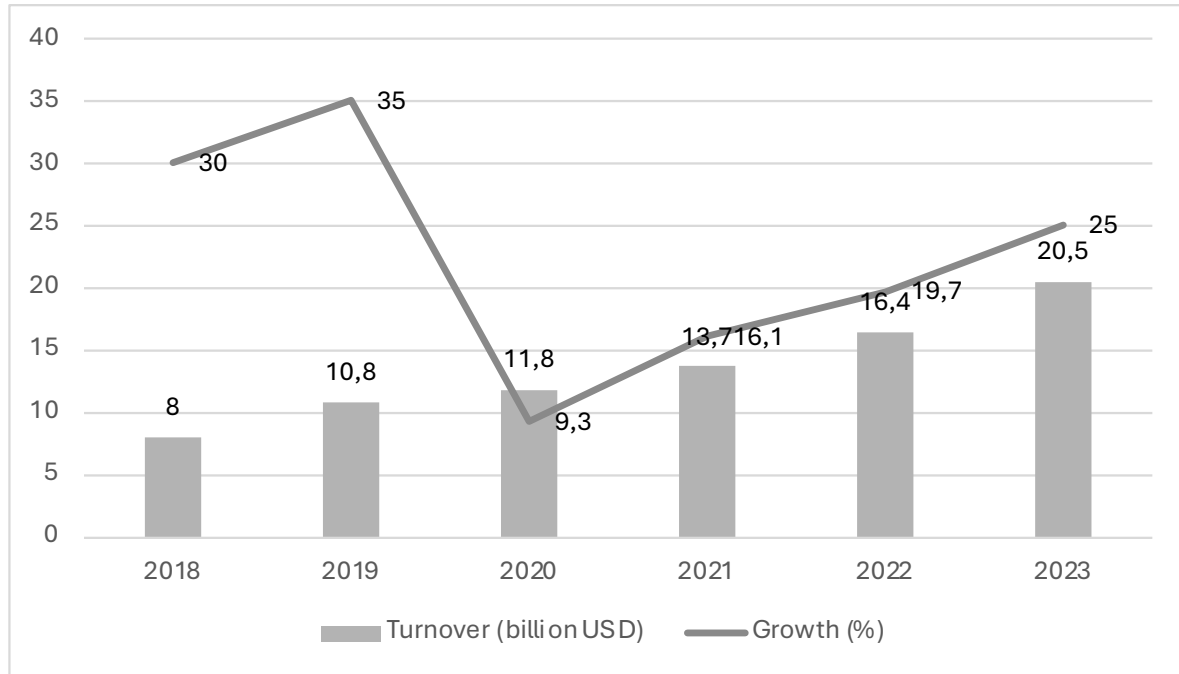
<sup>5</sup> Global Innovation Index 2023 *Innovation in the face of uncertainty 16th Edition*. Source: <https://www.wipo.int/documents/d/global-innovation-index/docs-en-wipo-pub-2000-2023-en-main-report-global-innovation-index-2023-16th-edition.pdf> (accessed on 22.03.2025)

<sup>6</sup> Digital economy accounts for over 18% of Viet Nam's GDP. Source: <https://en.baohinhphu.vn/digital-economy-accounts-for-over-18-of-viet-nams-gdp-111240719131501058.htm#> (accessed on 15.02.2025)

<sup>7</sup> General Statistics Office of Vietnam. Source: <https://www.gso.gov.vn/tin-tuc-thong-ke/2025/01/thong-cao-bao-chi-ket-qua-bien-soan-chi-tieu-ty-trong-gia-tri-tang-them-cua-kinh-te-so-trong-gdp-grdp-giai-doan-2020-2024/> (accessed on 17.02.2025)

the services sector's critical role in digital transformation and suggests ways to increase digital adoption across other industries.

Among the key components of the digital economy, e-commerce has emerged as a particularly dynamic and influential driver, reflecting broader changes in consumer behavior and digital business models in Vietnam (Figure 1).



**Figure 1.** E-commerce retail over the years of Vietnam

Source: E-Commerce and Digital Economy Agency, 2018-2023

The turnover grew from \$8 billion in 2018 to \$20.5 billion in 2023. This rise in turnover is consistent with a trend of growing consumer use in seeking out online platforms for shopping. However, there is a degree of fluctuation to the rate of increase. The increase in turnover peaked at 35% in 2019 before falling significantly to 9.3% in 2020, potentially as a result of market corrections and disruptions due to the COVID-19 pandemic. The recovery that followed highlights the flexibility and ingenuity of the sector and growth was anticipated to recover to 25% in 2023. The steady growth illustrates the change in e-commerce use in retail environments and consumer behavior, confirming its essential position in today's economy. By 2023 Shopee, Lazada, Tiki, TikTok Shop and Sendo had established themselves as the leaders in e-commerce in Vietnam, delivering 2.2 billion products and achieving turnovers of USD 9.52 billion – which represents a 53.4% increase over the previous year. These players have increased their market share from 31.4% in 2021 to 46.5% in 2023, with expectations set to have revenues of USD 12.72 billion in 2024 – a 35% increase over the previous year<sup>8</sup>. This change illustrates Vietnam's creativity while also representing a culture increasingly depending on digital solutions to enhance connectivity, efficiency, and convenience. This combination of economic and societal digitalization bolsters the country's technology ecology, establishing it as a leader in sustainable growth in the digital age.

Vietnam is increasingly positioning itself as a new technological hub in Southeast Asia, thanks to the country's ongoing digital transformation, a developing startup ecosystem, and substantial venture capital investment (Table 2). This transformation has yielded advances in multiple sectors, establishing Vietnam as a major player in the Southeast Asian technology landscape. Initiatives by the government to promote this growth include forming innovation centers for cooperation and pooling resources, providing strategic support to digital entrepreneurs. These initiatives have also generated an eco-system that encourages business activity, which has attracted significant foreign and local investment.

<sup>8</sup> Vietnam's E-Commerce Revolution: Telecom Infrastructure Paves the Way. Source: <https://www.telecomreviewasia.com/news/featured-articles/4378-vietnam-s-e-commerce-revolution-telecom-infrastructure-paves-the-way/> (accessed on 21.03.2025)

**Table 2** – Overview of digital transformation in Vietnam by sector

Sector	Key digital transformation initiatives
Healthcare	Remote healthcare platforms, universal electronic medical records, telemedicine deployment in all healthcare facilities, creation of a national health database, smart hospitals
Education	Distance learning platforms have digitized curricula, with 100% of educational institutions implementing distance teaching and learning, online assessments, and updating university curricula on digital technologies such as AI and IoT
Finance & Banking	Digital banking services, automated processes, mobile payments, collaborations with FinTech for financial inclusion, and digital credit scoring systems
Agriculture	Smart agriculture, big data in farming, digital supply chain management, and initiatives like «Every farmer is a trader»
Transportation & Logistics	In order to modernize logistics, integrate seaports, rail, and warehousing, intelligent transportation systems concentrate on urban networks, highways, and digital platforms that facilitate digital profiles and efficient administrative procedures while optimizing transport management
Energy	Smart grid automation, digital meters, efficient energy distribution and loss detection systems
Environment	Comprehensive databases on managing resources, land, biodiversity, climate, and disasters, early warning systems, and open national digital maps
Industrial Production	Building smart factories, enabling intelligent operations, developing smart strategies and organizational structures, generating smart goods, and improving workforce digital skills are the main pillars of industrial manufacturing's digital transformation

*Source: Authors*

Through intentional efforts to implement modern technology across many sectors, Vietnam has made significant progress toward establishing a digital economy. The nation aims to increase accessibility, streamline operations, and improve service delivery by utilizing advances like big data, artificial intelligence (AI), and the Internet of Things (IoT). For example, the use of electronic medical records and telemedicine in the healthcare industry has improved systemic efficiency and lowered treatment obstacles. In the same way, educational programs aim to create a friendly environment, encourage lifelong learning.

Vietnam's comprehensive approach to addressing sector-specific issues and promoting sustainable development is shown in the incorporation of digital technology into industries including energy, transportation, and agriculture. Transparency and operational efficiency in these domains might be enhanced by automation and big data analytics. Also, some of these new features, like e-credit scoring and mobile banking, provide a great deal of financial stability in the banking and finance sector. It is in these technical advances that Vietnam stands a chance to meet the aspirations to become an economy capable of engaging in high-tech and digital processes that responds adequately to the diverse needs of citizens within various geographical locations.

#### *Vietnam's policies and regulations supporting digital transformation*

That dedication to digital transformation in Vietnam is becoming an increasingly vital part of the nation's socioeconomic growth. The Vietnamese government has proactively implemented a series of policies, regulatory frameworks, and strategic action plans for it recognizes how impactful digital technologies could be. These measures are intended to promote innovation, reinforce digital infrastructure, and develop an

environment supportive of the growth of the digital economy. In line with the larger socio-economic goals of the nation and strengthening its competitive advantage in the global market, such initiatives show clear vision to build Vietnam into a global lead in digital transformation by 2030 (Table 3).

**Table 3** – Key policies and programs for digital transformation in Vietnam

Policy/Regulation	Year	Main Aim
Resolution No. 52-NQ/TW on a number of policies and strategies to proactively participate in the Fourth Industrial Revolution	2019	The objective is to create a strong environment for regional advancement and keep Vietnam in the top three ASEAN nations on the Global Innovation Index (GII). By 2030, more than 30% of GDP will come from the digital economy
National Digital Transformation Program to 2025, vision to 2030	2020	Increase digital economy contribution to 20% of GDP by 2025; rank among top 50 in e-Government
Program to support small and medium enterprises in digital transformation	2021	Support digital adoption in SMEs through subsidies and tax incentives
National Strategy on Green Growth for the 2021-2030 period, with a vision to 2050	2021	Defining that through cutting-edge technology, digital transformation, contemporary governance, and the construction of sustainable infrastructure, green growth propels economic change
Program to Support Digital Transformation of Enterprises in the 2021-2025 Period	2021	By 2025, the program expects 100% of enterprises to be more conscious of digital transformation. Support will be provided to at least 100,000 organizations, including training, consultation, self-assessment tools, and links to digital transformation solutions
Circular No. 06/2022/TT-BKHĐT of the Ministry of Planning and Investment	2022	Regulations offer SMEs technical and advisory assistance, including financial assistance for the purchase or rental of authorized digital transformation solutions. In order to suggest suitable assistance measures, SMEs evaluate their preparedness for digital transformation

Source: Authors

Small and medium-sized enterprises are the building blocks of the Vietnamese economy, while over 98% of the total number of businesses account for this part<sup>9</sup>. These enterprises provide a substantial contribution toward national production and employment, both being a coveted basis for economic stability. Thirteen thousand and eight hundred companies across sixty-three provinces and cities in Vietnam were trained in digital transformation by the end of 2024. Additionally, almost four hundred enterprises were included in developing and implementing fully operational digital transformation roadmaps, and twenty-eight enterprises received tailored on-site training<sup>10</sup>. This variation in business approach and operational scope is indicative of how dynamic the market is and how adaptable businesses are, more so in relation to rapid globalization.

Vietnam's vision for digital transformation goes beyond economic interest to juggle the need for social advancement and sustainable development. Establishing the country as a technological innovation and deployment leader regionally is one of the central goals. Vietnam's attempt to tap the potential of the Fourth Industrial Revolution involves transforming its economy, enhancing governance, and uplifting citizens' well-being. In other words, it involves ensuring the integration of the nation into the global digital economy,

<sup>9</sup> White Book on Women-Owned Small and Medium Enterprises Released. Source: <https://dangcongsan.vn/kinh-te/cong-bo-sach-trang-ve-doanh-nghiep-nho-va-vua-do-phu-nu-lam-chu-658405.html> (accessed on 17.03.2025)

<sup>10</sup> Policy to support businesses in digital transformation and innovation. Source: <https://dangcongsan.vn/kinh-te/cong-bo-sach-trang-ve-doanh-nghiep-nho-va-vua-do-phu-nu-lam-chu-658405.html> (accessed on 11.03.2025)

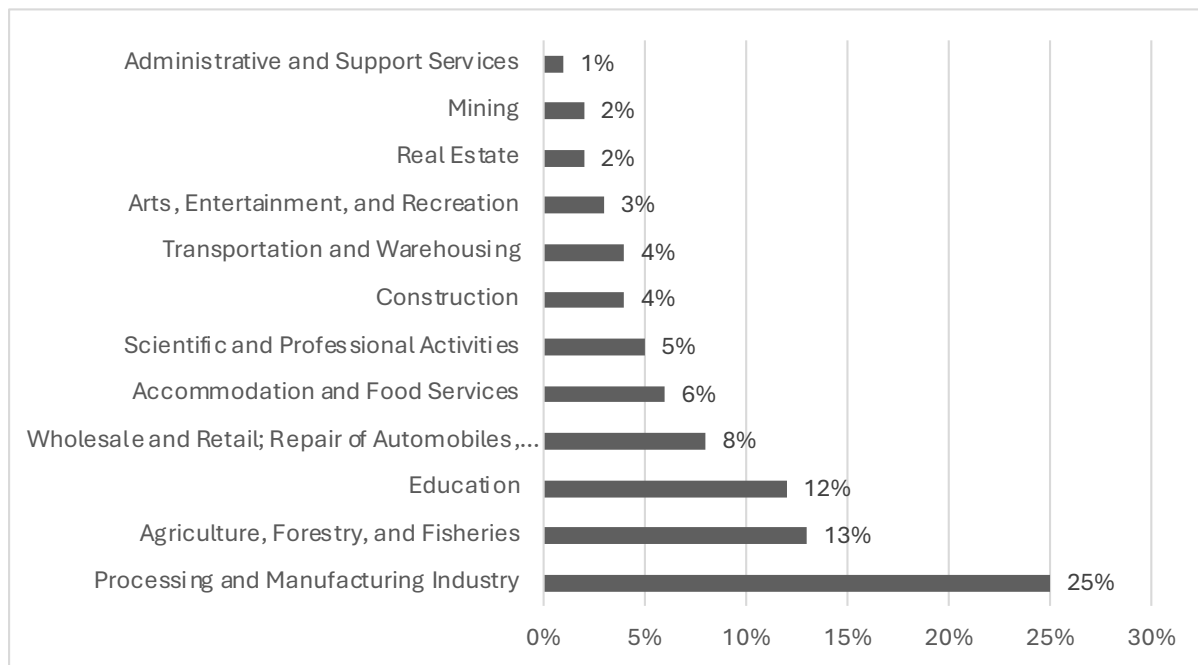
improving productivity, and enhancing competitiveness.

Key to this idea is the objective of contributing GDP to the digital economy. This means leveraging digital tools and platforms to help foster innovation in the core sectors of manufacturing, agriculture, and services. The internet infrastructure extension projects aim to ensure connectivity across the country, thus providing equal access to digital services and eliminating the digital divide between urban and rural contexts. The policy messages stimulate growth based on the belief the benefits of the digital turn will flow through to all walks of life.

Another key aim is to build a competitive digital ecosystem that gives people and enterprises the tools and resources they need to be competitive in the digital age. Labor upskilling, business support, and technology development are encouraged by the government in order to facilitate innovation and productivity. Data governance and Cybersecurity are equally essential and are highly prioritized to build trust and resilience in the digital economy. Vietnam also aims to plug regulatory gaps and promote responsible behavior online to create a safe, welcoming space for domestic and international investment in the digital sector. Together, this set of initiatives aims to ensure that Vietnam's digital transition provides for growth that is fair, sustainable, and innovative.

#### *Challenges for Vietnam in the Digital Transformation*

Vietnam has achieved phenomenal successes in digital transformation, but many obstacles still stand against its longer-term goals. Some of the major challenges include cybersecurity deficiencies, workforce readiness, obsolete or incoherent regulatory frameworks, and limitations in digital infrastructure. These obstacles must be overcome if Vietnam's digital transformation initiatives are to be inclusive, successful, and sustainable. Overcoming these barriers will require cross-sectoral collaboration, giving resilience, creativity, and equitable access to digital resources primacy.



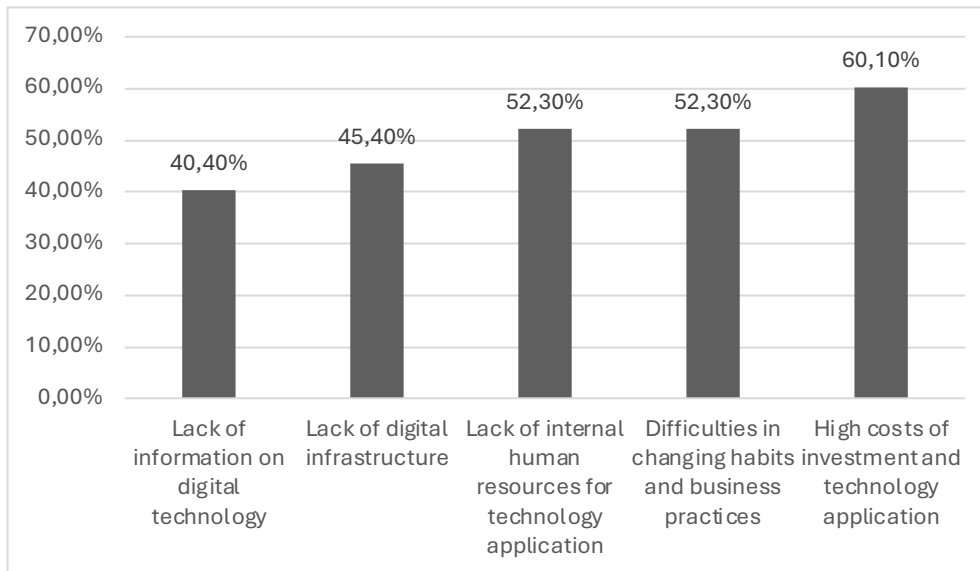
**Figure 2.** Sectoral Distribution of Digital Transformation Readiness Among Enterprises in Vietnam, 2023  
 Source: *Annual report on digital transformation of Vietnamese enterprises, 2023*<sup>11</sup>

Vietnam's businesses encounter a wide range of obstacles in their digital transformation, which reflects different levels of preparedness and ability to adopt new technologies (Figure 2). While some businesses are aggressively using digital solutions to boost productivity and competitiveness, others face major challenges including labor preparedness, insufficient infrastructure, and few resources. These difficulties highlight the

<sup>11</sup> *Annual report on digital transformation of Vietnamese enterprises, 2023.* Source: [https://digital.business.gov.vn/wp-content/uploads/2024/04/Annual-Enterprise-DX-report\\_final\\_EN.pdf](https://digital.business.gov.vn/wp-content/uploads/2024/04/Annual-Enterprise-DX-report_final_EN.pdf) (accessed on 15.03.2025)

necessity of sector-specific approaches and encouraging laws in order to close the digital divide, encourage creativity, and guarantee a fair and long-lasting economic transition.

There are significant variations in understanding and resource distribution across industries areas in Vietnam's digital transformation environment. The strategic importance and revolutionary potential of digital technologies are still not completely implemented by many organizations, communities, and businesses. For small and medium-sized businesses (SMEs) in Vietnam, this problem is especially severe (Figure 3).



**Figure 3.** Top 5 barriers that Vietnamese businesses encounter in the process of digital transformation

Source: *Barriers and difficulties of businesses when transforming digitally*<sup>12</sup>

Moreover, while the community's overall digital literacy has improved, there still are very clear gaps – particularly in remote, border and island areas, as well as areas populated by ethnic minorities<sup>13</sup>. In these places, the more obvious presence of unequal access is compounded by a lack of digital skills and knowledge that leads to less engagement with technology, making the digital gap wider still. More must be done to tackle these discrepancies, through better public-private partnerships, targeted infrastructure investment, and a lot more widespread digital education initiatives to ensure all, equitable and sustainable digital transformation across the country.

Vietnam's quick embrace of digital technologies has made it more vulnerable to various cybersecurity risks. In 2021, Vietnam was one of the top 10 countries most affected by cyberattacks, indicating how vulnerable its digital infrastructure is<sup>14</sup>. The absence of strong cybersecurity frameworks and poor cybersecurity knowledge among individuals and businesses all contribute to this risk. Many businesses lack thorough security procedures, making sensitive information and vital systems vulnerable to hacking, financial fraud, and other crimes. These cybersecurity issues pose a serious obstacle to sustained prosperity as Vietnam continues its digital transition, necessitating immediate government and private sector cooperation to create a robust digital ecosystem.

Digital transformation entails the automation of repetitive tasks and the replacement of traditional jobs. In Vietnam, this could result in sweeping changes in labor markets which could, especially in industry and agriculture, threaten jobs for a significant share of the work force. Estimates suggest that, by 2030, as many as 1.3 million jobs in these sectors could face risk from automation, giving cause for concern about

<sup>12</sup> *Barriers and difficulties of businesses when transforming digitally.* Source: <https://digital.business.gov.vn/2153-2/> (accessed on 19.03.2025)

<sup>13</sup> *Identifying challenges in digital transformation.* Source: [https://www.mof.gov.vn/webcenter/portal/thtk/pages\\_r/l/chi-tiet-tin-tin-hoc-va-thong-ke?dDocName=MOFUCM270788](https://www.mof.gov.vn/webcenter/portal/thtk/pages_r/l/chi-tiet-tin-tin-hoc-va-thong-ke?dDocName=MOFUCM270788) (accessed on 08.12.2024)

<sup>14</sup> *Which Countries are Most Dangerous? Cyber Attack Origin – by Country.* Source: <https://www.cyberproof.com/blog/which-countries-are-most-dangerous/> (accessed on 08.12.2024)



rising unemployment and social inequality<sup>15</sup>. High-level digital jobs provide new opportunities but typically demand advanced skills that are often lacking in a large section of the low-skilled labor force, giving rise to an ever-widening skills' gap. Unless the government and other stakeholders embark on strong reskilling programs and planned interventions, the change will endanger the disadvantaged sectors, create a disruption against inclusive economic growth, and further deepen socio-economic fissures.

Another challenge Vietnam faces on its road to digital transformation is that of brain drain, losing some of its best-trained and most employable citizens to greener pastures abroad due to a scarcity of local opportunities or better incentives elsewhere. As the international demand for IT skills grows, keeping Vietnam's top digital talent should be of utmost priority. This will include competitive salaries, improvements in the working conditions, and an increase in domestic career opportunities. The government could further create a more nurturing environment for innovation by backstopping tech firms, research projects, and industry-academia partnerships. It might even be possible to reverse the trend by enticing foreign experts back to Vietnam through tax rebates or the possibility of investment in tech ventures.

These are the challenges that the digital transition now presents for Vietnam. While the government has started to make some headway regarding these concerns, the outcome of discussion of these pressing points will ultimately depend on whether there's collaboration between the private sector and the public. For digital transformation to deliver equal and sustainable benefits in Vietnam, improvements must be made in infrastructure deficit, skills enlargement, proper rating of the existing legal and regulatory environment, and stimulation of resilience against cyber threats. These challenges could be met in a manner that accomplishes its ambitious aspirations and sets an example in the world's thinking about the development course that has similar issues.

#### *Policy Recommendations for Advancing Vietnam's Digital Transformation*

A robust, universal, and concerted digital infrastructure is crucial for Vietnam's digital transformation. Though connectivity is increasing, inequalities still lead to differences in harmonic connectivity levels among populations, with significant differences in remote and rural populations. The government should promote public/private partnerships in order to build momentum for population expectations regarding both investments in a 5G network and the investment into high-speed broadband service measuring bandwidth and latency that provides some minimal service standard. Yet, the infrastructure required to reach unserved populations needs to be built by private telecommunications firms, who benefit from financial, investment, and tax incentives, to provide similar and adequate populations access to telecommunication services. Vietnam's second priority should be to ensure proper response to the supply of cloud services and protect data sovereignty where necessary, while at the same time allowing business the means to use digital technology; meaning that needed local data centers for business and industry need to be built in order to make this work.

As Vietnam moves toward a digital economy, it is vital to develop a skilled workforce in digital values. Digital literacy formation cannot work in isolation, this being included at all levels of our national education system is thus a prime requirement. Universities should partner with tech corporations in private industry to provide programs relevant to employment in the field, such as cybersecurity, data science, and artificial intelligence training. After that, on-the-job skills upgrading and technical transition by the national upskilling-reskilling should minimize the risk of redundancy for workers across a wide range of occupations, including those most directly in line with the digital economy. Awareness campaigns within underprivileged and rural communities become paramount in instilling knowledge that leads to a fair share in inputs to the digital economy.

There is an imperative of developing such an ecosystem that, in the digital world, would be safe and reliable for the development of Vietnam in the digital age. A comprehensive national cybersecurity policy should be developed by the government, which would address various vulnerabilities in the system and provide protection for its vital national infrastructure. This policy will include the establishment of Regional Training Centers and fund the training of committed specialists in combating cybercrimes, thereby increasing

<sup>15</sup> OOOLAB highlights urgent need for upskilling. Source: <https://vir.com.vn/ooolab-highlights-urgent-need-for-upskilling-109805.html> (accessed on 05.12.2024)

resilience against them. Public awareness campaigns: people and organizations, including children, should be educated about the threats of the internet and acceptable conduct on digital platforms and often seminars on safety practices; besides, building confidence in the digital sphere.

In the same light, it is vital to ensure that Vietnam's digital transition is inclusive. The government should provide funding for affordable digital devices and internet access for low-income families. Targeted activities such as mentorship and training programs for disadvantaged groups, primarily women and ethnic minorities, may engage them further in the digital economy. Extension of e-governance platforms in rural areas would enable people in the digital age to access basic services such as health and education.

Through these defined approaches, Vietnam can therefore take full advantage of the opportunities consequential to the digital transformation and not escape the consequences. Injecting infrastructure, investing in digital skills, updating its regulatory frameworks, and promoting inclusive prosperity will place Vietnam at the forefront of any developing country in the digital era. The government, companies, and civil society must jointly contribute to fulfilling the vision and ensuring that digital transformation will spur equitable and sustainable growth for all.

### **Conclusion**

This is a manifestation of the interplay of possibilities, hurdles, and opportunities concerning the modernization of the country's economy through digital transformation. Vietnam has become a digital trailblazer in Southeast Asia thanks to the country's advantageous demographic situation, a strong business environment, and a proactive regulatory framework, which have helped Vietnam blossom. Rapidly growing e-commerce and a significant GDP contribution from the ICT industry testify to Vietnam's readiness to transition into the digital economy. All these achievements, buttressed by concerted efforts in infrastructure and research, place Vietnam as an emerging nexus of wealth and growth driven by technology.

However, different challenges are related to the disruption that digitalization can create. The persistent divides represent the disparities among various societal groups in terms of opportunity and access to the new relevant technologies. Security vulnerabilities expose businesses and organizations to data breaches and cyberattacks that bring tremendous financial loss. Also, the closure of traditional businesses, along with the widening skills gap, is likely to aggravate differences among the working class and even threaten progress. These challenges indicate a need for targeted efforts to ensure as many members of society reap benefits from the digital revolution.

In dealing with these problems and maintaining development, Vietnam is required to put more commitment into its digital transformation. Top of the agenda will be investment in new technologies such as artificial intelligence and big data, alongside the construction of solid and high-speed internet infrastructure. Bridging the skills gap and propelling digital literacy, especially in disenfranchised groups, will be key in ensuring broad participation in the digital economy. Building further on this, policies that promote public-private partnerships can combine resources and ideas to address problems more effectively.

There are many lessons Vietnam can indicate to those other developing countries engaged in their own digital transformation. The focus on innovation management, proactive rule, and incorporation of sustainable goals into the digital projects illustrates how indispensable flexibility and inclusivity are in this digital age. This frame of thinking augurs the need to strike a balance pertinent to the digital transformation—namely, ensuring that it is a strong enabler of holistic and equitable growth-driven by technical innovation and social equity plus welfare commitment.

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The authors declare that there is no conflict of interest.

### AUTHOR'S CONTRIBUTIONS

Dinh Le Hong Giang – conceptualization; supervision.

Nguyen Huu Phu – writing – original draft.

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