MEASURING IMPACTS OF THE PLATFORM ON VIETNAM'S ECONOMY

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This report is a research project conducted by the Central Institute for Economic Management (CIEM) in collaboration with a group of experts from the General Statistics Office (GSO). CIEM's research team is led by Dr. Tran Thi Hong Minh; Dr. Nguyen Minh Thao (Head, Department of Business Environment and Competitiveness Studies) is in charge of research contents; and jointly implemented with members from Department of Business Environment and Competitiveness Studies. GSO's expert team includes MSc. Nguyen Viet Phong, Deputy Director, Department of National Accounts and colleagues; with the participation of Dr. Bui Trinh, senior statistics expert.

The information in this report is compiled from many different data sources, in which data to measure the economic impacts of the Platform is based on the input-output table(IO) updated 2022 of GSO. All materials in this report are copyrighted. We encourage the transmission of the report's information to serve the parties' research activities, policy consultation activities, and arguments in implementing management and administration activities.

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LIST OF ABBREVIATIONS

Abbreviation	Full description
CAGR	Compound annual growth rate
CIEM	Central Institute for Economic Management
GDP	Gross Domestic Product
GRDP	Gross Regional Domestic Product
GO	Gross output
GSO	General Statistics Office
ICT	Information and Communications Technology
I-O	Input-output
IR 4.0	The 4th Industrial Revolution
IT	Information technology
MIC	The Ministry of Information and Communications
MoIT	The Ministry of Industry and Trade
MoJ	The Ministry of Justice
MoPS	The Ministry of Public Security
MoT	The Ministry of Transport
NDXP	The National Data Exchange Platform
SBV	State Bank of Vietnam
SEDP	Socio-economic Development Plan
VA	Value-added
VECOM	Vietnam E-commerce Association

EXECUTIVE SUMMARY

1 Digital economy in general and Platform economy in particular are not only a trend but also a strong driving force, contributing to reshaping the global economy. Therefore, the Government of Vietnam has identified clear and specific goals for developing the digital economy, including the Platform economy.

2 Since officially joining the global internet on December 01, 1997, Vietnam has witnessed the rapid development of information technology (IT) and become one of the countries with the fastest internet growth in the Asia Pacific region. According to the e-Conomy SEA 2023 report by Google, Temasek, and Bain & Company, Vietnam is ranked among the top 10 countries with the highest number of new mobile app downloads for two consecutive years (2022, 2023). In addition, Vietnam's population is nearly 100 million people, ranked at 15th in the world, and thus is seen as a large market for digital economic development. Out of the population structure, the age groups with the largest proportion are also groups that use Platform services the most. This is expected to directly impact the trend of using Platform services in Vietnam.

3 The high and rapidly increasing rate of internet usage, along with the large proportion of the young population that favors using Platform services, leads to the trend of online shopping increasing rapidly in terms of both revenue and growth rate. Accordingly, e-commerce activities have become a pillar for Vietnam's digital economic growth. In the Vietnam E-Commerce White Book 2023, the Ministry of Industry and Trade reported that in 2023, the revenue of the retail e-commerce market increased by about 4 billion USD (up 25%) compared to 2022, reaching 20.5 billion USD. The e-commerce revenue in 2024 is estimated to reach 27.7 - 28 billion USD, an increase of 36%, placing it among the countries with the fastest growth rates in the world.

4 The urban population is growing rapidly in Vietnam, while there is a lack of public transportation options and the frequency and situation of traffic congestion is increasing, so the demand for ride-hailing transportation has also increased in recent years. Accordingly, in recent years, the transport Platform industry has made a meaningful contribution to Vietnam's economic development (contributing about 1.7% of GDP in 2022 and continuing to increase in 2023). In particular, for two key economic regions of Vietnam (including the Red River Delta and the Southeast region), the transport Platform industry has contributed 2.7% and 2.3% respectively to the GRDPs of these two regions.

5 In addition, the online food delivery market is experiencing significant growth due to consumers changing traditional consumption habits. They are increasingly changing to online Platforms to order food. According to Momentum Works, In 2023, the estimated total revenue of Vietnam's online food delivery market is ranked 5th among Southeast Asian countries, behind Indonesia, the Philippines, Thailand and Malaysia; but its growth rate over the same period of 2022 is ranked 3rd (at 29.5%).

6 E-logistics, also known as e-commerce logistics, has grown rapidly in Vietnam recently. Vietnam's e-commerce logistics industry is ranked 11th in the top 50 growth markets. According to VECOM, the revenue of products shipped via delivery Platform services increased by 47% in 2020. From 2020 to 2025, it is expected to maintain a growth rate of 29%. Among e-logistics Platforms, GrabExpress is a popular delivery app in Vietnam. With a widespread network of GrabBike drivers, customers find that ordering deliveries through GrabExpress is quite fast and convenient.

7 In Vietnam, efforts to apply IT are being implemented in all economic sectors, including the sector of digital payment. Decision No. 316/QD-TTg dated March 9, 2021 of the Prime Minister on pilot implementation of using telecommunications accounts to pay for goods and services of small value (**Mobile-Money**) is considered as a sandbox in Vietnam. According to the State Bank of Vietnam (**SBV**), the ratio of cash to total means of payment decreased from 11.34% in 2021 to 9.51% in 2022 and just over 8% in 2023. By the end of June 2024, the ratio of adults having payment accounts reached 87.08% (an increase of 9.67% compared to the end of 2023), exceeding the target set by the Government for 2025. In the first 6 months of 2024, the total accumulative number of customers using mobile money services is more than 8.8 million, of which 6.3 million customers are in rural, mountainous, remote and mountainous areas; Non-cash payment transactions increased by 58.2% in quantity and 36.7% in value.

8 Vietnam's population is nearly 100 million, ranking 15th in the world, and is a large market to nurture and develop digital technology businesses. According to data from the Ministry of Information and Communications (**MIC**), in the first 6 months of 2024, the number of digital technology businesses increased by 8% compared to the same period in 2023, currently there are 50,350 operating businesses, higher than the Government's target of 48,000 businesses. The rapid growth of digital technology businesses creates a foundation for expanding and developing digital business services, including Platform services in Vietnam.

9 With the changes and results analyzed above, the digital economy in Vietnam has continuously developed in recent years, and especially grown rapidly in the first half of 2024. According to data from the General Statistics Office, the proportion of the added value of the digital economy in GDP from 2020 to 2023 was 12.66%, 12.88%, 12.63%, and 12.33%, respectively. By the first half of 2024, the proportion of added value of the digital economy in GDP had grown to reach 18.3%, exceeding the average rate for the 2020-2023 period.

Google, Temasek, Bain & Company (2023) evaluates Vietnam's digital economic growth rate as the fastest in ASEAN for 2 consecutive years, at 3.5 times higher than the GDP growth rate. In 2023, the number of users on digital Platforms in Vietnam grew by 46% compared to 2022. Thanks to that, Vietnam continues to be expected to be the country with the strongest growth of digital economy in the ASEAN region from now to 2025.

10 The above results demonstrate the increasing role of the digital economy in general and the Platform economy in particular. Vietnam is assessed as a country having certain advantages for developing the digital economy. This will be a driving force for Vietnam to have sustainable growth and development in the coming time.

With the rapid development of technology, many Platform services have appeared in Vietnam. These business activities adapt to technology trends and are in line with transformation trends in the world. This research report aims to analyze and identify the economic impacts of Platform services on the Vietnamese economy. Specifically, the report measures the impacts through calculating multiplier effects and spillover effects in inter-industry relationships based on the use of Input - Output tables (IO table updated 2022) and available related data.

11 According to statistics from GSO, Platform sector has made a significant contribution to the economic development of Vietnam, contributing **40.5 billion USD** of value added to Vietnam's economy in 2022, representing **9.92%** of GDP. Value added of transport Platform sector is **6.8 billion USD**, accounting for **16.8%** of VA of the Platform industry, representing **1.7%** of the economy's GDP. However, there are large differences between economic regions in terms of the contribution to the value-added of the Platform industry. Accordingly, the Red River Delta region (including Hanoi) and the Southeast region (including Ho Chi Minh City) are the two regions with the largest contributions to the VA of the Platform. Thus, it can be seen that there is still much room to develop the Platform industry and transport Platform in the remaining economic regions of Vietnam in the coming years.

12 In the Platform sector, Grab Company Ltd. (**Grab**) is a pioneering model in technology-based business, creating a diverse ecosystem to meet daily essential needs of the people, such as ride-hailing, delivery services, food delivery, etc. As a leading enterprise in the ride-hailing and delivery industries, Grab operates extensively in 50 out of 63 provinces and cities across the country and is a widely preferred Platform. Grab's participation has driven growth and development in the transportation sector and made a significant contribution to Vietnam's economic development. In 2022, Grab contributed **0.13%** to the country's GDP, **1.31%** to the added value of the Platform sector, and as much as **7.8%** to the added value of the transportation Platform sector.

13 Measuring and analyzing economic impacts of the Platform based on Vietnam's IO table show some notable results as follows:

a) The final products of the Platform industry stimulate the output of the economy at **1.009** (Index of the power of dispersion). A ratio greater than 1 indicates the importance of the Platform as an industry that uses physical products and services from other sectors in the economy as Platform inputs. This means that as the Platform industry develops, it will stimulate the growth of other industries that provide products and services in the economy.

The Platform industry's index of the sensitivity of dispersion is **1.628**, much higher than the general average (which is 1). This result demonstrates the significant importance of the Platform industry as a source of inputs for the economy.

b) The final products of the Platform industry spread to the value-added (Power of dispersion on value-added) and income of the economy (Power of dispersion on income) is **1.230** and **1.294** respectively. Both of these are also much higher than the average levels. However, the Platform industry's power of dispersion on labor is 0.709; lower than average level because the Platform industry requires high-skilled workers .

c) *Regarding output multiplier*[1]: One billion USD of the final product of the Platform industry not only stimulates its own output but also stimulates the output of the whole economy by **2.754 billion USD** (**1.401** billion USD of Platforms itself and **1.352** billion USD of other industries).

d) The final products of the Platform sector not only stimulate the value-added (**VA**), jobs and income of the Platform itself, but also stimulate the VA, jobs and income of other sectors in the economy. Accordingly, if the output of the Platform industry increases, it will increase the output, VA, jobs and income of other industries. Results of measuring from the I-O table show:

- *The spillover effects of the Platform industry on value-added*: One billion USD of the final product in the Platform industry stimulates the economy's added value by **1.1918 billion USD**. Of this, it boosts the added value of the Platform industry itself by 0.77 billion USD (accounting for **64.4%** of the total impact) and stimulates the added value of other industries by 0.42 billion USD (accounting for **35.6%** of the total impact).

- *The spillover effects of the Platform industry on jobs*:

+ In the business sector, in 2022, the Platform industry employed **2,086.2 million** people, accounting for **4.12%** of total employment in the economy.

+ Measuring spillover effects of the Platform on jobs shows that one billion USD of the final product in the Platform industry generates **93,734** job opportunities across the entire economy. Of this, it stimulates 39.5 thousand jobs within the Platform industry itself (accounting for **42.14%** of the total impact), while 54.234 thousand jobs are created in other industries (accounting for **57.86%** of the total impact). The Platform industry's spillover effect on job creation in other industries is greater than its impact on added value and income. This indicates that the more the Platform industry develops, the more job opportunities it generates.

+ Based on the job multiplier measured above, in 2022, the increase in the final product of the Platform industry is estimated to have stimulated an additional **423,909** job opportunities in the economy, including **178,638** jobs in the Platform sector and **245,272** jobs in other sectors.

[1] The output multiplier represents the total change in the output of the economy when there is a 1 USD increase in the final products of the Platform sector.

- *The spillover effects of the Platform industry on income*:

+ For the formal business sector, in 2022, the total income of workers in the Platform industry was approximately **540.74 trillion VND** (equivalent to 26.2 billion USD), accounting for **10.9%** of total worker income. Notably, while the number of workers in Platform enterprises made up only 4.12% of total employment, their income accounted for 10.9% of total worker income in the whole economy. In the period of 2018–2022, the average monthly income of workers in the Platform industry was over 11.3 million VND, 14% higher than the national average income (nearly 9.9 million VND). These results indicate that the Platform industry provides higher income for workers compared to the average of the whole economy.

+ Measuring spillover effects of the Platform on income shows that one billion USD of the final product in the Platform industry stimulates worker income in the economy by **0.7326 billion USD**. Of this, it boosts worker income within the Platform industry itself by **0.4968 billion USD** (accounting for 67.81% of the total impact) and increases worker income in other industries by **0.2358** billion USD (accounting for 32.19% of the total impact).

+ Based on the measured income multiplier effect of the Platform industry, in 2022, the increase in the final product of the Platform industry is estimated to have stimulated an additional **3.313 billion USD** in worker income across the economy, including **2.247 billion USD** in income of workers the Platform sector and **1.066 billion USD** in income of workers in other sectors.

e) In addition, the Platform's output is not only created by the final products of the Platform but also by the final products of other sectors in the economy. Although the ratio of the Platform industry's VA to GDP is only about 9.92%, the output of the Platform industry created by the final products of other industries in the economy is up to **62.4%**. This partly shows the high level of "Platformization" of the Platform industry in the economy.

14 Digital transformation has become an inevitable imperative for Vietnam's development. However, in order to achieve the Government's objectives of digital economy, Vietnam has opportunities but also faces many challenges. This requires a change in policy mind-set to design the policies that both promote innovation and technological development while effectively managing risks. Sandboxes with the principles of ensuring business freedom can be regarded as an appropriate policy option for Vietnam. Policy best practices of sandboxes such as Decision No. 24/QD-BGTVT on piloting the application of science and technology to support the management and connection of passenger transport activities under contracts and Decision No. 316/QD-TTg dated March 9, 2021 of the Prime Minister on pilot implementation of using telecommunications accounts to pay for small value goods and services need to be replicated in many other fields.

15 Thus, the platform business sector not only stimulates added value, income, and job opportunities for workers within the sector itself but also boosts added value, income, and job opportunities for workers in other sectors of the economy. Platform businesses have created new opportunities and developed alongside traditional production and business methods. With the rapid development of platforms, they have motivated traditional businesses to innovate their business thinking, enhance internal capabilities to increase competitiveness, and adapt to new trends. At the same time, the emergence of platform businesses has prompted policy-making agencies to research and quickly improve the legal framework in order to manage flexibly and promptly while still ensuring the encouragement of creativity for new development trends and business models; thus, effectively leveraging the benefits of these trends and business models.

16 The trend of the Platform economy is inevitable in the context of current development. Policies should provide regulations that generally promote the Platform industry, creating a pervasive impact on the digital economic ecosystem and the entire economy. Therefore, creating a favorable, safe and innovative business environment for the Platform is necessary. Accordingly, the Report specifically proposes a number of recommendations, including: (i) Recommendations for state management agencies; (ii) Recommendations for Platform businesses; and (iii) Recommendations for designing sandboxes for some Platform business activities.

17 In summary, the digital economy and Platform economy have yielded many positive results, consistently achieving high growth rates in recent years and making significant direct contributions to the country's economic and social development. Mindset of state management and legal frameworks have gradually been reformed to adapt to digital transformation trends, facilitating the growth of the Platform economy. With the solid foundation built over the past decade and the advantages of technology, the digital economy in general and the Platform economy in particular will continue to be key sectors contributing to GDP growth and the government's economic and social development goals.

To strongly drive the development of Platform businesses and the digital economy, policies and regulations must focus on supporting businesses, reducing administrative procedures, and shortening approval times for new technology products and services. In this context, a regulatory sandbox mechanism is frequently recommended as a key policy framework for fostering technological innovation and breakthroughs.

INTRODUCTION

The 4th Industrial Revolution (**IR 4.0**) develops based on three basic pillars: biotechnology, physical technology and digital technology. In particular, with the strong development of digital technology, the digital economy is becoming a characteristic and trend of economic development. These basic pillars of Industrial Revolution 4.0 not only contribute to creating new resources, products and assets but also directly and strongly impact social resources including institutions, political and social structures, and especially the development of new economic models and business models.

The digital economy in Vietnam includes 3 main components: (i) **ICT** digital economy is the industry of information technology (**IT**) and telecommunications services (also known as digital technology industry); (ii) **Platform economy** is the economic activity of digital Platforms, online systems connecting supply and demand, and online services; and (iii) Sectoral digital economy is digital economic activities in industries and fields. In particular, the Platform economy is a new form of industrial organization and a new business model that operates based on an online system connecting supply and demand. Accordingly, the Platform economy changes traditional business and production methods; connects diverse sellers and buyers; and provides a wide variety of goods and services.

The Platform economy thrives on digital technology, data and Platform supporting services, thereby improving efficiency and reducing costs. Therefore, the Platform economy is a priority for Governments globally, including Vietnam. Over the past decade, the Platform business model has developed strongly in the world and penetrated deeply into Vietnam in many industries and fields, including transportation and commerce. Therefore, digital Platform-based business activities in Vietnam have been legalized.

It can be said that the Platform economy is an irreversible trend. With the rapid development of technology, currently, many Platform business activities have appeared in Vietnam. These business activities adapt to technology trends and are in line with transformation trends in the world. In just a short period of time, since the outbreak of the Covid-19 pandemic, Vietnam has witnessed the strong emergence of many digital Platform applications connecting supply and demand. These digital Platform applications appear in almost every industry, especially in transportation, retail, healthcare, education, banking, finance, etc.

In the past two years, Vietnam has consistently been rated by international organizations as the country with the fastest digital economy growth in ASEAN. The growth rate of Vietnam's digital economy is 3 to 4 times faster than the country's GDP growth rate. This will be a driving force for Vietnam's sustainable growth and development in the coming period.

In that context, the Central Institute for Economic Management (CIEM) conducts the study "**Measuring impacts of the Platform on Vietnam's economy**".

Research Objectives and Contents

This report aims to analyze and identify the economic impacts of the Platform industry on Vietnam's economy. The identification of Platform business in this study is based on legal basis and data from surveys by the General Statistics Office of Vietnam (**GSO**). Specifically:

- Clause 2, Article 3 of Circular No. 80/2021/TT-BTC[2] stipulates: "***Business activities based on digital Platforms****" are business activities of entities that use intermediary digital systems to connect with customers, and all connection activities take place in a digital environment*.

- The E-Transactions Law (2023) defines "*Electronic transactions are transactions conducted by electronic means*" (Clause 1, Article 3); "***Digital Platforms*** *for electronic transactions are information systems... creating electronic environments that allow parties to conduct transactions or provide, use products or services, or use them to develop products and services*" (Clause 2, Article 45); and "***Intermediary digital Platforms*** *for electronic transactions are digital Platforms specified in Clause 2 of this Article, where the Platform owner is independent of the parties conducting the transactions*" (Clause 3, Article 45).

- Additionally, at Decision No. 411/QD-TTg dated 31/3/2022 of the Prime Minister approving the National Strategy for Digital Economy and Digital Society Development until 2025, with a vision to 2030, the Government defines: "***Platform-based digital economy*** *is the economic activity of digital Platforms, online systems that connect supply and demand, and online services*."

With the above legal regulations, this report defines "**Platform business**" as the business activity of entities using digital Platforms to conduct transactions and connect customers. These services include both the direct digital Platform services of the business entities (via their own apps) and intermediary digital Platform services[3].

Based on the identification of the scope of industries related to Platform business, the report measures the impacts of the Platform sector on the economy through the calculation of multiplier effects and spillover effects in inter-industry relationships. The economic aspects measured include:

- Impact on GDP.
- Impact on the development of the digital economy.

[2] Circular No. 80/2021/TT-BTC dated September 29, 2021 of the Ministry of Finance guiding the implementation of a number of articles of the Law on Tax Administration and Decree No. 126/2020/ND-CP dated October 19, 2020 of the Government detailing a number of articles of the Law on Tax Administration.

[3] In Vietnam, intermediary digital Platform business activities can be classified in the following areas of activity:
- Digital Platforms for services in sectors such as finance, housing, accommodation, logistics and transportation, such as Grab, Be, GoJek, Ahamove, Giaohangtietkiem, Giaohangnhanh,...
- Digital Platform for goods commerce such as Grab, Shopee, Lazada, TikTok Shop,...
- Digital Platforms for digital goods commerce such as Google, Play, App Store,…

- Impact on regional GRDP.
- Measuring multiplier effects on output, value-added, employment, and income.
- Spillover effects on sectors within the production linkages.

The research results are expected to provide further scientific evidence regarding the role, significance, and contribution of the Platform activities to Vietnam's economic growth and development. Based on the current situation of Platform development, combined with the analysis of the economic impacts of the Platform sector, the report proposes several recommendations to enhance the effectiveness of Platform services while also managing risks, including recommendations for policy improvements.

Methodology

The research is conducted by combining qualitative and quantitative research methods. The report measures the impacts of the Platform on the economy with the use of the updated 2022 input-output (**I-O**) table and available relevant data. Details of the methodology and calculation methods are presented in **Appendix 1**. Notably, some aspects of the research methodology are as follows:

1) Note that in research on the impact of an industry on the economy, we should agree to call it **the final product**. For conventional I-O analysis, the final product is also **final demand** or **final use**. The I-O models are accounting representations of the structure of an economy, which allow analysts to examine the possible impacts of changes in the demand for an industry's goods and services.

2) In this study, **multipliers** measure the total effects on either output, income, employment or value added, given an increase in one unit of output of a particular industry (UN, 1999)[4]. Accordingly, **multipliers** in economics refer to effects where an initial one-dollar increase in spending or investment leads to more than one dollar increase in economic activity. This chain reaction comes about because the dollar spent by one entity becomes the income for another, and that second entity, in turn, spends a portion of that dollar, creating income for yet another entity. Each round of spending causes additional rounds of spending causing the so-called multiplier effect.

3) **The output multiplier** represents the total output produced by all industries in response to a dollar increase in final demand for an industry's output. Accordingly, in this study, the output multiplier is a summary measure of the value of additional output produced by industries in the economy to satisfy a one-dollar increase in final demand for the services produced by the Platform industry. The output multiplier consists of **Initial effect, Direct effect**, **Indirect effect**, **Induced effect** and **Spillover effect**. An interpretation of the components of the output multipliers of the Platform sector is presented in ***Table 1*** and further detailed in **Appendix 1**.

[4] United Nations (UN), 1999. *Handbook of Input-Output Table Compilation and Analysis*. Department of Economics and Social Affairs, Division of Statistics, New York.

Table 1. Interpretation of output multiplier

Multipliers	Multipliers	Multipliers	Multipliers
Additional final demand for Platform services stimulates the increased output of Platform industry			
Initial effect	**Initial effect** describes the beginning for production; and is equal to 1. (For example, an enterprise has enough production capacity but has not yet produced)	I is the unit matrix Initial effect = 1	The increased demand for services provided by the Platform Industry will create increased output in that Industry, include: **initial effect, direct effect** and **indirect effect**
Direct Multiplier	If there is an increase in final demand for Platform services, the producers of the Platform industry increase their output. Suppose final product of Platform has increased by one unit, Platform requires inputs from Platform and other industries to generate one unit of production. **Direct input coefficient** of Platform is the ratio of inputs of Platform to output of Platform.	A_{11}	
Indirect Multiplier	The final product of Platform then used as inputs to stimulate the increase in output of all 20 industries, including Platform. In other words, when the final product of Platform used as inputs increases, this stimulates the increased output of all 20 industries, including Platform. The increased output of the Platform (in the primary production tier) is called the **Indirect effect**.	$(I \quad A_{11})^{-1}$ -I - A_{11}	
Induced effects (feedback effects or inter-industrial feedback effects)	When the final product of Platform (used as inputs) changes one unit, this stimulates output of Platform and 19 remaining industries (**spillover effect**). The increased output of 19 industries, in turn, creates new demand for services provided from Platform. As a result, output of Platform may increase again. These additional effects are known as the **induced effect** (or the feedback effects). In other words, induced effects were excited by production of other industries when the increased output of these industries stimulated the increase in output of Platform services used as inputs for them.		B_{11}-$(I-A_{11})^{-1}$
Additional final demand for Platform services stimulates the increased output of other industries (19 remaining industries)			
Spillover effects	A change of the final product of Platform services will result in increased output in the related industries (19 remaining industries) because these industries use the		B_{21} = $B_{22}.A_{21}.B_1$

	final product of Platform as intermediate inputs. These effects are referred to as the **spillover effects**.	
Total output multiplier	**Total output multiplier** is measured by **the sum of the initial, direct, indirect, induced, and spillover effects.**	

Apart from measuring the output multiplier, we also measure other impacts of the Platform Industry, including: **Value-added multiplier; Income multiplier; and Employment multiplier**. Interpretation of these effects is shown in ***Table 2*** and further detailed in **Appendix 1**.

Table 2. Interpretation of value-added, income, and labor multipliers

Effects	Interpretation	Equation
Effects on income	**Income multiplier** describes the dollars of labor income generated as a result of one dollar of labor Income in the Platform Industry.	
	The stimulation of a unit of Platform industry final product to Platform industry income is	$h_1.B_{11}$
	The final products of the Platform industry stimulate to the income of other industries	$h_2.B_{21}.A_{21}.B_2$
	Final products of other industries stimulate the income of the Platform industry	$h_1.B_{11}.A_{12}.B_2$
	Other industries' final products stimulate their own income	$h_2.B_{22}$
Effects on employment	**Employment multiplier** describes the total jobs generated as a result of 1 job in the Platform Industry.	
	The stimulation of a unit of Platform industry final product to Platform industry labor	$l_1.B_{11}$
	The final products of the Platform industry stimulate to the labor of other industries	$l_2.B_{21}.A_{21}.B_2$
	Final products of other industries stimulate the labor of the Platform industry	$l_1.B_{11}.A_{12}.B_2$
	Other industries' final products stimulate their own labor	$l_2.B_{22}$

In addition, the report will analyze Industry linkages that represent production inter-dependence among industries. This implies the existence of two kinds of production linkages, namely backward and forward linkages. Interpretation of these linkages is shown in ***Table 3*** and further detailed in **Appendix 1**.

Table 3. Interpretation of backward linkage and forward linkage

Industry linkages	Interpretation	Note
Backward linkage	When specific sector final demand changes one unit, the change of the total outputs of all sectors increase/decrease is the **Dispersion** of specific sector to all sectors, also named **Backward Linkage Effects**.	BLi = ∑rij (the column totals of the Leontief).

	Backward linkage captures the interconnection of an industry to other industries from which it purchases inputs in order to produce its output. In other words, backward linkage describes an increase in the output of the Platform Industry will increase the input demands of other sectors and focused on demand structure. Backward linkages are given by the column totals of the Leontief.	Backward Linkage Effect = n.BLi/= $\sum BLi$
Forward linkage	The change of demand for specific sector output is the **Sensibility** of that sector, also named **Forward Linkage Effects**. In other words, forward linkages occur when an industrial activity induces the utilization of its output by other domestic production activities. Forward linkage describes how an increase in output of the Platform Industry will encourage an increase in the output of other industries. This linkage analysis indicates how to use the input as intermediate consumption and focused on input structure. Forward linkages are given by the row totals of the Leontief.	FLi = ∑rij (the row totals of the Leontief). Forward Linkage Effect = n.FLi/$\sum FLi$
Sectors with higher levels of integration have a greater impact on the economic system		

4) The 2022 I-O table of Vietnam is aggregated into 20 industries to make the analysis more manageable and to focus on the Platform industry and its closely inter-related industries. Data on Platform services is aggregated and extracted from 14 sectors across various fields, including: transportation, warehousing, commerce, finance, information and communication, education, healthcare, science and technology, entertainment, etc. (for detailed reference, see **Table 2, Section 1, Appendix 1**).

In addition, in the Platform industry, the research team also analyzed in depth the contribution of the transportation Platform industry to the economy (based on data from the Enterprise Survey). Accordingly, the transportation Platform sector is compiled and separated from 4 industries, including: transportation, warehousing, postal, delivery, etc. Refer to the details of the 4 related industries in **Table 3, Section 1, Appendix 1**.

CHAPTER 1. INTRODUCTION OF THE PLATFORM ECONOMY

1.1. The Platform Economy in Vietnam

Global trends show that Platform economy based on digital technology, data, and supporting services have driven efficiency improvements and cost reductions. Therefore, the Platform economy is a priority for governments worldwide, including Vietnam. Over the past decade, technology-based business models have grown strongly across the globe and deeply penetrated Vietnam, being present in many areas of life such as: providing ride-sharing services, accommodation, online shopping, using e-wallets, ride-hailing apps, logistics, booking flights, ordering food, renting accommodations, financial services, etc.

The role of the digital economy in general and Platform economy in particular can be recognized from various perspectives. From the broadest standpoint, the Platform economy has impacts in areas such as: (1) growth of e-commerce; (2) encouraging users to engage with the Internet; (3) developing the system of digital goods and services; (4) ensuring transparency - a key advantage of the digital economy through online activities, allowing for better management; (5) reducing transaction costs (including time, financial, and human resource costs, etc.); and (6) reducing information asymmetry, making supply and demand more aligned and better predictable, etc. As a result, the digital Platform enhances productivity and efficiency in economic activities and transactions.

The Platform economy has created new opportunities and developed alongside traditional production and business models. In recent years, the rapid development of Platform services has motivated traditional businesses to innovate their business mindsets, enhance their internal capabilities to increase competitiveness, and adapt to new consumer trends. At the same time, the emergence of the Platform economy has encouraged policy-making agencies to study and quickly refine the legal framework to ensure flexible and timely governance while still promoting innovation in new development trends and business models. This approach allows for the effective harnessing of the benefits of these trends and business models, including Platform-based business activities.

The term "**Platform economy**" is a concept that emerged globally in the early 21st century. It has been mentioned more frequently with the rapid development of the Fourth Industrial Revolution (**IR 4.0**). The "Platform economy" has various approaches, and there is yet to be an official definition. However, in Vietnam, the concept of "Platform economy" has been officially recognized in legal terms.

With the emergence of digital Platform-based business activities, the Law on Tax Administration (Law No. 38/2019/QH14 dated June 13, 2019) and Decree No. 126/2020/ND-CP dated October 19, 2020, which details several provisions of the Law on Tax Administration, have included "digital Platform-based business" entities under tax administration. Furthermore, Circular No. 80/2021/TT-BTC has further clarified the

meaning of this concept. Specifically: "***Digital Platform-based business activities*** *are business activities conducted by business entities through an intermediary digital system to connect with customers, with all connection activities occurring in a digital environment*" (Article 3.2). Thus, digital Platform-based businesses have been officially recognized in legal documents since 2019 and are subject to tax administration.

Subsequently, in Decision No. 411/QD-TTg dated 31/03/2022 by the Prime Minister approving the National Strategy for the Development of the Digital Economy and Digital Society until 2025, with orientations towards 2030, the Government has defined:

> *The digital economy is economic activity that uses digital technology and digital data as the main input factors, utilizes the digital environment as the primary operational space, and applies information and telecommunications technology to increase labor productivity, innovate business models, and optimize the economic structure.*
>
> *The digital economy includes: The ICT digital economy, which is the information technology industry and telecommunications services;* ***The Platform-based digital economy****, which refers to economic activities of digital Platforms, online systems connecting supply and demand, and online services; The sectoral digital economy is digital economic activity within sectors and industries.*

In the most recent legal document (specifically the 2023 E-Transactions Law), it is defined that: "***Digital Platforms*** *for e-transactions are information systems... creating an electronic environment that allows parties to conduct transactions or provide, use products, services, or use them to develop products and services*" (Clause 2, Article 45), and "***Intermediary digital Platforms*** *for electronic transactions are digital Platforms specified in Clause 2 of this Article, where the Platform owner is independent of the parties conducting the transactions*" (Clause 3, Article 45).

Thus, the development of Platform sector is a driving force for the growth of the digital economy across industries and sectors in Vietnam. Additionally, in a simple and commonly understood way in Vietnam, the Platform economy is viewed as a new form of industrial organization and a new business model, operating through an online system that connects supply and demand. The Platform economy changes the traditional way of conducting business, links a diverse range of buyers and sellers, and offers a wide variety of goods and services. Therefore, in this study, "**Platform business**" is defined as the business activity of entities using digital Platforms to conduct transactions and connect with customers. These services include both direct digital Platform services by the business entities (via their own apps) and intermediary digital Platform services

1.2. Policies of developing the digital economy and Platform economy in Vietnam

The digital economy in general, and the Platform economy in particular, is not only a trend but also a powerful driving force that contributes to reshaping the global

economy. Therefore, the Government of Vietnam have set clear and specific goals for the development of the digital economy, including the Platform economy. The section below provides an overview of some important policies regarding the development of the digital economy and Platform economy in Vietnam.

1) Resolution No. 52-NQ/TW dated September 27, 2019, approved by the Politburo on several policies and measures to proactively participate in the Fourth Industrial Revolution. Accordingly, Vietnam aims for the digital economy to account for 20% of GDP by 2025 and over 30% by 2030; the proportion of the digital economy in each sector should reach at least 10-20%.

2) To implement these targets, the Government and the Prime Minister have issued numerous documents and policies to promote the development of the digital economy and Platform economy. Notably among them are:

- Decision No. 645/QD-TTg dated May 15, 2020, approving the Master Plan for National E-commerce Development for the period 2021-2025.
- Decision No. 749/QD-TTg dated June 3, 2020, on the National Digital Transformation Program until 2025, with orientations towards 2030.
- Decision No. 2289/QD-TTg dated December 31, 2020, of the Prime Minister on the National Strategy for the Fourth Industrial Revolution until 2030.
- Decision No. 1968/QD-TTg dated November 22, 2021, approving the Proposal on "Promoting Information Technology Application and Digital Transformation in Trade Promotion Activities for the period 2021-2030".
- Decision No. 411/QD-TTg dated March 31, 2022, approving the National Strategy for the Development of the Digital Economy and Digital Society until 2025, with orientations towards 2030.

Notably, there are more than 50% of countries worldwide that have issued strategies for digital transformation and strategies for the public sector digitization. More than 10 countries and territories, including Vietnam, have issued strategies for the development of the digital economy and digital society[5]. In the National Digital Transformation Program until 2025, with orientations towards 2030, the Government clearly states, "*Digital transformation is the means to achieve sustainable development goals*", and "*People are at the center of digital transformation*". More specifically, the Government identifies, "***The development of digital Platforms*** *is a breakthrough solution to accelerate digital transformation, reduce costs, and increase efficiency*". Accordingly, priority should be given to the digital transformation of sectors that have social impact, are involved in daily life, help to change perceptions quickly, bring about efficiency, and save costs, including: Healthcare, Education, Finance - Banking, Agriculture,

[5] The speech by the representative of MIC at Vietnam - ASIA DX Summit 2024. See at: https://vneconomy.vn/lan-song-tiep-theo-cua-kinh-te-so-viet-nam.htm

Transportation and Logistics, Energy, Natural Resources and Environment, and Industrial Production.

Table 4. Some targets for digital economy development by 2025 and 2030

Targets	Unit	By 2025	By 2030
- Proportion of the digital economy to GDP	%	**20**	**30**
- Minimum proportion of the digital economy in each sector	%	**10**	**20**
- Proportion of e-commerce to total retail sales	%	**>10**	**>20**
- Percentage of businesses using electronic contracts	%	**>80**	**100**
- Percentage of small and medium-sized enterprises (**SME**s) using digital Platforms	%	**>50**	**70**
- Percentage of digital economy workers in the labor force	%	**>2**	**3**
- Information Technology Index (IPI) ranking	Rank	**50**	**30**
- Global Innovation Index (GII) ranking	Rank	**35**	**30**

Source: Compiled from Decision No. 749/QD-TTg dated June 3, 2020, and Decision No. 441/QD-TTg dated March 31, 2022

3) With the emergence and rapid development of the Platform economy, the legal framework has been gradually amended and supplemented to ensure alignment with trends and the development context. Some recent legal documents contain specific provisions on the development of the digital economy and Platform economy, which are detailed in ***Table 5***.

Table 5. Introduction to some legal documents regulating the digital economy and Platform economy

No	Legal documents	Introduction of some related regulations
1	Law No. 20/2023/QH15 on E-transactions	The E-Transactions Law clearly recognizes electronic transaction activities, including Platform-based business activities. Specifically, the Law contains the following provisions: - Clause 1, Article 34 states: "*An e-contract shall be concluded or executed from the interaction between an automated information system and a person or among automated information systems and its legal value cannot be denied for the sole reason that any inspection or intervention of human in each specific*

		action performed by the automated information systems or in the contract is not made". - Article 35 stipulates: "*1. Entry into e-contracts means the use of data messages to execute part or whole of transactions in the process of entering into e-contracts.* *2. Unless otherwise agreed upon by concerned parties, an offer to enter into an e-contract and acceptance of the offer to enter into the e-contract may be carried out through data messages*". At the same time, the Law also clearly states: "*In the process of concluding and executing an e-contract, a notice in the form of a data message shall have the same legal value as that of a printed notice*". (Article 38).
2	The Law on Protection of Consumers' Rights (No 19/2023/QH15) Decree No 55/2024/NĐ-CP dated 16/05/2024 on elaboration on the Law on Protection of Consumers' Rights	The Law on Consumer Rights Protection also recognizes business activities through Platforms. Specifically, in Clause 5, Article 3, it states: "*remote transaction means a transaction which is made online, by electronic means or other means that consumers cannot check or have direct contact with products, goods or services before participating in the transaction*." Thus, Platform-based business is a form of remote transactions. Accordingly, Platform business activities must also comply with the principles and policies for protecting consumer rights as stipulated by this Law and its implementing regulations.
3	Law No. 24/2018/QH14 on Cyber Security Decree No. 53/2022/ND-CP on Regulating in detail some articles of the cybersecurity law Decree No. 13/2023/ND on the Protection of Personal Data	Platform-based business is a transaction activity conducted in cyberspace. Therefore, Platform-based business must also comply with regulations on cybersecurity. Clause 3, Article 2 of the Cybersecurity Law stipulates: "***cyberspace*** *means a network of information technology (IT) infrastructure which includes telecommunications network, the Internet, computer network, communication systems, information processing and control systems, databases; cyberspace is where people's activities are not limited by space and time*".
4	Digital Payment	

	Decree No. 52/2024/NĐ-CP on non-cash payment	The legal framework for promoting non-cash payments and sandbox of using telecommunications accounts for small-value goods and services (mobile money) serves as the legal basis to facilitate Platform-based business activities in the financial sector in Vietnam.
	Decision 316/QD-TTg dated March 9, 2021 approving the pilot implementation of telecommunications accounts for payment of small value commodities and services (Mobile-Money)	
5	E-commerce	E-commerce is an important component of the platform economy. In Vietnam, e-commerce has been officially regulated by law since 2013 under Decree No. 52/2013/ND-CP. With the emergence and development of intermediary digital platforms, Decree No. 85/2021/ND-CP, issued by the Government, amended and supplemented several provisions of Decree No. 52/2013/ND-CP, adding "***E-commerce services***"
6	Decree No. 52/2013/ND-CP dated May 16, 2013, of the Government on E-commerce.	"*E-commerce activities are the process of conducting part or all of the commercial activities through electronic means connected to the Internet, mobile telecommunications networks, or other open networks*." (Clause 1, Article 3)
7	Decree No. 85/2021/ND-CP dated September 25, 2021, of the Government amending and supplementing several provisions of Decree No. 52/2013/ND-CP.	"*E-commerce services are e-commerce activities in which businesses or organizations providing e-commerce services establish e-commerce websites to provide an environment for other businesses, organizations, or individuals to carry out promotional activities, sell goods, or provide services.* *Businesses or organizations providing e-commerce services do not include businesses or organizations that only provide website design services and do not directly participate in business activities, operations, or coordinate activities on those websites*." (Clause 3, Article 1)

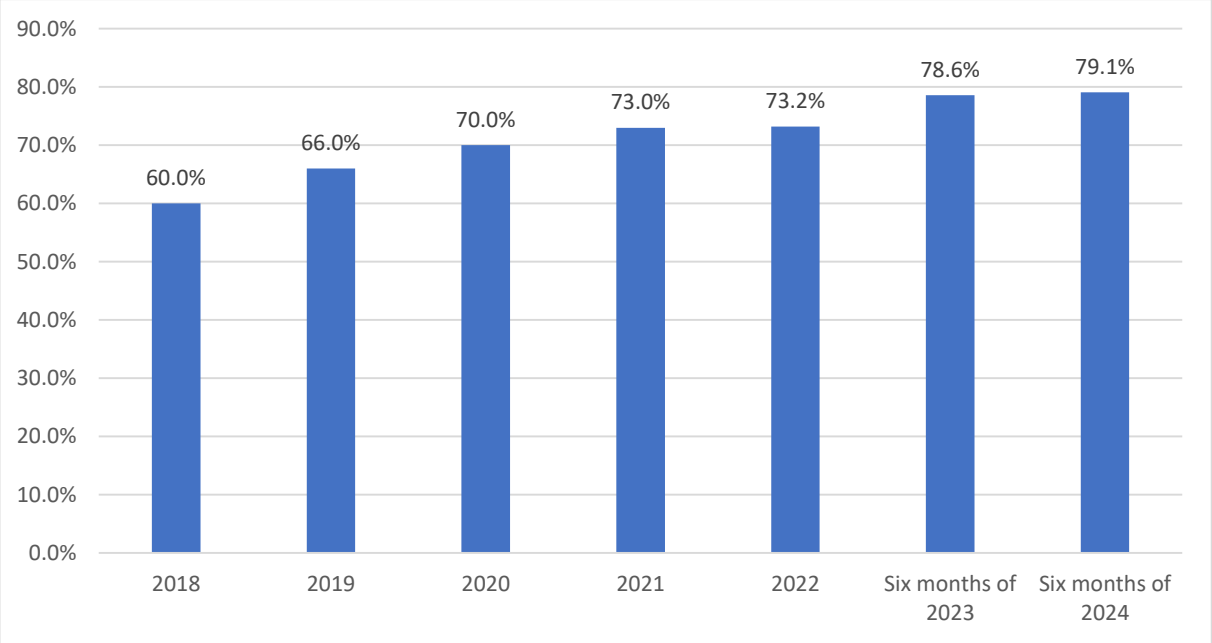
1.3. Current status of digital economy and Platform economy in Vietnam

1.3.1. Results of development of Platform economy

1) High and rapidly increasing internet usage rate

According to statistics, the percentage of the population using the Internet has continuously increased from 2018 to the present, achieving a rapid growth rate (see ***Figure 1***). By early 2024, there were 78.44 million Internet users; the internet penetration rate reached 79.1%; there were 72.70 million social media users, equivalent to 73.3% of the total population; and there were 168.5 million mobile connections in Vietnam, equivalent to 169.8% of the total population (according to We Are Social and Datareportal[6]). The number of mobile connections in Vietnam increased by an additional 5.1 million at the beginning of 2024, representing a 3.2% increase compared to the same period in 2023.

Figure 1. The percentage of the population using the Internet



Source: Data for 2018-2023: Department of E-commerce and Digital Economy, MoIT

Data for 2024: We Are Social and Datareportal

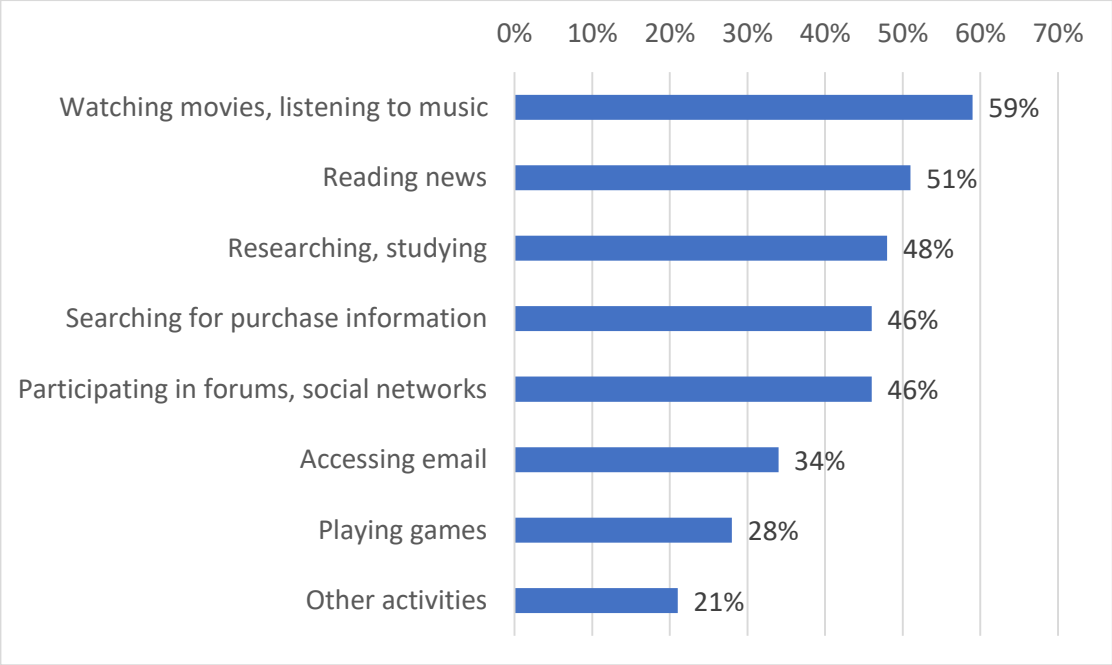
It can be seen that since officially connecting to the global Internet on December 1, 1997, Vietnam has witnessed the rapid development of information technology and has become one of the countries with the fastest internet growth rates in the Asia-Pacific region. According to the e-Conomy SEA 2023 report by Google, Temasek, and Bain & Company, Vietnam is ranked among the top 10 countries with the highest number of new mobile app downloads for two consecutive years (2022, 2023). This is expected to directly impact and promote the trend of Platform service usage in Vietnam.

[6] We Are Social và Datareportal (2024). *Vietnam Digital Report 2024*.

2) A young population with a tendency to use Platform services

The population of Vietnam reached 99.19 million people in January 2024, with an average age of 33.0. Among them, 15.7% are aged 25 to 34, and 15.6% are aged 35 to 44. This age group has the largest proportion and is also the group that uses Platform services the most. According to a survey by the Ministry of Industry and Trade (**MoIT**), 46% of Internet users use it for the purpose of searching for purchasing information, and 78% of Internet users engage in online shopping (see ***Figure 2***).

Figure 2. Purpose of Internet usage



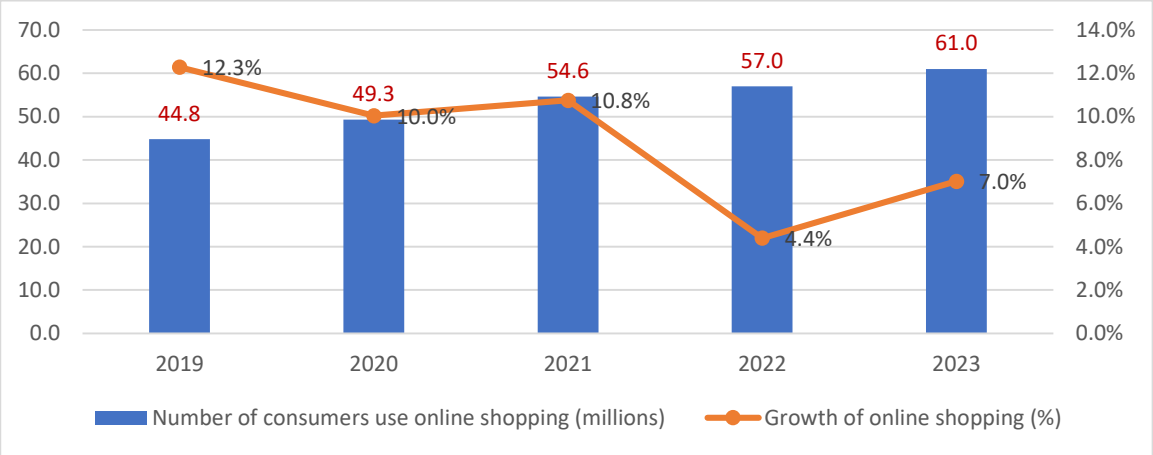
Source: Vietnam E-commerce White Book 2023 by MoIT

3) Rapid growth in e-commerce

With a high and rapidly increasing rate of internet usage, along with a large proportion of the young population favoring Platform services, the trend of online shopping has grown rapidly both in quantity and speed (see ***Figure 3***). As a result, e-commerce has become a key pillar of growth for Vietnam's digital economy. The growth rate of e-commerce in Vietnam increased significantly in 2023, sustaining into 2024. E-commerce revenue in 2024 is estimated to reach 27.7 - 28 billion USD, an increase of 36%, placing Vietnam among those with the highest growth rates of e-commerce in the world[7]. Furthermore, Google, Temasek, and Bain & Company projects that Vietnam's e-commerce market could reach $57 billion by 2025.

[7] The report on the implementation of the 2024 socio-economic development plan (**SEDP**), and the proposed SEDP for 2025. The report was presented by Prime Minister Pham Minh Chinh at the 8th session of the 15th National Assembly.

Figure 3. Number of users and growth rate of online shopping

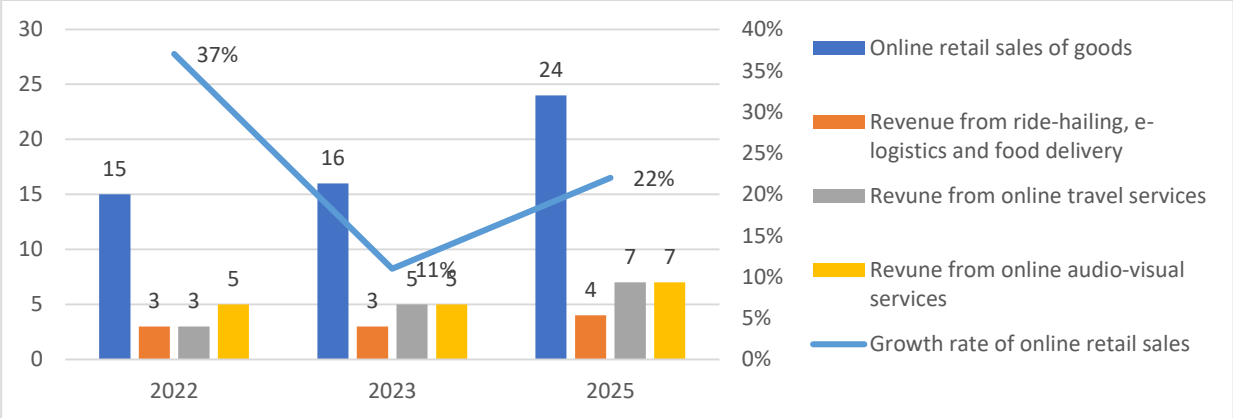


Source: Data from Department of E-commerce and Digital Economy, MoIT

In the Vietnam E-commerce White Book 2023, the MoIT reported that in 2023, the revenue of the retail e-commerce market increased by about $4 billion (25%) compared to 2022, reaching 20.5 billion USD. In the first six months of 2024, e-commerce revenue reached 13.2 billion USD, an increase of 28% compared to the same period in 2023. Previously, in January 2024, Modor Intelligence noted that Vietnam is one of the 10 countries with the highest e-commerce growth rates in the world, leading in ASEAN. The value of the e-commerce market in Vietnam is projected to reach 23.77 billion USD by 2029. Notably, Google, Temasek, and Bain & Company (2023) also showed that the growth rate of online retail revenue in Vietnam has reached double digits in recent years and is forecasted to continue growing at a rate of 22% by 2025[8] (see ***Figure 4***).

Figure 4. Revenue on e-commerce in Vietnam

Unit: (Revenue: billion USD; Growth rate: %)



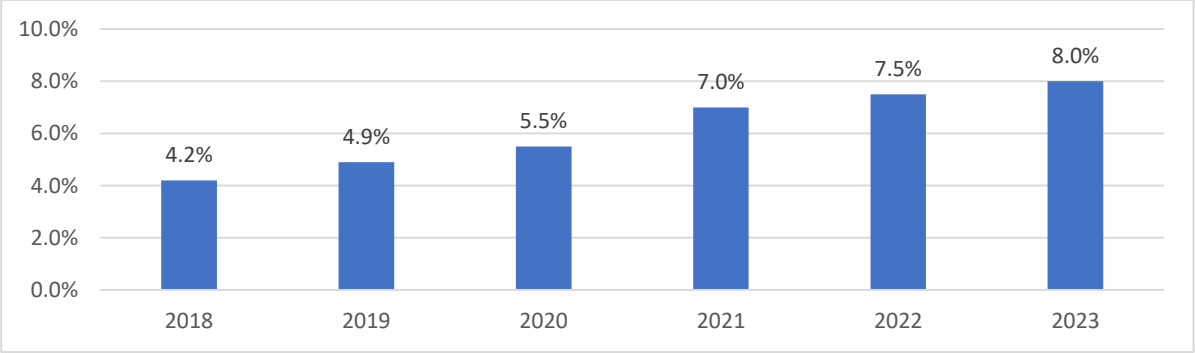
Source: Compiled from data at Google, Temasek, and Bain & Company (2023)

It can be seen that e-commerce continues to be an important distribution channel, contributing to the development of supply chains and circulation both domestically and

[8] Google, Temasek, Bain & Company, 2023. *E-Conomy SEA 2023 Report*.

internationally. Notably, B2C e-commerce has continuously grown rapidly since 2018 and currently accounts for approximately 8% of the total retail revenue of consumption goods and services nationwide.

Figure 5. The proportion of B2C e-commerce revenue compared to total retail revenue of consumption goods and services



Note: Vietnam's B2C e-commerce revenue includes the revenue from all goods and services sold through e-commerce channels (excluding transactions related to finance, banking, credit, insurance, and online gaming).

Source: Data from Department of E-commerce and Digital Economy, MoIT

In the latest report on shopping behavior of Vietnamese consumers conducted by NielsenIQ Vietnam[9], the frequency of online shopping by consumers in 2024 is twice as high as in 2023. Specifically, on average, each person makes online purchases nearly 4 times per month and spends more than 8 hours per week on shopping online. This figure is almost double the frequency of monthly supermarket visits by Vietnamese consumers. On average, each person uses 3.2 Platforms for online shopping.

Overall, Vietnam's e-commerce market is experiencing strong growth, driven by the increasing penetration of the internet and mobile devices, along with the high proportion of the young population who prefer using online Platforms. The shift to online shopping and advancements in digital payments will continue to fuel the growth momentum for Vietnam's e-commerce market to keep expanding.

4) Ride-hailing market: Growth and competition

With the rapidly increasing urban population in Vietnam, coupled with a lack of public transportation options and growing traffic congestion, the demand for ride-hailing services has also risen in recent years. In 2016, the Ministry of Transport (**MoT**) issued Decision No. 24/QĐ-BGTVT on January 7, 2016, regarding the pilot implementation of scientific and technological applications to support the management and connection of passenger transport activities with contract. This was the first legal document, recognized as a sandbox for the Platform business model in the transportation sector. This decision

[9] Report on *Shopping trends in Vietnam 2024*. Available at: https://nielseniq.com/global/vi/insights/report/2024/syndicated-studies-research-shopper-trends-2024-2/

laid the groundwork for promoting the development of the ride-hailing market and Platform applications in transportation; thus, requiring and motivating an improvement in the quality of services offered by traditional transportation businesses.

Box 1. Traditional taxi companies "transformed" to compete in the domestic market

The technology ride-hailing market in Vietnam over the past decade has witnessed profound changes, completely changing the way people access transportation services. The emergence and development of technology ride-hailing apps has created a revolution in the transportation industry. Foreign ride-hailing apps have brought unprecedented convenience, but also put traditional taxi companies in a situation of having to transform to develop.

Besides facing a series of difficulties with declining market share and revenue, high operating costs, and limited management systems, traditional taxi companies also have to compete with rivals that possess stronger investment capabilities, and more effective marketing strategies. Under competitive pressure from foreign competitors, traditional taxi companies in Vietnam recognize that in order to survive and develop, they must transform, apply information technology, and collaborate together.

In that context, more than 200 traditional taxi companies across the country have decided to cooperate and participate on a common Platform. Accordingly, taxi calling is integrated into banking apps. This solution works in parallel with each company's own apps, creating a closely connected ecosystem between businesses. Thanks to this shared Platform, users only need a single app to order cars from many different companies, find the nearest driver and compare prices and services. This not only brings convenience to users but also helps taxi companies expand their customer base, especially small companies that have difficulties in accessing the market.

Source: https://vietnamnet.vn/taxi-truyen-thong-lot-xac-thach-dau-ung-dung-goi-xe-tren-chinh-san-nha-2326956.html

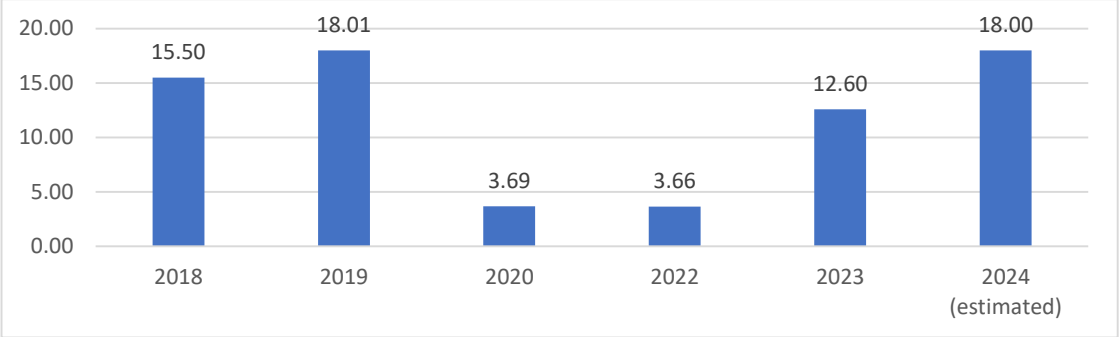
The ride-hailing market has witnessed changes in the habits of people in using transportation services. The level of competition in the ride-hailing market is becoming increasingly intense with the participation of companies such as Grab Holdings Inc., Xanh SM (GSM Joint Stock Company), Be Group Joint Stock Company, FastGo, and others. According to Q&Me, on average, 80% of the cost incurred by users is spent on **bike ride-hailing services** in the ride-hailing market. The ride-hailing market in Vietnam is growing rapidly for several reasons:

- The increasing urban population and rising incomes are driving demand for convenient transportation options, especially among urban workers and young people. There is a trend of choosing ride-hailing services for the convenience of personal travel.
- The rise in demand for travel and tourism, along with a tech-savvy young population, has boosted the use of ride-hailing services. Statistics show that the number of international tourists coming to Vietnam has strongly rebounded since 2023 after the disruptions and declines during the COVID-19 period (2020-2021) (see ***Figure 6***). The recovery in tourist numbers has also contributed to the growth of the ride-hailing market in Vietnam.

- Vietnam has high internet coverage (reaching nearly 80% in 2023). The increasing number of smartphone users is driving demand for digital services, including ride-hailing services through Platforms.

Figure 6. Number of international tourists coming to Vietnam

Unit: Million visits

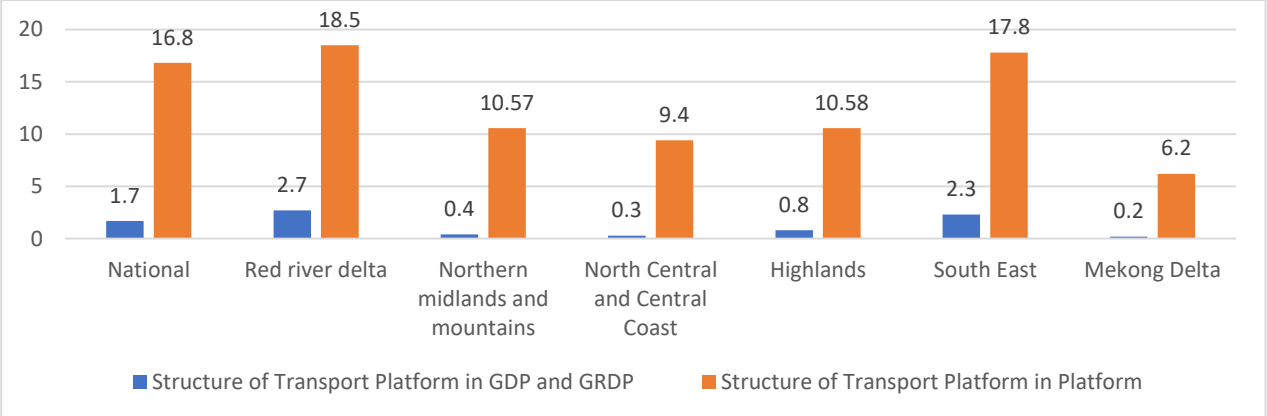


Source: Vietnam National Tourism Administration

As a result, in recent years, the transport Platform sector has made a significant contribution to the economic development of Vietnam (contributing approximately 1.7% of GDP in 2022 and continuing to increase in 2023). Notably, for the two key development regions of Vietnam (including the Red River Delta and the Southeast region), the transport Platform services have contributed 2.7% and 2.3% of the GRDP of these two regions, respectively.

Figure 7. Proportion of the transport Platform sector's contribution to the economy

Unit: %



Source: Calculation based on data from GSO

It can be seen that the fierce competition in the ride-hailing market has created benefits for consumers through companies improving service quality and reducing prices. To maintain their respective market shares in a highly competitive market, companies have improved options for customers and expanded their operations and services on

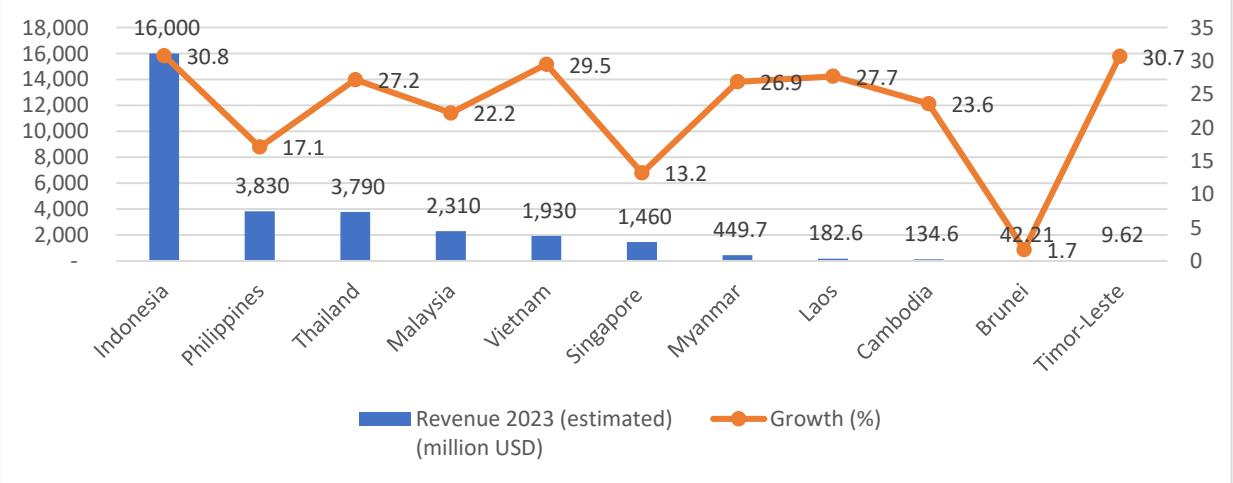
mobile apps. As a result, market efficiency increases, this makes a meaningful contribution to Vietnam's economic growth and development

5) Online food delivery maintains growth momentum

The online food delivery market is experiencing significant growth due to consumers changing their traditional habits and using online Platforms to order food. The development of this Platform industry is driven by the increasing number of people using the Internet, easy access to smartphones, the growth of e-banking, improved food delivery logistics, and changes in lifestyle and consumption trend.

After the COVID-19 pandemic, the trend of ordering food among Vietnamese people has increased. According to the 2023 online food delivery market report by Momentum Works, by the end of 2022, the total gross merchandise value (**GMV**) of online food delivery Platforms in ASEAN reached 17.1 billion USD, showing steady growth at 5%. In 2023, the estimated total value of the online food delivery market in Vietnam ranked fifth among ASEAN countries, following Indonesia, the Philippines, Thailand, and Malaysia. However, its growth rate compared to the same period in 2022 ranked third (at 29.5%), and the compound annual growth rate for the period from 2023 to 2027 is expected to rank second after Indonesia. The three largest markets contributing to the GMV growth of the online food delivery sector in ASEAN are the Philippines, Malaysia, and Vietnam, thanks to the strong development of Grab and ShopeeFood.

Figure 8. Online food delivery market



Source: Data from the 2023 online food delivery market report by Momentum Works

With a large population in ASEAN and the trend of changing consumption habits, Vietnam has significant potential to develop its online food delivery market in the coming years. According to Momentum Works, the online food delivery market in Vietnam has considerable room for growth. In 2023, the number of orders through food delivery Platforms continued to rise rapidly, with approximately over 12 million people having food delivery orders. It is estimated that this sector will achieve an average growth rate of about 5.48% during the period from 2023 to 2027.

It is evident that in the past decade, Platform-based ride-hailing and delivery services have become an indispensable part of business operations, employment, and daily life in urban areas, especially in big cities like Ho Chi Minh City and Hanoi. In particular, Ho Chi Minh City is currently the largest ride-hailing market in Vietnam.

6) E-logistics market

E-logistics, also known as e-commerce logistics, has experienced rapid growth in Vietnam in recent years. This trend reflects the flexibility and adaptability of the economy in the context of digital transformation. Participants in the e-logistics market can be divided into two main groups: (i) the internal e-logistics departments of e-commerce Platforms and retail businesses, and (ii) third-party e-logistics service providers (**3PL**). In recent years, e-commerce Platforms have tended to outsource delivery services through 3PL.

Thanks to the increased application of technology by logistics companies and customers, Vietnam's e-commerce logistics industry is ranked 11th among the top 50 growth markets. The rapid development of e-commerce has created growth potential for the e-logistics sector, particularly in the fast delivery segment. According to the Vietnam E-commerce Association (**VECOM**), the volume of products transported through delivery services increased by 47% in 2020. From 2020 to 2025, the sector is expected to maintain a growth rate of 29%.

7) Digital payment

a) In Vietnam, efforts to apply information technology (**IT**) are implemented in all economic sectors, including the field of digital payment. However, the establishment of sandboxes appears to be slower than in other countries. Since 2016, only two pilot mechanisms, which are regarded as sandboxes, have been issued. That is Decision No. 24/QD-BGTVT on piloting the application of science and technology to support the management and connection of passenger transport activities under contracts (also known as Project 24 as presented above) and Decision No. 316/QD-TTg dated March 9, 2021 of the Prime Minister on pilot implementation of using telecommunications accounts to pay for small value goods and services (Mobile-Money).

With Decision No. 316/QĐ-TTg, telecommunications enterprises are allowed to provide payment services to users through telecommunications accounts - previously a function solely performed by credit institutions according to the Law on Credit Institutions. The pilot implementation period is 02 years from the time the first enterprise implementing the pilot is approved. However, on November 18, 2023, the Government issued Resolution 192/NQ-CP extending the implementation time of this Decision. As a result, the pilot mechanism for implementing Mobile money has promoted non-cash payment activities, increasing access to financial services, especially in rural and remote areas of Vietnam.

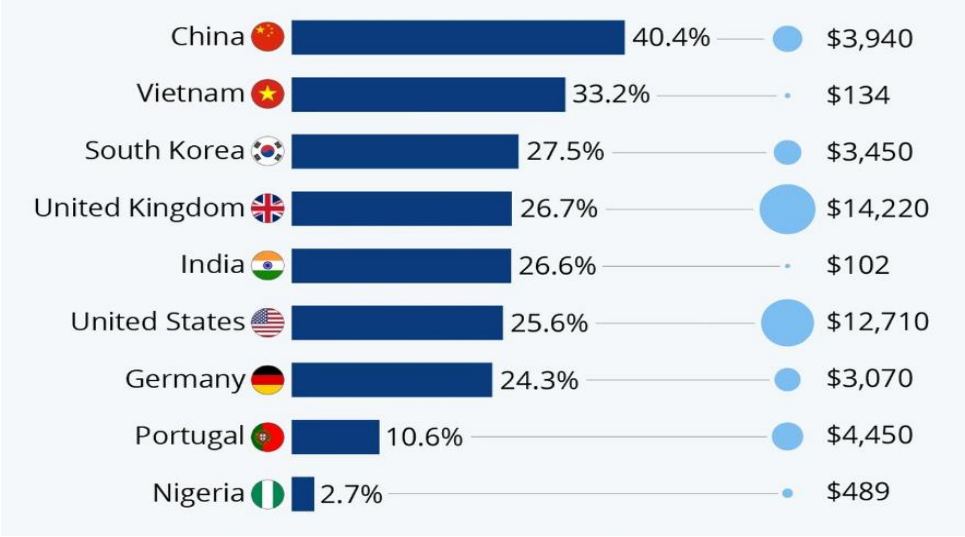
The pilot implementation of Mobile Money has significantly contributed to reducing cash usage in Vietnam. According to a report from the State Bank of Vietnam

(**SBV**), the cash-to-total payment ratio decreased from 11.34% in 2021 to 9.51% in 2022, and to just over 8% in 2023. By the end of June 2024, the percentage of adults with payment accounts reached 87.08% (an increase of 9.67% compared to the end of 2023), surpassing the government's target set for 2025. In the first six months of 2024, the total number of accumulated customers using Mobile Money services reached over 8.8 million, of which 6.3 million were in rural, mountainous, and remote areas. Non-cash payment transactions increased by 58.2% in quantity and 36.7% in value. Data-sharing transactions between Platforms and information systems through the National Data Exchange Platform (**NDXP**) increased by 67% compared to the same period in 2023[10].

These results have created the basis for the formation of a legal framework for Mobile Money. Recently, the Government assigned the SBV to preside over and coordinate with the Ministry of Information and Communications (**MIC**), the Ministry of Public Security (**MoPS**), the Ministry of Justice (**MoJ**) and relevant agencies to draft legal documents on cryptocurrency. At the same time, in Resolution No. 100/NQ-CP, the Government assigned the SBV to preside over the drafting of the Government's Decree on the Fintech sandbox.

b) According to a report by Statista, as of August 2022, Vietnam ranked second, with 33.2% of people making mobile payments. The following countries were South Korea (27.5%), the United Kingdom (26.7%), India (26.6%), and the United States (25.6%). The rapid development of digital payments in Vietnam has contributed to promoting and creating room for the growth of Platform services.

Figure 9. Ranking of the proportion of mobile-money users



Source: Statista

[10] According to the Report of SBV at the 9th session of the National Committee on Digital Transformation and the Task Force for the Implementation of Government Project 06; The mid-term review conference for the first half of 2024 on national digital transformation and Government Project 06.

8) Digital technology businesses

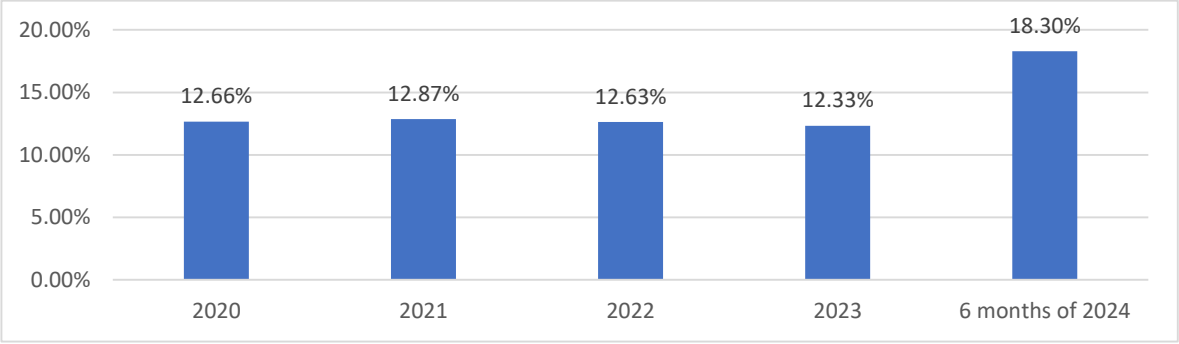
With a population of nearly 100 million, ranking 15th in the world, Vietnam is a large market to foster and develop its digital technology enterprises. Since 2019, Vietnam's digital technology industry has made positive strides. The number of digital technology companies has increased by 30%, and digital technology industry revenue has grown by 32%[11]. According to data from the Ministry of Information and Communications[12], in the first six months of 2024, the number of digital technology companies increased by 8% compared to the same period in 2023, with 50,350 companies currently operating, exceeding the government's target of 48,000. Of these, about 30,000 are hardware, digital content, telecommunications, and IT service companies; 10,000 are software technology companies with a high growth rate of around 15-20% per year; and over 50 Fintech companies providing payment and cryptocurrency services. Additionally, Vietnam has tens of thousands of digital startups each year.

The rapid growth of digital technology businesses creates a foundation for expanding and developing digital business services, including Platform services in Vietnam. This promotes transformation in the economy towards a digital economy, including creating changes in policy mindset. However, the current laws do not have breakthrough regulations to develop the domestic market for digital technology enterprises, especially small and medium-sized digital technology companies.

9) Rapid growth in the digital economy

a) With the changes and results analyzed above, the digital economy in Vietnam has continuously developed in recent years, and particularly rapid growth in the first half of 2024. This is reflected in the proportion of the digital economy in GDP (see ***Figure 10***).

Figure 10. The proportion of digital economy in GDP



Source: Data from GSO

[11] Opening remarks by the Minister of Information and Communications at the 5th National Forum on the Development of Vietnam's Digital Technology Enterprises with the theme "Innovating Digital Applications for Digital Economy Development – A Driving Force for Economic Growth and Labor Productivity" on December 11, 2023.

[12] At the Conference on Information and Communications activities in the first 6 months and tasks in the last 6 months of 2024. See at: https://vneconomy.vn/cong-nghiep-ict-6-thang-tang-27-dat-gan-1-86-trieu-ty-dong.htm

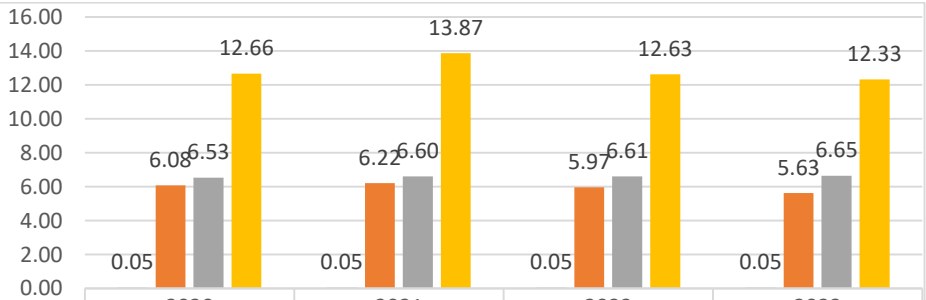
According to data from GSO, the proportion of the VA of the digital economy in GDP for the years 2020-2023 was 12.66%, 12.88%, 12.63%, and 12.33%, respectively. In 2023, the core digital economy contributed 7.42% (accounting for 60.19%), while the digitalization of other sectors contributed 4.91% (accounting for 39.81%). In the first half of 2024, the VA proportion of the digital economy in GDP reached 18.3%, significantly higher than the average rate from 2020-2023.

Several sectors had a high average VA from 2020 to 2023, such as wholesale and retail sales, accounting for about 13% of the total VA of digital economy; the VA of financial services activities accounted for about 2%; ... In 2023, the proportion of VA of the digital economy in the country's GDP decreased. The main reason was the decline in the computer manufacturing, electronic products, and optical products sector, which accounted for more than 30% of the total VA of digital economic activities. This was primarily due to a drop in global demand, leading to reduced production and exports in this sector. However, the VA of service industries through Platforms and the use of information technology in production, business operations, and management increased.

b) The proportion of the digital service industries' VA in GDP is the largest and tends to increase over the years (see ***Figure 11***).

Figure 11. Proportion of digital economy in GDP by sectors

Unit: %



	2020	2021	2022	2023
Agriculture, forestry and fisheries	0.05	0.05	0.05	0.05
Industry, construction	6.08	6.22	5.97	5.63
Services	6.53	6.60	6.61	6.65
Total	12.66	13.87	12.63	12.33

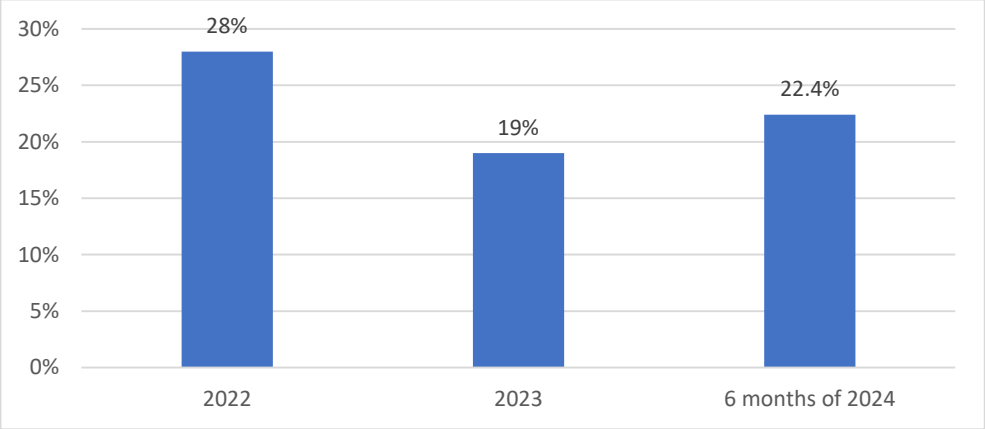
Source: Data from GSO

c) In terms of the proportion of VA of the digital economy in the total GRDP by provinces during the period 2020-2023, the data shows that out of 63 provinces and cities: 5 provinces and cities had a proportion above 20%; 8 provinces and cities had a proportion from 10-20%; 48 provinces and cities had a proportion from 5-10%; and 2 provinces and cities had a proportion below 5%. (For detailed proportions of VA of the digital economy for all 63 provinces and cities, see **Appendix 2**).

d) The report of Google, Temasek, Bain & Company evaluates that the growth rate of Vietnam's digital economy is the fastest in ASEAN for two consecutive years (28% in

2022 and 19% in 2023), which is 3.5 times higher than the GDP growth rate. In 2023, the number of users on digital Platforms in Vietnam grew by 46% compared to 2022. According to data from GSO, the digital economy is estimated to have increased by 22.4% in the first six months of 2023 compared to the same period in 2022. As a result, Vietnam continues to be expected to be the country with the strongest growing digital economy in the ASEAN region from now until 2025.

Figure 12. Growth of digital economy in Vietnam

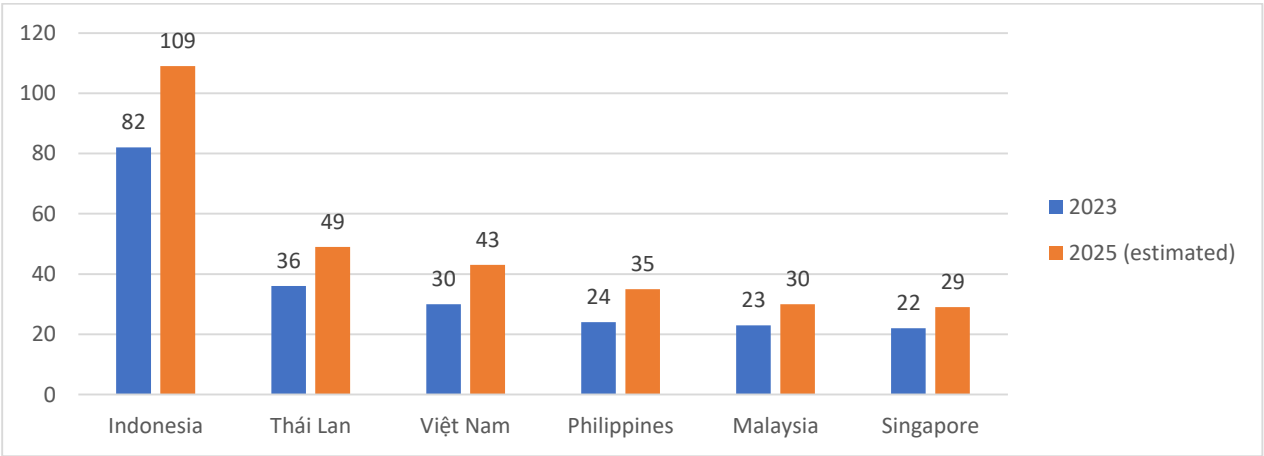


Source: Data of 2022, 2023 from Google; data of 2024 from GSO

MoIT's report[13] forecasts that in the period from 2022 to 2025, Vietnam's Internet economy will lead the region with an annual growth rate of approximately 31%. According to the e-Conomy SEA 2023 Report from Google, Temasek, and Bain & Company, the scale of Vietnam's digital economy currently ranked third in the region, after Indonesia and Thailand (see ***Figure 13***).

Figure 13. Value of the digital economies

Unit: Billion USD



Source: Data is compiled from the e-Conomy SEA 2023 Report by Google, Temasek, Bain & Company

[13] *Vietnam E-commerce White Book 2023*.

Statistics from the period 2018-2022 show that the growth rate of the digital economy in many major countries significantly outpaces the overall growth rate of the real economy. Countries with the highest GDP per capita in the world, such as the U.S. and Singapore, also regard the digital economy as a growth driver, with growth rates 2-3 times higher than those of the real economy[14]. According to the e-Conomy SEA 2023 report, VA of Vietnam's digital economy in 2024 is expected to reach 52 billion USD, 3.71 times higher than in 2020 (which was 14 billion USD). Thus, on average, VA of the digital economy increases by 30% per year (calculated in USD), which is much higher than the GDP growth rate (6.5-7% per year) at base price and also exceeds the GDP growth rate at current price (about 11%) and the GDP growth rate at PPP (about 25% per year). As a result, Vietnam is assessed as the country with the fastest growth rate of the digital economy in ASEAN for two consecutive years (2022 and 2023) and is expected to maintain this position in 2025 (tied with the Philippines). The analysis above indicates that Vietnam also has a significantly faster and superior growth rate in its digital economy compared to the overall growth rate of its economy.

10) Some global rankings related to the digital economy

Developing the digital economy with breakthroughs in AI and advancements in AI management has been a significant concern for governments worldwide. According to the report "Government AI Readiness Index 2023" published by Oxford Insights[15], Vietnam ranks 59th out of a total of 193 countries and territories assessed, marking the third consecutive year that Vietnam has surpassed the global average; it stands 5th out of 10 in ASEAN, improving by one position compared to 2022. This result reflects Vietnam's significant efforts in recent years, including the application of AI in developing and expanding the Platform economy.

Another global ranking index is the Global Cybersecurity Index (**GCI**) of the International Telecommunications Union (**ITU**)[16]. The Global Cybersecurity Index 2024[17], recently published by the ITU, indicates that countries worldwide are improving their cybersecurity efforts but need stronger actions to address the evolving cyber threats.

In 2020, Vietnam held a relatively high ranking in the Global Cybersecurity Index (25th out of 182 countries). In the fifth edition of the Global Cybersecurity Index 2024, the ITU changed its assessment and ranking criteria (based on five pillars: Legal, Technical, Organizational, Capacity Development, and Cooperation measures). Accordingly, Vietnam scored a total of 99.74 points (with capacity development scoring only 19.74 out of 20 scores), while the other four criteria were all recognized with perfect

[14] Report of the Department of Digital Economy and Digital Society, MIC, on Vietnam's digital economic development orientation at ASIA DX Summit 2024.

[15] Oxford Insights is a consulting organization on digital transformation and AI strategy in the UK. Government AI Readiness Index 2023 is the 6th report published, after 2017, 2019, 2020, 2021 and 2022.

[16] ITU is the United Nations specialized agency for information technology and communications.

[17] The 5th Report is published.

scores. This total score placed Vietnam among the top 46 countries with high cybersecurity indexes worldwide. As a result, Vietnam is among the four countries with strong cybersecurity indexes in ASEAN, including Indonesia (100), Thailand (99.22), Malaysia (98.82), and Singapore (99.86 scores).

In summary, the above results reflect the increasing role of the digital economy in general and the Platform economy in particular. Vietnam is internationally recognized for having certain advantages in developing the digital economy. This will be a new driving force for Vietnam to achieve sustainable growth and development in the near future. It is evident that the Platform economy is emerging and developing with cross-border Platforms like Google, Facebook, and ride-hailing apps such as Grab, Be, Xanh SM, along with e-commerce Platforms like Shopee, Tiki, Lazada, as well as digital payment Platforms like Momo, Zalopay, Vnpay, which have completely transformed the domestic market. The development of these Platforms, through changes in business trends and consumption habits, will impact various groups, including related industries in the economy, job opportunities, and the methods of solving social issues. This serves as a motivation for traditional businesses to enhance their competitiveness while also encouraging policymakers to research, make reforms of institutions, and timely approve legal frameworks to align with trends and practical developments.

1.3.2. Some challenges in developing Platform economy

1) Some common challenges in developing the Platform economy are as follows:

- The Platform economy in Vietnam is a new issue. Therefore, the mindset and awareness in state management regarding these new issues are still not open and remain aligned with old management thinking. This is a significant bottleneck for the development of the Platform economy.
- With the rapid development of Platform business models and the digital economy, legal regulations and institutions for digital economic development have not kept up. State management agencies are still hesitant in responding to the rapid technological changes and new business models.
- The infrastructure for digital transformation remains limited, particularly in terms of data infrastructure.
- The challenges of risk management for the Platform economy; issues related to ensuring cybersecurity, information security, and data protection remain significant concerns. According to statistics from Kaspersky, from 2019 to 2022, Vietnam ranked among the top three countries most frequently targeted by cyberattacks worldwide. Therefore, issues of cybersecurity, and the protection of personal and business data need to be given special importance.
- There is a lack of human resources for developing the Platform economy, especially workers of information technology and new technology.
- The lack of data resources is one of the major challenges in the development of the digital economy in Vietnam. Currently, Vietnam has only 9 data centers

dedicated to businesses, which is significantly fewer than countries in ASEAN, such as Thailand, Singapore, and Indonesia.

2) For the ride-hailing market, in addition to the general challenges mentioned above, the ride-hailing market in Vietnam faces several specific difficulties, including: (i) Issues related to resolving labor disputes and managing drivers; (ii) Barriers of legal regulations; (iii) Ensuring the safety of drivers and passengers; (iv) Requirements for upgrading technology; …

3) Some difficulties and challenges in proposing and designing sandboxes to promote the development of Platform are as below:

- Sandboxes are usually issued in the form of the Government's decrees or decisions of the Prime Minister, while many related obstacles are in laws (higher-level legal documents issued by the National Assembly). Because the laws do not yet permit sandboxes, therefore, the approval of sandboxes is often very difficult and limited.

- The policy-making mindset still tends toward tightening management with strict binding conditions; applying old management approaches to new business models; thus, policies lack flexibility and do not encourage innovation.

- The process of designing sandboxes is like promulgating a regular legal document. It is a complex, multi-step, time-consuming process. There has yet to be a streamlined drafting process applied to sandboxes.

- The policymakers are concerned about the risks of sandboxes, so they do not seem to support these policies.

1.4. Grab Vietnam – Best practice of Platform economy

Among the companies in the Platform economy, Grab Co., Ltd. (**Grab**) is a best practice of Platform-based business. The company has provided a variety of Platform services, consumer-oriented and leading business trends in Vietnam. As a result, Grab creates job and income opportunities for hundreds of thousands of workers , while contributing to promoting the digital transformation process at Grab's partners.

Grab started its operations in Vietnam in 2014 with the GrabTaxi service. Subsequently, Grab has developed and built a diverse ecosystem, connecting various types of services to meet the daily essential needs of the people, such as transportation (GrabTaxi, GrabCar, GrabBike), e-logistics (GrabExpress), food delivery (GrabFood), and grocery shopping (GrabMart). Grab also collaborates with Moca Technology and Services Joint Stock Company (**Moca**) to provide digital payment solutions on the Grab Platform. To date, Grab has operated extensively nationwide, offering Platform services in 50 out of 63 provinces and cities in Vietnam.

Box 2. Grab's business model paves the way for the issuance of the sandbox for the transport Platforms in Vietnam

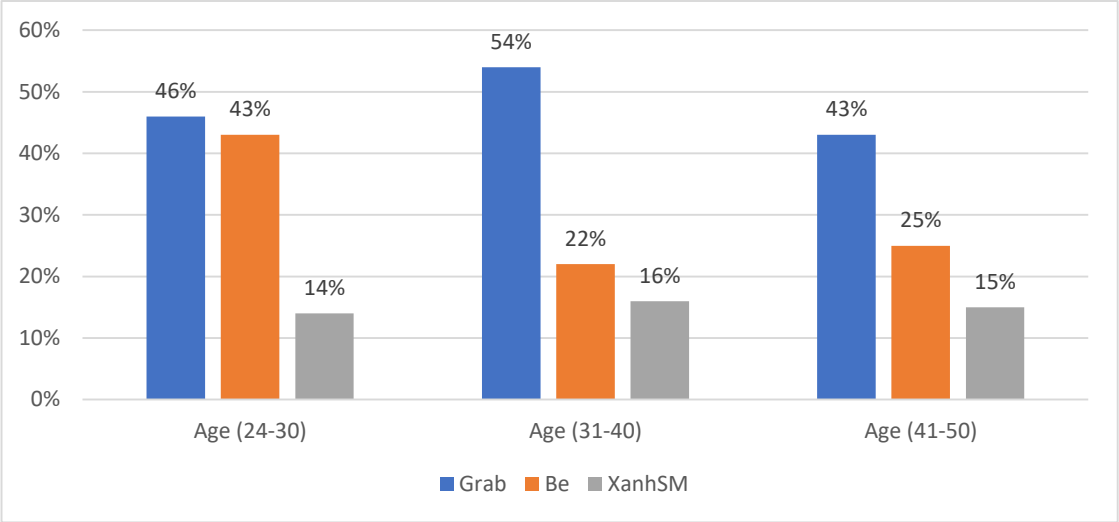
In Vietnam, efforts to apply information technology have been implemented across all economic sectors. However, the establishment of experimental institutional frameworks appears to be slower compared to other countries. Since 2016, only two pilot mechanisms, similar to policy tools like sandboxes, have been issued. The results from implementing these pilot mechanisms have laid the foundation for amending related legal documents. In the transportation sector, this pilot mechanism is the issuance of Decision No. 24/QD-BGTVT on January 7, 2016, which issued the Pilot Plan for implementing science and technology applications to support management and connect passenger transport activities under contracts, also known as **Scheme 24**

Scheme 24 was regarded as the regulatory sandbox for Platform business models in the transport industry. This Scheme is piloted in 05 provinces and cities of Vietnam, and for Grab Taxi and businesses registered with contract passenger transport activities in these provinces. With this Scheme, technology businesses are allowed to participate in the transport industry by providing a Platform for connection between drivers and passengers. Scheme 24 has helped Provincial transportation departments manage passenger transport activities and related tax obligations more effectively, while also increasing service options and facilitating passenger travel.

The implementation of Scheme 24 has also motivated traditional taxi companies to invest in technology to improve service quality. After four years of piloting, most traditional taxi companies have invested in technology and implemented Platforms to connect with passengers. The results from implementing Scheme 24 created opportunities for regulatory learning, and thus for revising Decree No 86/2014/ND-CP. Accordingly, the Government issued Decree No 10/2020/ND-CP dated 17/01/2020 on car transport business and conditions for car transport business (replacing Decree No 86/2014/ND-CP). Specifically, Decree No. 10/2020/NĐ-CP has added regulations concerning providers of Platforms that support transport connections.

A survey by Q&Me shows that the number of users choosing Grab's services across different age groups holds the highest proportion in the ride-hailing market (see ***Figure 14***). This result is also consistent with a survey by Decision Lab in the "The Connected Consumer Q2/2024" report, where Grab leads in terms of user numbers across all age groups in Vietnam.

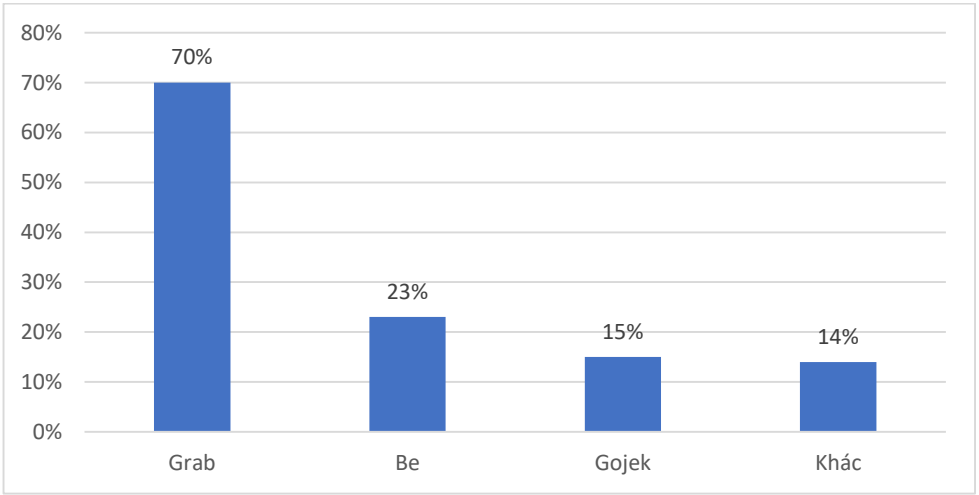
Figure 14. Percentage of users in the ride-hailing market in Vietnam



Source: Data from Q&Me

According to the 2023 E-commerce White Paper by MoIT, in the transport Platform sector, 70% of internet users prefer Grab's Platform, while 23% prefer Be's Platform. These are also the two most popular ride-hailing Platforms chosen by consumers.

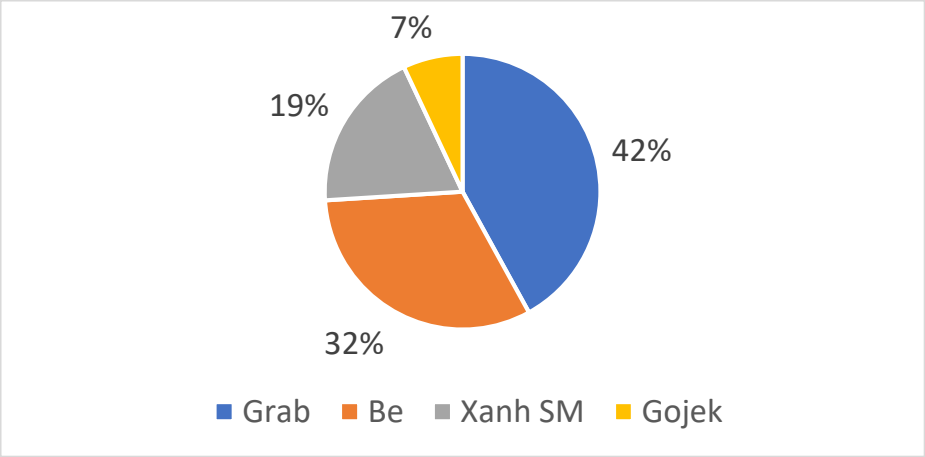
Figure 15. Popular ride-hailing Platforms (Percentage of users)



Source: E-commerce White Book 2023

In the ride-hailing market, on average, 80% expenses of users are spent on motorbike ride-hailing services. The "Motorbike Ride-Hailing Apps Popularity 2024" report by Q&Me shows that Grab is the leading brand, with 42% of users choosing it. Be ranks second with 32% and is popular among the youth, followed by XanhSM and Gojek with 19% and 7%, respectively. These are the four ride-hailing Platforms most recognized by survey participants.

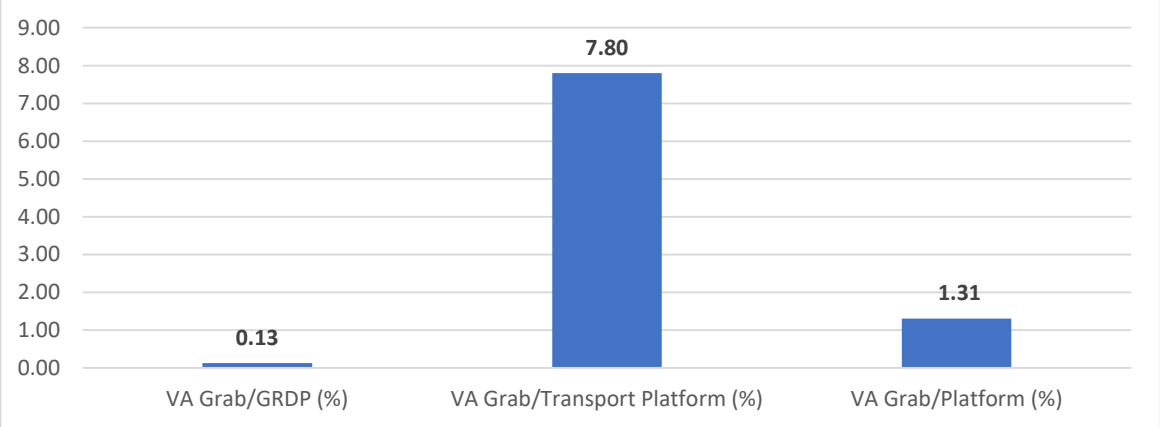
Figure 16. Motorbike market shares in Vietnam



Source: Report "Motorbike Ride-Hailing Apps Popularity 2024" by Q&Me

With its role as a leading company in the ride-hailing and food delivery market in ASEAN, Grab has successfully applied advanced technologies such as AI and automation into its transportation processes, thereby enhancing service quality and user experience. Grab is also improving the digital map of GrabMaps by using OpenAI's computer vision technology, enhancing automation capabilities and data quality from images. The forecasted revenue for Grab in 2024 indicates solid growth. As a result, Grab has made significant contributions to the growth and development of the Platform industry in general and the transport Platform sector in particular, thereby making a meaningful contribution to the country's GDP.

Figure 17. Grab's contribution in Transportation Platform and GDP



Source: Calculation from Grab's data and GSO's Enterprise Survey 2022

In 2022, Grab contributed 7.8% to the added value of the transportation Platform sector, 0.31% to the Platform industry and 0.13% to GDP, creating job and income opportunities for thousands of direct employees at the office, hundreds of thousands of drivers, and millions of workers in related industries. Notably, Grab contributed approximately 0.23% of the GRDP of the Red River Delta region (including Hanoi) and 0.17% of the GRDP of the Southeast region (including Ho Chi Minh City). This result

demonstrates that Grab has made a meaningful contribution to the important growth poles of the economy.

Overall, in the Platform industry, Grab is a pioneering model and a preferred Platform. Grab's participation has driven growth and development in the transportation industry and made a meaningful contribution to Vietnam's economic development.

CHAPTER 2. MEASURING THE MULTIPLIER EFFECTS OF THE PLATFORM INDUSTRY ON VIETNAM'S ECONOMY

2.1. Overview of GRDP by regions and the contribution of the Platform and the transport Platform in GRDP

According to 2022 data, GRDP in the Southeast region is the largest in the country (126.7 billion USD, accounting for 31% of total GDP); followed by the Red River Delta region (123.2 billion USD, accounting for 30.1% of total GDP); North Central and Central Coast region (60.3 billion USD, accounting for 14.5%); Mekong Delta region (48 billion USD, accounting for 11.8%); Northern Midlands and Mountains region (34.8 billion USD, accounting for 8.5%); The lowest is the Central Highlands region (15.7 billion USD, accounting for 3.8%).

Table 6. Value and structure of GRDP by economic regions

No.	Regions	GRDP in 2022	
		Value (Billion USD)	Structure (%)
	National	**408.8**	**100.0**
1	Red river delta	123.2	30.1
2	Northern midlands and mountains	34.8	8.5
3	North Central and Central Coast	60.3	14.8
4	Highlands	15.7	3.8
5	South East	126.7	31.0
6	Mekong Delta	48.0	11.8

Source: Calculated from data of Enterprises survey 2022

However, *in terms of the proportion of value added of the Platform industry*, there are big differences between economic regions. Of the total 40.5 billion USD in added value of the Platform, the Red River Delta region has the largest contribution (17.9 billion USD, accounting for 44.2%); The Southeast region ranked second (16.4 billion USD, accounting for 40.5%); followed by the North Central and Central Coast regions (2 billion USD, accounting for 5%); Mekong Delta region (1.7 billion USD, accounting for 4.3%); the Central Highlands region contributed the lowest (1.3 billion USD, accounting for 3.1%).

Table 7. Platform industry value and structure by economic region

No.	Regions	Value added of Platform in 2022	
		Value (Billion USD)	Structure (%)
	National	**40.5**	**100**
1	Red river delta	17.9	44.2
2	Northern midlands and mountains	1.2	2.9
3	North Central and Central Coast	2.0	5.0
4	Highlands	1.3	3.1
5	South East	16.4	40.5
6	Mekong Delta	1.7	4.3

Source: Calculated from data of Enterprises survey 2022

In terms of the Platform industry's contribution in GDP: The gross value added of the Platform in 2022 reached about 40.5 billion USD, accounting for 9.9% of total GDP. In which, the Red River Delta region accounts for 14.5%; The Southeast region accounts for 13.0%; The Mekong Delta region accounts for 3.6%; The Central Highlands region accounts for 8%; The Northern Midlands and Mountains accounts for 3.4%; The lowest is the North Central and Central Coast regions, accounting for 3.47%.

The data of the 2022 enterprise survey shows that the value added of transport Platform services[18] in 2022 is about 6.8 billion USD, in which the Red River Delta region contributed the most (3.3 billion USD, accounting for 48.8%); The second largest contributor is the Southeast region (2.9 billion USD, accounting for 43%); followed by the North Central and Central Coast region (0.2 billion USD, accounting for 2.8%); Central Highlands region (133 million USD, accounting for 2%); Northern Midlands and Mountains region (125 million USD, accounting for 1.8%); finally, the Mekong Delta region (107 million USD, accounting for 1.6%).

Table 8. Value and structure of the Transport Platform Industry by economic regions

No.	Regions	Value added of Transport Platform in 2022	
		Value (Billion USD)	Structure (%)
	National	**6.8**	**100**
1	Red river delta	3.3	48.8
2	Northern midlands and mountains	0.125	1.8

[18] Data on the transportation Platform sector is aggregated from four industries (refer to Table 3, Section 1, Appendix 1).

3	North Central and Central Coast	0.2	2.8
4	Highlands	0.133	2.0
5	South East	2.9	43.0
6	Mekong Delta	0.107	1.6

Source: Calculated from data of Enterprises survey 2022

Table 9 shows the proportion of Transport Platform in the Platform industry in 2022. Specifically, the Red River Delta region accounts for 18.5%; The Southeast region accounts for 17.8%; The Central Highlands region accounts for 10.58%; The Northern Midlands and Mountains accounts for 10.57%; The North Central and Central Coast regions account for 9.4%; Finally, the Mekong Delta region accounts for 6.2%.

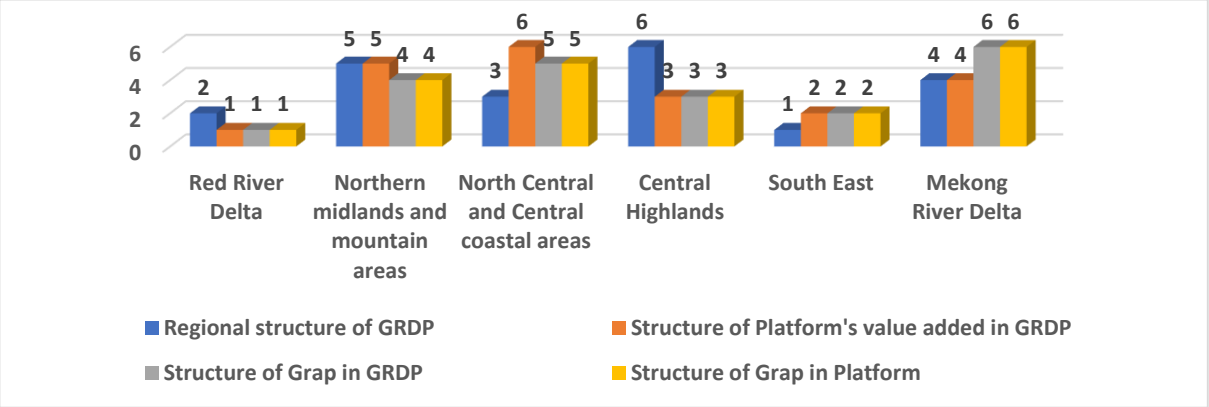
Table 9. Structure on value added of Platform and Transport Platform in GDP and Grab's structure in the Platform by economic regions

No.	Regions	Structure (%)		
		Structure of Platform in GDP and GRDP	**Structure of Transport Platform in GDP and GRDP**	**Structure of Transport Platform in Platform**
	National	**9.92**	**1.7**	**16.8**
1	Red river delta	14.5	2.7	18.5
2	Northern midlands and mountains	3.4	0.4	10.57
3	North Central and Central Coast	3.4	0.3	9.4
4	Highlands	8.0	0.8	10.58
5	South East	13.0	2.3	17.8
6	Mekong Delta	3.6	0.2	6.2

Source: Calculated from data of Enterprises survey 2022

Based on the rankings of economic regions in terms of GRDP structure; Platform proportion in GRDP; Transport Platform's proportion in GRDP; and the proportion of Transport Platform in the Platform industry; it is obvious that the development of the Platform industry and Transport Platform services is still concentrated mainly in key economic regions and urban areas (Hanoi, Ho Chi Minh City, Da Nang, Can Tho,...) (see ***Figure 18***). These results show that there is still a lot of room to develop the Platform industry and Transport Platform services in other economic regions of Vietnam in the future.

Figure 18. Structure rankings of GRDP, Platform and Transport Platform by economic regions



Source: Calculated from data of enterprises survey 2022

2.2. Economic impacts of the Platform on Vietnam's economy: Input - Output analysis

2.2.1. Regarding the supply and demand structure of the Platform industry

From the structure of the 2022 I-O table updated for 20 industries, it shows that on the supply side, the ratio of added value to gross input of the Platform industry is much higher than the overall ratio of the economy (54.8% compared to 28.5%). This partly reflects that the production efficiency of the Platform industry is better than the overall production efficiency of the economy.

Table 10. Supply and demand Structure of the Platform industry

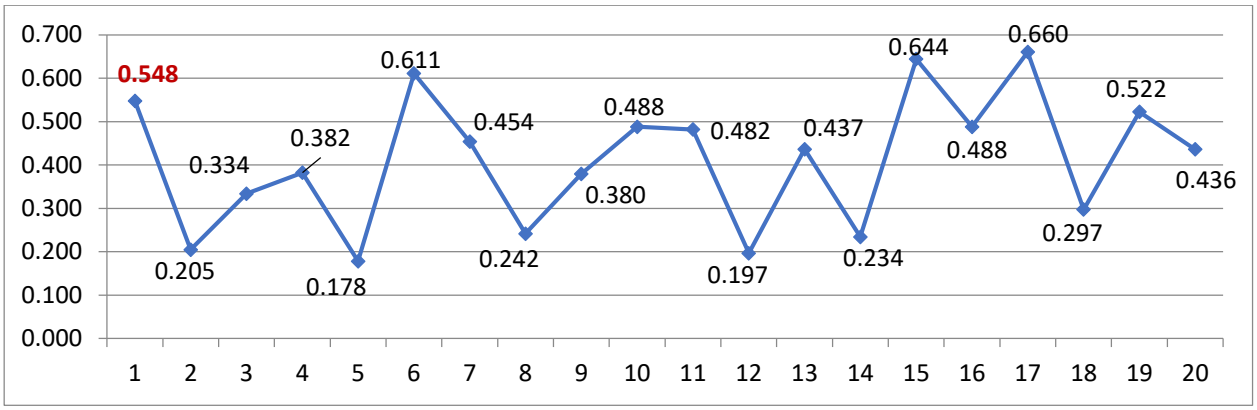
Industries	Input structure		
	Intermediate input	Value added	Gross input
Platform	45.2%	**54.8%**	100.0%
Other industries	71.5%	**28.5%**	100.0%

Source: Calculated from Vietnam's 2022 I-O table

In more detailed analysis, ***Figure 19*** shows that the ratio of value added to gross input of the Platform industry is one of the 4 industries with the highest ratio among the 20 industries surveyed in the model. They include: Platform (0,548), education and training (0.660); Real estate business activities (0.664); Electricity, gas, hot water, steam and air conditioning production and distribution industry (0.611).

Figure 19. Ratios of value added to gross input

Unit: times



Source: Calculated from Vietnam's 2022 I-O table

2.2.2. The power of dispersion index and the sensitivity of dispersion index of the Platform industry

In Input - output analysis, the power of dispersion index is average of output multipliers. We refer to the output multiplier of industry j as OM_j, and the power of dispersion index of industry j as P_j. P_j is determined as follows:

$$\mathbf{P_j = n.OM_j / \sum OM_j} \qquad \text{(n = number of industries = 20)}$$

And the sensitivity of dispersion index is the average of input multipliers. We refer to the input multiplier of industry i a IM_i and the sensitivity of dispersion index of industry i as S_i, then S_i is determined as follows:

$$\mathbf{S_i = n.IM_i / \sum IM_j} \qquad \text{(n = number of industries = 20)}$$

Industries with a power of dispersion index greater than 1 are industries that have an important stimulating impact on the economy.

Industries with a sensitivity of dispersion index greater than 1 are industries that are relatively necessary for the economy.

Table 11 shows that **the final products of the Platform industry in Vietnam stimulate the output of the economy slightly higher than the average (1.009 compared to 1)**[19]**. The sensitivity of dispersion of the Platform industry is also higher than the general average (1.628 compared to 1)**. Notably, the Platform industry (Industry 1), Agriculture, forestry and fishery industry (Industry 3) and Manufacturing and processing industry (Industry 5 that excludes digital production) are the industries having the highest sensitivity. Industry 5 has very high sensitivity because almost all other industries use products from Industry 5 as a production input .

[19] It is understood as a stimulating impact on the Platform itself and the output of other sectors in the economy.

Table 11. Economic structure with 20 industries

Unit: times

Sectors	Output multipliers	Backward linkage	Input multipliers	Forward linkage
1	**2.754**	**1.009**	**4.445**	**1.628**
2	2.290	0.839	2.318	0.849
3	2.963	1.085	5.692	2.085
4	2.627	0.962	2.034	0.745
5	2.889	1.058	14.872	5.448
6	2.061	0.755	1.924	0.705
7	2.743	1.005	1.300	0.476
8	2.878	1.054	1.682	0.616
9	2.864	1.049	1.241	0.455
10	2.871	1.052	1.936	0.709
11	2.873	1.053	1.571	0.576
12	2.939	1.077	2.342	0.858
13	2.759	1.011	1.123	0.411
14	2.964	1.086	1.860	0.681
15	2.185	0.800	2.563	0.939
16	2.969	1.088	2.152	0.788
17	2.765	1.013	1.604	0.587
18	2.888	1.058	1.349	0.494
19	2.417	0.886	1.386	0.508
20	2.900	1.062	1.207	0.442

Source: Calculated from Vietnam's 2022 I-O table

2.2.3. Indices of linkages of the Platform industry to value-added, workers and income

As indicated above, the impact of the final products of the Platform industry on the economy's output is slightly higher than the average impact level. At the same time, **its impact on the value-added and income of the economy (1.230 and 1.294 respectively) is also higher than the average level** (see ***Table 12***). An interesting thing is that the final products of the manufacturing industry (Industry 5) strongly stimulate to

the output of the economy (Sensitivity of dispersion is 5.448), but its spillover effect to the added value and income of the economy (0.739 and 0.747 respectively) is lower than the average level. That is why measuring the impact of an industry on output in many cases does not make much sense, especially for developing countries. Therefore, measuring the impact of a sector on the economy not only assesses the effect on output but also needs to consider other effects on value-added, income, and labor.

Table 12. Impact of a unit of final demand to value-added, income and labor

	Value added multiplier	Power of dispersion on value added	Income multipliers	Power of dispersion on income	Labor multipliers (*)	Power of dispersion on labor
1	**1.192**	**1.230**	**0.733**	**1.294**	**93,734**	**0.709**
2	0.564	0.582	0.275	0.486	53,827	0.407
3	0.941	0.972	0.593	1.046	152,600	1.155
4	0.883	0.911	0.476	0.841	56,537	0.428
5	0.739	0.763	0.423	0.747	86,493	0.655
6	0.962	0.992	0.358	0.632	42,731	0.323
7	1.018	1.051	0.599	1.057	108,962	0.825
8	0.793	0.818	0.522	0.922	129,664	0.981
9	0.999	1.031	0.661	1.167	179,857	1.361
10	1.142	1.178	0.704	1.243	191,755	1.451
11	1.137	1.173	0.700	1.236	141,620	1.072
12	0.763	0.788	0.455	0.803	105,352	0.797
13	1.028	1.061	0.598	1.056	279,140	2.112
14	0.847	0.874	0.522	0.921	133,928	1.014
15	1.045	1.079	0.384	0.677	58,698	0.444
16	1.156	1.193	0.784	1.384	127,326	0.964
17	1.262	1.303	0.810	1.430	165,548	1.253
18	0.847	0.874	0.565	0.997	117,994	0.893
19	1.009	1.041	0.447	0.789	91,808	0.695
20	1.054	1.088	0.719	1.270	325,266	2.461

Note: To study an industry in the economy, the exogenous variable (Y) is understood as final product. For national analysis, final products, final demand or final use are understood the same.

** The number of jobs created when an additional 1 USD of final output is produced by the Platform sector.*

Source: Calculated from Vietnam's 2022 I-O table

Regarding impacts on labor, it shows that one billion USD of final products of the Platform industry creates **93,734 workers in all industries**. However, the Platform industry's stimulating impact on labor (0.709) is lower than the average impact of other industries in the economy because this industry requires high-skilled workers . Industry 3 (agriculture, forestry and fisheries), Industry 13 (Services for accommodation (not using digital Platforms - traditional sectors)), Industry 20 (other services) do not require high skilled labor, thus the spillover of final demand to labor is higher than the average.

2.2.4. Output multiplier effects of the Platform industry

Table 13 shows that one USD of the Platform industry's final products stimulates its own output by **USD 1.401**; of which, directly stimulated from the final product of the Platform is **USD 1.329** and stimulated through induced effect (the Platform uses products from other industries as inputs, thus stimulates the production of other industries, which in turn stimulates output of the Platform industry (inter - industry feedback effects) is **USD 0.073**. In addition, 1 USD of the final product of the Platform industry not only stimulates its own output but also stimulates the output of other industries by **USD 1.352**. The total impact of 1 billion USD of final products of the Platform industry on the entire economy is **USD 2.754**.

Table 13. Impact of a unit of Platform's final products

Unit: times

1	**Impact on Platform industry output (2 + 6)**	**1.401**
2	**Multiplier effects (3 + 4 + 5)**	**1.329**
3	Initial effects	1.000
4	Direct effects	0.247
5	Indirect effects	0.081
6	**Induced effects**	**0.073**
7	**Spillover effects to output of other industry**	**1.352**
8	**Total impacts (output multiplier: 1 + 7)**	**2.754**

Source: Calculated from Vietnam's 2022 I-O table

Table 14 aims to clarify the impact of the Platform's final products on other industries (the remaining 19 industries) in the economy. The industry that benefits the most when the final products of the Platform industry group increase is Industry 5 (Processing and manufacturing industry with 38.4%); followed by Industry 3 (agriculture, forestry and fisheries with 14.7%) and Industry 15 (Real estate business activities with 7%), etc.

Table 14. The final products of the Platform create spillover effects to the output of other industries in Vietnam's economy

Industries	Spillover effects *(times)*	Percentage of spillover *(%)*
1	**1.352**	**100%**
2	0.079	5.8%
3	0.198	14.7%
4	0.034	2.5%
5	0.519	38.4%
6	0.038	2.8%
7	0.009	0.7%
8	0.028	2.0%
9	0.012	0.9%
10	0.040	3.0%
11	0.025	1.8%
12	0.061	4.5%
13	0.007	0.5%
14	0.054	4.0%
15	0.095	7.0%
16	0.065	4.8%
17	0.038	2.8%
18	0.022	1.6%
19	0.017	1.2%
20	0.012	0.9%

Source: Calculated from Vietnam's 2022 I-O table

2.2.5. Multiplier effects of the Platform industry on value-added, jobs, and income

The results shown in ***Table 15*** below demonstrate the impacts of the final output of the Platform sector on added value, income, and employment. Specifically:

- *The spillover effects of the Platform industry on value-added*: 1 billion USD of final product of the Platform sector stimulates an additional **1.1918 billion USD** of value added in the economy. Of which, the value added directly within the Platform sector is 0.77 billion USD (accounting for around **64.4%** of the total impact), while the value

added in other sectors is 0.42 billion USD (accounting for around **35.6%** of the total impact).

- *The spillover effects of the Platform industry on jobs*:

For formal business sector, the number of workers employed in the Platform enterprises was **2,086.2 thousand** people, accounting for 4.12% of the total employment in the whole economy's enterprises. In terms of job growth, the average pre-COVID period (2016–2019) saw the Platform sector recording a job growth rate of 6.5%, significantly higher (1.53 times) than the overall job growth rate of the economy (4.3%). During the COVID-19 period (2020–2021), job growth in the Platform sector declined to -0.8%, which was less severe than the average job growth decline of the economy (-1.6%). From 2022 onwards, job opportunities in the economy have recovered. Notably, jobs in the Platform sector experienced strong growth, reaching 9.4%, significantly outpacing the overall job growth rate of the economy (3.7%). These results demonstrate that the development of the Platform sector creates significant job opportunities for workers.

Measuring spillover effects of the Platform on jobs shows that one billion USD of final products of the Platform industry creates **93,734 jobs** in all industries. The final products of the Platform industry stimulate job growth in that industry (accounting for **42.14%** of the total impact) and stimulate job growth in the remaining industries (accounting for **57.86%** of the total impact). The spillover impact on jobs of the Platform industry to other industries is greater than the spillover to VA and income. This shows that the more the Platform industry develops, the more job opportunities will be created.

Based on the above measured job multiplier, it can be estimated that in 2022, the growth of the Platform industry's final output stimulated an additional **423,909 jobs** (both direct and indirect) in the economy, including **178,638** jobs within the Platform industry and **245,272** jobs in other sectors

- *The spillover effects of the Platform industry on income*:

For formal business sector, in 2022, the income of workers in Platform enterprises was approximately **540.74 trillion VND** (equivalent to 26.2 billion USD), accounting for **10.9%** of the total labor income in the whole economy's enterprises. Notably, although the Platform industry workforce made up only 4.12% of total employment, the income of workers in this sector accounted for 10.9% of the total income in the economy. In terms of average monthly income, in the period 2018-2022, the average income of Platform industry workers is more than 11.3 million VND, higher 14% than the average income of the economy (nearly 9.9 million VND). These results show that the Platform industry generates higher income for workers than the average income of the economy.

Measuring spillover effects of the Platform on income shows that one billion USD of final products of the Platform sector stimulates **0.7326 billion USD** in workers's income across the economy. Of which, it stimulates 0.4968 billion USD in income of

workers in the Platform sector itself (accounting for **67.81%** of the total impact), and 0.2358 billion USD in income of workers in other sectors (accounting for **32.19%** of the total impact).

With the above measured income multiplier, it can be estimated that in 2022, the increase in the final products of the Platform sector stimulated a **3.313 billion USD** increase in income of workers across the economy, including **2.247 billion USD** in income of workers the Platform sector and **1.066 billion USD** in income of workers in other sectors.

Table 15. Impact of a unit final product of the Platform on the value added, income and jobs

	A unit of final product of Platform *(times))*	**Percentage of contribution** *(%)*
Total effects on value added	**1.1918**	**100%**
Multiplier effects to value added of Platform (v1.Y1)	0.7676	64.4%
Spillover effects to value added of other industry (v2.B21)	0.4243	35,6%
Total effects on income	**0.7326**	**100%**
Multiplier effects to income of Platform	0.4968	67.81%
Spillover effects to income of other industry	0.2358	32.19%
Total effects on labor (thousand people)	**93.7**	**100%**
Multiplier effects to labor of Platform (thousand people)	39.5	42.14%
Spillover effects to labor of other industry (thousand people)	54.2	57.86%

Source: Calculated from Vietnam's 2022 I-O table

2.2.6. Platformization in Vietnam's economy

Table 16 shows that the Platform's output is not only created by the final products of the Platform but also by the final products of other industries in the economy. The result shows that 68,5% of the Platform's output is made up of final products from other industries in the economy (because production of other industries uses the Platform's products as inputs). This partly shows that there is a high level of "**Platformization**" in Vietnam's economy.

Table 16. Output of Platform created by a unit final product of Platform and final products of other industries

	Final product of Platform (Y1)	Final product of other industry (Y2)	Total (input multipliers)
Output of Platform *(times)*	1.401	3.043	4.445
Percentage of contribution *(%)*	31.5%	**68.5%**	100%

Source: Calculated from Vietnam's 2022 I-O table

In the I-O system, every industry has its own importance. The importance of an industry is not only the proportion of that industry's value added in GDP, but also the industry's contribution in the economy. The contribution of an industry is made through the products of that industry being used as input costs of other industries and spillover effects of the final products of that industry on the output, added value, income and labor of industries. From the 2022 I-O table of Vietnam shows that although the ratio of value added to GDP of the Platform industry is about 9.92%, but the ratio of Platformization in the output of the Platform industry is created by the final products of other industries in the economy up to 68.5%.

Furthermore, the final products of the Platform industry not only stimulate its own added value, income, and labor but also those of other industries in the economy. So, it can be seen that if the output of the Platform industry increases, it will increase the output, value added, income and labor of other industries.

CHAPTER 3. SOME IMPLICATIONS

3.1. Some common recommendations

In the context of rapidly changing technology, legal regulations often fail to keep pace with technological development and evolving practices. Digital transformation has become an essential imperative for Vietnam's development. However, while Vietnam has opportunities to achieve its digital economy goals, it also faces many challenges. This requires a change in mindset among policymakers in creating legal frameworks that both promote innovation and technological development while effectively controlling associated risks. Regulatory sandboxes with the principle of ensuring business freedom is a suitable policy option for Vietnam. Good policy practices of sandboxes, such as Decision No. 24/QĐ-BGTVT on piloting the deployment of science and technology applications to support the management and connection of passenger transport activities under contract and Decision No. 316/QĐ-TTg dated March 9, 2021, by the Prime Minister on piloting the use of telecommunications accounts for payments of small-value goods and services, should be expanded to other sectors.

Policies must anticipate trends and be formulated in a way that promotes the development of the Platform economy, creating a ripple effect on the entire digital economy ecosystem and the broader economy. Therefore, establishing a favorable, safe, and innovative policy environment for the Platform economy development is essential. To achieve this, the research team proposes some following recommendations:

3.1.1. Recommendations for state agencies

1) Government agencies and policymakers need to clearly understand the novelty of the Platform economy in order to adopt a new mindset in management and avoid rigidly applying old regulations and outdated management approaches to new models.

2) Government agencies and policymakers need to promptly identify potential unintended consequences and risks that may arise during the development of the Platform economy in various industries (such as concerns about privacy, cybersecurity threats, risks in protecting user data and in protecting consumer and investor rights, and dispute resolution issues, etc.). This is essential for preparing management strategies and establishing relevant policies to minimize negative impacts. At the same time, relevant regulatory agencies should issue warnings and advisories to users to avoid risks when conducting transactions on digital Platforms.

3) The Government needs to have a consistent and clear stance on the Platform economy. Additionally, there should be a comprehensive vision and the establishment of a more practical and effective inter-sectoral coordination mechanism during the policymaking process related to the Platform economy. Issuing fragmented policies by individual sectors can lead to inconsistency and discrepancies, which may hinder the broader goal of promoting digital economic development.

4) The Government should soon research and propose the establishment of the Vietnam Digital Technology Enterprise Development Fund, with capital mobilized from society. This would provide the necessary and timely resources for the development of digital technology enterprises, including domestic Platform companies.

5) The Government needs to urgently research and implement solutions to support enterprises in digital transformation, aiming to optimize their operations, enhance customer experience, and expand and diversify digital products.

3.1.2. Recommendation for the Platform-based enterprises

Enterprises are the backbone of Platform economy development, so the activeness and innovation of businesses are decisive factors. Accordingly, the report proposes that the Platform-based enterprises should implement the following solutions and actions:

- Continuously upgrade and develop technology to provide high-quality services to customers.
- Pay special attention to solutions that ensure customer safety; Improve risk management quality, especially concerning the security of customer information and data.
- Research and develop new services to better meet customer needs.
- Ensure Platform business activities promote fair competition, aim for sustainable and inclusive development, and support the economy's green growth goals.
- Establish a mechanism for interaction and dispute resolution, if necessary.

3.2. Recommendation on designing sandboxes for some Platform business activities

Establishing a controlled testing policy framework (**regulatory sandbox**) for new products, services, and business models utilizing digital technology is one of the key solutions emphasized in Directive No. 01/CT-TTg dated January 14, 2020, by the Prime Minister on promoting the development of digital technology enterprises. The sandbox mechanism is also one of the tools and policy approaches adopted by many countries. However, in Vietnam, the establishment of regulatory sandboxes seems to be slower compared to other nations. Therefore, the Report proposes the following solutions for setting up sandboxes in Vietnam:

1) The establishment of sandboxes needs to break away from old management mindsets and should be issued promptly to seize technological opportunities. At the same time, the drafting and approval of sandboxes should follow a streamlined process rather than the current complex and time-consuming procedures. Sandboxes should aim to support businesses, reduce administrative procedures, and shorten the time for licensing new technology products and services, etc.

2) Vietnam is currently in the process of drafting and consulting on the Decree on Fintech sandbox. Therefore, it is necessary to urgently finalize and promulgate this sandbox to pave the way for establishing similar legal frameworks in other sectors such

as Energy, Healthcare, etc. Additionally, collaboration between stakeholders during the drafting and implementation of sandboxes is crucial, particularly the collaboration between the public and private sectors, government agencies, and international partnerships.

3) The Vietnamese government should also explore setting up sandboxes for a variety of different sectors. At the same time, enterprises should be encouraged to apply internal regulations based on widely recognized industry standards. While the sandbox creates a controlled legal environment to test new technologies and business models, internal regulations allow businesses to set their own standards and rules, thereby promoting responsible business practices in the absence of official regulations.

In summary, the regulatory sandbox mechanism is a tool to foster technological development and innovation while managing risks. By focusing on learning from policy experiences, promoting cooperation among stakeholders, and designing policies suited to the national context, Vietnam can effectively leverage the sandbox framework to drive digital economic development.

CONCLUSIONS

The Platform economy develops based on digital technology and data, thereby increasing efficiency and reducing costs. As a result, the Platform economy has become a priority for governments worldwide, including Vietnam. Over the past decade, the Platform business model has grown rapidly globally and has deeply penetrated various industries and sectors in Vietnam, including transportation and commerce. This is an irreversible trend.

With the fast advancement of technology, many Platform-based business activities have emerged in the Vietnamese market. These activities align with global technology trends and the transformation happening around the world. The role of the digital economy in general and the Platform economy in particular has been recognized from different perspectives. The analyses and measurements in this report highlight the significant role and contribution of the digital economy in general and the Platform economy in particular to Vietnam's economy. Specifically, the final products of the Platform industry not only stimulate VA, income, and employment within this industry itself but also spur VA, income, and employment across other sectors of the economy.

The Platform economy has created new opportunities and developed alongside traditional production and business methods. The rapid growth of Platforms has driven traditional enterprises to innovate their business strategies and improve internal capacities to enhance competitiveness and adapt to new consumer trends. Moreover, the emergence of the Platform economy has prompted policymakers to research and quickly refine the legal framework to ensure flexible and timely management while encouraging innovation in new development trends and business models. This approach helps to effectively leverage the benefits of these trends and models, including Platform-based business activities.

It can be said that digital transformation has become an essential imperative for the development of nations. Vietnam is internationally recognized as having certain advantages for developing the digital economy. However, to achieve its digital economy goals, Vietnam also faces many challenges. This requires a change in policy-making mindset to ensure both the promotion of innovation and technology development while effectively managing related risks. Accordingly, policies must anticipate trends and be formulated in a way that fosters the growth of the Platform economy, creating a ripple effect across the entire digital economy ecosystem and the broader economy. Therefore, establishing a favorable, safe, and creative policy environment for the development of the Platform economy is necessary. This will be a new driving force for Vietnam's sustainable growth and development in the future.

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APPENDIXES

Appendix 1. Methodology

1. Introduction of Input-Output system

Since Leontief's Input-Output System (**I-O system**) was born (1936, 1941) it has been developed and expanded in many directions by many different researchers. In the development of more general economy-wide models, an initial addition to standard input-output systems called social accounting matrices (**SAM**s) most closely associated with Stone, Pyatt, and Round (1985); Hewings and Madden (1995). The original I-O table was also developed into an interregional I-O table by Isard (1951, 1960), a multiregional input-output (MRIO) model by Chenery (1954) and Moses (1955), Miller, Blair (1985) and Hirsch (1959). Parallel to the social accounting matrix system (SAM) of Stone (1961) and Pyatt and Rose (1977) is the demographic - economic model developed by Miyazawa (1976) and Madden, Batey. (1983), the demographic-economic model was developed by Miyazawa to analyze the income distribution structure according to endogenous consumption expenditure according to Leontief system standards. This type of model is later referred to as I-O type II.

In Vietnam, the I-O table has been called the inter-industry balance table (**Inter-industry balance table**). The influence of an industry or group of industries on the economy based on inter-industry relations of the I-O table has been done in a number of studies such as "Forestry sector and sustainable development policies in Vietnam: Analysis from input - output model" (2019)[20], "perennial trees in the Vietnam's economy - Perennial Plants in Vietnam's Economy" (2022)[21], "Measuring digital value in the economy: The case of Vietnam" (2022)[22]… In these studies, the concept of interdisciplinary analysis is compatible with Miyazawa, Sonis, and Hewing's notion of interregional analysis. The Hawaii Department of Business, Economic Development and Tourism (DBEDT) applied this method to inter-county input - output research in 2007, 2012, 2017.

Note that in research on the impact of an industry on the economy, we should agree to call it **the final product**. For conventional I-O analysis, the final product is also **final demand** or **final use**. The I-O models are accounting representations of the structure of an economy, which allow analysts to examine the possible impacts of changes in the demand for an industry's goods and services.

[20] Duong Hung and Bui Trinh (2019). Forestry Sector and Policies on Sustainable Development in Vietnam: Analyze from the Input - Output Model. *International journal of social and administrative Sciences*, Vol. 4 No.2 (2019)

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This study focuses on the multipliers, linkages, and economic impact of the Platform industry on Vietnam's economy with using the 2022 I-O table. **Multipliers** measure the total effects on either output, income, employment or value added, given an increase in one unit of output of a particular industry (UN, 1999)[23]. Accordingly, **multipliers** in economics refer to effects where an initial one-dollar increase in spending or investment leads to more than one-dollar increase in economic activity. This chain reaction comes about because the dollar spent by one entity becomes the income for another, and that second entity, in turn, spends a portion of that dollar, creating income for yet another entity. Each round of spending causes additional rounds of spending causing the so-called multiplier effect.

The 2022 I-O table of Vietnam is aggregated into 20 industries to make the analysis more manageable and to focus on the Platform industry and its closely interrelated industries. The list of industries is shown as below:

Table 1. 20 industries compiled in the 2022 I-O table

No.	Name of industries
1	Platform (industry applying digital technology)
2	Core digital Industry (producing digital technology)
3	Agriculture, forestry, fisheries
4	Mining sector
5	Processing and manufacturing industry (excluding core digital production - industry 2)
6	The industry produces and distributes electricity, gas, hot water, steam and air conditioning
7	Water supply, waste and wastewater management and treatment activities
8	Construction
9	Car, motorbike, motorbike and motor vehicle sales and repair services (not using digital Platform - traditional industries)
10	Wholesale (not using digital Platform - traditional industries)
11	Retail (not using digital Platform - traditional industries)
12	Transportation and warehousing (not using digital Platform - traditional industries)
13	Accommodation services (not using digital Platform - traditional industries)
14	Catering services (not using digital Platform - traditional industries)
15	Real estate business activities
16	Professional, scientific and technological activities; Administrative operations and support services; Activities of other organizations

[23] United Nations (UN) (1999). *Handbook of Input-Output Table Compilation and Analysis*. Department of Economics and Social Affairs, Division of Statistics, New York.

17	Education and training
18	Health and social assistance activities
19	Arts, entertainment and recreation
20	Other service activities

The Platform industry is separated from the following industries.

Table 2. Industries having the Platform services

No.	Name of industries
1	Sales and repair services for cars, motorbikes, motorbikes and motor vehicles
2	Wholesale
3	Retail
4	Transport and warehouse
5	Lodging
6	Food Service
7	Information and communication
8	Financial, banking and insurance activities
9	Real estate business activities
10	Professional, scientific and technological activities; Administrative operations and support services; Activities of other organizations
11	Education and training
12	Health and social assistance activities
13	Arts, entertainment and recreation
14	Other service activities

The transportation Platform industry is separated from the following industries.

Table 3. Industries having the transportation Platform services

No.	Name of industries
1	Bus transport services, other road passenger transport services
2	Road freight transport services, pipeline transport services
3	Warehousing services and services related to transportation support activities
4	Postal and delivery services

2. Methodology

The basic relationship in I-O analysis has the form:

$$\mathbf{X = (I - A)^{-1}.Y} \qquad \mathbf{(1)}$$

Where X is the output vector, I is the unit matrix, A is the direct input coefficient matrix and Y is the final use vector.

In this study, matrix A is divided into sub-matrices as follows:

$$\mathbf{A} = \begin{bmatrix} A_{11} & A_{12} \\ A_{21} & A_{22} \end{bmatrix} \quad \textbf{(2)}$$

A_{11} shows Platform industry group that uses its own inputs as intermediate input; dimension of A_{11} is (1 x 1)

A_{12} shows other industries (19 remain industries) in the economy that use Platform sector products as intermediate input; dimension of A_{12} is (1 x 19)

A_{21} shows that the Platform industry uses products from other industries as intermediate inputs; dimension of A_{22} is (19 x 1)

A_{22} shows other industries in the economy that use its own products as intermediate inputs; dimension of A_{22} is (19 x 19)

The output vector includes the output of Platform industry group X_1 and the output of other industries in the economy X_2: in this case, dimension of X_1 is (1 x 1) and X_2 is (19 x 1), so dimension of X is (20 x 1).

$$\mathbf{X} = \begin{bmatrix} X_1 \\ X_2 \end{bmatrix} \quad \textbf{(3)}$$

The final use vector includes the final products of Platform Y_1 and the final products of other industries Y_2:

$$\mathbf{Y} = \begin{bmatrix} Y_1 \\ Y_2 \end{bmatrix} \quad \textbf{(4)}$$

Put

$$\mathbf{B} = \mathbf{(I - A)^{-1}} = \begin{bmatrix} B_{11} & B_{12} \\ B_{21} & B_{22} \end{bmatrix} \quad \textbf{(5)}$$

From (1), (2), (3), (4) and (5) we can analyze the output of the Platform industry (X_1) and the output of other industries (X_2) in the economy as follows:

$$\mathbf{X_1 = B_{11}.Y_1 + B_{12}.Y_2} \quad \textbf{(6)}$$

$$\mathbf{X_2 = B_{21}, Y_1 + B_{22}.\ Y_2} \quad \textbf{(7)}$$

Furthermore, in order to understanding the diffusion to be according to Miyazawa, Sonis and Hewings the Leontief B matrix is developed as follow:

$$\mathbf{B} = \begin{bmatrix} B_{11} & B_{12} \\ B_{21} & B_{22} \end{bmatrix} = \begin{bmatrix} B_{11} & B_{11}.A_{12}.B_2 \\ B_{22}.A_{21}.B_2 & B_{22} \end{bmatrix} \quad \textbf{(8)}$$

Therefore, the Leontief relation is seen in sub - matrix form as follows:

$$\begin{bmatrix} X_1 \\ X_2 \end{bmatrix} = \begin{bmatrix} B_{11} & B_{11}.A_{12}.B_2 \\ B_{22}.A_{21}.B_1 & B_{22} \end{bmatrix} * \begin{bmatrix} Y_1 \\ Y_2 \end{bmatrix} \quad \textbf{(9)}$$

Where:

$$\mathbf{B_1 – (I – A_{11})^{-1}} \quad \textbf{(10)}$$

$$\mathbf{B_2 = (I – A_{22})^{-1}} \quad \textbf{(11)}$$

B_{11} is called the enlarge Leontief inverse, which is mixed between multiplier effects (B1) and induced effects by production of other industries when intermediate inputs of Platform used intermediate input of other industries (A_{21}) lead to stimulated output of other industries ($B_2.A_{21}$); thereby stimulating the production of the Platform industry; We define it as inter - industry feedback effects: $\mathbf{(I – B_1A_{12}\ B_2A_{21})^{-1}}$**.** This concept was cited in the report on inter-county input-output analysis of report Hawaii Department of Business, Economic Development and Tourism (DBEDT) (2016).

In sum, output multipliers of Platform include:

1) Multiplier effects were excited by a unit Platform's final products: $(I - A_{11})^{-1}$ includes:

- Initial effects: I (1): The beginning for production. The initial effect of Platform is equal to 1.
- Direct effects: A_{11}: Direct input coefficient of Platform that measures use of inputs from Platform for producing a unit output of Platform.
- Indirect effects: $(I\ A_{11})^{-1}$ -I - A_{11}: When the final product of Platform increases by one unit, it stimulates an increase in output of all 20 industries, including Platform. The increased output of the Platform (in the primary production repercussion) is called the Indirect effect.

2) Induced effects (or inter - industry feedback effects) was excited by production of other industries when the increased output of these industries stimulated the increase in output of Platform services used as inputs for them: B_{11}- $(I - A_{11})^{-1}$

3) Spillover effects on output to other industries when the Platform uses products of these industries as intermediate input: $B_{21} = B_{22}.A_{21}.B_1$

The same goes for final products of other industries.

Let h, l be the vector of coefficients of income and labor compared to the value of production, let h* and l* be the diagonal matrices of vectors h and l, thus: H and L are the vectors of income and labor; where H_1 is the income of the Platform industry and H_2 is the income of other industries; L_1 is the Platform's labor and L_2 is the labor of other industries

Multiplying the two sides of relation (8) by h* and l* we have:

$$\begin{bmatrix} H_1 \\ H_2 \end{bmatrix} = \begin{bmatrix} h_1 & 0 \\ 0 & h_2 \end{bmatrix} * \begin{bmatrix} B_{11} & B_{11}.A_{12}.B_2 \\ B_{22}.A_{21}.B_2 & B_{22} \end{bmatrix} \begin{bmatrix} Y_1 \\ Y_2 \end{bmatrix} \quad (12)$$

$$\begin{bmatrix} L_1 \\ L_2 \end{bmatrix} = \begin{bmatrix} l_1 & 0 \\ 0 & l_2 \end{bmatrix} * \begin{bmatrix} B_{11} & B_{11}.A_{12}.B_2 \\ B_{22}.A_{21}.B_2 & B_{22} \end{bmatrix} \begin{bmatrix} Y_1 \\ Y_2 \end{bmatrix} \quad (13)$$

Explicit relationship (12) shows:

+ The stimulation of a unit of Platform industry final product to Platform industry income is: $h_1.B_{11}$

+ The final products of the Platform industry stimulate to the income of other industries $h_2.B_{21}.A_{21}.B_2$

+ Final products of other industries stimulate the income of the Platform industry: $h_1.B_{11}.A_{12}.B_2$

+ Other industries' final products stimulate their own income: $h_2.B_{22}$

Explicit relationship (13) shows:

+ The stimulation of a unit of Platform industry final product to Platform industry labor is: $l_1.B_{11}$

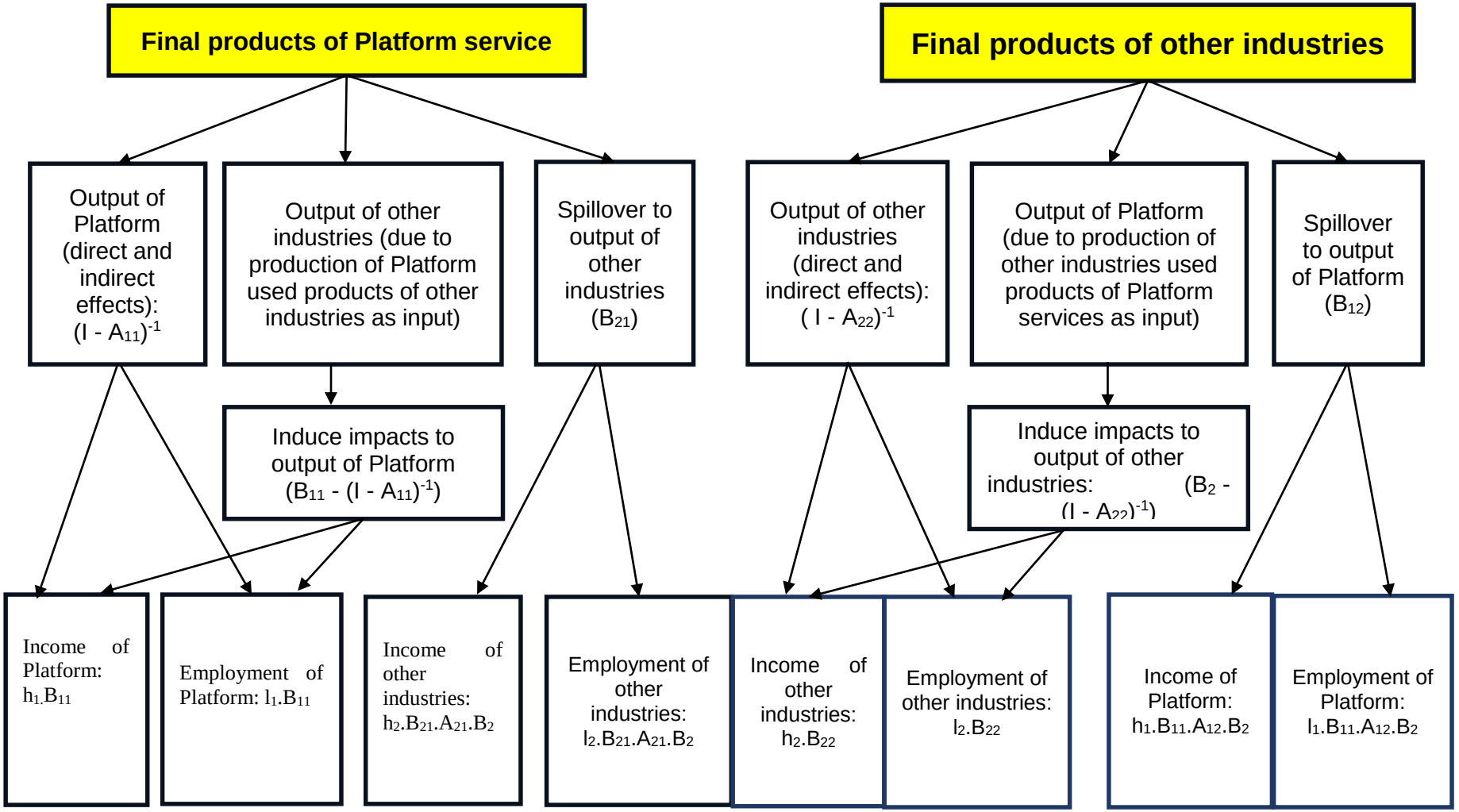
+ The final products of the Platform industry stimulate to the labor of other industries $l_2.B_{21}.A_{21}.B_2$

+ Final products of other industries stimulate the labor of the Platform industry: $l_1.B_{11}.A_{12}.B_2$

+ Other industries' final products stimulate their own labor: $l_2.B_{22}$

These above relationships are intended to describe the final product of an industry that stimulate to production value (its own and that of other industries) and then stimulate to value added, income and labor (its own and other industries). These are shown in the below diagram.

Diagram on effects stimulated by final products of Platform services and other industries



3. Interpretation of the diagram

A change of final products on the demand side leads to changes of output on the supply side. In turn, changes in output lead to changes in value added, income, and labor. Accordingly, we measure the following impacts:

1) On the left-hand side of the diagram, we measure all effects of Platform's final product. Specifically:

- A change in final product of Platform stimulates:
  - increase in output of Platform; and
  - increase in output of other industries of the economy (B21).
- In turn, a change in output of Platform stimulates increases in value added, income, and labor of Platform.
- A change in output of other industries stimulates increases in value added, income, and labor of other industries.

In sum, on the left-hand side, we measure all effects as shown in equations.

2) On the right-hand side of the diagram, we measure "Platformization"

- A change in final products of other industries stimulates:
  - increases in output of other industries; and
  - increases in output of Platform. The study focuses on Platform; thus, we measure only spillover effects of final products of other industries on Platform (B12).
- In turn, a change in output of Platform stimulates increases in value added, income, and labor of Platform.

In sum, on the right-hand side, we measure the following effects:

- spillover effects of final products of other industries on Platform (B12)
- a change in output of Platform stimulates increases in value added, income, and labor of Platform.

Appendix 2. The proportion of the digital economy's VA to GRDP for the period of 2020 - 2023

No	Provinces	2020	2021	2022	2023
1	Ha Noi City	15.37	15.81	15.4	15.85
2	Ha Giang	6.3	6.35	6.38	6.36
3	Cao Bang	6.84	6.75	7.21	8.1
4	Bac Kan	7.59	7.48	7.62	8.05
5	Tuyen Quang	5.48	5.84	6.02	6.19
6	Lao Cai	4.76	4.94	5.08	5.45
7	Dien Bien	6.98	6.71	6.63	6.6
8	Lai Chau	6.11	6.03	6.17	6.7
9	Son La	5.41	5.74	5.75	6.12
10	Yen Bai	6.74	6.69	6.93	7.7
11	Hoa Binh	10.81	10.57	10.16	10.02
12	Thai Nguyen	40.79	37.59	34.24	34.05
13	Lang Son	6.26	6.37	6.55	6.87
14	Quang Ninh	5.52	5.94	5.98	5.92
15	Bac Giang	26.14	28.06	32.45	34.72
16	Phu Tho	10.39	9.43	10.17	12.47
17	Vinh Phuc	19.04	22.75	24.7	26.12
18	Bac Ninh	50.41	48.49	46.79	45.18
19	Hai Duong	10.5	9.56	10.27	10.47
20	Hai Phong City	23.65	24.42	27.22	29.69
21	Hung Yen	6.69	6.63	6.43	6.43
22	Thai Binh	4.45	4.92	4.99	5.2
23	Ha Nam	10.38	11.06	11.84	13.25
24	Nam Dinh	5.01	5.54	5.55	5.77
25	Ninh Binh	10.25	9.29	9.71	10.54
26	Thanh Hoa	4.68	4.77	4.77	5.11
27	Nghe An	6.63	6.6	7.12	7.4

28	Ha Tinh	5.6	5.72	6.27	7.2
29	Quang Binh	6.48	6.35	6.34	6.61
30	Quang Tri	7.48	6.94	6.9	7.09
31	Thua Thien Hue	7.41	7.32	7.26	7.52
32	Da Nang	13.38	13.76	13.61	14.39
33	Quang Nam	5.78	6.43	6.35	7.48
34	Quang Ngai	5.09	5.22	4.99	5.55
35	Binh Dinh	5.46	5.89	5.97	6.1
36	Phu Yen	7.21	7.09	7.13	7.15
37	Khanh Hoa	7.04	7.26	7.17	7.46
38	Ninh Thuan	5.98	5.54	5.61	5.66
39	Binh Thuan	5.18	5.39	5.52	5.79
40	Kon Tum	7.94	7.33	7.17	6.88
41	Gia Lai	6.27	6.5	6.5	6.66
42	Dak Lak	6.32	6.26	6.32	6.69
43	Dak Nong	6.91	6.33	6.26	6.28
44	Lam Dong	6.66	6.64	6.54	6.9
45	Binh Phuoc	7.76	7.47	7.2	7.42
46	Tay Ninh	4.55	4.67	4.64	4.94
47	Binh Duong	8.11	7.29	7.18	8.63
48	Dong Nai	5.69	6.44	6.51	6.78
49	Ba Ria- Vung Tau	4.61	4.6	4.77	5.04
50	Ho Chi Minh City	12.62	13.84	13.51	14.65
51	Long An	5.18	5.21	5.3	5.68
52	Tien Giang	5.22	5.23	5.2	5.52
53	Ben Tre	6.31	6.13	6.29	6.6
54	Tra Vinh	5.45	5.67	5.72	5.99
55	Vinh Long	6.96	7.08	7.41	8.16
56	Dong Thap	4.39	4.49	4.57	4.96
57	An Giang	4.93	5.02	5.02	5.28
58	Kien Giang	4.44	4.58	4.77	5.22

59	Can Tho City	6.57	6.59	6.58	7.14
60	Hau Giang	6.03	6.02	5.53	5.53
61	Soc Trang	5.04	4.99	5.11	5.1
62	Bac Lieu	5.46	5.51	5.43	5.65
63	Ca Mau	5.37	5.47	5.44	5.92

Source: GSO