

THE DATA REVOLUTION:

HOW VIETNAM CAN CAPTURE THE DIGITAL TRADE OPPORTUNITY AT HOME AND ABROAD

promoting sustainable global trade

hinrich foundation



Important Notice on Contents

This research employs a broad definition of “digital trade” which covers the production, distribution, marketing, sale or delivery of goods and services – domestically and abroad – supported by cross-border data flows. As international trade increasingly spills into the digital sphere with potentially huge economic benefits for economies, developing a knowledge base around the topic of digital trade becomes ever critical. This report serves to inform:

- **Governments and policy makers** to take into account the importance of digital trade for both the external and domestic economies when formulating trade and economic policy;
- **Businesses** on harnessing the opportunities afforded by digital trade in the form of increased exposure to overseas markets and uplifting productivity at home;
- **Industry groups** on recognising the nature and magnitude of economic benefits that digital trade could bring about to different sectors, and champion these in their outreach efforts.

This report was prepared by the Hinrich Foundation, in collaboration with the Central Institute for Economic Management (CIEM) and with analytical support from AlphaBeta. All information in this report is derived from AlphaBeta analysis using both proprietary research and publicly available data. Where information has been obtained from third-party sources, this is clearly referenced in the footnotes.

promoting sustainable global trade

hinrich foundation

The Hinrich Foundation believes sustainable and mutually beneficial global trade creates positive engagement between people and nations, and supports sustainable development. The Foundation initiates and supports factual, balanced research that advances the understanding of sustainable global trade.



The Central Institute for Economic Management (CIEM) is among the most reputable research institutes in Vietnam, providing policy recommendations directly to the Vietnamese Government. CIEM specialises in economic reform in Vietnam through the study of economic laws, institutional regulations, policies, planning and management mechanisms, business environment and economic reforms. It offers training to economic management staff as well as consultancy services.

αlphaβeta
strategy x economics

AlphaBeta is a strategy and economic advisory business serving clients across Australia and Asia from offices in Singapore, Sydney, Canberra and Melbourne.

CONTENTS

EXECUTIVE SUMMARY	07
1. THE VALUE AT HOME FROM DIGITAL TRADE	12
Understanding how digital trade impacts day-to-day operations	14
The economic value of digital trade for domestic sectors	16
2. THE VALUE OF DIGITAL EXPORTS FOR VIETNAM	22
The value of Vietnam's digital exports	24
Digitally-enabled products	26
Digitally-enabled services	30
Indirect digital services	31
3. CAPTURING THE DIGITAL TRADE OPPORTUNITY	32
Perceived concerns related to digital trade	34
Priorities for action	41





THE DIGITAL TRADE OPPORTUNITY FOR VIETNAM



VALUE OF DIGITAL TRADE FOR VIETNAM'S DOMESTIC ECONOMY¹



Digital trade currently enables
UP TO VND 81 TRILLION
of economic impact in
Vietnam's domestic economy.



By 2030, digital trade will
enable an estimated
VND 953 TRILLION
of economic value for
Vietnam's domestic economy.



Potential benefits are spread across
all sectors of the Vietnamese
economy, but particularly relevant in
**INFRASTRUCTURE,
FINANCIAL SERVICES,
MANUFACTURING,
AND AGRICULTURE & FOOD.**

VALUE OF DIGITAL TRADE FOR VIETNAM'S EXPORTS²



A vibrant startup scene with
>3,000 LOCAL STARTUPS
in the areas of fintech, food tech,
healthcare and e-commerce.



If digital goods and services were a
sector, it would be the
8TH LARGEST EXPORT SECTOR
for Vietnam.



By 2030,
Vietnam's digital exports could
GROW BY 570%.

THREE IMPERATIVES FOR CAPTURING THE OPPORTUNITY



1 ENSURING OPEN
DATA FLOWS



2 RETHINKING
CONTENT RESTRICTIONS



3 MINIMISING
BORDER FRICTIONS

1. This refers to economic value created by cross-border data flows for the domestic economy, and is estimated in terms of consumer surplus, productivity gains and cost savings.

2. This refers to the value of exports of digital goods and services, which consists of: revenue from overseas digital downloads of local apps, sales of products to overseas markets through cross-border e-commerce platforms, services provided using digital technologies and imported digital services that get used in the export of other products and services.



EXECUTIVE SUMMARY

To maintain Vietnam's historically high growth rates experienced over the past decades, research has shown the country requires a transition to a productivity-driven growth trajectory.¹ The adoption of digital technologies will be a critical driver of such productivity benefits.

Thanks in part to recent dramatic increases in Vietnam's smartphone penetration and internet availability rates, the country is well positioned to harnessing these technologies to sustain its growth momentum. Cognisant of this, the Vietnamese government issued a directive in 2017 to strengthen the country's ability to access Industry 4.0² technologies by developing the requisite IT infrastructure and encouraging businesses' investment in this area through adjusted tax policies between now and 2020.³

Digital trade (see Box 1 for a definition) will be crucial for achieving the objective of maintaining fast growth. Vietnam is heavily trade dependent, being one of the world's top 30 net exporters and amongst the top 5 markets by exports and imports relative to GDP, respectively.⁴ Though trade was once dominated by tangible goods, growth in global goods trade has flattened while global data flows have surged, with the amount of cross-border bandwidth having grown 45 times since 2005.⁵ This is projected to increase by an additional nine times over the next five years as flows of information, searches, communication, video, transactions and intra-company traffic continue to rise.⁶

Digital trade is crucial not only as a way to increase and diversify Vietnam's export base, but also for helping Vietnamese firms leverage digital technologies across every sector of the economy.

Yet, the importance of digital trade in helping Vietnam achieve this vision has received limited attention to date. Traditional economic metrics have failed to keep pace with the rapid growth of the digital economy and there is currently a lack of robust data measuring the importance of digital trade for exports or for the domestic economy. This report aims to address these gaps by providing new data on the importance of digital trade, both for Vietnam's exports and domestic economy, and recommendations for how Vietnam can fully exploit the benefits of digital trade as it seeks to become a leading digital nation.

Our key findings include (Exhibit 1):

- **Digital trade can create huge positive impact for Vietnam's domestic economy, with some of the biggest beneficiaries coming from outside the digital sector.** Digital trade enables Vietnamese firms to achieve cost efficiencies (e.g. from storage of data), enter new markets and generate richer insights from data. It supports collaboration (particularly where Vietnam may have skill gaps), enables adoption of more efficient business

1. McKinsey Global Institute (2012), *Sustaining Vietnam's growth: The productivity challenge*.

Available at: <https://www.mckinsey.com/featured-insights/asia-pacific/sustaining-growth-in-vietnam>

2. This is a term used to describe the current trend of automation and data analytics-based manufacturing technologies. It includes cyber-physical systems, the Internet of Things, cloud computing and cognitive computing. The intended result is greater productive efficiency while reducing overall costs of production.

3. Duy Anh (2017), "Vietnam sets out plans for Industry 4.0", *Vietnam Today*.

Available at: <http://www.vneconomictimes.com/article/vietnam-today/vietnam-sets-out-plans-for-industry-4-0>

4. According to World Bank Open Data. Available at: <https://data.worldbank.org/>

5. McKinsey Global Institute (2016), *Digital globalization: The new era of global flows*.

Available at: <https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/digital-globalization-the-new-era-of-global-flows>

6. McKinsey Global Institute (2016), *Digital globalization: The new era of global flows*.

Available at: <https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/digital-globalization-the-new-era-of-global-flows>



practices (such as allowing consumers real-time access to their bank accounts even when abroad) and supports management of global supply chains (e.g. tracking of export containers using Internet of Things technology). Today, the economic value of digital trade-enabled benefits to the Vietnamese economy is estimated to be worth VND 81 trillion (US\$3.5 billion) which is equivalent to 1.7 percent of its GDP. Although this is in line with neighbouring countries (digital trade-enabled economic value in Malaysia and Philippines accounts for 1.8 percent of their GDP), this figure is lower in comparison with advanced Asia-Pacific economies such as Australia, for which the equivalent figure is 3 percent. If digital trade is fully leveraged, it is estimated that the value to Vietnam's domestic sectors could grow by 12-fold to reach VND 953 trillion (US\$42 billion) by 2030.

- **Digital exports account for 2 percent of Vietnam's total export value today, but this value could grow rapidly.** The export value of virtual goods and services enabled by the digital economy, such as goods sold to overseas markets via e-commerce amounts to VND 97 trillion (US\$4.3 billion) today, accounting for 2 percent of its total export value. In the absence of barriers to digital trade, it is

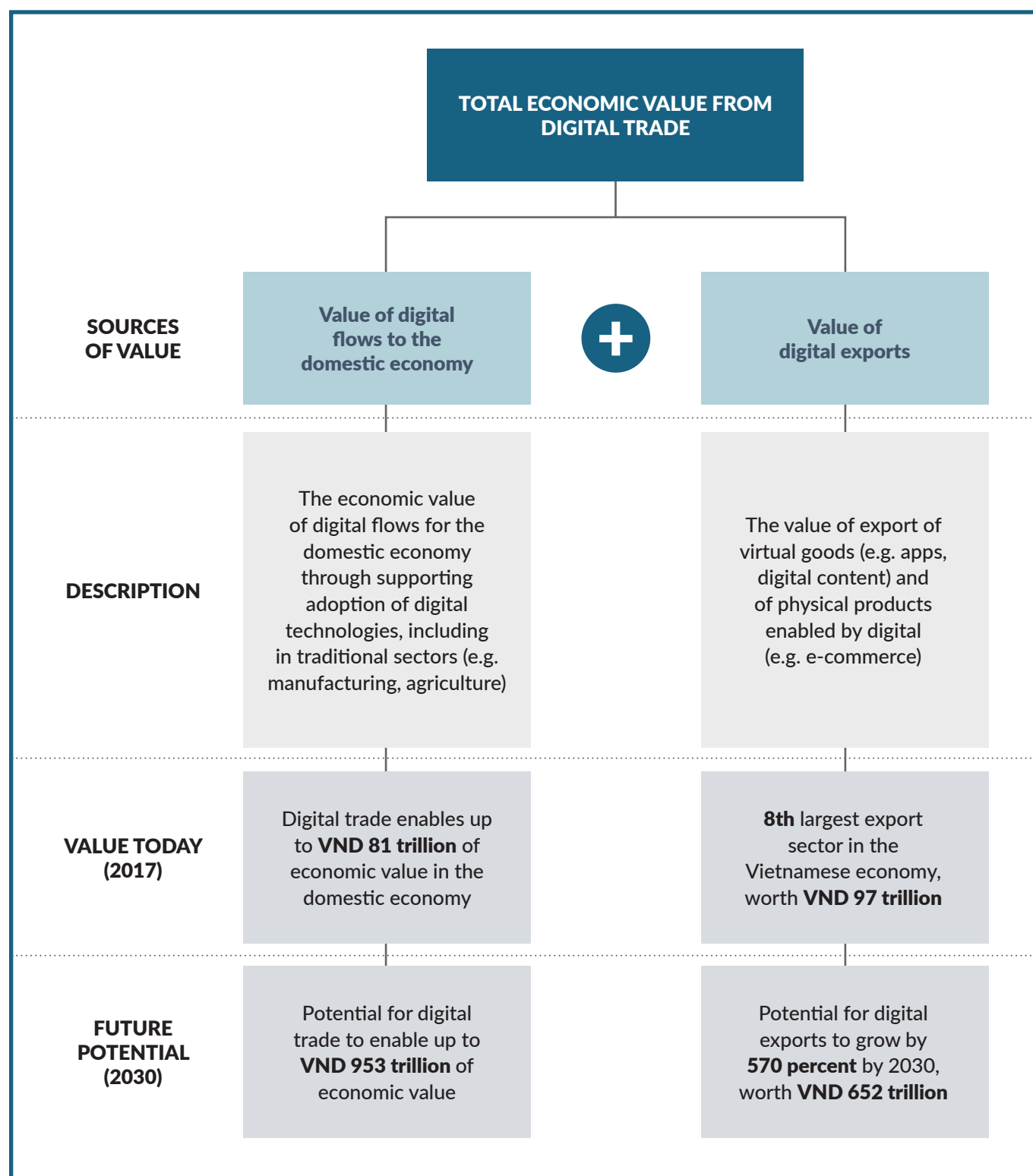
estimated that Vietnam's digital exports could grow by 570 percent to reach VND 652 trillion (US\$28.7 billion) by 2030.

- **To achieve the maximum returns to digital trade in future, it is imperative to consider reducing trade barriers today.** Policymakers in Vietnam and across Asia Pacific are rushing to develop regulations for the digital economy. Vietnam's restrictive local licensing, content regulation and data localisation requirements could significantly impact data flows and undermine the country's ability to capture the digital opportunity, including the country's Industry 4.0 vision. There is the opportunity for Vietnam to play a role both at home and abroad to push for balanced digital trade rules in its various bilateral and multilateral trade negotiations.

The report is structured into three chapters. Chapter 1 examines the current and potential impact of digital trade at home and quantifies the economic value of technological gains enabled by digital trade. Chapter 2 assesses the current and future potential value of digital exports for the Vietnamese economy. Chapter 3 highlights some of the concerns related to digital trade and how they can be addressed, and identifies the priorities for Vietnam to capture the digital trade opportunity.

EXHIBIT 1:

VIETNAM IS ALREADY REAPING SIGNIFICANT VALUE FROM DIGITAL TRADE, BUT THE FUTURE VALUE COULD BE SIGNIFICANTLY HIGHER



SOURCE: AlphaBeta analysis

BOX 1.

DEFINING DIGITAL TRADE AND ITS COMPONENTS

At present, there is no consensus about the meaning of digital trade. Part of what makes defining digital trade difficult is the rapidly changing nature of the digital economy. Different definitions have been used by various international organisations. The World Trade Organisation (WTO) has generally employed the term “electronic commerce” rather than “digital trade”, defining it as “the production, distribution, marketing, sale or delivery of goods and services by electronic means”.⁷ The definition used by the United States International Trade Commission (USITC) is broader and includes the provision of e-commerce platforms and related services, but excludes the value of sales of physical goods ordered online, as well as physical goods that have a digital counterpart (such as books, movies, music, and software sold on CDs or DVDs).⁸ The United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) recognises that while the narrowest definition of “digital trade” is “trade in digitised products” (i.e. trade in products with digital elements such as films and e-books, and in digital services such as IT and telecommunication services), a broader definition relates to “the use of digital technologies (ICTs) to conduct business”.⁹

This research employs a broad definition of “digital trade” which covers the production, distribution, marketing, sale or delivery of goods and services – domestically and abroad – supported by cross-border data flows. This consists of (a) trade in digitally-enabled products and services, and (b) cross-border data flows that create economic value in the domestic economy. Both components of digital trade are analysed in this report:¹⁰

- **Trade in digitally-enabled products and services.** There are three components to this: a) Digitally-enabled products; b) digitally-enabled services; c) indirect digital services. For the purpose of this research, the value of exports in these components are estimated:

1. **Digitally-enabled products.** These refer to physical and digitised products that are traded electronically via the Internet, e.g. overseas digital downloads of local apps, or sales of physical products to overseas markets through cross-border e-commerce platforms.¹¹
2. **Digitally-enabled services.** These refer to services that are provided using digital technologies. This is a large category because most industry sectors have adopted digital technologies and sell e-services to varying degrees. This includes online advertising (viewed from abroad), digital IT-BPO services¹² and the export of data processing and online software consultancy services. It also includes trade in other direct e-services such as online tourism booking and electronic banking; however, these categories are currently not able to be measured in a robust manner due to the lack of granularity in available data.
3. **Indirect digital services (embedded in other exports).** These refer to imported digital services that get used in the export

7. UNESCAP (2016), *Internal trade in a digital age*. Available at: <http://www.unescap.org/sites/default/files/aptir-2016-ch7.pdf>

8. U.S. International Trade Commission (2017), *Global Digital Trade 1: Market Opportunities and Key Foreign Trade Restrictions*. Available at: <https://www.usitc.gov/publications/332/pub4716.pdf>.

9. UNESCAP (2016), *Internal trade in a digital age*. Available at: <http://www.unescap.org/sites/default/files/aptir-2016-ch7.pdf>

10. The detailed methodology is explained in an accompanying methodology document, which can be found on the Hinrich Foundation website (<http://hinrichfoundation.com/trade-research/>).

11. This research defines cross-border e-commerce platforms as Internet-enabled platforms that facilitate the selling and buying of products and services across national borders, where the seller and buyer are in different countries. This includes both B2B and B2C e-commerce. However, the analysis in this research focuses largely on B2C e-commerce due to the availability of existing data.

12. IT-BPO stands for Information Technology-Business Processing Outsourcing. This refers to the contracting of non-primary business activities and functions with digital components to a third-party provider. Examples of IT-BPO services include payroll administration, data management and customer/call centre relations.



of other products and services. Examples include telecommunication services such as email, video conferencing, digital file sharing, and Voice Over Internet Protocol (VOIP) services that are used by a mining firm exporting overseas.

- **Cross-border data flows.** This does not reflect 'international trade' in its conventional sense, i.e. transactions involving the exchange of goods and services for money, that are conducted between two parties located in different countries. Rather, cross-border data flows entail the exchange of data across national borders that create economic value, but which may not necessarily be associated with monetary transactions nor interaction between two parties (in many cases, it involves exchanges within the same company). Cross-border data flows take place for a variety of

reasons including business processing (e.g. international supply chain data used to guide inventory stocking decisions at a company's retail stores worldwide) and operational efficiency improvements (e.g. data flows enabling Internet banking functions overseas so that consumers wishing to access bank accounts from abroad can do so). This research estimates the economic impacts cross-border data flows create for the domestic economy. These are not represented in terms of GDP or market size, but rather in terms of economic value, which relates to consumer surplus, productivity gains and cost savings. Six key channels (which are discussed further in Chapter 1) have been identified by which digital trade supported by cross-border data flows is important for boosting productivity, creating new revenue streams, or lowering costs in the domestic economy.



THE VALUE AT HOME FROM DIGITAL TRADE

Today, digital trade is supporting up to VND 81 trillion (US\$3.5 billion) of economic benefits in Vietnam through enabling digital technologies that increase worker productivity, lower costs and create new sources of revenue. This economic value is equivalent to 1.7 percent of Vietnam's GDP. Although this is in line with neighbouring countries such as Malaysia and Philippines, it is smaller than the equivalent figure for advanced Asia-Pacific economies such as Australia, which is 3 percent. The relatively low penetration rates of these digital technologies today suggest large potential for higher impact in the future. By 2030, this could grow almost twelve-fold to reach VND 953 trillion (US\$42 billion).



UNDERSTANDING HOW DIGITAL TRADE IMPACTS DAY-TO-DAY OPERATIONS

This research adopts a broad definition of “digital trade” which relates to cross-border data flows, i.e. the exchange of data across national borders that create economic value (see Box 1 for detailed definition). In this chapter, the economic impacts which cross-border data flows create for Vietnam’s domestic economy have been estimated. To do this, six key channels have been identified through which digital trade is important for boosting productivity or lowering costs for Vietnamese sectors (Exhibit 2).

- **Identifying and entering new markets.** New digital tools ranging from simple internet search engines to cloud computing, which are heavily reliant on cross-border data flows, can boost the export capabilities of firms, particularly micro, small and medium-sized enterprises (MSMEs). This allows these firms to operate with ease across geographies and tap into international supply chains, compete with larger exporters and connect with consumers, suppliers and investors across the globe. Analysis by the Asia Pacific MSME Trade Coalition (AMTC) estimates that digital tools could lower the export costs of an average MSME by as much as 82 percent and reduce time involved in exporting for MSMEs by up to 29 percent.¹³
- **Supporting collaboration.** Some activities may be particularly complex, and the sharing of data across borders enables better collaboration between talents. This could include talent for the analysis of data or it could relate to the use of human-guided robotics. For example, remote robotic surgery allows complex operations to be completed even when those surgeons may not be in the same country. A further example is how cross-border data flows can enable researchers around the world to share insights, design experiments and analyse the results in a collaborative and real-time manner.¹⁵
- **Enabling richer insights.** Used the right way, data can help companies improve products and make more informed business decisions. Analysis of the simplest datasets can lead to robust insights that inform important business decisions. For example, data on warehouse and point-of-sales inventory can allow retailers to optimise re-stocking through better forecasting of production and shipment needs, which could lead to increased sales.
- **Introducing more efficient business practices.** Digital trade can be a critical enabler of greater operational efficiency for businesses. This could include providing greater accessibility of data for clients across geographies (for example, Vietnamese consumers wishing to access their bank accounts from overseas), enabling digital platforms to conduct routine operations such as collection and exchange of data, and outsourcing operations to locations with a comparative advantage in the provision of required services.
- **Reducing cost and increasing speed of data storage, processing and access.** High data generation is more likely to lead to cross-border flows, in part due to storage requirements. For example, data processing is 5 to 7 percent of the total input costs in sectors such as financial services.¹⁴ Related to this, storing data in a number of geographic locations can enhance recovery management.

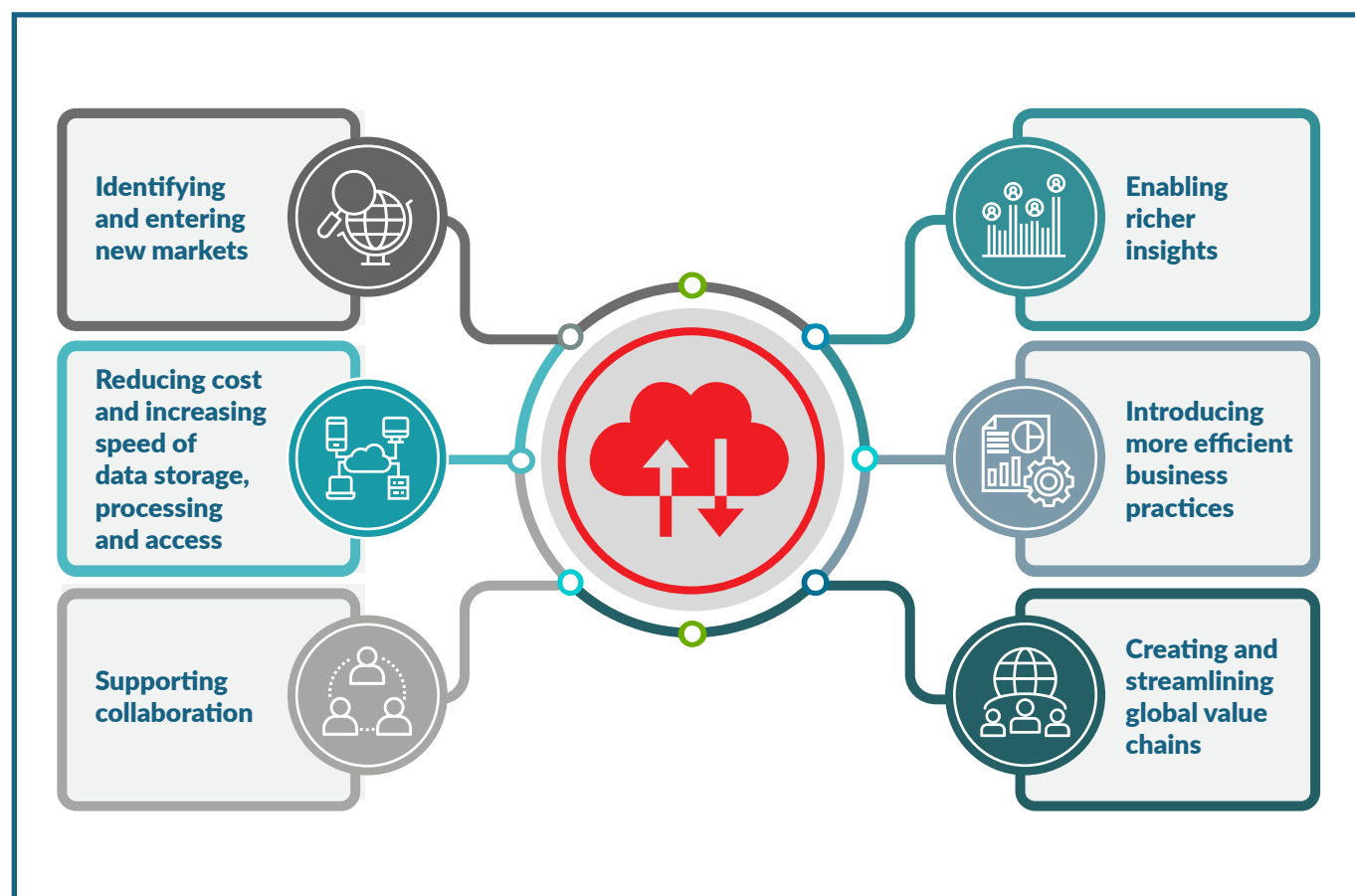
13. Asia Pacific MSME Trade Coalition (2018), *Micro-Revolution: The new stakeholders of trade in APAC*.

14. Matthias Bauer et al. (2014), *The costs of data localization: Friendly fire on economic recovery*, European Centre for International Political Economy (ECIPE). Available at: http://www.ecipe.org/app/uploads/2014/12/OCC32014_1.pdf

15. Joshua Paul Meltzer (2014), “The Internet, Cross-Border Data Flows and International Trade”, *Asia & the Pacific Policy Studies*, vol. 2, no. 1. Available at: <https://onlinelibrary.wiley.com/doi/epdf/10.1002/app5.60>

EXHIBIT 2:

DIGITAL TRADE SUPPORTS PRODUCTIVITY, GROWTH AND COST EFFICIENCY THROUGH SIX MAIN CHANNELS



- **Creating and streamlining global value chains.**

Digital data flows can help create efficiencies in real-time monitoring and decision-making to support global value chains. For example, businesses are able to receive customer orders in real time and adjust production processes accordingly. Likewise, Internet of Things (IoT) monitoring of the transit of goods across countries enables better control over supply chains, creating significant logistical benefits.

“ This research adopts a broad definition of 'digital trade' which relates to cross-border data flows, i.e. the exchange of data across national borders that create economic value. ”



THE ECONOMIC VALUE OF DIGITAL TRADE FOR DOMESTIC SECTORS

To understand the economic value of digital trade for Vietnam's domestic sectors, a set of relevant technological applications for different sectors of the Vietnamese economy were identified based on an extensive review of the academic literature (Exhibit 3).¹⁶ The importance of digital trade was then assessed for each technological application, based on factors related to the six channels highlighted above, including (a) the volume of data generated (requiring more efficient storage requirements); (b) the scale requirements to draw insights (which cross-border data flows can facilitate by enabling pooling of data); (c) the complexity of the activity (and hence the potential need for cross-border collaboration); and (d) whether the activity to which the technology is being applied is itself cross-border in nature.

The value of these applications was sized both for 2017 and 2030. Economic value supported by digital trade across the major sectors in the Vietnamese economy is estimated to have been up to VND 81 trillion (US\$3.5 billion) in 2017. This number is equivalent to 1.7 percent of Vietnam's GDP, which is although in line with neighbouring countries such as Malaysia and the Philippines for which the equivalent figure is 1.8

percent, pales in comparison with advanced Asia-Pacific economies such as Australia for which the equivalent figure is almost 3 percent. Vietnam faces a critical opportunity to rein in more of this value by reducing the barriers to digital trade. In addition, low technology penetration rates today mean there is great untapped potential for Vietnam. If digital trade is fully leveraged, it is estimated that the economic value to Vietnam's domestic sectors could increase almost twelve-fold to as much as VND 953 trillion (US\$42 billion) by 2030, which is equivalent to 9 percent of its projected GDP (Exhibit 4).

Some of the main opportunities and examples by sector include:¹⁷

- Infrastructure.** Digital trade can help facilitate international collaboration which in turn enhances the efficiency of constructing and maintaining infrastructure, while minimising resource use. To boost productivity and quality in Vietnam's construction sector, the Vietnamese government partnered with software company Autodesk to roll out a nationwide Building Information Modelling (BIM) programme by 2021.¹⁸ Under this programme,

16. The detailed methodology is explained in an accompanying methodology document, which can be found on the Hinrich Foundation website (<http://hinrichfoundation.com/trade-research/>).

17. The descriptions below only include a subset of the total technologies analysed in this research. See the methodology document for a more extensive discussion of the analysis, which can be found on the Hinrich Foundation website (<http://hinrichfoundation.com/trade-research/>).

18. Geospatial World (2017), "Vietnam government takes the assistance of Autodesk in reforming its construction industry".

Available at: <https://www.geospatialworld.net/news/vietnam-governmen-takes-assistance-autodesk-reforming-construction-industry/>



construction and facility management companies would be equipped with BIM skills and tools to efficiently design, construct and operate buildings, and through this process, the government will fine-tune regulations to encourage adoption nationwide.¹⁹ Using Autodesk software, stakeholders from across the globe who are involved in Vietnam's construction projects subject to this scheme could simultaneously collaborate on optimising project design within the stipulated budget.²⁰

- **Financial Services.** In the context of Vietnam's low credit card ownership rates, e-wallets and mobile money schemes have huge potential to increase financial inclusion by easing the accessibility of financial services to the poor in remote regions.²¹ MoMo, a SIM-based mobile e-wallet and payment app, allows customers to load cash into their account, withdraw it as and when needed, make bill payments and conduct other transactions not unlike those that could be done with a regular bank account. A ubiquitous payments platform, MoMo works with over 100 service providers in

Vietnam and is integrated with 24 domestic banks and international payments networks including Visa, MasterCard and JCB.²² Since its inception in 2014, MoMo has seen a 30-50 percent month-on-month growth in transaction volume, with a current user base of 8 million.²³ Digital trade is crucial to seizing these opportunities due to the cross-border flow of payments and remittances, as well as the need for local e-payments services to link up with international networks for seamless payments experience and optimised risk management.

- **Manufacturing.** Despite being a growth driver, Vietnam's manufacturing sector experiences low productivity.²⁴ To address this, the Vietnamese government created a national road map for adopting Industry 4.0. Advanced manufacturing technology suppliers and manufacturers have been increasingly focusing on Vietnam as a key market.²⁵ For example, Danish company Universal Robots supplied 'cobots'²⁶ which were used to improve production efficiency and worker safety at Meiko Trading and Engineering, a Vietnamese

19. Autodesk Newsroom (2017), "The BIM steering committee – Ministry of Construction and Autodesk sign MOU to collaborate in implementing Building Information Modelling (BIM) in Vietnam". Available at: <http://news.autodesk.com/announcements?item=122921>

20. Autodesk (2018), "Real-time BIM collaboration". Available at: <https://www.autodesk.com/solutions/bim/construction-management-software>

21. Le Thanh Tam and Le Nhat Hanh (2018), Fintech for promoting financial inclusion in Vietnam: Fact findings and policy implications.

Available at: <http://www.bssj-re.com/journals/BSSJ-02012018.pdf>

22. FinTech Singapore (2016), "Momo – The rising star of Vietnam Fintech in online payments".

Available at: <http://fintechnews.sg/3627/mobilepayments/momo-the-rising-star-of-vietnam-fintech-in-online-payments/>

23. FinTank (2016), "MoMo, an online payment and e-wallet start-up, is picking up momentum in the Vietnamese Fintech market". Available at: https://fintank.net/2016/09/30/momo_e-wallet/ and The Asian Banker (2018) "Press Release - MoMo was awarded Best Mobile Payments Product in Vietnam at The Asian Banker Vietnam Country Awards Programme 2018". Available at: <http://www.asianbankerawards.com/VietnamCountryAwards/press/2018/MoMo.pdf>

24. McKinsey (2018), Industry 4.0: Reinvigorating ASEAN manufacturing for the future.

Available at: <https://www.mckinsey.com/~media/mckinsey/business%20functions/operations/our%20insights/industry%204%200%20reinvigorating%20asean%20manufacturing%20for%20the%20future/industry-4-0-reinvigorating-asean-manufacturing-for-the-future.ashx>

25. McKinsey (2018), Industry 4.0: Reinvigorating ASEAN manufacturing for the future.

Available at: <https://www.mckinsey.com/~media/mckinsey/business%20functions/operations/our%20insights/industry%204%200%20reinvigorating%20asean%20manufacturing%20for%20the%20future/industry-4-0-reinvigorating-asean-manufacturing-for-the-future.ashx>

26. Cobots, or collaborative robots, are robots that are designed to physically interact with humans in a shared workspace. This is in contrast with robots which are designed to operate autonomously or with limited guidance.

EXHIBIT 3:

EXAMPLES OF RELEVANT TECHNOLOGIES BY SECTOR IN VIETNAM










 Resources	<ul style="list-style-type: none"> • Smart exploration • Autonomous mining equipment • Predictive safety • Performance monitoring
 Financial Services	<ul style="list-style-type: none"> • Big data analytics • Digitising marketing, distribution and service • Reg tech • Financial inclusion through mobile payments
 Agriculture & Food	<ul style="list-style-type: none"> • Precision farming • Supply chain management • Food safety • Real-time market information
 Manufacturing	<ul style="list-style-type: none"> • Big data analytics • Additive manufacturing • IoT-enabled supply chain management
 Health	<ul style="list-style-type: none"> • Remote patient monitoring • Telehealth • Data-based public health interventions • Detection of counterfeit drugs • Smart medical devices • AI-enabled diagnostics
 Infrastructure	<ul style="list-style-type: none"> • Smart grids • 5D BIM & project management technologies • Predictive maintenance • Smart buildings • Smart roads • Smart ports
 Consumer & Retail	<ul style="list-style-type: none"> • Digitising channels • Inventory management • Analytics-driven products and services
 Education & Training	<ul style="list-style-type: none"> • E-career centres and digital jobs platforms • Personalised learning • Online retraining programmes

EXHIBIT 4:

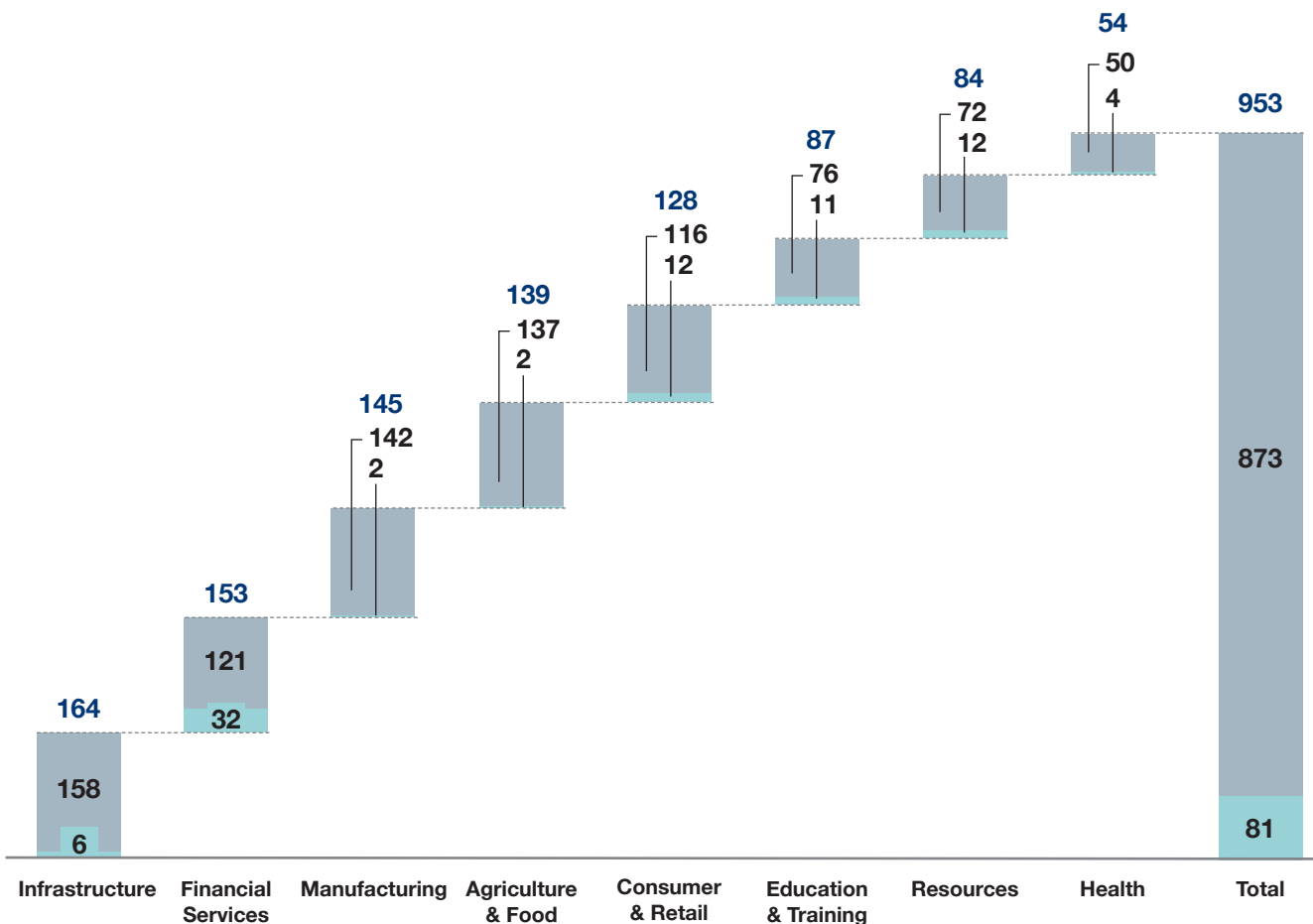
DIGITAL TRADE IS SUPPORTING UP TO VND 81 TRILLION OF ECONOMIC BENEFITS IN VIETNAM, WHICH COULD GROW TO VND 953 TRILLION BY 2030



POTENTIAL ANNUAL ECONOMIC VALUE^{1 2} VND TRILLION, 2017 AND 2030 (HIGH-END SCENARIO)

THE POTENTIAL ECONOMIC VALUE IN 2030 IS EQUIVALENT TO **9%** OF VIETNAM'S PROJECTED GDP

2017 Additions in 2030



1. These estimates do not represent GDP or market size (revenue), but rather economic value, including consumer surplus. The sizing includes the economic value that is both "somewhat enabled" and "highly enabled" by digital trade.

2. Due to rounding to the nearest billion, the numbers in this table may not add up precisely to the totals indicated.

SOURCE: AlphaBeta analysis



printed circuit board manufacturer. Mr Tuan Anh Tran, Deputy Manager of Automation & Sales, commented that “the ‘cobots’ small footprint, flexibility and safety [have] relieved [their] operators from repetitive and strenuous tasks, providing ease of use and raising the level of work satisfaction in the company”.²⁷ Vietnamese conglomerate Vingroup partnered German multinational Siemens in developing an advanced analytics-based factory management and operations system in their automotive manufacturing plants. To be equipped with over 1,200 remotely-controlled robots, Vingroup’s automotive welding plant is expected to be the most automated car body welding plant in Southeast Asia.²⁸

- Agriculture and Food.** To maintain Vietnam’s global competitiveness in a sector that contributes almost 16 percent to overall GDP²⁹, there is vast potential for the country to leverage technologies such as precision farming to enhance its productivity and crop quality.³⁰ Vietnamese start-up MimosateK developed an IoT platform which collects data on environmental parameters through a series of sensors planted in farms, and runs algorithms to recommend the optimal irrigation schedule to farmers.³¹ The start-up indicated that their products have helped farmers save up to 50 percent on water and electricity use in farm irrigation, while increasing yields by up to 25 percent.³² Vietnam’s IT service company FPT Corporation collaborated with

27. Thanh Thanh (2018), “Universal Robots keen to expand in Vietnam”, Vietnam Economic Times.

Available at: <http://www.vneconomicstimes.com/article/business/universal-robots-keen-to-expand-in-vietnam>

28. Viet Nam News (2018), “VinFast to use 1,200 remote-controlled robots”.

Available at: <https://vietnamnews.vn/economy/462036/vinfast-to-use-1200-remote-controlled-robots.html#deEmmfyF2zysOPOS.97>

29. Vietnam General Statistics Office (2018). Available at: <https://www.gso.gov.vn/Default.aspx?tabid=217>

30. Dinh Viet Anh Nguyen (2017), “Smart agriculture: Vietnam’s untapped potential”. Asia IoT Business Platform.

Available at: <http://iotbusiness-platform.com/blog/smart-agriculture-vietnams-untapped-potential/>

31. Small and Growing Businesses (2018), “Introducing precision agriculture in Vietnam”. Available at: <http://www.whysgbs.org/mimosatek/>

32. Small and Growing Businesses (2018), “Introducing precision agriculture in Vietnam”. Available at: <http://www.whysgbs.org/mimosatek/>

Japanese company Fujitsu on implementing a 'Food and Agriculture Cloud' as well as two agricultural facilities employing Japan-developed precision farming technologies to grow high-quality tomato and lettuce produce in Hanoi.³³

- **Consumer & Retail.** With the highest growth in mobile traffic within Southeast Asia, accompanied by the proliferation of e-wallets and mobile payments, Vietnam's e-commerce market has been growing.³⁴ Local players are leading the charge; Vietnamese e-tailer Tiki, for example, has tied up with Vietnamese technology company VNG to leverage their strong social media and mobile payments networks to expand the reach of their e-commerce services.³⁵ Indeed, this segment is still relatively nascent in Vietnam, and can further grow if data analytics and IoT technologies were utilised to customise customer experiences. Digital trade is crucial for enhancing the productivity of Vietnam's e-commerce players through its enablement of cross-border data pooling and analytics to obtain robust insights on consumption patterns, thereby facilitating more targeted marketing campaigns, as well as IoT technologies to track goods across borders.
- **Education & Training.** Digital technologies hold the promise of enhancing the quality of teaching, improving access to higher education, and closing the skills gap between student education and employment. Topica is an example of a local start-up leveraging online learning tools such as augmented reality to expand higher education access and fill the skills gap in Vietnam by partnering 16 top-tier universities both locally and abroad to create online degree offerings for both students and working adults.³⁶ Boasting a
- 6,200-strong alumni of whom 97 percent are employed and register an overall 16 percent increase in salaries, Topica's services have expanded to Thailand, Philippines, Indonesia, Singapore and even the US.³⁷ Digital trade is important for such opportunities given the need for cross-border information exchange and remote teaching services.
- **Resources.** Vietnam's state-owned mining enterprise, Vinacomin Group, leveraged digital technologies to automate production lines, increase coal recovery rate and reduce manpower requirements. A built-in GPS system in the company's mining trucks allows the company to track and monitor the location, speed and information about the driver of each truck, in order to optimise operations and safeguard worker safety.³⁸ In addition, smart exploration approaches drawing on big data have the potential to uncover more opportunities in Vietnam's resource landscape, while technologies such as autonomous drills and predictive maintenance and safety applications will augment productivity in drawing from existing reserves. Digital trade is crucial for technologies in this sector due to the need for cost efficient data gathering, analytics and storage solutions.
- **Health.** Technology applications enabled by digital trade can improve Vietnam's healthcare quality and coverage, especially in rural regions. Using special video conferencing software developed by American technology company Cisco for telehealth purposes, medical specialists and professors at the Viet Duc Hospital in Hanoi are now able to provide guidance to regional doctors for challenging cases and even during live surgeries.³⁹

33. Fujitsu Limited (2015), "Fujitsu and FPT implement smart agriculture in Vietnam".

Available at: <http://www.fujitsu.com/global/about/resources/news/press-releases/2015/1208-01.html>

34. Ly Pham (2018), "3 insights about Vietnam's ecommerce landscape last year". TechnAsia.

Available at: <https://www.technasia.com/talk/vietnam-ecommerce-facts-2017>

35. Reuters (2018), "JD.com widens Southeast Asia presence by investing in Vietnam's Tiki.vn".

Available at: <https://www.reuters.com/article/us-jd-com-tiki-vn-funding/jd-com-widens-southeast-asia-presence-by-investing-in-vietnams-tiki-vn-idUSKBN1F5075>

36. Topica (2018). Available at: <https://topica.asia/aboutus.html>

37. Topica (2018). Available at: <https://topica.asia/aboutus.html>

38. PetroTimes (2017), "TKV & Industrial Revolution 4.0". Available at: <https://petrotimes.vn/tkv-cach-mang-cong-ngheip-40-500129.html>

39. Sarah Struble (2018), "Reaching everyone, everywhere: Better access to care with telehealth". Cisco Blogs.

Available at: <https://blogs.cisco.com/healthcare/world-health-day-everywhere-better-access-to-care-with-telehealth>



THE VALUE OF DIGITAL EXPORTS FOR VIETNAM

Vietnam's digital exports in 2017 are estimated to be worth over VND 97 trillion (US\$4.3 billion). This makes it the country's 8th largest export sector, accounting for 2 percent of its total export value. If digital trade is fully enabled, Vietnam's digital exports could potentially increase by almost seven-fold to reach VND 652 trillion (US\$28.7 billion) by 2030.



THE VALUE OF VIETNAM'S DIGITAL EXPORTS

Although the digital export value captured today by Vietnam is currently not large, local companies are determined to capture the opportunity and have the potential to go much further by supporting the digital ecosystem. Vietnam's digital exports are estimated to be currently worth VND 97 trillion (US\$4.3 billion), making it the country's 8th largest export sector. This is equivalent to about 2 percent of total exports. By 2030, it could grow by 570 percent (Exhibit 5).

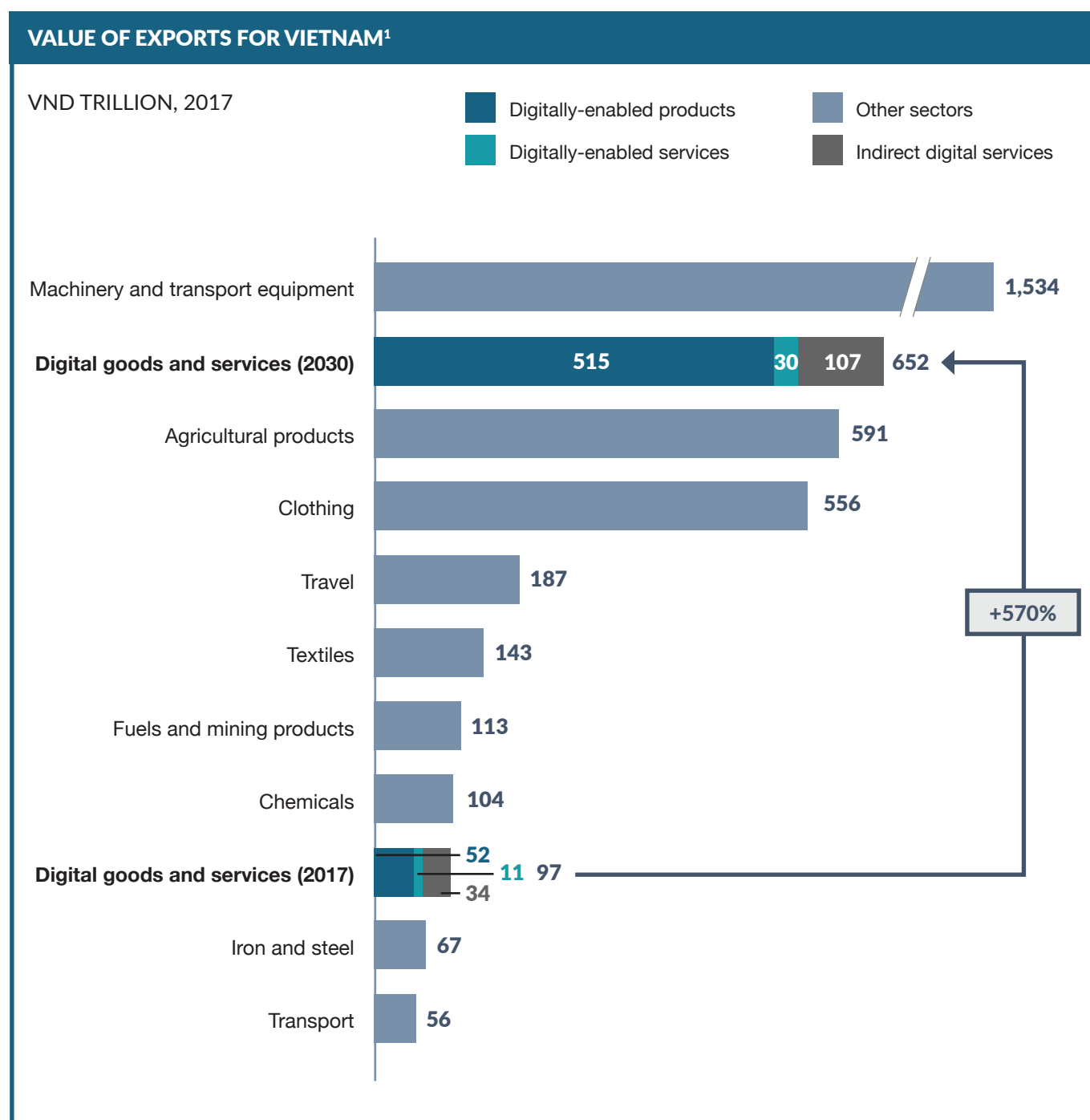
It should be noted that this report's estimate of the value of digital exports is conservative, due to data

constraints. For digitally-enabled products, the value of products exported via cross-border e-commerce platforms only focuses on Fast Moving Consumer Goods (FMCG) and no other categories of goods where e-commerce could be important, due to the availability of data. Since a large proportion of FMCG goods are B2C in nature, the estimate of e-commerce exports would likely approximate the value of B2C e-commerce. Similarly, the value of digitally-enabled services only focuses on a subset of services where robust data is available.



EXHIBIT 5:

IF DIGITAL WERE A SECTOR, IT WOULD REPRESENT VIETNAM'S 8TH LARGEST EXPORT SECTOR, AND COULD INCREASE BY 570 PERCENT BY 2030



1. Due to rounding to the nearest billion, the numbers in this table may not add up precisely to the totals indicated.

SOURCE: WTO (data on 19 other sectors); AlphaBeta analysis



DIGITALLY-ENABLED PRODUCTS

The value of these exports is currently VND 52 trillion (US\$2.3 billion) and could grow nine times by 2030, reaching VND 515 trillion (US\$22.7 billion). This growth is expected to be largely driven by expanding e-commerce exports.

- **E-commerce.** E-commerce platforms can be crucial gateways to connect local brands to overseas markets and provide a new source of future growth for traditional sectors such as food manufacturing. Approximately 12 percent of the global goods trade is now conducted via international e-commerce, with much of it being driven by platforms such as Alibaba, Amazon, eBay, Flipkart and Rakuten.⁴⁰ One example of a Vietnamese company taking advantage of the e-commerce export opportunity is the popular coffee brand Trung Nguyen (See Box 2).

E-commerce penetration has been increasing in Vietnam. According to a 2016 survey by the Vietnam E-Commerce and Information Technology

Agency (VECITA), 32 percent of businesses in Vietnam had established collaborative B2B relationships with foreign partners through online channels, and 11 percent had joined an e-commerce platform.⁴¹ 45 percent of businesses in Vietnam also had websites which allow consumers to purchase products online.

However, most Vietnamese businesses have yet to tap the export opportunity, with less than 13 percent of businesses directly or indirectly engaged in exporting in 2015 (versus 16 percent in East Asian and Pacific economies on average).^{42 43} Many businesses, particularly Small and Medium Enterprises (SMEs) still face substantial challenges in bridging the gap to global markets. They often lack the resources to research international sales opportunities, build global business networks and promote their products overseas. E-commerce can be a facilitator of exports; it has been demonstrated that Vietnamese businesses on the eBay platform

40. McKinsey Global Institute (2016), *Digital globalization: The new era of global flows*. Available at: <https://www.mckinsey.com/~/media/McKinsey/Business%20Functions/McKinsey%20Digital/Our%20Insights/Digital%20globalization%20The%20new%20era%20of%20global%20flows/MGI-Digital-globalization-Full-report.ashx>

41. *Export.gov* (2018), *Vietnam Country Commercial Guide - Vietnam - eCommerce*. Available at: <https://www.export.gov/apex/article2?id=Vietnam-eCommerce>

42. World Bank Enterprise Surveys (2015). Available at: <http://www.enterprisesurveys.org/data/exploretopics/trade>

43. World Bank Enterprise Survey (2015). Available at: <http://www.enterprisesurveys.org/Custom-Query#hReprtpreview>

are much more likely to be involved in exporting than those not using the platform.⁴⁴ See Box 3 for an example of how a Vietnamese company is assisting MSMEs in the country to access the e-commerce export opportunity.

Based on average export revenue data and eBay data on the proportion of sellers on their platform that are exporting, it is estimated that e-commerce generated over VND 52 trillion (US\$2.3 billion) of export revenues for Vietnam in 2017, which could grow to over VND 515 trillion (US\$22.7 billion) by 2030 based on the forecasted growth of e-commerce markets in nearby countries.⁴⁵

- **Digital apps.** Vietnam's app economy is dominated by mobile gaming. Vietnam's gaming industry has experienced strong growth in recent years (at a CAGR of 28 percent over the past four years), with total gaming revenue in 2017 at VND 8.2 trillion (US\$361 million).⁴⁶

While Vietnamese apps have yet to fully leverage the export opportunity across the board, some are already doing well on the world stage.⁴⁷ For example, Vietnam's most famous app export in recent years was the mobile game 'Flappy Bird', which, in 2014, reached over 50 million downloads worldwide. While creator Dong Nguyen removed the game from the Google Play and Apple App stores to focus on other projects, Flappy Bird reportedly made over VND 1.1 billion (US\$50,000) a day from advertisements at its peak.⁴⁸ The messaging app 'Zalo' also proved popular as a viable regional alternative to other apps in South-East Asia, amassing over 100 million subscribers.⁴⁹ Several other apps from Vietnamese studios have garnered millions of users around the world, including Greengar with its popular app 'Whiteboard: Collaborative Drawing' that generated over 8 million downloads worldwide, and DivMob with its popular games such as 'Ninja Revenge' and 'Zombie Age'.⁵⁰

44. eBay (2016), Small Online Business Growth Report. Available at: https://www.ebaymainstreet.com/sites/default/files/eBay_global-report_2016-4_0.pdf

45. Based on AlphaBeta analysis.

46. Newzoo (2017), The Vietnamese Gamer 2017. Available at: <https://newzoo.com/insights/infographics/vietnamese-gamer-2017/>

47. The report does not quantify the total revenues from app exports for Vietnam as due to the small size of app export market robust data is not available.

48. Tuoi Tre News (2016), "Vietnamese app developer sets Guinness Record with now-defunct Flappy Bird".

Available at: <https://tuoitrenews.vn/business/32813/vietnamese-app-developer-sets-guinness-record-with-nowdefunct-flappy-bird>

49. South China Morning Post (2017), "How Vietnam's answer to Whatsapp, Zalo, began with a hack". Available at: <http://www.scmp.com/week-asia/business/article/2124113/how-vietnams-answer-whatsapp-zalo-began-hack> and Vietnam Net (2018), "Zalo officially reaches 100 million users". Available at: <https://english.vietnamnet.vn/fms/science-it/201058/zalo-officially-reaches-100-million-users.html>

50. Tech In Asia (2013), "10 startups in Vietnam that have reached over 1 million users". Available at: <https://www.techinasia.com/million-user-startups-vietnam>. Information on Greengar has been obtained from the company website: <https://500.co/startup/greengar/>

BOX 2. TRUNG NGUYEN

Founded in 1996, the owners of Trung Nguyen saw potential in producing gourmet coffee. Today, Trung Nguyen coffee is one of Vietnam's most popular coffee brands and their products are available through both its physical coffeehouse chains as well as its instant coffee packets sold in convenience stores and supermarkets.

Thanks to the rise of e-commerce, Trung Nguyen has been able to reach customers outside of Vietnam

and increase their global market presence. In China, Trung Nguyen's instant coffee product 'King Coffee' was listed as one of the four best-selling brands of T-Mall Super Market, an Alibaba-owned e-commerce website with over six million users globally.⁵¹ In South Korea, this product is being distributed via over 300 e-commerce websites.⁵² Outside Asia, Trung Nguyen has also partnered with local e-commerce distributors such as Len's Coffee in North America and Dragon Coffee in Europe.



Photo source: <https://jetho78.wordpress.com/traveling/vietnam-dalat/>

51. Vietnam Investment Review (2018), "Trung Nguyen Group will have to compete with its subsidiary". Available at: <http://www.vir.com.vn/trung-nguyen-group-will-have-to-compete-with-its-subsidiary-60944.html>

52. Vietnam Investment Review (2018), "Trung Nguyen Group will have to compete with its subsidiary". Available at: <http://www.vir.com.vn/trung-nguyen-group-will-have-to-compete-with-its-subsidiary-60944.html>

BOX 3.

HELPING VIETNAMESE MSMEs ACCESS THE E-COMMERCE EXPORT OPPORTUNITY⁵³

Although e-commerce presents a ready solution to the current challenges faced by Vietnamese businesses face in accessing overseas markets, many still do not know how to unlock this opportunity. Mr Tran Dinh Toan, Deputy CEO of Vietnamese digital consultancy OSB Investment and Technology JSC, observes that, "On the whole, many Vietnamese business owners are still unaware of the potential benefits of e-commerce and hence do not invest heavily in it. They see it as merely another sales channel and are not familiar with some of its other valuable functions such as its effective marketing tools as well as data analytics of the company's sales performance or their customers' shopping behaviour. Those who do understand its power, however, face problems in using it."

Mr Toan explains that this lack of adoption and utilisation is due to a combination of three factors: a lack of IT skills required for e-commerce adoption in Vietnam's workforce (e.g. website and app-building, graphic design and customer analytics), a poor understanding of customer expectations in the digital economy (such as fast response rates) and weak English language skills which are crucial for communication with overseas customers.

To address this, OSB's consulting arm seeks to assist Vietnamese MSMEs in taking advantage of the e-commerce export opportunity through



Photo source: <http://www.osbholding.com>

initiatives in three key areas. These are: seminars and workshops to inform businesses about the benefits of e-commerce, IT training for e-commerce adoption and English language courses, as well as consulting services in which customers are advised on which e-commerce platforms and services are most suited to their needs and how to effectively utilise them. OSB even recently spearheaded a pilot programme to provide funding to 100 selected Vietnamese MSMEs which were evaluated to lack the required human and financial resources to adopt e-commerce. OSB's impact is growing. To date, the company has assisted over 200,000 Vietnamese businesses in sectors ranging from F&B, agricultural products to construction materials in accessing the e-commerce export opportunity.

53. Based on interview with Mr Tran Dinh Toan, Deputy CEO of OSB Investment and Technology JSC.

DIGITALLY-ENABLED SERVICES

The value of these exports is estimated to be VND 11 trillion (US\$473 million) in 2017 and could grow almost three times the current value by 2030 to reach VND 30 trillion (US\$1.3 billion).⁵⁴ This growth is expected to be largely driven by expanding digital infrastructure services.

- **Digital infrastructure services.** This includes telecommunication services such as the export of email, video conferencing, digital file sharing, and Voice Over Internet Protocol (VOIP) services as well as data processing. Vietnam's digital exports of infrastructure services in 2017 are estimated at around VND 10.4 trillion (US\$457 million), with the potential to grow to VND 26.1 trillion (US\$1.1 billion) in 2030.⁵⁵
- **Online video advertising.** Thanks to the advent of video-sharing platforms such as YouTube, Vimeo and Facebook, Vietnamese stories and voices are starting to find new global audiences.

In 2017, it is estimated that there were over 50 billion views on Vietnamese channels. The demand for Vietnamese content and the economic opportunities associated with them are significant. For example, Vietnamese YouTube content creator Helen Le started her channel 'Helen's Recipes', leveraging the global appeal of Vietnamese food to reach a larger audience. Today, more than 450,000 people globally have subscribed to her channel. Helen has been very successful internationally. Over 45 percent of her viewers come from the US, and a sizeable chunk from other countries, including Australia, Canada, Germany and Singapore. Capitalising on her popularity, Helen released two cookbooks in recent years. Several TV channels and brands in the travel and lifestyle segment have



invited her to attend cooking shows in popular or up-and-coming travel destinations in the region. Helen was even offered honorary ambassadorship to the Japanese city of Hokkaido in 2015.⁵⁶

It is estimated that online video platforms supported over VND 360 billion (US\$16 million) in advertising revenues from foreign markets for business in Vietnam in 2017.⁵⁷ These benefits reflect the income earned by Vietnamese from advertising displayed on their content. This could potentially grow to over VND 3.8 trillion (US\$167 million) by 2030 based on the forecasted growth of the digital advertising market.⁵⁸ This is in addition to the large, but difficult to size, value of direct digital services exports in industries such as tourism (including online tourism booking), financial services, accounting, law, education and even medicine.

54. Based on AlphaBeta analysis.





55. Based on AlphaBeta analysis.

56. Interview with Helen Le conducted by AlphaBeta in January 2018.

57. Based on AlphaBeta analysis.

58. Based on AlphaBeta analysis.

EXHIBIT 6:

GAMES  <ul style="list-style-type: none"> • Who: Cris Devil Gamer • Theme: Games • Subscribers: >3.8 million • Views: >852 million 	CHALLENGES  <ul style="list-style-type: none"> • Who: Oops Banana • Theme: Challenge videos & experiments • Subscribers: >2.3 million • Views: >805 million
REVIEWS  <ul style="list-style-type: none"> • Who: Mr. Huy • Theme: Food and technology review • Subscribers: >1.4 million • Views: >726 million 	KIDS  <ul style="list-style-type: none"> • Who: Playground for kids • Theme: Activities for children • Subscribers: >3.3 million • Views: >599 million

INDIRECT DIGITAL SERVICES

Imported digital services are crucial for enabling the growth of the exports of non-digital sectors. In traditional sectors such as manufacturing, imported digital services, such as email, video conferencing, Voice Over Internet Protocol (VOIP), digital file sharing and data processing help Vietnamese firms to reach new markets.

For example, Vietnam's largest dairy company, Vinamilk, has begun to bring artificial intelligence technologies

into its production and management facilities, which has the company to increase productivity while reducing costs. These improvements allow Vinamilk to compete on the global stage against other big international brands.⁵⁹ In 2017, the impact of imported digital services on exports in all other sectors in Vietnam is estimated at just under VND 34 trillion (US\$1.5 billion), with the potential to grow to VND 107 trillion (US\$4.7 billion) by 2030.⁶⁰

59. VOV (2018), *Being smart in the "smart" era*. Available at: <https://english.vov.vn/economy/being-smart-in-the-smart-era-377291.vov>

60. Based on AlphaBeta analysis.



CAPTURING THE DIGITAL TRADE OPPORTUNITY

In order to realise the full potential of digital trade, policy makers will need to address four areas of potential concern surrounding digital trade. The good news is that all of them are addressable without needing to unduly restrict digital trade flows. It is in Vietnam's interest to ensure a strong domestic ecosystem for digital trade and to also play a role in advocating strongly for digital trade to remain open in the Asia Pacific to safeguard the potential benefits for Vietnamese firms.



PERCEIVED CONCERNS RELATED TO DIGITAL TRADE

Digital trade has unfortunately faced increasing barriers in various forms in recent years, ranging from data localisation requirements through to local registration mandates. The barriers exist in four main forms:



1. PRIVACY

Protecting the privacy of citizens



2. SECURITY

Enabling rapid access to data for law enforcement and safeguarding national security



3. ECONOMIC

Supporting the growth of domestic digital firms and local jobs



4. FISCAL

Protecting the local tax base

These barriers require critical examination. Some overlook the fact that the same end objective could be achieved more efficiently through technological measures or modernised regulations without jeopardising the benefits of digital trade.



CONCERN 1:

PROTECTING THE PRIVACY OF CITIZENS AND SAFEGUARDING THEM FROM INAPPROPRIATE CONTENT

Digitised information requires appropriate privacy safeguards in order to protect citizens and safeguard against nefarious use or interference. There are different ways of addressing data privacy concerns and many can achieve the same objective of safeguarding privacy, without unduly impeding data flows. For example, the United States has adopted an approach of self-regulation enforced with heavy fines if companies are found not to be safeguarding privacy appropriately.

The Asia-Pacific Economic Cooperation (APEC) forum has established the Cross-Border Privacy Rules (CBPR)

and Privacy Recognition for Processors (PRP) systems which requires participating businesses to implement data privacy policies consistent with the APEC Privacy Framework.⁶¹ These forms of privacy protections are solutions that allow cross-border data flows while safeguarding privacy through interoperable enforcement mechanisms, providing an ideal international framework that APAC policymakers should seek. On the other hand, data localisation requirements could actually increase privacy risks by requiring data to be stored in single centralised locations that are more vulnerable to intrusion.

CONCERN 2:

ENABLING RAPID ACCESS TO DATA FOR LAW ENFORCEMENT AND SAFEGUARDING NATIONAL SECURITY AS WELL AS THE SECURITY OF USERS

Cybersecurity concerns may be exacerbated by constraints on cross-border digital trade that limit the scale of cloud providers (thus potentially impacting their ability to ensure appropriate investment in data safeguards) and by concentrating data in few locations (as opposed to maintaining redundant datasets at multiple data centres spread across countries).

Modern data storage systems take advantage of 'sharding', a type of database partitioning that separates very large databases into smaller, faster and more easily managed parts called data shards. Sharding assists the intelligent transmission and storage of data, enabling the movement and replication of data between data centres and across borders in the interests of integrity, efficiency and security.

Cloud providers balance factors ranging from internet bandwidth and the likelihood of power outages over available networks to network throughput in order to optimise systems.⁶² As one set of researchers found, "Requirements to localise data do nothing on their own to make data safer; in fact, they will only make it impossible for cloud service providers to take advantage of the Internet's distributed infrastructure and use sharding."⁶³

Moreover, research has shown that local storage providers in fact apply less rigour to data security than global providers as a result of fewer financial resources, less technological expertise, lower competitive need to draw customers and technological restrictions (e.g. on sharding and the distributed storage of backup

61. For further information, see: <http://www.cbprs.org/>

62. Urs Holzle (2018), "Freedom of data movement in the cloud era" (Google Blogs).

Available at: <https://www.blog.google/products/google-cloud/freedom-data-movement-cloud-era/>

63. Patrick Ryan, Sarah Falvey, and Ronak Merchant (2013), "When the cloud goes local: The global problem with data localization". IEEE Computer Society, Issue 12, Vol. 46. Available at: <https://www.computer.org/csdl/mags/co/2013/12/mco2013120054-abs.html>



“ For example, the Asia-Pacific Economic Cooperation (APEC) forum established the Cross-Border Privacy Rules (CBPR) and Privacy Recognition for Processors (PRP) systems which require participating businesses to implement data privacy policies consistent with the APEC Privacy Framework. These forms of privacy protections are solutions that allow cross-border data flows while safeguarding privacy through interoperable enforcement mechanisms, providing an ideal international framework that APAC policymakers could seek. ”

copies).⁶⁴ There are also numerous examples of data localisation creating issues for the resilience and security of data by making it susceptible to a single point of failure. For example, in 2012, a small explosion in a data centre in Calgary, Canada, led 30,000 people to lose landline phone services (including to emergency services) and interruptions to the functioning of radio stations, fire authorities, taxi services, and even some local government functions for several days.⁶⁵ National-level events such as flooding, earthquakes, tornadoes, and wildfires could create resiliency issues even for data stored at multiple points within a country.

There are valid issues when it comes to law enforcement officials requiring timely access to data in other countries; however, these issues are best addressed by tackling the specific requirements of law enforcement agencies through inter-governmental data sharing agreements, rather than constricting data flows.⁶⁶

64. James Arlen and Brendan O'Connor (2015), "Xenophobia is hard on data: Forced localization, data storage, and business realities", Sector. Available at: <http://www.sector.ca/Program/Sessions/Session-Details/xenophobia-is-hard-on-data-forced-localization-data-storage-and-business-realities/>

65. Leviathan Security Group, "Comparison of Availability Between Local and Cloud Storage". Available at: <https://static1.squarespace.com/static/556340ece4b0869396f21099/t/559dad9ae4b069728afca34a/1436396954508/Value+of+Cloud+Security+-+Availability.pdf>

66. Joshua P. Meltzer and Peter Lovelock (2018), *Regulating for a digital economy: Understanding the importance of cross-border data flows in Asia*. Available at: https://www.brookings.edu/wp-content/uploads/2018/03/digital-economy_meltzer_lovelock_working-paper.pdf



CONCERN 3:

SUPPORTING THE GROWTH OF DOMESTIC DIGITAL FIRMS AND LOCAL JOBS

It has been argued that free digital trade will result in a select number of large multinationals (with the necessary scale) capturing the economic benefits, while local firms receive limited benefits and local economies miss out on employment opportunities. The economic literature has debunked the notion that trade protectionism spurs the creation of highly-productive domestic champions,⁶⁷ and the same is even more true for the digital sector for several reasons.

First, digital multinationals make important contributions to the local digital ecosystem. A survey of start-ups across Asia (including in Vietnam) found that 88 percent considered it crucial to attract foreign technology investment to the country, with some of the most important channels including start-up financing, investments in the digital ecosystem, and knowledge transfer.⁶⁸ In Vietnam, such examples of the importance

of digital multinationals to the local digital industry are plentiful:

- **Investment in research.** Samsung developed a research and development centre in Ho Chi Minh city that focuses on cutting-edge technologies that can be deployed in household appliances, smartphones and other electronics.⁶⁹ With up to 500 Vietnamese employees that will be employed, this project is intended to promote foreign investment and technology transfer, as well as train Vietnam's workforce.⁷⁰
- **Support for innovation.** IBM's 'Smarter Cities Challenge' is a competitive grant programme in which IBM partners cities who have put forth the most compelling proposals by leveraging IBM's technical expertise in cloud computing, analytics

67. For a literature review, see Arvind Panagariya, "A Re-examination of the Infant Industry Argument for Protection", *Journal of Applied Research*, February 18, 2011. Available at: <http://journals.sagepub.com/doi/abs/10.1177/097380101000500102>

68. AlphaBeta (2017), *Digital Nation: Policy levers for investment and growth*. Available at: <http://www.alphabeta.com/digital-nation-policy-levers-investment-growth/>

69. Atsushi Tomiyama (2017), "Samsung readies Vietnam R&D center for appliances", *Nikkei Asian Review*.

Available at: <https://asia.nikkei.com/Business/Electronics/Samsung-readies-Vietnam-R-D-center-for-appliances>

70. Hung Le (2017), "Samsung opens R&D center in HCMC", *The Saigon Times*.

Available at: <http://english.thesaigontimes.vn/57236/Samsung-opens-RD-center-in-HCMC.html>

and artificial intelligence to achieve their visions – fully funded by IBM.⁷¹ Two Vietnamese cities, Ho Chi Minh and Da Nang, have received such support, particularly in the area of digitising its administrative services.⁷²

- **Support for small business.** EDoctor, a telehealth startup in Vietnam, is sponsored by both Google and Facebook. Besides monetary support, the startup will have an opportunity to work closely with Google for six months in Vietnam and participate in an all-expense-paid training for two weeks at Google's headquarters in the US, with access to Google engineers, resources and mentors.⁷³
- **Support for the education system.** SAP collaborated with the ASEAN Foundation to jointly roll out digital literacy programmes for youths in ASEAN member states, including Vietnam. These are aimed to provide youths with the skills they need to tackle societal issues and thrive in the digital economy, and covers broad fields such as education, volunteerism and entrepreneurship.⁷⁴

Second, digital constraints not only negatively affect the digital sector itself, but also the broader economy. In fact, the larger impact is on non-digital sectors. The macroeconomic costs of forced data localisation range between 0.7 percent and 1.1 percent of GDP.⁷⁵ In addition, data localisation has been associated with investment decreases of up to 4 percent.⁷⁶

Third, digital trade constraints bring about significant additional operational costs which often fall hardest on SMEs. While a major company may have sufficient revenues and scale to justify building data centres in multiple locations, smaller firms can be shut out of the domestic and international internet economy completely if they cannot access affordable computing and data services. Past research has found that local companies would be required to pay 30-60 percent more for their computing needs from strictly enforced data localisation policies.⁷⁷ Indeed, it has been observed that not only does the fragmentation of global online networks by data localisation laws result in delays, inefficiencies and higher costs from building or renting physical infrastructure in each jurisdiction, it also imposes the need to operate in a “complex array of different jurisdictions imposing conflicting mandates and conferring conflicting rights”.

Fourth, protectionism could encourage retaliatory behaviour in other jurisdictions with the potential to shut out local firms from these foreign markets. McKinsey Global Institute estimates that data flows accounted for US\$2.8 trillion of economic value in 2014 and any impediment to these flows could create significant economic headwinds.⁷⁸

Finally, the perceived benefit of data localisation requirements for domestic employment is typically much smaller than expected. Data centres, for example, are ‘capital heavy’ but ‘job light’ investments that are likely to create few local jobs.⁷⁹

71. IBM (2017), “Smarter Cities Challenge aims to make lasting urban improvements”.

Available at: <https://www.ibm.com/blogs/cloud-computing/2017/02/17/smarter-cities-challenge-improvements/>

72. IBM Smarter Cities Challenge (2018). Available at: <https://www.smartercitieschallenge.org/cities>

73. Viet Nam News (2017), “VN's doctor consulting app gets Google sponsor package”.

Available at: <https://vietnamnews.vn/economy/377115/vns-doctor-consulting-app-gets-google-sponsor-package.html#qKzZh67v4LQ8HZ7r.9Z>

74. SAP News (2017), The ASEAN Foundation and SAP extend strategic collaboration to drive positive social impact in the digital economy.

Available at: <https://news.sap.com/sea/2017/11/the-asean-foundation-and-sap-extend-strategic-collaboration-to-drive-positive-social-impact-in-the-digital-economy/>

75. Matthias Bauer et al. (2014), The costs of data localisation: Friendly fire on economic recovery, European Centre for International Political Economy (ECIPE).

Available at: http://www.ecipe.org/app/uploads/2014/12/OCC32014_1.pdf

76. Martina Ferracane et al (2018), Digital Trade Restrictiveness Index, European Centre for Political Economy (2018).

Available at: https://ecipe.org/wp-content/uploads/2018/05/DTRI_FINAL.pdf

77. Leviathan Security Group (June, 2014), Quantifying the costs of forced localization. Available at: <https://static1.squarespace.com/static/556340e4b0869396f21099/t/559dad76e4b0899d97726a8b/1436396918881/Quantifying+the+Cost+of+Forced+Localization.pdf>

78. McKinsey Global Institute (2016), Digital globalization: The new era of global flows.

Available at: <https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/digital-globalization-the-new-era-of-global-flows>

79. TechRepublic (2016), “Why data centers fail to bring new jobs to small towns”.

Available at: <https://www.techrepublic.com/article/why-data-centers-fail-to-bring-new-jobs-to-small-towns/>

CONCERN 4: PROTECTING THE LOCAL TAX BASE

A fear of many policymakers is that digital trade makes it easier for companies to shift profits to low tax jurisdictions and hence avoid paying taxes. This perception, however, is not necessarily backed by the data. Research by the European Centre for International Political Economy (ECIPE) shows that the taxes paid by the world's largest Internet firms are on average commensurate with leading businesses across the Asia-Pacific region.⁸⁰ As government officials have increasingly acknowledged, the international approach to tackling Base Erosion and Profit Shifting (BEPS) and US tax reform have together been largely successful at addressing the issue of double-non-taxation and indefinite deferred taxation respectively.

The conversation has now moved on to how that tax should be allocated among countries, particularly countries with large consumer markets. At present, digital multinationals (like non-digital multinationals) pay the majority of their tax where their product development takes place. Some countries have expressed their desire for the presence of large consumer markets to play a stronger role in how profit (and therefore taxing rights) is allocated, but it is no longer accurate to suggest that there is a broad problem of digital multinationals not enough paying tax at a global level.

Surveys of digital multinational enterprises conducted by AlphaBeta in past research found that investors



are more concerned about the unpredictability of the tax environment, as opposed to the rate itself.⁸¹ For example, over 30 percent of respondents in Deloitte's latest "Asia Pacific Tax Complexity Survey" considered the tax compliance and fiscal requirements in Vietnam to be "complicated".⁸² The early lessons from BEPS reforms in the region highlight the importance of a strong consultation process with industry and of enforceable mechanisms that do not discriminate against the digital sector.⁸³

80. Martina Ferracane and Hosuk Lee-Makiyamahe (2018), *Geopolitics of Online Taxation in Asia-Pacific - Digitalisation, Corporate Tax Base and The Role of Governments*. Available at: <http://ecipe.org/publications/the-geopolitics-of-online-taxation-in-asia-pacific/>

81. AlphaBeta (2017), *Digital Nation: Policy levers for investment and growth*. Available at: <http://www.alphabeta.com/digital-nation-policy-levers-investment-growth/>

82. Deloitte (2017), *Shifting sands: risk and reform in uncertain times. 2017 Asia Pacific Tax Complexity Survey*.

Available at: <https://www2.deloitte.com/content/dam/Deloitte/cn/Documents/tax/deloitte-cn-tax-2017-ap-tax-complexity-survey-en-170424.pdf>

83. AlphaBeta (2017), *The Screen Evolution: How video-on-demand boosts Asia's economies and generates value for viewers, business and society*.

Available at: <http://www.alphabeta.com/the-screen-evolution/>



PRIORITIES FOR ACTION



CATEGORY 1: ACTION AT HOME

Vietnam has a number of opportunities to enhance its current domestic regulatory approach to data:

- **Ensuring open data flows and interoperability.**

Vietnam has extensive data policies that substantially restrict cross-border data flows. For example, Vietnam forbids direct access to the Internet through foreign Internet Service Providers (ISPs) and requires domestic ISPs to store information transmitted on the Internet for at least 15 days.⁸⁴

Another regulation is the mandatory data localisation requirement for over-the-top services (such as Whatsapp and Skype), as well as the need

for a broad range of online companies (including social networks, online gaming sites and search engines) to have at least one server in Vietnam “serving the inspection, storage and provision of information at the request of competent state management agencies”.⁸⁵

As highlighted earlier in this chapter, law enforcement and customer protection concerns can be addressed without requiring data localisation, which can impose significant costs on the economy. Academic research has shown that Vietnam’s legislation on data localisation could potentially reduce GDP by around 1.7 percent, and the amount of domestic investments by 3.1 percent.⁸⁶

84. Nigel Cory (2017), “The critical role of data in the global economy”, Information Technology and Innovation Foundation. Available at: <http://www2.itif.org/2017-usitc-global-digital-trade.pdf>

85. Nigel Cory (2017), “The critical role of data in the global economy”, Information Technology and Innovation Foundation. Available at: <http://www2.itif.org/2017-usitc-global-digital-trade.pdf>

86. Matthias Bauer et al. (2014), The costs of data localisation: Friendly fire on economic recovery, European Centre for International Political Economy (ECIPE). Available at: http://www.ecipe.org/app/uploads/2014/12/OCC32014_1.pdf

Businesses should be allowed to partake in cross-border data exchanges, while data privacy and security concerns may be addressed through regulations on data sharing. These regulations should be clear on the type of data that can be shared, the boundaries of sharing, and the type of consumer consent that is required. A useful first step would be for Vietnam to adopt the APEC Privacy Framework and join the APEC Cross Border Data Privacy Rules System as well as adopt ISO Standards such as ISO27018 that specifies controls to protect personal data.

Another opportunity is to encourage interoperability between digital frameworks, particularly on payment gateways, to avoid the costs of companies having to customise their approaches to every single market. One opportunity for Vietnam is to support the implementation of the data management initiative under the Master Plan on ASEAN Connectivity 2025 (MPAC 2025), which aims to improve transparency and accountability on data regulation requirements in ASEAN and identify areas to enhance performance and coordination.⁸⁷

- **Rethinking content restrictions and promoting innovation-oriented approaches to copyright and intermediary liability regulations.** Well-balanced Internet Intermediary Liability (IIL) regulations can help to ensure the effective removal of illegal or undesirable content without constraining the free flow of information. The Vietnamese government's 'Decree 72' mandates that Internet Service Providers (ISPs) coordinate with the

state on removing or blocking online content which is deemed to threaten political and social stability.⁸⁸ It requires social networks to prevent any information that defames the state of Vietnam from being published, requiring such networks to obtain a license from the Ministry of Information and Communication before being published.⁸⁹ The remit of this decree extends even to how internet connectivity in Vietnam is organised and managed, and is reported to facilitate the filtering of online content by limiting external access points, with only Vietnamese state-owned companies being allowed to operate outside of these strict controls.⁹⁰

Such restrictions to access content online makes it cost-prohibitive to provide online services – a critical conduit of digital trade. A more effective approach of limiting citizens' exposure to illegal content that does not restrict the company's access to the benefits of digital trade might be a 'safe harbour' policy, which addresses platform liability over content distributed over the platform. A strong environment for digital trade is one in which the development of innovative digital content is facilitated in a manner that does not undermine the interests of rights holders. While addressing copyright concerns and removing undesirable content (such as hate speech) are clearly important priorities for stimulating innovation and protecting consumers, the challenge is to balance such objectives with a system that is sufficiently flexible that it does not impose undue burden on firms, particularly MSMEs. Hence, it is imperative that regulations define clear and cost-efficient

87. ASEAN Secretariat (2016), *Master Plan on ASEAN Connectivity 2025*.

Available at: <http://asean.org/storage/2016/09/Master-Plan-on-ASEAN-Connectivity-20251.pdf>

88. Ministry of Information and Communications (2013), Decree No. 72/2013/ND-CP of July 15, 2013, on the management, provision and use of Internet services and online information. Available at: <https://www.vnnic.vn/en/about/legaldocs/decreed-no-72-2013-nd-cp-july-15-2013-management-provision-and-use-internet?lang=en>

89. Ministry of Information and Communications (2013), Decree No. 72/2013/ND-CP of July 15, 2013, on the management, provision and use of Internet services and online information. Available at: <https://www.vnnic.vn/en/about/legaldocs/decreed-no-72-2013-nd-cp-july-15-2013-management-provision-and-use-internet?lang=en>

90. Ministry of Information and Communications (2013), Decree No. 72/2013/ND-CP of July 15, 2013, on the management, provision and use of Internet services and online information. Available at: <https://www.vnnic.vn/en/about/legaldocs/decreed-no-72-2013-nd-cp-july-15-2013-management-provision-and-use-internet?lang=en>

requirements for intermediaries to comply with legislation and provide clarity on any potential liability. This would allow regulators to balance the interests of content creators on the one hand, and society's competing interest in the free flow of ideas, information, and commerce on the other.

- **Minimising border frictions.** Cross-border trade would be greatly enhanced by reducing the need for local registration, removing disclosure requirements of key intellectual property, and minimising unnecessary procedures and duties. Local establishment requirements can be cost prohibitive especially for MSMEs, and pose as a disincentive to businesses by effectively serving as an additional tax on operations.

In the 'Digital Trade Restrictiveness Index' developed by European Centre for International

Political Economy (ECIPE), Vietnam ranks third in a list of 65 countries under the indicator 'trading restrictions'.⁹¹ This is due to its strict licensing and registration requirements for online social networks, general information websites, mobile telecommunications network-based services and certain online games services, as well as the mandatory local registration and licensing requirement for foreign companies to physically establish in Vietnam.⁹² Vietnam also imposes the maximum tariff rate of 35 percent on ICT goods and their inputs.⁹³ In addition, the country imposes restrictive measures in the policy fields of foreign investment, competition policy and cross-border data flows.⁹⁴ The study by the ECIPE has demonstrated this to have influenced the country's currently low level of technological readiness and ICT use.

CATEGORY 2: ACTION ABROAD

The Vietnamese Government is currently engaged in about 17 bilateral and multilateral free trade agreements. These include the Regional Comprehensive Economic Partnership (RCEP), a proposed free trade agreement (FTA) between the ten member states of the Association of Southeast Asian Nations (ASEAN) and the six states with which ASEAN has existing free trade agreements (Australia, China, India, Japan, South Korea and New Zealand). Advocating on these three issues highlighted

above can help increase the export opportunities for Vietnamese firms.

In addition, a positive step that Vietnam has taken is to join the Comprehensive and Progressive Agreement for Trans Pacific Partnership (CPTPP), which establishes key principles for its member states under which free cross-border e-commerce data flows may take place.⁹⁵

91. Martina Ferracane et al (2018), *Digital Trade Restrictiveness Index*, European Centre for Political Economy (2018). Available at: https://ecipe.org/wp-content/uploads/2018/05/DTRI_FINAL.pdf

92. Martina Ferracane et al (2018), *Digital Trade Restrictiveness Index*, European Centre for Political Economy (2018). Available at: https://ecipe.org/wp-content/uploads/2018/05/DTRI_FINAL.pdf

93. Martina Ferracane et al (2018), *Digital Trade Restrictiveness Index*, European Centre for Political Economy (2018). Available at: https://ecipe.org/wp-content/uploads/2018/05/DTRI_FINAL.pdf

94. Martina Ferracane et al (2018), *Digital Trade Restrictiveness Index*, European Centre for Political Economy (2018). Available at: https://ecipe.org/wp-content/uploads/2018/05/DTRI_FINAL.pdf

95. These include: (i) commitments not to impose custom duties on digital products; (ii) commitments to adopt or maintain a legal framework that provides for the protection of the personal information of e-commerce users; (iii) non-discriminatory treatment of digital products; (iv) rules against localisation requirements; (v) commitments to provide reasonable network access for telecommunications suppliers. See: Henry S. Gao (2018), "Digital or trade? The contrasting approaches of China and US to digital trade", *Journal of International Economic Law*, Vol 21, Issue 2. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3162557

Prepared by AlphaBeta

αlphaβeta
strategy x economics