THE DATA OPPORTUNITY:

THE PROMISE OF DIGITAL TRADE FOR INDIA

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Important Notice on Contents

Digital trade refers to the distribution, marketing, sale or delivery of goods and services to overseas markets – and the reception of these by domestic markets from abroad – by electronic means. 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 policymakers** to take into account the importance of digital trade for both the external and domestic economies when formulating trade and economic policy;
- **Businesses** in harnessing the opportunities afforded by digital trade in the form of increased exposure to overseas markets and uplifting productivity at home;
- **Industry groups** in 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 and the All India Management Association (AIMA) 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.

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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.

AIMA
ALL INDIA MANAGEMENT ASSOCIATION

The All India Management Association (AIMA) has always been at the forefront of building management capability in the country. AIMA actively contributes to the management profession through its various programmes, training, education and testing services. Since its inception, it has continuously strived to search for new avenues for management learning and development, and to enhance the capability of aspiring and practising management professionals.

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

FOREWORD
(VIEWS BY PRESIDENT, AIMA)

AIMA has always been at the forefront of building management capability in the country and actively contributes to the management profession through its various programmes, training, education and testing services. Since our inception, we have continuously strived to search for new avenues for management learning and development, and to enhance the capability of aspiring and practicing management professionals.

It gives me great pleasure to present this research report on 'The Data Opportunity: The Promise of Digital Trade for India' brought out in collaboration with Hinrich Foundation, and with analytical support from AlphaBeta. Another significant contribution by AIMA towards the development of management thought in the country.

Digital Trade encompasses digitally-enabled transactions of trade in goods and services that can either be digitally or physically delivered, and that involve consumers, firms, and governments. That is, while all forms of digital trade are enabled by digital technologies, not all digital trade is digitally delivered. Digitisation has led to an increase in scale, scope and speed of trade. It is also changing how we trade. Rapid technological developments are facilitating rapid rise of international cross-border trade. Domestic economies are also reaping in benefits as government and policymakers take into account the importance of digital trade while formulating trade and economic policy. Business are able to access international markets while uplifting productivity at home. The benefits of digital trade can be seen in all industry sectors. The time has come for India to take note and to develop a knowledge base around digital trade.

The report presents India's data opportunity and the promise it brings for digital trade in India, and it includes inputs and viewpoints from senior industry leaders and experts on the road ahead.

The AIMA and Hinrich Foundation team engaged in carrying out this research deserve special appreciation for all their efforts towards this publication.
We hope that this report will prove to be insightful and useful for industry, academia and government alike.

HARSHAVARDHAN NEOTIA
President, AIMA
Chairman, Ambuja Neotia Group

FOREWORD
(VIEWS BY DIRECTOR GENERAL, AIMA)

Over the past two decades, the gross domestic product (GDP) of India has risen by more than US$1 trillion. Though India has started making progress, the fact remains that it would have to work towards increasing its GDP by 9 percent per year to become a US$10 trillion economy over the next two decades. Digital trade is an opportunity for India to increase its GDP in the coming decades. Potential benefits of digital trade are spread across all sectors of the Indian economy, but are particularly relevant in agriculture, infrastructure, and retail.

As part of its research initiative on contemporary themes, AIMA decided to support this research project from the Hinrich Foundation, implemented by AlphaBeta. In this research, an attempt has been made to highlight and focus on digital trade driven technologies that have the potential to impact and transform India's domestic economy. Digital trade has already created a huge positive impact, but this benefit can grow even more rapidly in the right setting in the Indian landscape, involving the government, business powerhouses, and society at large. The report provides different examples of how these disruptive trends, such as mobile, cloud, digital wallets, and payments have the capability, individually and collectively, to impact people and businesses and through its applications, in bringing about a transformation across different sectors such as Education, Healthcare, Banking services, Retail and FMCG, Agriculture, and Government. In addition, it seeks to estimate the benefit that these technologies could generate.

It is an important piece of work and AIMA was delighted to work with the Hinrich Foundation and AlphaBeta to bring this report to you.

REKHA SETHI
Director General
All India Management Association

FOREWORD BY HINRICH FOUNDATION

The Hinrich Foundation is a philanthropic organization focused on promoting sustainable global trade. It is a unique, independent and authoritative Asia-based voice on global trade.

We view sustainable global trade as an important force for growth, development, poverty alleviation and for stabilizing geopolitics. It is our belief that sustainable global trade requires mutually acceptable terms and balanced economic, social and environmental outcomes.

We promote sustainable global trade through policy research and education programs. Our aim is to progress the understanding of trade issues and opportunities and help inform policy discussions for better trade outcomes and more sustainable growth.

At the Hinrich Foundation we consider open digital trade to be a growth opportunity for countries as well as an enabler of major productivity improvements for sectors beyond the digital sector. In recent time, we have seen exponential developments in the digital economy that have created ample opportunities especially for SMEs to foray into global markets. Important policy and regulatory discussions are however now required to better harmonize frameworks - related to data protection, storage, transfer and security in particular - and fully realize the potential of digital trade-led growth.

We commissioned this research project to fill an information gap about the value and impacts of digital trade on growth in eight economies in the Asia-Pacific – Australia, China, India, Indonesia, Japan, Malaysia, Philippines and Vietnam.

Our objectives for this research project included:

- Sizing the value of the digital trade opportunity for exports and the domestic economy
- Identifying the key requirements for unleashing the digital opportunity and creating sustainable growth
- Identifying the risks of an open digital policy and ways to address them
- Recommending key policy actions for helping economies harness the benefits and manage potential risks

We hope that this report - “The Data Opportunity: The Promise of Digital Trade for India” - will provide policymakers, business leaders and other stakeholders in India the information they need to discuss ways to harness the benefits and manage potential risks related to digital trade.

We are very grateful to the All India Management Association (AIMA) and AlphaBeta for their analytical support to this research project.

KATHRYN DIOTH
Chief Executive Officer
Hinrich Foundation

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THE DIGITAL TRADE OPPORTUNITY FOR THE INDIA

VALUE OF DIGITAL TRADE FOR INDIA'S DOMESTIC ECONOMY[1]

Digital trade enables
₹226 THOUSAND CRORE
of economic impact within the domestic economy.

By 2030, potential for digital trade will enable an estimated
₹3,331 THOUSAND CRORE
of economic impact within the domestic economy.

Potential benefits are spread across all sectors of Indian economy, but are particularly relevant in
AGRICULTURE, INFRASTRUCTURE, AND RETAIL.

VALUE OF DIGITAL TRADE FOR INDIA'S EXPORTS[2]

Digitally-enabled exports of goods and services account for
₹379 THOUSAND CRORE
today.

If digital goods and services were a sector, it would be the
SECOND LARGEST EXPORT SECTOR
for India.

By 2030, India's digital exports could
GROW BY 238%.

THREE IMPERATIVES FOR CAPTURING THE OPPORTUNITY

1 ENSURING OPEN DATA FLOWS

2 MINIMISING BORDER FRICTIONS

3 BUILDING FLEXIBILITY INTO COPYRIGHT AND INTERMEDIARY LIABILITY REGULATIONS

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

The digital economy holds immense promise for sustaining India's incredible run of recent economic growth and addressing the various socioeconomic challenges facing the economy, including helping large segments of the population struggling to meet basic food, water, energy and sanitation needs. India's Ministry of Electronics and Information Technology has set an ambitious target of making India a US$1-trillion digital economy in the coming five to seven years.[1] Understanding the role of digital trade, in both domestic and export markets, and optimising the regulatory environment is crucial if India is to capture this potential.

Digital trade (see Box 1 for the definition) will be crucial for achieving this vision. Though trade was once dominated by tangible goods, growth in global goods trade has flattened as global data flows have surged, with the amount of cross-border bandwidth having grown 45 times since 2005.[2] 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.[3] Digital trade is also supporting large productivity improvements in domestic sectors, underpinning production and quality improvements, and international competitiveness. Yet, traditional economic measures fail to adequately measure the value of digital trade to exports and India's economy. This creates risk that the value of digital trade is not fully appreciated and taken into account when formulating policy.

This report aims to quantify the economic value of digital goods and services exports, as well as the value of digital trade in enabling productivity improvements in the domestic economy.

Our key findings include (Exhibit 1):

- **Digital trade has already created huge positive impact for India's domestic economy, but this benefit can grow even more rapidly in the right setting.** Enabled by cross-border data flows, digital trade allows Indian 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 India may have skill gaps), enables adoption of more efficient business 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 Indian economy is estimated to be worth up to ₹226 thousand crore (US$35 billion). If digital trade, as well as cross-border data flows and storage, are fully facilitated, it is estimated that the value to India's domestic sectors could grow by more than 14-fold to reach ₹3,331 thousand crore (US$512 billion) by 2030.

1. Kiran Rathee (2018), "Why India will find it difficult to become a $1-trn digital economy".
Available at: http://www.rediff.com/business/report/tech-why-india-will-find-it-hard-to-become-a-1-trn-digital-economy/20180309.htm
2. McKinsey Global Institute (2016), Digital globalisation: The new era of global flows.
Available at: https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/digital-globalisation-the-new-era-of-global-flows
3. McKinsey Global Institute (2016), Digital globalisation: The new era of global flows.
Available at: https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/digital-globalisation-the-new-era-of-global-flows

- **Digital exports represent the second largest export sector for India today.** The export value of virtual goods and services enabled by the digital economy, such as e-commerce, account for ₹379 thousand crore (US$58 billion) today, making it India's second largest export sector. To maintain and even enhance this strong performance, India's strategy in its export markets must be supported by greater cross-border data exchanges, processing and storage. In such a scenario, it is estimated that India's digital exports could grow by 238 percent from today's levels to become ₹12.81 lakh crore (US$197 billion).

- **To achieve the maximum returns to digital trade in the future, it is imperative to consider reducing digital trade barriers today.** Policymakers in India and across Asia Pacific are rushing to develop regulations for the digital economy. Good regulatory frameworks are essential to address issues related such as privacy and cybersecurity, but many countries are adopting digital trade rules that could undermine the digital trade opportunity for India. Issues such as imposing undue red tape on digital enterprises, restricting cross-border data flows, and providing imbalanced copyright and intermediate liability regulations, need to be addressed. There is the opportunity for India to play a leading role, not only at home, but also abroad in pushing for facilitative 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 Indian economy. Chapter 3 highlights some of the concerns related to digital trade and how they can be addressed, and identifies the priorities for India to capture the digital trade opportunity.

EXHIBIT 1:

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

TOTAL ECONOMIC VALUE FROM DIGITAL TRADE

SOURCES OF VALUE	**Value of digital flows to the domestic economy**	+	**Value of digital exports**
DESCRIPTION	The value of digital flows for creating positive economic impact in the domestic economy through supporting adoption of digital technologies, including in traditional sectors (e.g., manufacturing, agriculture)		The value of export of virtual goods (e.g., apps, digital content) and of physical products enabled by digital (e.g., e-commerce)
VALUE TODAY (2017)	Digital trade enables up to **₹226 thousand crore** of economic value in the domestic sectors		Second largest export sector in the Indian economy, worth **₹379 thousand crore**
FUTURE POTENTIAL (2030)	Potential for digital trade to enable up to **₹3,331 thousand crore** of economic value		Potential for digital exports to grow by **238 percent** by 2030, worth **₹1,281 thousand crore**

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".[4] 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).[5] 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".[6]

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:[7]

- **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.[8]

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 Information-Technology Business Process Outsourcing (IT-BPO)[9] 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

4. UNESCAP (2016), Internal trade in a digital age. Available at: http://www.unescap.org/sites/default/files/aptir-2016-ch7.pdf
5. 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.
6. UNESCAP (2016), Internal trade in a digital age. Available at: http://www.unescap.org/sites/default/files/aptir-2016-ch7.pdf
7. The detailed methodology is explained in an accompanying methodology document, which can be found on the Hinrich Foundation website (http://hinrichfoundation.com/trade-research/).
8. 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 focusses largely on B2C e-commerce due to the availability of existing data.
9. IT-BPO stands for Information Technology-Business Process 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.

digital services that get used in the export 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 Gross Domestic Product (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

Sized based on technological applications that rely on cross-border data flows, processing and even storage, digital trade is estimated to support up to ₹226 thousand crore (US$35 billion) of economic benefits in India today through enabling digital technologies that increase worker productivity, lower costs, and create new sources of revenue. If India capitalises on digital trade by fully engaging in cross-border data flows, it is estimated that this economic value could grow more than fourteen-fold to reach ₹3,331 thousand crore (US$512 billion) by 2030.

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 India'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 Indian 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 the time involved in exporting for MSMEs by up to 29 percent.[10] Specifically in India's context, a KPMG-Google study found that digital engagement was a major driver for increasing exports by Indian MSMEs, with 11 percent of "digitally-engaged" MSMEs using digital technologies to export, as compared to only 1 to 2 percent for other MSMEs.[11]

- **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 constitutes about five percent of total input costs in the financial services sector.[12] Related to this, storing data in a number of geographic locations can enhance recovery management.

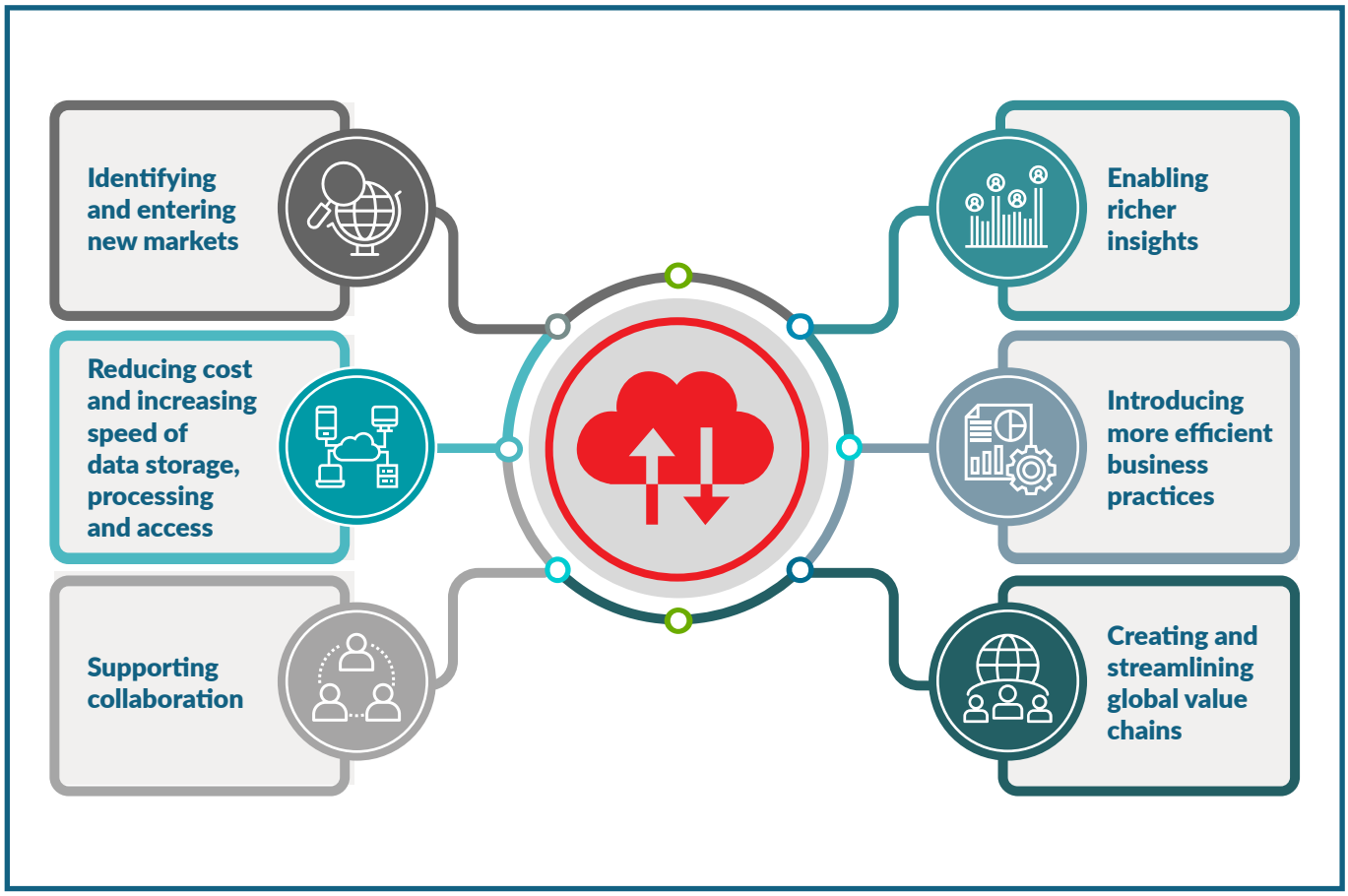
- **Supporting collaboration.** Some activities may be particularly complex, and the sharing of data across borders enables collaboration between talents. This could include talent for the analysis of data or it could relate to the use of human-guided robotics. For example, remote robotic surgery allows complex operations to be completed even when those surgeons may not be in the same country. Another 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.[13]

- **Enabling richer insights.** When used in 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.

10. Asia Pacific MSME Trade Coalition (2018), Micro-Revolution: The new stakeholders of trade in Asia-Pacific.
Available at: https://www.alphabeta.com/our-research/micro-revolution-the-new-stakeholders-of-trade-in-apac/
11. KPMG and Google (2017), Impact of internet and digitisation on SMBs in India.
Available at: https://assets.kpmg.com/content/dam/kpmg/in/pdf/2017/01/Impact-of-internet-and-digitisation.pdf
12. EY Global Financial Services Institute (2015), Do big banks have lower operating costs?
Available at: https://www.ey.com/Publication/vwLUAssets/ey-do-big-banks-have-lower-operating-costs/$FILE/ey-do-big-banks-have-lower-operating-costs.pdf
13. 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



- **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, Indian 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.
- **Creating and streamlining global value chains.** Digital data flows can help create efficiencies in real-time decision-making and monitoring 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.

THE ECONOMIC VALUE OF DIGITAL TRADE FOR DOMESTIC SECTORS

To understand the economic value of digital trade on India's domestic sectors, a set of relevant technological applications for different sectors of the Indian economy was identified based on an extensive review of the academic literature (Exhibit 3).[14] 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 enabled by cross-border data flows); (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 information exchange); 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 Indian economy is estimated to be approximately ₹226 thousand crore (US$35 billion) (see Exhibit 4). By 2030, in the absence of barriers to digital trade both domestically and internationally, and with the full enablement of cross-border data flows, this could grow more than fourteen-fold to reach ₹3,331 thousand crore (US$512 billion).

Some of the main opportunities and examples by sector include:[15]

- **Financial Services.** Digital technologies are stimulating substantial gains in this sector by increasing financial inclusion rates. As part of its "Digital India" strategy, the government launched "Cashless India", a programme designed to increase awareness and adoption of cashless transactions by promoting ten different cashless payment modes including mobile wallets, prepaid cards and digital banking services.[16] A prominent example is Paytm Payments Bank. Formed under a partnership between the Indian government and India's largest e-wallet and e-commerce company, this is a savings bank which allows customers to make deposits of up to ₹1 lakh (US$1,536) and offers digital remittance services and zero-balance accounts.[17] In addition, mobile banking services, which are a key part of the government's Pradhan Mantri Jan Dhan Yojana (PMJDY) scheme, have helped doubled India's financial inclusion rate from 40 percent in 2011 to 80 percent in 2018.[18] Digital trade is crucial in this sector for helping to lower the costs of storing high volumes of sensitive data in a secure fashion, and due to the cross-border activities of Indian banks, with data needing to move seamlessly across their different country operations.

- **Agriculture & Food.** Digital technologies such as the mobile internet, precision farming and IoT hold significant potential for increasing information, raising yields, minimising waste, and boosting revenue for Indian farmers. For example, the use of precision farming technology has led to yields 60 to 80 percent higher than conventional farming methods.[19] In addition, IoT-enabled supply chain management and food

14. The detailed methodology is explained in an accompanying methodology document, which can be found on the Hinrich Foundation website (http://hinrichfoundation.com/trade-research/).
15. 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/).
16. InterMedia Financial Inclusion Insights, 2017 Annual Report: Financial Inclusion in India. Available at: http://finclusion.org/uploads/file/india-wave-5-report_final.pdf
17. InterMedia Financial Inclusion Insights, 2017 Annual Report: Financial Inclusion in India. Available at: http://finclusion.org/uploads/file/india-wave-5-report_final.pdf
18. World Economic Forum (2019), "Financial inclusion in India is soaring. Here's what must happen next".
Available at: https://www.weforum.org/agenda/2019/01/financial-inclusion-in-india-is-soaring-heres-what-must-happen-next/
19. McKinsey Global Institute (2014), India's tech opportunity: Transforming work, empowering people.
Available at: https://www.mckinsey.com/industries/high-tech/our-insights/indias-tech-opportunity-transforming-work-empowering-people

EXHIBIT 3:
EXAMPLES OF RELEVANT TECHNOLOGIES BY SECTOR IN INDIA

Resources	• Smart exploration • Autonomous mining equipment • Predictive safety • Performance monitoring
Financial Services	• Big data analytics • Digitising marketing, distribution, and service • Reg tech • Financial inclusion through mobile payments
Agriculture & Food	• Precision farming • Supply chain management • Food safety • Real-time market information
Manufacturing	• Big data analytics • Additive manufacturing • IoT-enabled supply chain management
Health	• Remote patient monitoring • Telehealth • Data-based public health Interventions • Detection of counterfeit drugs • Smart medical devices • AI-enabled diagnostics
Infrastructure	• Smart grids • 5D BIM & project management technologies • Predictive maintenance • Smart buildings • Smart roads • Smart ports
Consumer & Retail	• Digitising channels • Inventory management • Analytics-driven products and services
Education & Training	• E-career centres and digital jobs platforms • Personalised learning • Online retraining programmes

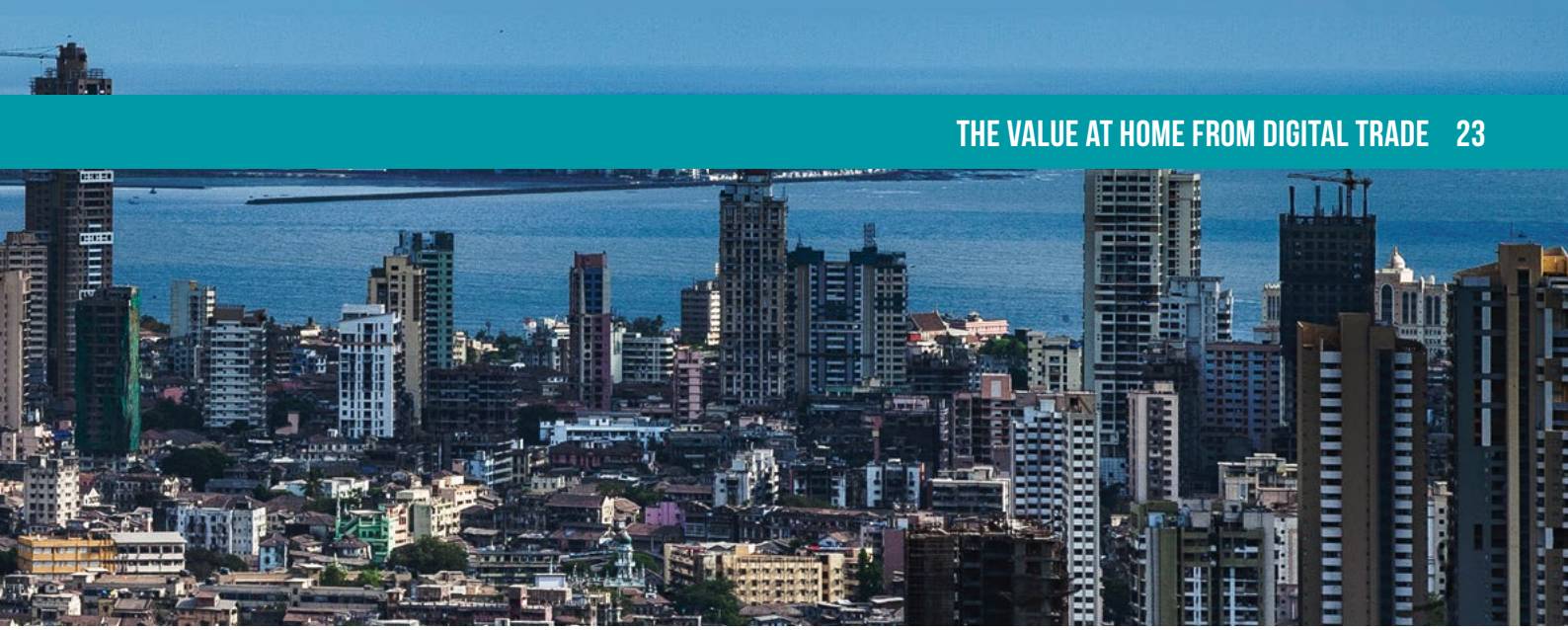
safety monitoring technologies can reduce losses from India's food supply chain by improving food traceability via sensing, tracking and data monitoring. Box 2 illustrates how two Indian companies have benefited from digital trade to improve productivity across two distinct parts of the country's agricultural value chain – from leveraging insights from data pooled across borders to inform the farming practices and crop planning decisions of local farmers, to deploying food traceability technology in supply chain and distribution networks.

- **Infrastructure.** Digital technologies can enhance not only the efficiency in construction of new infrastructure, but also the utilisation and maintenance of existing infrastructure. For example, India's ports, such as the Port of Mundra in Gujarat, are deploying Radio-frequency Identification (RFID) technologies to track vehicles at the gate, increasing loading and unloading efficiency by 50 percent.[20] Digital trade is crucial for many of these infrastructure-related technologies due to the need for cross-border data flows (for remote data aggregation and analytics), the large volume of data generated (requiring cost-efficient and secure storage), and the need for collaboration and cross-border monitoring (for example, in the tracking of containers).

- **Consumer & Retail.** Domestic e-commerce sales are expected to grow at a rapid annual rate of 31 percent, surpassing the United States to become the second largest e-commerce market in the world by 2034.[21] Homegrown online e-tailing companies such as Flipkart are experiencing fast-paced growth. In 2018, during a major sales event promoted as "Big Billion Day", Flipkart sold 1 million mobile phones in an hour and over 3 million in a day, making it the highest number of smartphones sold in a day by a single retailer in India.[22] In addition to retail giants, mobile e-commerce and technology-optimised supply chains are increasingly adopted even by kiranas, India's mom-and-pop stores.[23] The efficiency of Indian e-tailers has also been boosted by leveraging international online payments services such as Visa's global processing network, VisaNet. All these developments in e-commerce rely on cross-border data exchanges, whether it be related to supply chain management or enabling Indian consumers access to a cheaper and better selection of goods.

- **Education & Training.** Digital technologies hold the promise of enhancing the quality of instruction, improving the productivity of teaching and support staff, and enhancing the matching of labour demand and supply. Online job platforms could potentially boost GDP by 2.2 percentage points and create

20. McKinsey Global Institute (2014), India's tech opportunity: Transforming work, empowering people. Available at: https://www.mckinsey.com/industries/high-tech/our-insights/indias-tech-opportunity-transforming-work-empowering-people
21. India Brand Equity Foundation (2018), E-commerce industry in India. Available at: https://www.ibef.org/industry/ecommerce.aspx
22. Business Today India (2018), "Flipkart, Amazon claim sales in first 2 days have surpassed last year's festive numbers". Available at: https://www.businesstoday.in/current/corporate/flipkart-amazon-claim-sales-in-first-2-days-have-surpassed-last-year-festive-numbers/story/284886.html
23. McKinsey Global Institute (2014), India's tech opportunity: Transforming work, empowering people. Available at: https://www.mckinsey.com/industries/high-tech/our-insights/indias-tech-opportunity-transforming-work-empowering-people



over 12 million jobs in India by 2030 through encouraging workforce participation and increasing the speed and efficiency of job matching.[24] India currently has the second highest number of users on the professional networking portal, LinkedIn, after the United States.[25] Digital trade is important for many of these opportunities given the scale benefits from pooling a large number of insights (both in terms of learning results, but also in cross-border job matching).

- **Manufacturing.** The use of big data and IoT can improve demand forecasting and production planning to improve customer service levels, while real-time data on inventory levels and shipments in transit can allow manufacturing businesses to optimise their supply chains. Digital trade is crucial for manufacturing given the cross-border nature of supply chains and this will grow in importance as the government's "Make in India" strategy aims to attract more multinational operations to the country.

- **Health.** Technologies enabled by digital trade can support cost-effective solutions to improve India's healthcare quality and coverage. For example, in the state of Tamil Nadu, community health workers have been trained to use low-cost devices to access cloud-based health management information, and render primary care based on this information.[26] Leveraging international health services that pool international datasets can facilitate the faster development of new treatments and more reliable diagnoses.[27] Digital trade is thus critical to enabling Indian doctors and patients to develop and access high-quality and affordable healthcare services. It is also crucial due to the cross-border nature of some applications, such as IoT to track drugs (and prevent tampering) throughout the supply chain.

- **Resources.** Smart exploration approaches drawing on big data have the potential to uncover more opportunities in India's resource landscape, though some time would need to be spent on building up its currently patchy geophysical database – only 2 percent of India has been covered for gravity and magnetic analysis, compared to forerunners such as Australia, which has covered 100 percent of its area.[28] Digital trade is crucial for technologies in the resources sector due not only to the need for cost-efficient storage solutions, but also for global Indian resource companies to pool data across their different international operations to understand opportunities for improved performance.

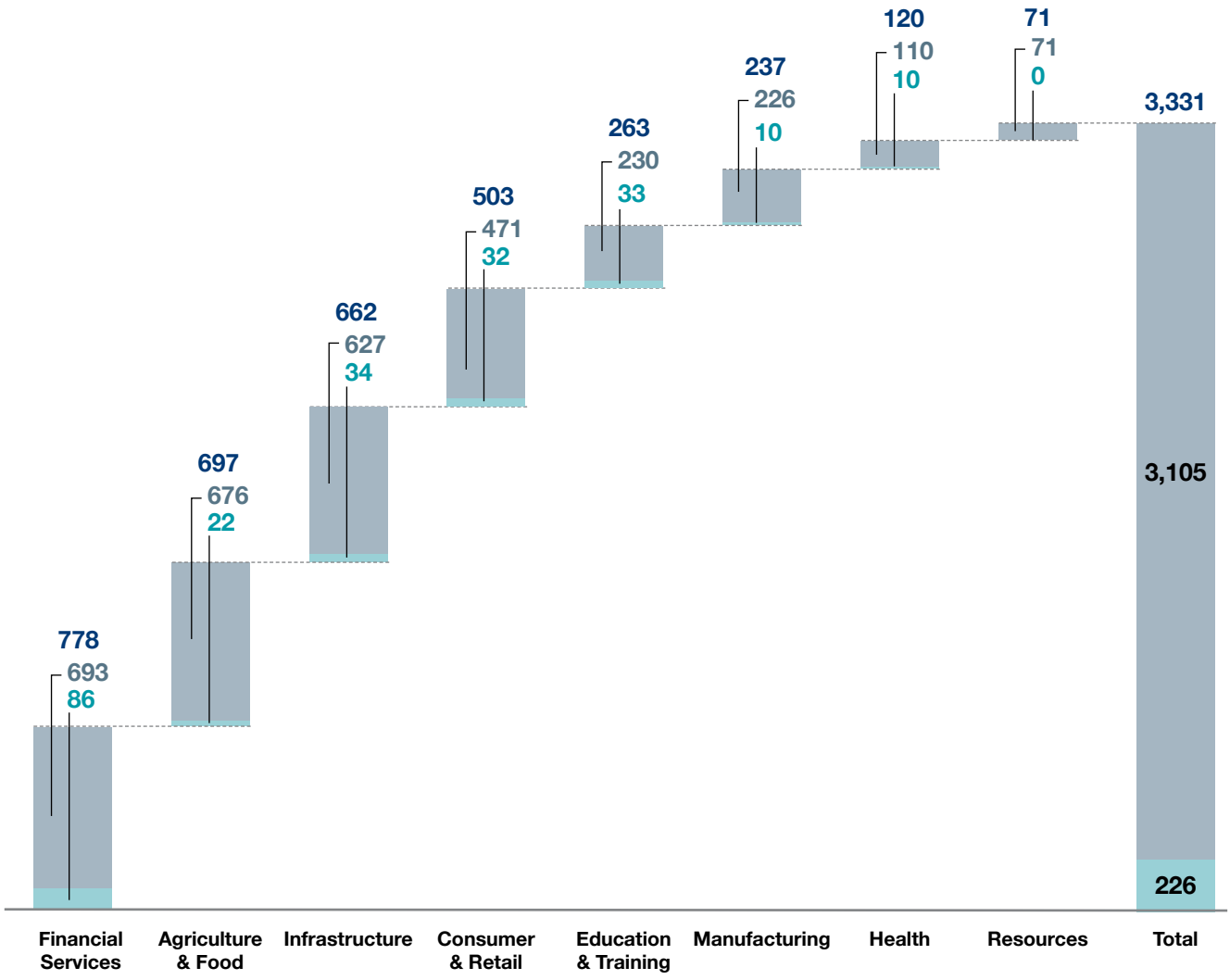
24. McKinsey Global Institute (2015), A labour market that works: Connecting talent with opportunity in the digital age.
Available at: https://www.mckinsey.com/~/media/McKinsey/Business%20Functions/McKinsey%20Digital/Our%20Insights/Digital%20globalisation%20The%20new%20era%20of%20global%20flows/MGI-Digital-globalisation-Full-report.ashx
25. Data from Statista (2018). Available at: https://www.statista.com/statistics/272783/linkedins-membership-worldwide-by-country/
26. McKinsey Global Institute (2014), India's tech opportunity: Transforming work, empowering people.
Available at: https://www.mckinsey.com/industries/high-tech/our-insights/indias-tech-opportunity-transforming-work-empowering-people
27. Information Technology & Innovation Foundation (2015), Cross-border data flows enable growth in all industries.
Available at: http://www2.itif.org/2015-cross-border-data-flows.pdf
28. McKinsey & Company (2014), Putting India on the growth path: Unlocking the mining potential.
Available at: https://www.mckinsey.com/featured-insights/india/putting-india-on-the-growth-path-unlocking-the-mining-potential

EXHIBIT 4:

DIGITAL TRADE IS SUPPORTING UP TO ₹226 THOUSAND CRORE OF ECONOMIC BENEFITS IN INDIA TODAY, WHICH COULD GROW TO ₹3,331 THOUSAND CRORE BY 2030

POTENTIAL ANNUAL ECONOMIC VALUE[1,2]
INR ₹ THOUSAND CRORE, 2017 AND 2030 (HIGH-END SCENARIO)

THE POTENTIAL ECONOMIC VALUE IN 2030 IS EQUIVALENT TO **10%** OF INDIA'S PROJECTED GDP



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

BOX 2.
BOOSTING THE PRODUCTIVITY OF LOCAL FARMERS AND THE COMPETITIVENESS OF THEIR PRODUCE THROUGH DIGITAL TRADE[29]

Two innovative Indian enterprises are leveraging cross-border data flows to unlock value across diverse segments of the country's agricultural sector: from informing the farming practices and crop planning decisions of local farmers, to improving supply chain traceability and instilling buyer confidence in local agricultural produce.

Photo source: https://www.mycrop.tech/farmer-interaction.html

Realising the potentially powerful insights for farming practices big data could reap given the prevalence of agriculture in the region, MyCrop was started with the intention to harness these insights for the benefit of local farmers. Aggregating data collected from farms in regional economies including Indonesia, Vietnam, Philippines and Thailand, MyCrop leverages machine learning to generate crop-specific farming insights and best practices which are then shared with local farmers across rural regions in India. In addition, MyCrop aggregates real-time data on crop prices from international and local sources and uses algorithm-based analytics to forecast future demand and pricing. Such information is also relayed to local farmers, allowing them to make more informed crop planning decisions and efficiently direct their resources to the crops that would fetch most value.

Photo source: https://inc42.com/features/seeded-with-new-funds-cropin-aims-to-modernise-indian-agriculture-with-its-smartfarm/

At the other end of the value chain, Indian enterprise CropIn is boosting the efficiency of supply chain distribution networks for India's agricultural produce. Recognising the rising interest of overseas customers in understanding the origin and "journey" of their purchased produce, as well as increasing regulation requiring the full disclosure of such information in large markets such as the UK, Japan and Europe, CropIn implemented traceability technologies to allow overseas customers and suppliers a real-time view of where the agricultural produce was in the supply chain. Under this system, every unit of produce (e.g., a box of grapes) has a QR code which contains all the information involved in its production and processing journey (e.g., consignment number of vessel or flight, expected date of arrival, all the locations it has been in).

With such information previously being tracked manually, Chief Operating Officer of CropIn, Mr. Kunal Prasad, stated that this technology has allowed for great efficiency savings, as customers of Indian agri-businesses are now able to access pertinent information in real-time. He states, "Previously, this information was obtained manually through communications between multiple parties including the producer, exporter and final customer – and were all done in hard copy. Now, with the QR code tracking the entire journey of the produce in a digitised format, there is no longer a need to go back and forth between the different parties, and as a result, the number of transactions that our clients can undertake at any one point in time has significantly increased."

29. Based on interviews with Mr Kunal Prasad, Chief Operating Officer of CropIn and Mr Deepak Pareek, Founder of MyCrop.

THE VALUE OF DIGITAL EXPORTS FOR INDIA

India's digital exports in 2017 were estimated to be worth roughly ₹379 thousand crore (US$58 billion), making it India's second largest export sector. To maintain and even enhance this strong performance, India's strategy in its export markets must be supported by greater cross-border data exchanges, processing and storage. It is estimated that if digital trade were fully leveraged, India's digital exports could grow by 238 percent from today's levels to reach ₹12.81 lakh crore (US$197 billion) by 2030.

OVERALL VALUE OF DIGITAL EXPORTS

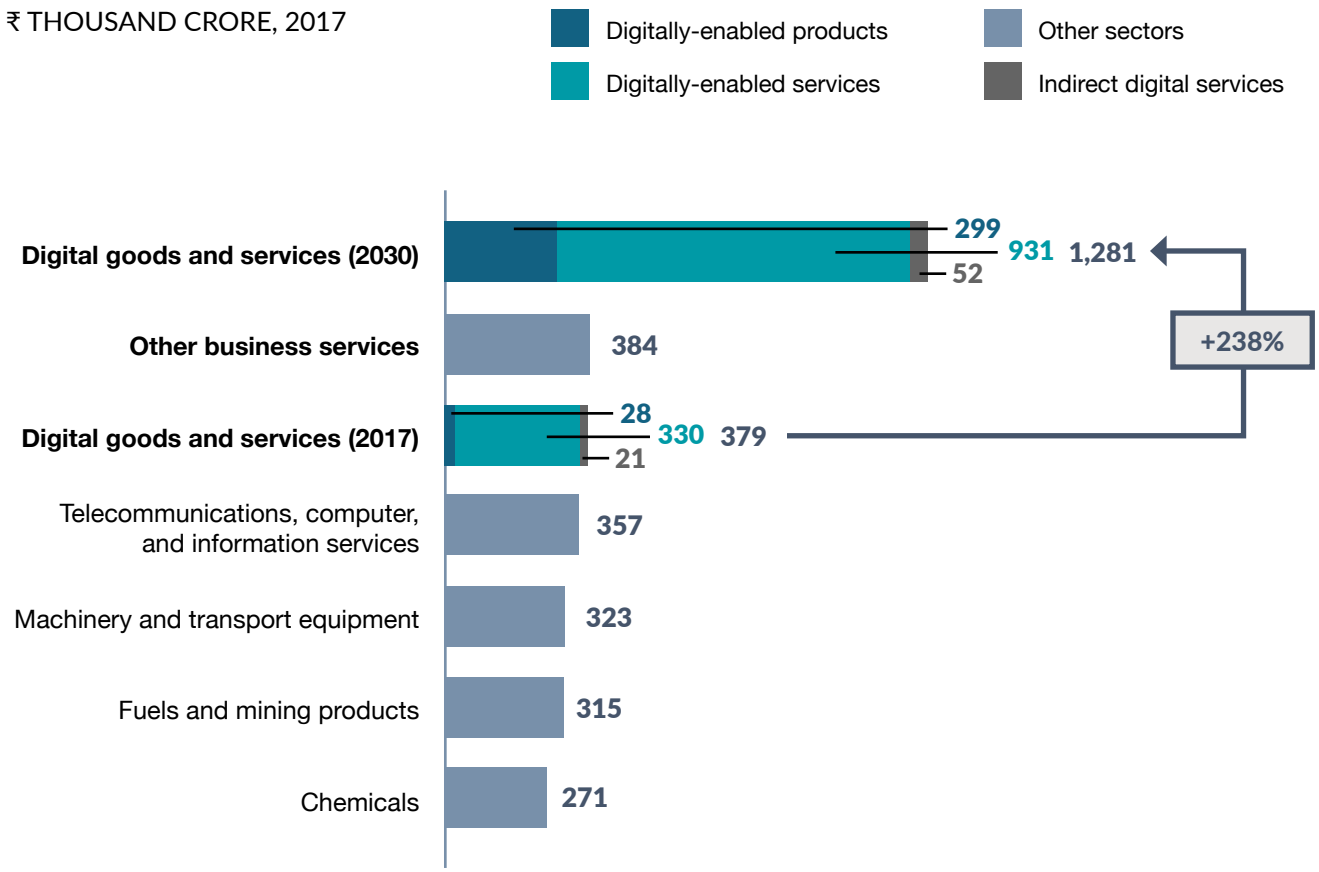
India is already performing well on capturing the digital export opportunity and has the potential to go much further. India's digital exports are estimated to be currently worth ₹379 thousand crore (US$58 billion), making it India's second largest export sector. This is equivalent to over 15 percent of the country's current total export value. To maintain and even enhance this strong performance, India must fully leverage digital trade by enabling cross-border data flows. In such a scenario, it is estimated India's digital export value could grow by 238 percent to become ₹12.81 lakh crore (US$197 billion) by 2030 (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 focusses on Fast Moving Consumer Goods (FMCG) and not other categories of goods where e-commerce could be important, due to the availability of data. Since a large proportion of FMCG goods is 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 focusses on a subset of services where robust data is available.

EXHIBIT 5:

IF DIGITAL GOODS AND SERVICES WERE A SECTOR, IT WOULD REPRESENT INDIA'S SECOND LARGEST EXPORT SECTOR, AND COULD INCREASE BY 238 PERCENT BY 2030

VALUE OF EXPORTS FOR INDIA[1]



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 sectors); AlphaBeta analysis

DIGITALLY-ENABLED PRODUCTS

The value of these exports is currently ₹28 thousand crore and could grow by over ten times the current value by 2030, reaching ₹299 thousand crore. This growth is being driven by rapidly expanding e-commerce exports and exports of digital apps.

- **E-commerce.** E-commerce platforms can be crucial gateways to connect firms to export markets and provide a new source of future growth for traditional sectors such as manufacturing. In 2016, it was estimated that approximately 12 percent of the global goods trade was conducted via international e-commerce, with much of it driven by platforms such as Alibaba, Amazon, eBay, Flipkart, and Rakuten - with this figure likely to be higher today. Data from eBay also shows that Indian businesses on the eBay platform are much more likely to be involved in exporting than those not using the platform – 9.5 times more likely to be exact.[30]

However, most Indian businesses have yet to tap the export opportunity, with about 9 percent of businesses currently engaged in exporting (versus 21 percent in China).[31] Many businesses, particularly Small and Medium Enterprises (SMEs), still face substantial challenges to bridge the gap to global markets. They often lack the resources to research international sales opportunities, build global business networks and promote their products overseas.

Nevertheless, digital adoption is relatively advanced in India. According to the United Nations Industrial Development Organisation (UNIDO), over 27 percent of Indian businesses receive orders via

BOX 3.
CASE STUDY: CRAFTSVILLA

Craftsvilla is an e-commerce business selling arts and crafts from a network of 20,000 local artists and craftsmen and craftswomen. The founders, husband and wife duo Monica and Manoj Gupta, wished to revive the traditional Indian handicrafts industry and help Indian artisans. Travelling across the country, they convinced local craftsmen of the benefits of having an online presence and of joining Craftsvilla.

Craftsvilla was able to reduce its customer acquisition costs by 60 percent through digital advertising. Within 12 months, the number of daily orders increased from 400 to 10,000. This surge in demand meant sellers were experiencing 10 times higher revenues.[32]

Photo source: https://www.retailnews.asia/tag/craftsvilla/

30. *eBay (2016), Small Online Business Growth Report. Available at: https://www.ebaymainstreet.com/sites/default/files/ebay_global-report_2016-4_0.pdf*
31. *World Bank Enterprise Survey (2017). Available at: http://www.enterprisesurveys.org/Custom-Query*
32. *Digital India with Google. Available at: https://digitalindia.withgoogle.com/intl/en-in#card-story/5681034041491456*

the Internet.[33] There is thus much potential for exporters to make use of this opportunity to sell abroad.

Based on average export revenue data and eBay data on the proportion of sellers on their platform who are exporting, it is estimated that e-commerce generated over ₹27.9 thousand crore (US$4.3 billion) of export revenues for India in 2017.[34] This could grow to over ₹298 thousand crore (US$46 billion) by 2030 based on the forecasted growth of e-commerce markets in nearby countries.[35] These make up the majority of estimated export revenues from digitally-enabled products in both 2017 and 2030.[36] One example of an Indian company taking advantage of the e-commerce export opportunity is Craftsvilla (See Box 3).

- **Digital apps.** Realising close to 50 percent growth in app downloads in 2015, India is one of the fastest-growing emerging app economies in the world.[37] Not only large local companies such as Flipkart and Snapdeal have flourished; smaller ventures have also experienced significant growth. For example, MakeMyTrip is a made-in-India app that offers a one-stop shop for one's travel needs, offering trip planning resources and booking options across the user's entire travel journey. With over 10 million global downloads, the company today has offices in New York, Singapore, Kuala Lumpur, Phuket, Bangkok and Dubai.[38] Combined, Indian app exports in 2017 accounted for over ₹28 crore (US$4 million) and this number is estimated to grow to potentially over ₹3 hundred crore (US$47 million) by 2030.[39]

DIGITALLY-ENABLED SERVICES

The value of these exports is currently ₹330 thousand crore (US$50.7 billion) and could grow almost three-fold the current value by 2030, reaching ₹931 thousand crore (US$143 billion). This growth is being driven by India's rapidly growing IT and business processing outsourcing business.

- **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. A major driver of these services is the large amount of IT and business process management services that India provides globally. It has been estimated that India has 67 percent of the world's IT capability outsourcing business.[40] India's digital exports of infrastructure services in 2017 are estimated at around ₹329 thousand crore (US$50.6 billion), which makes up most of the sized export value of its digitally-enabled services.[41] This is in addition to the large, but difficult to size, value of direct digital services exports in industries such as tourism (e.g., online tourism-related booking), financial services, accounting, law, education, and even medicine.

33. UNIDO (2017), National report on e-commerce development in India. Available at: https://www.unido.org/sites/default/files/2017-10/WP_15_2017_.pdf
34. Based on AlphaBeta analysis.
35. Based on AlphaBeta analysis.
36. Based on AlphaBeta analysis.
37. Reported by App Annie, June 8, 2016. See: App Annie (2016), The Next Horizon of Emerging App Markets; App Annie Insights and App Annie (2016) App Annie Mobile App Forecast: The Path to US$100 Billion. Available at: https://www.appannie.com/insights/market-data/forecast-intelligence-predicts-future-of-app-economy/
38. Startup Talky (2019), "MakeMyTrip - story, founder, business model, funding, team, news". Available at: https://startuptalky.com/makemytrip-indian-startup-success-story/
39. Based on AlphaBeta analysis.
40. India's IT Sector – Growing Opportunities for Investment. Available at https://www.india-briefing.com/news/india-it-bpo-investment-16286.html/
41. Based on AlphaBeta analysis.

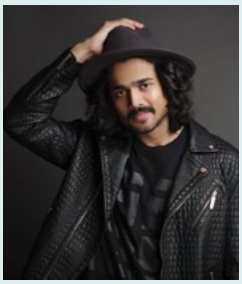
- **Online video advertising.** With the advent of video sharing platforms such as YouTube, Vimeo and Facebook, Indian stories and voices are finding new global audiences.

  The demand for Indian content and the economic opportunities associated with them are significant. In 2014, 63 percent of the views of YouTube content uploaded by users in India came from outside the country.[42] Bhuvan Bam, the creator of YouTube comedy channel BB Ki Vines, was the first Indian YouTuber to have over 2 million subscribers. He now has over 8.7 million subscribers, with over a billion views (Exhibit 6).[43] Another popular YouTuber is Sandeep Maheshwari who runs a motivational speaking YouTube channel with over 5.9 billion subscribers, partly inspired by his success as an entrepreneur in India.

  Online video platforms are estimated to have supported over ₹6 hundred crore (US$99 million) in advertising revenues from foreign markets for India-based content creators in 2017. These benefits reflect the income earned by Indians from advertising displayed on their content. This could potentially grow ten-fold to over ₹60 hundred crore (US$923 million) by 2030 based on forecasted growth of the digital advertising market.[44] [45]

EXHIBIT 6:

COMEDY



- **Who:** Bhuvan Bam
- **Channel:** BB Ki Vines
- **Detail:** Slice of life comedy
- **Subscribers:** >8.7 million
- **Views:** >1.1 billion

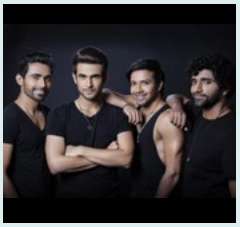
MOTIVATION

- **Who:** Sandeep Maheshwari
- **Channel:** Sandeep Maheshwari
- **Detail:** Motivational seminars
- **Subscribers:** >5.9 million
- **Views:** >333 million

COOKING

- **Who:** Nisha Madhulika
- **Channel:** Nisha Madhulika
- **Detail:** Vegetarian Indian recipes
- **Subscribers:** >4.7 million
- **Views:** >984 million

MUSIC



- **Who:** Sanam Puri, Samar Puri, Keshav Dhanraj & Venky S
- **Channel:** Sanam
- **Detail:** Original music and Bollywood covers
- **Subscribers:** >4.2 million
- **Views:** >794 million

42. OECD (2016), Economic and social benefits of Internet openness.
Available at: https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/ICCP(2015)17/FINAL&docLanguage=En
43. The Success Story Behind Bhuvan Bam's "BB Ki Vines". Available at http://www.allstory.org/success-story-behind-bhuvan-bams-bb-ki-vines/
44. Based on AlphaBeta analysis.
45. Data from Statista. Available at: https://www.statista.com/outlook/216/107/digital-advertising/australia#market-revenue

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 Indian firms in reaching new markets.

In 2017, the impact of imported digital services on exports in all other sectors in India is estimated to be ₹214 hundred crore (US$3.3 billion).

"In 2017, the impact of imported digital services on exports in all other sectors in India is estimated to be ₹214 hundred crore (US$3.3 billion)."

CAPTURING THE DIGITAL TRADE OPPORTUNITY

In order to realise the full potential of digital trade, policymakers 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 and cross-border data exchanges. India has a role in advocating strongly for digital trade to remain open in the Asia Pacific to safeguard the potential benefits to India's economy.

PERCEIVED CONCERNS RELATED TO DIGITAL TRADE

Governments have increased their constraints on digital trade in recent years, ranging from data localisation requirements to local registration mandates. Four reasons are often made to justify such interventions:

1. PRIVACY
Protecting the privacy of citizens

2. SECURITY
Enabling rapid access to data for law enforcement and safeguarding national security as well as the security of users

3. ECONOMIC
Supporting the growth of domestic digital firms and local jobs

4. FISCAL
Protecting the local tax base

Many of these justifications require critical examination. While these concerns are valid in their own right, they may be addressed without unduly impeding digital trade flows.

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 require participating businesses to implement data privacy policies consistent with the APEC Privacy Framework.[46] 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 Asia-Pacific policymakers should seek. On the other hand, data localisation requirements could actually increase privacy risks, unless data is stored within multiple locations.

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 the into smaller, faster, 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.[47] 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."[48]

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

46. For further information, see: http://www.cbprs.org/
47. 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/
48. Patrick Ryan, Sarah Falvey, and Ronak Merchant (2013), "When the cloud goes local: The global problem with data localisation". IEEE Computer Society, Issue 12, Vol. 46. Available at: https://www.computer.org/csdl/mags/co/2013/12/mco2013120054-abs.html

copies).[49] By subjecting data to single points of failure, data localisation could potentially create issues for the resilience and security of data.

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.[50] For example, India could explore discussions with the United States under the CLOUD Act, which authorises providers to disclose communications content pursuant to a lawful order from a foreign government that has entered into an executive agreement with the United States.

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. Setting up protectionist barriers against digital trade does not necessarily safeguard the competitiveness of the domestic 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 India) 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.[51] In India, such examples of the importance of digital multinationals to the local digital industry are plentiful:

- **Support for digital infrastructure.** As part of the Indian Prime Minister's 'Digital India' initiative, to bridge the digital divide between WiFi covered and non-WiFi covered locations in India, local broadband and VPN service provider RailTel Corporation worked with Google as the technology partner to set up high-speed Wi-Fi networks covering over 400 rail stations in India.[52]

- **Promotion of the local creative industry through digital technology.** Amazon collaborated with Indian filmmakers to produce the animated TV series "Baahubali: The Lost Legends". It has additionally been reported that Amazon will invest close to US$300 million on original content in India.[53]

- **Support for digital financial literacy.** In partnership with the Grameen Foundation for Social Impact and supported by IKEA Foundation, Indian e-commerce payment and digital wallet company Paytm organised digital financial literacy workshops in smaller cities and towns across four Indian states. These workshops aim to educate the citizenry in these areas on how to make use of digital payment methods, thereby supporting the future use of the

49. James Arlen and Brendan O'Connor (2015), "Xenophobia is hard on data: Forced localisation, data storage, and business realities", Sector. Available at: https://sector.ca/sessions/xenophobia-is-hard-on-data-forced-localization-data-storage-and-business-realities/
50. 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
51. AlphaBeta (2017), Digital Nation: Policy levers for investment and growth. Available at: https://www.alphabeta.com/our-research/digital-nation-policy-levers-for-investment-and-growth/
52. RailWire Express Network (2019), "Station Wi-Fi project". Available at: https://www.railwire.co.in/station-wi-fi-project.php
53. Sources include: Tech Crunch (2017), "Netflix rival iflix reveals its first original content series for emerging markets" Available at: https://techcrunch.com/2017/04/20/iflix-originalcontent/ ; The Economic Times (2016), "Amazon stitching content deals for possible Diwali launch of Prime Video" Available at: http://economictimes.indiatimes.com/industry/media/entertainment/amazon-stitching-content-deals-for-possible-diwali-launch-of-prime-video/articleshow/54554614.cms

100,000 banking touchpoints that Paytm intends to set up in the rural and semi-urban areas of India.[54]

- **Support for digital education and skills building.** Microsoft worked with non-profit foundations NASSCOM Foundation, Aide et Action and the CAP Foundation to train over 46,000 disadvantaged Indian youth in digital skills in 2017. This has resulted in over 17,000 being employed and going on to double their family's income, as well as over 2,500 new entrepreneurial ventures established as a direct result of this training.[55]

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.

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 to 60 percent more for their computing needs from strictly enforced data localisation policies.[56] 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

54. Meha Agarwal (2018), "Paytm AshiKiran Partners with Grameen Foundation to PRomote Self-Employment in Rural India". Available at: https://inc42.com/buzz/paytm-ashakiran-partners-with-grameen-foundation-to-enable-self-employment-opportunities-in-rural-india/
55. Microsoft News (2018), "A fresh start: Bringing Indian youth closer to 21st century jobs". Available at: https://news.microsoft.com/en-in/features/microsoft-philanthropies-india-youth-digital-skills-training/
56. Leviathan Security Group (2014), Quantifying the costs of forced localisation. Available at: https://static1.squarespace.com/static/556340ece4b0869396f21099/t/559dad76e4b0899d97726a8b/1436396918881/Quantifying+the+Cost+of+Forced+Localisation.pdf

different jurisdictions imposing conflicting mandates and conferring conflicting rights".[57]

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.[58]

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.[59]

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. 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 indefinitely 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.[60] For example, almost 80 percent of respondents in Deloitte's latest "Asia Pacific Tax Complexity Survey" consider the tax compliance and fiscal requirements in India to be "complicated".[61] 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.[62]

57. Sascha Meinrath (2013), "We can't let the Internet become balkanised", Slate.
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59. 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/
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Available at: https://www.alphabeta.com/our-research/digital-nation-policy-levers-for-investment-and-growth/
61. 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
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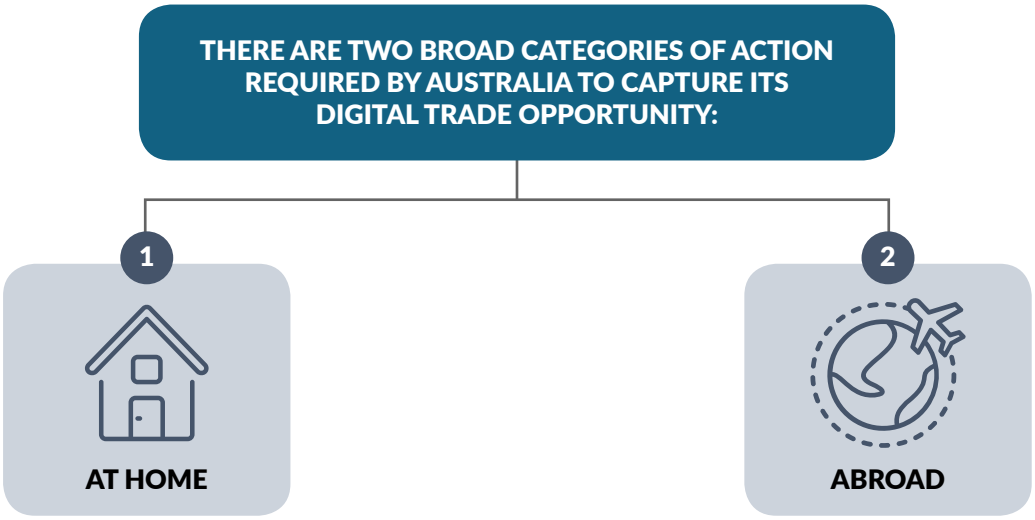
Available at: http://www.alphabeta.com/the-screen-evolution/

PRIORITIES FOR ACTION



CATEGORY 1: ACTION AT HOME

India has a number of opportunities to enhance its current domestic regulatory approach to data. There is currently no overarching data protection legislation in India, but instead, there are a number of sector-specific regulations. Current rules limit the transfer abroad of personal data deemed "sensitive". Data can only be transferred when deemed necessary (which is relatively ambiguous) or when the subject consents to the transfer.

India has also introduced a number of restrictions to cross-border data flows. For example, in 2015, India required all relevant gateways and application servers that serve Indian customers be located domestically.

CATEGORY 2: ACTION ABROAD

The Indian Government is currently engaged in a number of bilateral and multilateral trade deals. 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).

There are three crucial areas for India to advocate for:[63]

- **Ensuring open data flows and interoperability.** There is a considerable opportunity to improve transparency on data management requirements across Asia and to identify areas to enhance performance. Data privacy laws and regulations have been introduced in many Asian countries in

63. These same issues have been identified in past research supported by AlphaBeta (2018), Micro-revolution: The new stakeholders of trade in Asia-Pacific. Available at: https://www.alphabeta.com/our-research/micro-revolution-the-new-stakeholders-of-trade-in-apac/

recent years, but many areas of uncertainty remain. Clarity is required around 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 countries 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.

A related 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.

- **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.

Some countries have also adopted complicated administrative processes and burdensome document requirements on international trade in goods, placing an additional barrier on e-commerce.

A further concern is low customs thresholds, which impose significant administrative costs. Countries should aspire to raise de minimis thresholds, and remove customs duties on digital products.[64] A de minimis threshold of US$200 could generate over US$30 billion in economic benefits for all 21 APEC members.[65] Further, upon the expiry in 2017 of the WTO moratorium which banned member states from charging customs duties on electronic transmissions of goods and services[66], it is tempting for emerging economies to move

64. This does not preclude governments from applying local consumption or sales taxes, but these cannot discriminate against international designers or developers.
65. Stephen Holloway and Jeffrey Rae (March 2012), "De minimis thresholds in APEC", World Customs Journal, Vol.6 # 1.
Available at: https://researchprofiles.canberra.edu.au/en/publications/de-minimis-thresholds-in-apec
66. United Nations Economic and Social Commission for Asia and the Pacific (2016), International trade in a digital age.
Available at: https://www.unescap.org/sites/default/files/aptir-2016-ch7.pdf

towards implementing such duties in the belief that this would improve its trade balance and ensure the competitiveness of domestic businesses.[67] Such arguments, however, neglect the adverse cost impact on consumers and businesses, and ignore the scale of economic benefits digital imports bring to domestic businesses (as elaborated in Chapter 1).[68] By positing that import tariffs are necessary for a healthy trade balance, these arguments understate the potential scale of India's digital exports in the absence of digital trade barriers (as highlighted in Chapter 2).

Finally, an emerging issue of concern is around governments requiring the transfer of or access to software source code as a condition for the import, distribution, sale or use of software.[69] There is thus a strong need to balance competing domestic policy issues against safeguarding the flexibility for domestic enterprises to flourish in the global trade environment.

- **Promote innovation-oriented approaches to copyright and intermediary liability regulations.** 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.

  Ensuring clarity on issues such as the 'fair use doctrine', which aims 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 hand, will be important as part of this. This issue is particularly relevant as emerging technologies such as Artificial Intelligence (AI) will create the need for regulatory frameworks related to copyright to evolve, given the use of large volumes of data.

  The challenge for regulators is how to balance the need to protect an author's intellectual property from unauthorised use without hampering innovation. In the United States, the Digital Millennium Copyright Act (DMCA) provides a mechanism for copyright holders to protect their online content, whereby a service provider must act "expeditiously" to remove copyrighted work after it has been notified.[70]

  Similarly, well-balanced Internet Intermediary Liability (ILL) regulations can help to ensure the effective removal of illegal content without constraining the free flow of information. Having a clear system of intermediary liability protections in place is a fundamental building block for digital trade. To enable trade, online services need to facilitate transactions and communications among millions of businesses and consumers, enabling buyers and sellers to connect directly on a global basis. For example, in jurisdictions where appropriate liability protections are in place, small Indian businesses can offer customer reviews and feedback mechanisms. These online tools are critical for any small business that want to build customer trust in a foreign market. It is imperative that regulations define clear and cost-efficient requirements for intermediaries to comply with legislation and provide clarity on any potential liability. To this end, many jurisdictions have laws setting out the conditions under which intermediaries can be made exempt from liability, known as "safe harbours".

67. D. Ravi Kanth (2018), "India, South Africa seek WTO relook at e-commerce norms", LiveMint. Available at: https://www.livemint.com/Politics/OqRYP6Fthy4AJmDJKY3CTM/India-South-Africa-seek-WTO-relook-at-ecommerce-norms.html
68. Asia Pacific Economic Cooperation (2016), 2016 CTI report to ministers. Available at: http://publications.apec.org/-/media/APEC/Publications/2016/11/2016-CTI-Report-to-Ministers/TOC/Appendix-26-Pathfinder-on-Permanent-Customs-Duty-Moratorium-on-Electronic-Transmissions-Including-Co.pdf
69. World Trade Organisation 11th Ministerial Conference, Buenos Aires, 10-13 December 2017, Some preliminary implications of WTO source code proposal. Available at: https://www.twn.my/MC11/briefings/BP4.pdf
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AIMA'S RECOMMENDATION

EXPERT VIEWS

T V MOHANDAS PAI

Past President, AIMA and

Chairman, Manipal Global Education Services

"Rapid digital adoption has transformed India. India Stack, which runs on the JAM stack of Jan Dhan + Aadhar + Mobile, was a masterstroke by the Government of India's 'Digital India' strategy. It has enabled rapid financial and business inclusion of India's disadvantaged population while allowing world-class products to be built on its open source APIs. India Stack has revolutionised how India does commerce, credit, investing, skills development, retail customer onboarding, and much more. With over 500 million internet users and 340 million smartphone users, India is actively shaping into a digitally empowered society.

Businesses, irrespective of scale or industry, are adopting digital technologies for the purposes of efficiency, customer acquisition and retention, and lateral business models. India already leverages digital platforms for economic benefit. This report estimates the value of digital trade today at INR 226 thousand crores across major economic sectors. 3 of the top 5 and 5 of the top 10 IT services companies globally are Indian, and India's digital exports are already roughly 40 percent of the country's aggregate export value. By 2030, in the absence of domestic and international barriers to digital trade, and with the full enablement of cross-border data flows, value could grow by more than fourteen-fold to reach INR 3,330 thousand crores.

The report explores how digital platforms can enhance the value of many sectors, and increase digital trade and exports in the next decade. Crucial to our success is the careful formulation of India's foreign trade policy, regulations, and addressal of concerns of security, privacy and competitiveness of indigenous players against MNCs. Digital trade is undoubtedly India's biggest opportunity for growth as it rises as one of the top 3 economies by 2030."

D SHIVAKUMAR

Past President,
AIMA and

Executive President,
Aditya Birla Management Corporation Pvt. Ltd.

India is seeing a massive growth in digital eco systems, primarily led by the growth of smartphones and the lower price of data plans. India is the second cheapest market for price of smartphones and data charges. This will not change in the near term and hence digital eco systems will get a big boost. India is primarily a mobile first market with desktops and laptops being insignificant vs mobile population.

India has for long been a congested physical infrastructure market, and now the growth of digital has taken away the friction in many an eco system. We are seeing the growth of the digital eco system in every sphere – in shopping (e-commerce), education (e-learning), healthcare, payments, etc.

The growth of smartphones is enabling a huge development of the apps eco system and very soon India will be the biggest developer of apps in the world. The growth in India via digital will only move up with the development of video, and development of vernacular apps.

India has a unique Aadhar system which enables banks to sign up customers, government transfer of funds etc in a seamless way. As the digital system progresses, India will generate massive data and the big data industry will be a big driver of future job creation.

This is an excellent report and will help everyone associated with the India digital eco system.

DR. J. S. JUNEJA

Chairman,
AIMA MSME Committee and
Past President AIMA and
Chairman,
Global Projects & Services Pvt. Ltd.

"Share of MSME exports has been steadily increasing and has been recorded at 49.86 percent of India's total exports. Digital exports represent the second largest export sector for India today. Currently, for the MSME sector to maintain and even enhance its performance, there is a need to identify and enter 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 Micro, Small and Medium-sized Enterprises (MSMEs). The study has rightly concluded that 'Digital trade 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 the time involved in exporting for MSMEs by up to 29 percent which is a welcome step keeping in view the escalating costs and increasing global competition being faced by MSMEs. Specifically in India's context, a KPMG-Google study found that digital engagement was a major driver for increasing exports by Indian MSMEs, with 11 percent of 'digitally-engaged' MSMEs using digital technologies to export, as compared to only 1 to 2 percent for other MSMEs. However, MSMEs need to be made aware of the benefits of digitalisation, so that they can realise them fully.

The initiative of the AIMA, Hinrich Foundation, researchers and supporting organisations are welcome and merit compliments in this effort."

VED PRAKASH

Chairman and
Managing Director,
Minerals & Metals Trading Corporation Ltd

"The Fourth Industrial Revolution, also called 'India 4.0', is driven by rapid technological change and digitalization. India, like many other developing countries, is having a profound impact on global trade, economic growth and social progress. The rising digitization can have a great impact on the trade competitiveness.

Digital infrastructure goes much beyond ICT or e- commerce and includes ICT infrastructure, cloud computing infrastructure and Data infrastructure, along with use of related digital skills and technologies. Cross-border e-commerce has generated trillions of dollars in economic activity in recent years and it continues to grow. India's domestic e-commerce sales are expected to grow at a staggering annual rate of 31 percent, surpassing the United States to become the second largest e-commerce market in the world soon. By 2030, in the absence of domestic and international barriers to digital trade, and with the full enablement of cross-border data flows, this trade could grow multifold. The Digital Trade supports the development of policy framework and governance protocol that maximises the benefits of digital trade and data flows while addressing other legitimate policy objectives of its various stakeholders i.e. Government, the private sector, the civil society, academia and others.

This report prepared by AIMA, the Hinrich Foundation and Alphabeta is very useful not only for promoting digital trade from India but also in facilitating the formulation of new foreign trade policy."

AIMA'S PERSPECTIVE ON MSMES AND CYBER SECURITY: CONCLUSIONS AND RECOMMENDATIONS

India has vast opportunities in international trade but faces new challenges. The rising digitalization can greatly impact on trade competitiveness of the countries, India is no exception. Currently, MSME sector in India consisting of 63.39 million units provides employment to over 110 million people. The sector, through more than 6,000 products, contributes 45% of the total manufacturing output and 49% to the exports from the country. The share of MSMEs to GDP is 27.77 %. The report has assessed the value of digital trade today at INR 226 thousand crores across major economic sectors. By 2030, in the absence of domestic and international barriers to digital trade, and with the full enablement of cross-border data flows, this could grow by more than 14X to reach INR 3,330 thousand crores.

Furthermore, with the government's focus on manufacturing through programmes such as 'Make in India' and policies such as the 'National Policy for Advanced Manufacturing', MSMEs could play a key role in boosting the manufacturing sector's share in the country's GDP to 25 per cent by 2025 from the current 17 per cent.

The AIMA survey specifically focussed on Indian MSMEs. It revealed that the digitization process in Indian MSMEs have already started in gradual phase by using technologies such as 'firms connect with customers digitally and trading globally through the e- commerce platform'. Majority of workforce engaged in MSMEs are using computers, having an access to internet and reaching to foreign buyers through e- commerce. Number of on-line purchases is likely to cross 2 billion mark in 2019.

The AIMA survey identified the emerging challenges which MSMEs are facing in digitization process:-

- It was argued that special emphasis needs to be laid on promoting and protecting and linking domestic

producers, especially MSMEs, to these platforms to enhance their competitiveness in international markets as well as in domestic markets.

- It was also suggested that new trade policy should consider the scope of using big data analytics with respect to ways of promoting trade and improving competitiveness of export-oriented MSMEs of India.

- Big data can also be used to inform the trade policy on globally rising non-tariff measures and their implications for India's exports from MSMEs
- Indian MSMEs need to have their own Smart Phone App to protect their customers to App based businesses.

- MSMEs need to be trained on Smart Phone App to acquire the benefit of first provider advantage.

- MSMEs need to create digital inventory management and marketing by using digital technologies such as RFID (Radio Frequency Identification).

- It was also suggested that the application of the SaaS (Software as a Service) based Software distribution model is a boon to MSMEs. It's a low cost application and requires MSMEs to only invest in a good Internet connection and hire rest of the digital infrastructure, applications etc.

- The survey also revealed that by aligning with tech companies such as Google, Amazon, and IBM etc. MSMEs can create a digital infrastructure, which can help them to quickly integrate into the digital ecosystem.

- The recent threats such as crypto lockers, DDoS (Distributed Denial of Service), Web hacks, MITM (Man –in –the middle attack), phishing etc. are very prevalent and any organization needs a proper strategy and operating procedure to handle these threats properly. The solutions such as UTM (Unified Threat Management), IPS (Intrusion Prevention System) IDS (Internet Distribution system) can be engaged on pay per use.

- The need of government intervention was also suggested to assume the role of a critical stakeholder. They were in opinion that putting the Indian MSME sector at the forefront of the fourth Industrial revolution will need significant push in terms of funds, infrastructure, technical knowhow and exposure — areas where the government's intervention can make a significant impact and make the benefits of Industry 4.0 accessible to the bottom of the pyramid.

Recommendations

- In view of above conclusions, AIMA recommends that Trade Policy should focus on increasing the digital content of MSMEs export by enhancing the use of digital services, skills and digital technologies. The policy should include building digital infrastructure for MSMEs i.e., enhancing digital connectivity, promoting digital skills, developing data infrasturure for MSMEs exports, fostering digital start-ups; encouraging use of digital technologies and digital services in traditional MSMEs; and promoting national digital platforms.

- To boost India's digital capacity in trade, there is need to preserve space in the on-going trade negotiations at the WTO as well as in the future bilateral and regional trade and investment agreements.

- AIMA also recommends that course curricula should be aligned and updated with digital trade requirements and industry relevant. New certificate course or diploma courses should be introduced. There is also need to promote a culture of research and training in upcoming areas of digital trade.

DIGITAL TRADE: IMPORTANCE OF CYBER SECURITY

Digital Trade is the way forward for the Global economy which will lead to the ultimate idea of a Global Village. The basis of the Digital Trade is Cross-border data flows which then highlights the importance of Cyber Security.

Cyber security helps establish secured communication protocols to ensure data security. According to KPMG in India's Cybercrime Survey Report 2017, 79 per cent of corporations in India have acknowledged cyber security as one of the top-five business risks.

Growing in volume, intensity and sophistication, cyber threats are global in nature and can pose serious risks to the global IT ecosystem on which economic growth and global trade depend. As a result, the need to protect information and identify the sources and nature of cyber threats have become a legitimate responsibility of private and public entities seeking to foster trust in the IT ecosystem that underpins the growth of their digital economy.

In consideration of: (i) the need for policies that protect government and businesses against cyber threats and (ii) the importance of guaranteeing that those policies do not inhibit the exchange of products and services. The major recommendations of AIMA of are as follow:-

- Control over cross-border data flows is necessary to maintain comparative advantage in the international trade in the digital era. Indian Government has initiated many programs for India's digital transformation under Digital India, New Foreign Trade Policy can leverage the gains from these programs to boost India's trade competitiveness.

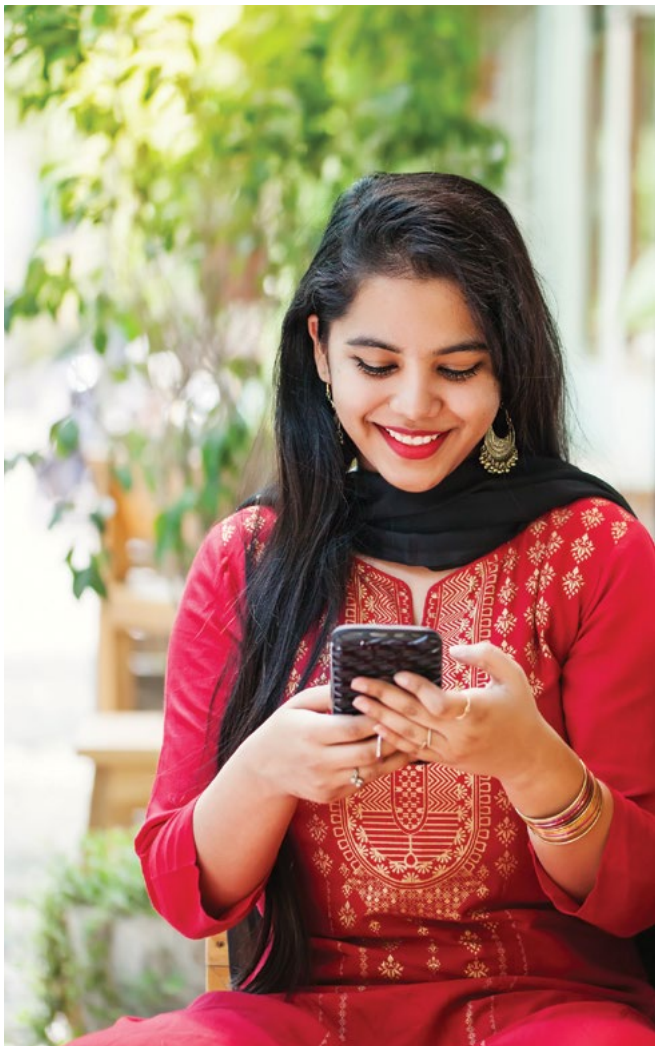
- Currently, India is in process of developing a Comprehensive and Inclusive National Cyber-Security Strategy AIMA recommends that "We should adopt and develop National cyber-security activities in the context of international cyber activities and of other activities affected by cyber-security efforts. The strategy should be inclusive by allowing collaboration and coordination among key stakeholders, which include government agencies including trade ministries, industry, and academia and citizen groups. It should be comprehensive by incorporating critical infrastructure cyber-security strategy and ensuring a functional interagency process".

- AIMA recommends that Flexible and Outcome Focused Security Standards should ensure that those who safeguard data and digitally supported services can better protect their systems. Cyber-security threats evolve with technology and thus it is important that private and public entities have latitude to develop or adopt the most effective cyber-security solutions.

- AIMA recommends that Government procurement laws and security standards should specify security outcomes by coordinating with key stakeholders. There is need to have balance between government structures and regulatory enforcement such as domestic preferences and ownership requirements by considering the best practices of innovation.

- AIMA recommends that Regulations, Laws and Policies are aligned with Internationally Recognized Technical, Certification and Testing Standards

- AIMA recommends that there is need to protect the privacy and maintenance the integrity of consumer data. Consumer data drives commercial activity online, and thus its protection is instrumental in creating trust and ensuring that emerging opportunities within the digital economy are fully leveraged. Cyber laws should be carefully attuned to privacy considerations and ensure adequate remedies are available to individuals.



Laws requiring the transfer or access to source code, encryption keys, security testing results and other proprietary information as a condition for the import, distribution, sale or use of the product, pose risks to privacy protection and provide little to no added security value. For instance, code or encryption keys disclosed by companies can be targeted by hackers.

- It has also been recommended that to create competency and skills in area of cyber security, AIMA should introduce training, management development Programs and diploma and certificate courses with the support of industry.

These recommendations and findings have been contributed by Dr. Raj K. Agrawal, Ms. Sarah Nasim and Mr Rahul Bhatia.

Prepared by AlphaBeta and the All India Management Association (AIMA)

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