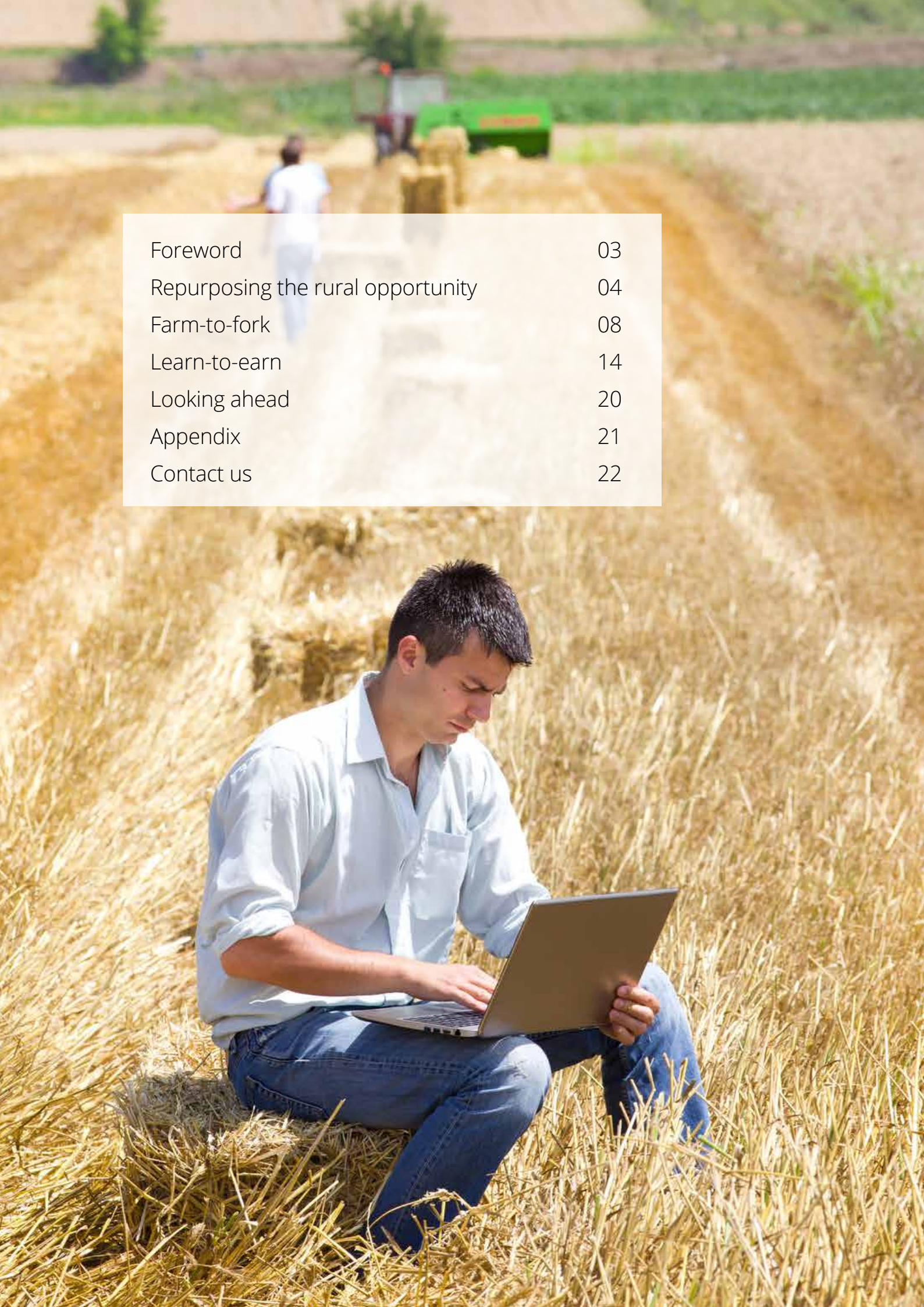


Digital for social good

The trillion dollar opportunity
in Southeast Asia



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Foreword



We believe that, in the future, companies who outperform the market will be those that operate with a strong sense of purpose, and who make a genuine commitment to sustainable development. At the same time, these companies will be adept at harnessing the potential of digitisation and the power of ecosystems to transform the way they engage with its stakeholders.

In other words, we believe that they are those who use digital for social good.

As traditional, linear value chains are now transforming into complex, dynamic, and connected ecosystems with increasing digitisation, we are also witnessing the rise of new ecosystems that, unlike those of the past, are not bounded by traditional industries and markets. Rather, they coalesce around several core human needs, and leverage each player's unique capabilities to solve complex challenges in ways that were not possible before.

In this paper, we explore the USD 1.42 trillion rural opportunity in Southeast Asia through the lenses of exponential technologies and ecosystems thinking. We examine how companies can solve rural problems with sustainable business models that are backed by digitisation and collaboration, while unlocking value and achieving commercial success in the process.

Two themes – "Farm-to-fork" and "Learn-to-earn" – have also been selected to illustrate how rural opportunities can present strong and viable business models.

We hope that you will find this an inspiring read.

Mohit Mehrotra

Co-Lead, Monitor Deloitte
Deloitte Asia Pacific

Repurposing the rural opportunity

Globally, rural¹ development has the potential to unlock USD 1 trillion of annual rural output by 2025, boosting the current baseline rural GDP of USD 13.2 trillion by 7.5% to USD 14.2 trillion². In Southeast Asia, the rural opportunity could unleash a total of USD 1.42 trillion economic output by 2025 (see Figure 1). To put this into context, this figure corresponds to approximately 30% share of Southeast Asia's rural GDP in the year 2025.

Figure 1: The rural opportunity in Southeast Asia in 2025



Drivers of future economic growth

For a variety of reasons, the rural opportunity in Southeast Asia has traditionally been accorded a lower priority for many businesses. We believe, however, that three major drivers of future economic growth should persuade us to explore the region's rural opportunity in a different light:

1. Inclusive and sustainable growth

Within the last 50 years, Southeast Asia has witnessed a tripling of its population size to 625 million. Despite its rapid urbanisation, however, almost 50% of its population continues to live in rural areas³. By 2025, this figure is expected to remain sizeable at 47%, with economies such as Cambodia, Myanmar, and Vietnam having more than 50% of its population residing in rural areas. Given the sheer size Southeast Asia's rural population, it is now imperative that growth in rural regions is reinforced, even as the focus on urban growth continues, to ensure the region's inclusive and sustainable growth in the years ahead.

"The opportunity outside of Southeast Asia's cities could potentially unlock USD 1.4 trillion dollars of economic output which would be 30% of total GDP by 2025."

1. "OECD Regional Typology". OECD. 2011. https://www.oecd.org/cfe/regional-policy/OECD_regional_typology_Nov2012.pdf

2. "Unleashing rural Economies". Economist Intelligence Unit. 2015. https://eiperspectives.economist.com/sites/default/files/Unleashingruraleconomies_0.pdf

3. United Nations Population Division. 2018. <https://population.un.org/wup/DataQuery/>

2. Significant source market potential and human capital

As incomes of rural consumers continue rising, their purchasing power will represent a significant opportunity for many businesses. Indeed, rural expenditure volumes for Southeast Asia are expected to rise to USD 656 billion (see Figure 2).

But beyond that, rural societies also represent a relatively large and under-utilised pool of human capital. Despite increasing labour participation rates and lowered unemployment rates in rural workforces, they remain relatively idler than urban workforces. In Vietnam, for instance, the agrarian society works about seven hour less per week than the national average, while in Philippines, this figure can be as high as 11 hours⁴.

Figure 2: The rural market and human capital opportunity in Southeast Asia in 2025



* Euromonitor 2018, UN Population Division 2018, UN Household size and composition around the world 2017, Monitor Deloitte analysis

3. Potential for digital-enabled growth

Although there remains a disparity between rural and urban populations in Southeast Asia in terms of digital adoption, there are clear indicators that rural populations are primed for digital-enabled growth. Across the region, governments are investing in digital infrastructure and education initiatives, and the results of these efforts are becoming visible.

In 2013, for instance, the number of Facebook users in Vietnam's rural areas was one third the number in urban areas. By 2017, however, the number of users have nearly equalised with 22.5million Facebook users in rural areas, and 23.5 million Facebook users in urban areas⁵. Similarly, in Indonesia and Thailand, the percentage of rural households with Internet access has almost doubled in the past few years to 32%⁶ and 45%⁷ respectively in 2017.

Focus
 "Digital for social good" can help businesses change their mindsets from viewing rural opportunities only as a CSR obligation, to considering them as viable business opportunities. The themes "Farm-to-fork" and "Learn-to-earn" sections will showcase how Digital for Social good can bring forth this mindset change.

The population outside the cities of Southeast Asia have significant spending power and is also a source of human capital that remains largely untapped

4. "Mean weekly hours actually worked per employed person by sex and economic activity". International Labour Organization. 2017. https://www.ilo.org/ilostat/faces/oracle/webcenter/portalapp/pagehierarchy/Page27.jspx;ILOSTATCOOKIE=8pu_Dr_z0f7hMn6ht1H2jdOBbhMalPdG25kaxM1sxlxnmIQGW-N6t!-1664393171?indicator=HOW_TEMP_SEX_ECO_NB&subject=HOW&datasetCode=A&collectionCode=YI&_adf.ctrl-state=bofkq1zed_4&_afrLoop=561118154656163&_afrWindowMode=0&_afrWindowId=null#%40%40%3Findicator%3DHOW_TEMP_SEX_ECO_NB%26_afrWindowId%3Dnull%26subject%3DHOW%26_afrLoop%3D561118154656163%26datasetCode%3DA%26collectionCode%3DYI%26_afrWindowMode%3D0%26_afrWindowId%3D105nvwg0kw_4

5. "Facebook users on the rise in rural Vietnam". Vnexpress. 28 November 2017. <https://e.vnexpress.net/news/business/data-speaks/facebook-users-on-the-rise-in-rural-vietnam-survey-3677019.html>

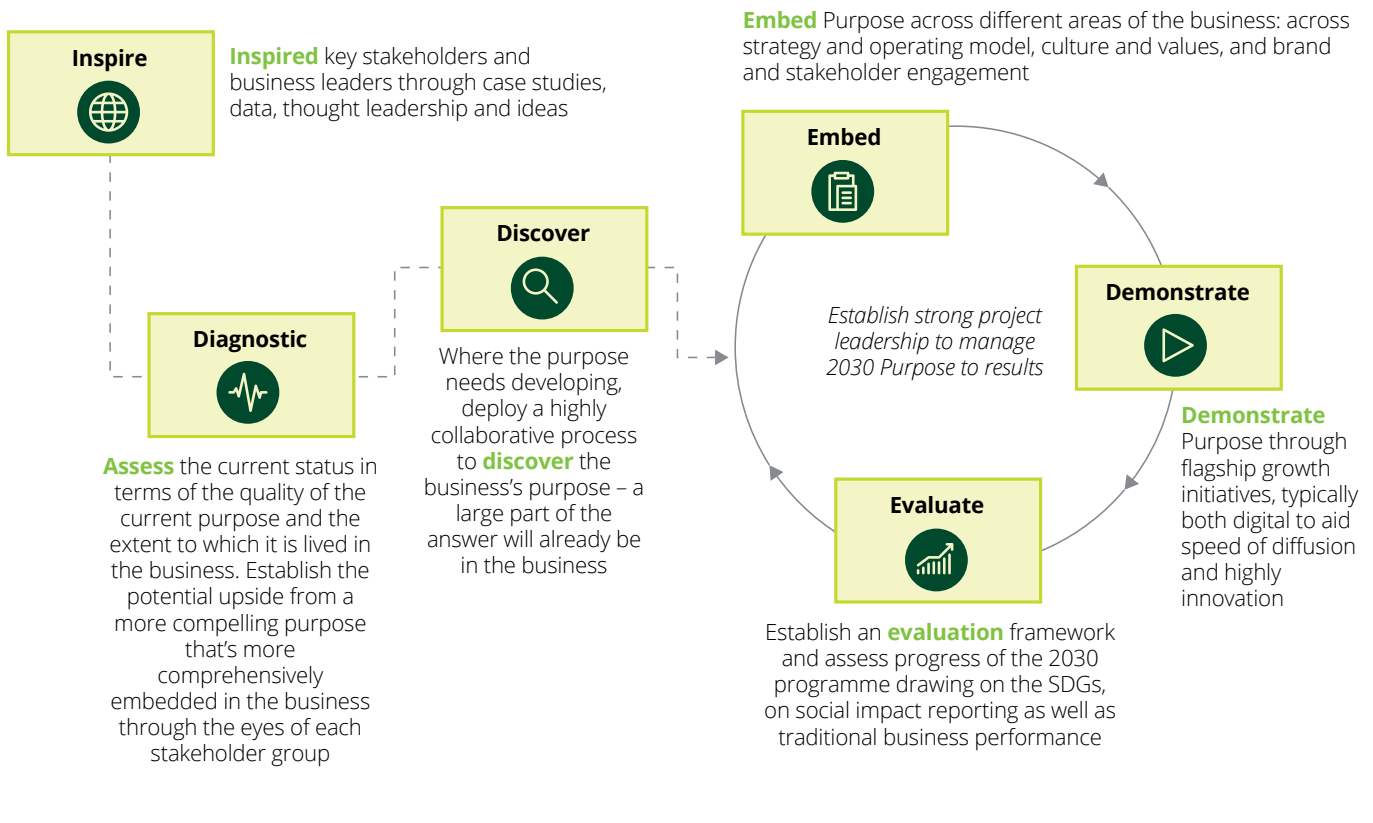
6. "Berita Resmi Statistik". Badan Pusat Statistik. 2018. <https://www.bps.go.id/>

7. "Summary of labor force survey in Thailand". National Statistical Office of Thailand. 2017. <http://web.nso.go.th/>

Deloitte's Purpose Framework

How can businesses optimise their commercial success, while making their impact on the society? Deloitte's Purpose Framework provide a way for companies to frame their strategies as they unlock rural opportunities in Southeast Asia (see Figure 3).

Figure 3: Deloitte's Purpose Framework



A digitally-enabled ecosystem approach

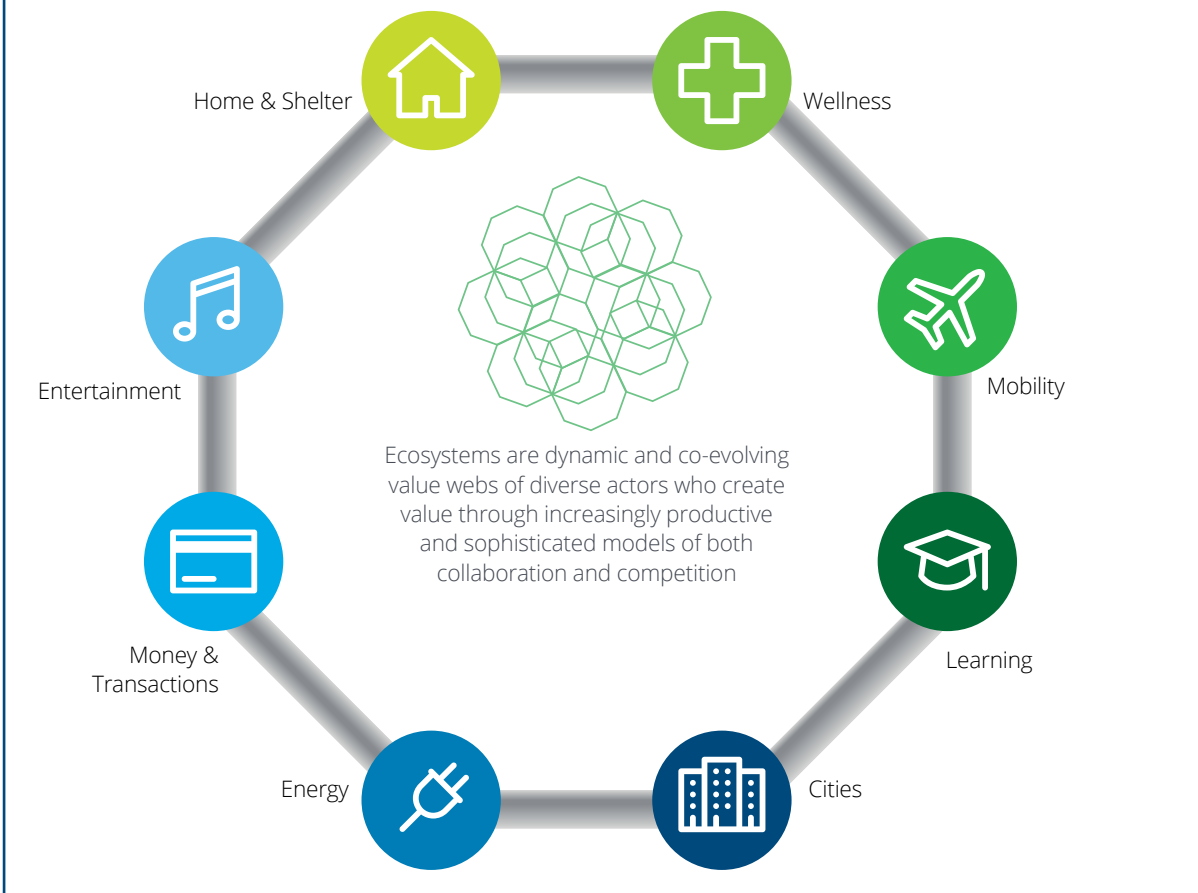
To harness the potential of the rural opportunity, a digitally-enabled ecosystem approach should be adopted to bring businesses together and leverage their unique capabilities to solve the complex challenges that exist in rural development.

The use of digital technologies is a key tenet of this approach for two reasons. Firstly, digital technologies are empowering stakeholders with solutions to solve problems that were deemed too difficult to solve in the past. Secondly, digital technologies have enabled work to become more transparent and created a real-time feedback loop between the intended purpose of the endeavour and on-the-ground performance, which in turn have helped with the emergence of viable business models in the social sphere.

In this report, we have identified eight macro ecosystems, defined as dynamic and co-evolving value webs of diverse actors who create value through increasingly productive and sophisticated models of both collaboration and competition – covering the areas of Wellness, Home & Shelter, Mobility, Learning, Cities, Energy, Money & Transactions, and Entertainment – which can be activated by businesses through the enablement of digital technologies (see Figure 4).

The emergence of these eight macro ecosystems are crucial for the reshaping of the economy, as they organise companies and capabilities around these 8 core human needs. Large incumbents and small disruptors alike will benefit from an understanding of how to create their own ecosystems that are centred on the 8 core human needs that these macro ecosystems serve.

Figure 4: Eight macro ecosystems

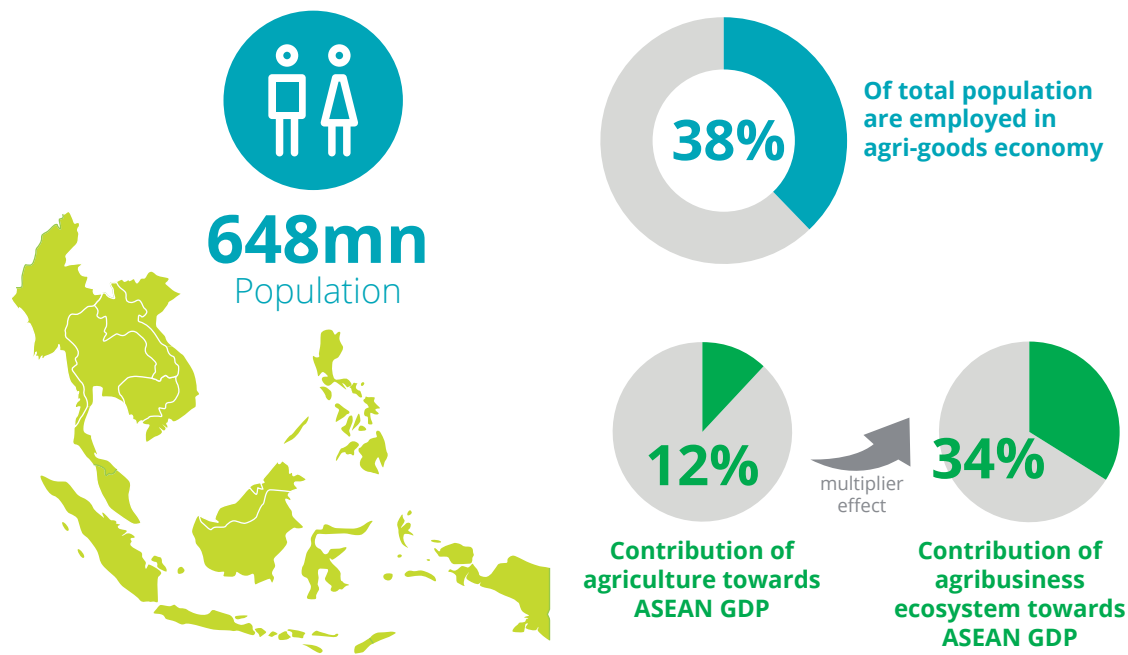


Farm-to-fork

With a growing global population that is forecasted to reach 10 billion by the end of the century⁸, a critical challenge lies ahead in ensuring there is adequate, safe, and nutritious food supply to meet the increasing demand for food. An increased food production, however, has to be balanced with the sustainable use of natural resources so as to minimise the impact on climate change, biodiversity, and natural capital.

For Southeast Asian economies, the farm-to-fork value chain remains vital, as it provides a source of income for large segments of the population (see Figure 5). In the region, the farm-to-fork value chain is a complex ecosystem that comprises multinational agribusiness enterprises, fragmented smallholder farmers, as well as micro, small and medium enterprises (MSMEs) (see Appendix for definition).

Figure 5: GDP and employment contribution of farm-to-fork value chain in Southeast Asia in 2017^{9, 10, 11, 12}



8. "The food value chain. A challenge for the next century". Deloitte Touche Tohmatsu Limited. 2013. https://www2.deloitte.com/content/dam/Deloitte/ie/Documents/ConsumerBusiness/2015-Deloitte-Ireland-Food_Value_Chain.pdf

9. "4 ASEAN Infographics: Population, Market, Economy". ASEAN UP. 26 March 2018. <https://aseanup.com/asean-infographics-population-market-economy/>

10. "Association of Southeast Asian Nations Agri-Food Market - Opportunity Assessment for Canadian Suppliers". Agriculture and Agri-Food Canada. 2015. <http://www.agr.gc.ca/eng/industry-markets-and-trade/international-agri-food-market-intelligence/asia/market-intelligence/asean-agri-food-market-opportunity-assessment-for-canadian-suppliers/?id=1484840560164>

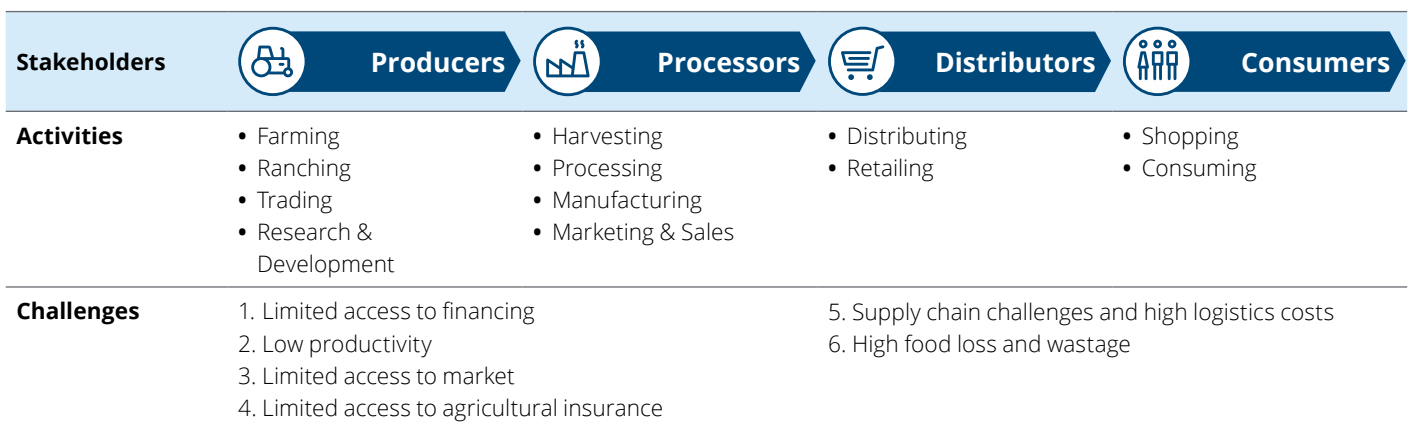
11. "World Development Indicators". World Bank. 2017. <https://data.worldbank.org/>

12. "Efficient Agriculture, Stronger Economies in ASEAN". BCSD Singapore, PBE, Indonesia BCSD and Viet Nam BCSD. 2016. http://www.aprilasia.com/id/images/pdf_files/BCSD/BCSD_white_paper.pdf

Stakeholder challenges

Both governments and private sector companies, in partnership with key stakeholders in the farm-to-fork value chain, possess an obligation, as well as opportunities, to ensure a sustainable, secure food supply for the new millennium. Innovative solutions will be required to overcome the various challenges faced by key stakeholders, including but not limited to producers, processors, distributors, and consumers (see Figure 6).

Figure 6: Challenges faced by stakeholders in the farm-to-form value chain in Southeast Asia



1. Limited access to financing

Limited access to financing is a common challenge faced by various stakeholders, especially smallholder farmers. In 2017, the total financing needs for smallholder farmers in Southeast Asia was estimated to be USD 94 billion¹³, while credit provided to smallholder farmers by formal financial institutions and other value chain actors only met 14% of these total needs.

2. Low productivity

There is a strong impetus to raise productivity with better access to technology across the value chain in order to meet future production demands. The value-added per farmer in Southeast Asia, for instance, is 25% lower than global average¹⁴. In some cases, the farmers' yield is less than 40% of the possible yield, due to a variety of agronomic and economic constraints¹⁵.

3. Limited access to market

In Southeast Asia, farmers usually have limited direct access to both input and output markets. The agribusiness value chain in the region is also dominated by multiple layers of intermediaries which possess exclusive access to marketplace, and hold significant market power over farmers which enables them to squeeze the latter's profitability, resulting in large mark-ups and wide variations between retail and farm gate prices. Reducing the layers of such intermediaries could improve farmers' income and reduce prices at the consumer level by as much as 15%¹⁶.

13. "Inflection point: Unlocking Growth in the Era of Farmer Finance". Dalberg Global Development Advisors. https://mastercardfdn.org/wp-content/uploads/2018/06/Inflection-Point_April-20160-accessible.pdf

14. "Sustainable Cities and Communities". Asia-Pacific SDG Partnership. 2017. <http://data.unescap.org/sdg/#data/11>

15. "Rice Yields and Yield Gaps in Southeast Asia: Past Trends and Future Outlook". ScienceDirect. 2012. <https://www.sciencedirect.com/science/article/abs/pii/S1161030111000979>

16. "Entrepreneurs Cut Out Middlemen in Indonesia's Agricultural Trade". IndonesiaExpat. 2016. <http://indonesiaexpat.biz/business-property/entrepreneurs-cut-out-middlemen-in-indonesias-agricultural-trade/>

4. Limited access to agricultural insurance

Despite the increasing threats from climate changes, the majority of farmers in Southeast Asia do not possess insurance coverage. While the region is highly vulnerable to natural disasters and the effects of climate change, only 10% of the region's USD 28 billion of economic losses from disasters from 2012 to 2017 were insured, as compared to 44% in North America¹⁷.

5. Supply chain challenges and high logistics costs

The farm-to-fork supply chain also faces a myriad of distribution challenges. Against the backdrop of relatively poor transportation infrastructure and the proliferation of retail channels to meet diverse customer needs, food distributors and retailers continue to face challenges in ensuring an efficient, cost-effective supply chain. For instance, logistics costs in Indonesia and Vietnam account for 24%¹⁸ and 21%¹⁹ of GDP respectively, which is significantly higher than the global average of 14%²⁰.

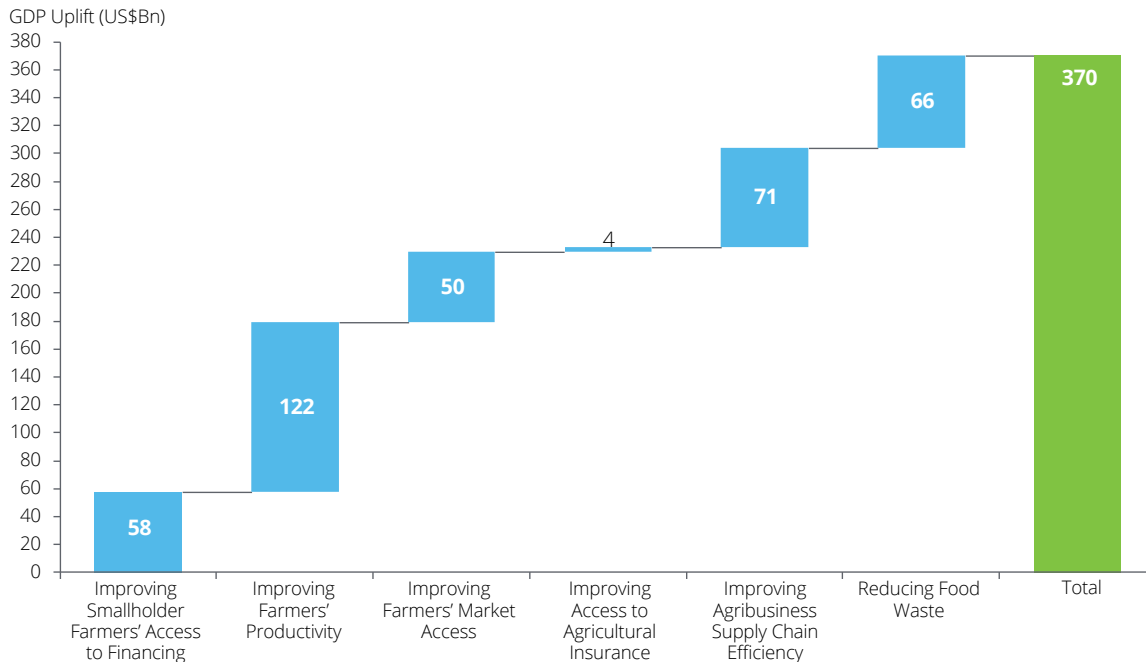
6. High food loss and wastage

In Southeast Asia, food loss and wastage is high: 59% of produce never makes it to the dining table²¹, and up to 87% of food waste in the region occurs during production, processing, handling, and distribution²².

The digitally-enabled ecosystem approach

Tackling the farm-to-fork challenges will be crucial to meet the projected food supply needs and drive Southeast Asia's economies forward. It also presents significant opportunities to generate an additional GDP uplift of USD 370 billion to Southeast Asia's economies by 2025 (see Figure 7).

Figure 7: Additional value-add from improvements to the farm-to-fork value chain in Southeast Asia by 2025²³



17. "Effective Policies for Promoting Agriculture Climate Insurance to Increase Resilience in ASEAN". Food and Agriculture Organization. 2016. http://www.fao.org/fileadmin/templates/rap/files/meetings/2016/160816_Concept_note_and_agenda_01.pdf

18. "Indonesia's Logistics Performance Remains Poor". The Insider Stories. 2018. <http://theinsiderstories.com/indonesias-logistics-performance-remains-poor/>

19. "Vietnam's e-commerce companies face logistics and price challenges". Retail News Asia. 8 May 2018. <https://www.retailnews.asia/vietnams-e-commerce-companies-face-logistics-and-price-challenges/>

20. "Rapid Growth, Limited Connectivity: Challenges and Opportunities in Vietnam's Logistics". The World Bank. http://vietnamsupplychain.com/assets/files/530ef941689c9done_2_Blanca_Vietnam_Logistics_Challenges.pdf

23. "Fixing Food Loss With Disruptive Tech". Eco-Business. 2017. <https://www.eco-business.com/news/fixing-food-loss-with-disruptive-tech/>

22. "Food Price Watch". The World Bank Group. 2014. <http://www.worldbank.org/content/dam/Worldbank/document/Poverty%20documents/FPW%20Feb%202014%20final.pdf>

23. This list is non-exhaustive

To meet the pressing food security demands, existing incremental solutions and traditional models of stakeholder collaboration within the value chain will no longer suffice. Disruptive technologies, embedded in ecosystems of partnerships, are the only viable way forward. With the introduction of Industry 4.0, a number of digital solutions have begun to disrupt the way the farm-to-fork value chain creates value for its stakeholders.

Examples of the array of new technologies that have already been employed in precision agriculture to improve yields and reduce input costs include the Variable Rate Nutrient Application technology, which is able to increase wheat production by 10% while providing up to 37% savings on the nitrogen fertiliser²⁴. A robust blockchain traceability system can also be used to reduce the scope of recall by up to 95%²⁵, while reducing the required time for product recall from days to seconds²⁶.

At the same time, mobile technologies are enabling a new range of services, including financial services, information provision and sharing, trade services, and better supply chain visibility for various

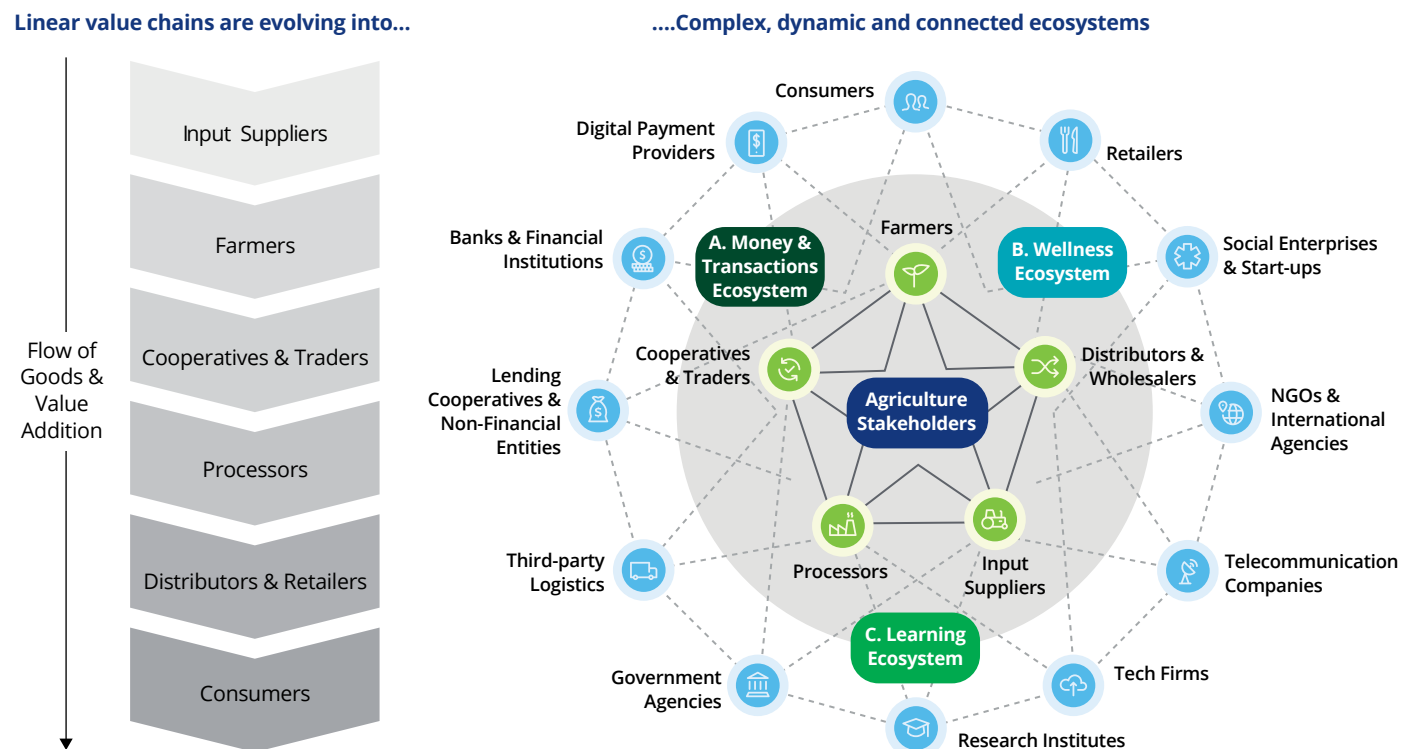
stakeholders. Digital marketplaces, in turn, are leveraging mobile platforms to bring greater access to mechanisation for farmers. In Nigeria, for example, an Uber-like service for farm tractors was introduced in 2014 to enable farmers to have greater access to rental tractors via text messaging and mobile money, resulting in an improvement in the farmers' yield by 200%²⁷.

From value chains to ecosystems

The advent of digital technology is causing another disruption: traditional, linear value chains are now transforming into complex, dynamic, and connected ecosystems. These new ecosystems are not bounded by traditional industries and markets, but instead coalesce around core human needs.

In the context of farm-to-fork, traditional agriculture players are partnering with non-traditional players in adjacent and non-adjacent industries to co-create solutions (see Figure 8). Examples of these transformations have been witnessed in the Wellness, Learning, and Money & Transactions ecosystems.

Figure 8: Farm-to-fork transformations from value chains to ecosystems



24. "Precision Agriculture Technologies Positively Contributing to GHG Emissions Mitigation, Farm Productivity and Economics". MDPI. 2017. <http://www.mdpi.com/2071-1050/9/8/1339/pdf>
 25. "Tracing Back and Tracking Forward: Traceability in Food". Source Trace. <http://www.sourcetrace.com/tracing-back-tracking-forward-traceability-food/>
 26. "IBM Forges Blockchain Collaboration With Nestlé & Walmart In Global Food Safety". Forbes. 2017. <https://www.forbes.com/sites/rogeraitken/2017/08/22/ibm-forges-blockchain-collaboration-with-nestle-walmart-for-global-food-safety/#1dc202a3d361>
 27. "Hello Tractor - An Uber for Tractors". City Press. 2017. <https://city-press.news24.com/Impact-Journalism/hello-tractor-an-uber-for-tractors-20170625>



Transformations in the Wellness ecosystem

Case study 1: Digital supplier footprint

Agribusiness companies are facing increasing pressure from consumers and regulators to ensure sustainable practices in their supply chain. In practice, very few companies are capable of doing so, due to the difficulty in tracking the thousands of smallholder farmers in their value chains. To overcome these challenges, a global agribusiness embarked on an initiative to digitise its supply chain and connect with its 4.7 million farmers.

Through its digital dashboard, the agribusiness firm's main customers – the food manufacturers – are able to access sustainability information about the suppliers of raw materials. Such information includes the suppliers' environmental footprint, such as greenhouse gas emissions data. In addition, the agribusiness firm's customers can choose to pay additional fees, to access more detailed information and tailored solutions to co-create sustainability programmes.

Case study 2: Blockchain-backed source-to-shelf “handshake”

In today's digital retail world, shoppers expect trustworthy data to support brand and product marketing at points of sale. For instance, 8 in 10 UK shoppers want to know origins of their food. To meet these consumer expectations, a transparent means to certify various product claims made by stakeholders along the entire supply chain – from origin to retail stores – is required. In the UK, the largest consumer co-operative engaged a blockchain software company to build a comprehensive digital history of their products, linking them from farm, factory, depot and retail branches.

The solution creates a blockchain-backed digital “handshake” at each point where the product is transferred. This provides a single source of truth for the most important product claims and certificates, which are traditionally stored in separate silos. Shoppers are then able to access real-time product data by using their mobile phones to scan the product labels. This end-to-end supply chain visibility also improves the company's



Transformations in the Learning ecosystem

Case study 1: Data democratisation

Farmers often lack the required data and information to ensure that they get the lowest-cost inputs and best practices to improve their profitability. Suppliers and traders sometimes exploit this to improve their own margins at the expense of farmers'. A leading Agtech company in the US aims to democratise the data for the farmers.

The firm asks its farmer members to anonymously crowdsource their planting patterns, yield results and the prices they pay for the inputs. The data-driven insights are then shared back with its members, enabling farmers to improve yields by as much as 17%. An online marketplace is also created, allowing agribusiness partners to distribute lower-costs inputs. This enables the farmers to purchase agrochemical inputs up to half the cost of major suppliers.

Case study 2: “Flavour fingerprints” for accelerated product development

In the increasingly competitive and consumer-centric environment, food and beverage (F&B) companies need to get more distinct products to market faster than before, while catering to rapidly changing consumer demands. To overcome these challenges, a leading global F&B company turned to digital solutions to create new value-add for its consumers, while building a new competitive advantage for itself.

By partnering with leading research institutes and a global technology company, the F&B company was able to leverage artificial intelligence solutions to measure and predict the flavours and aromas created by yeast during fermentation process. These solutions in turn enabled the product developers to map the “flavour fingerprints” for the samples and reduce the amount of time it takes to research taste combinations by a third.



Transformations in the Money & Transactions ecosystem

Case study 1: Mobile-enabled micro-insurance

Crop insurance has largely been unavailable to smallholder farmers in developing countries, in part due to the costs involved in administering micro-insurance policies. At the same time, these smallholder farmers are often subjected to extreme weather conditions that destroy their crops and trap them in poverty. To overcome these challenges, a leading telecommunications provider in Kenya partnered with a global agribusiness firm and a national insurance firm to offer farmers low-cost micro-insurance.

The programme leverages low-cost mobile phone payment system and solar-powered weather stations to offer farmers “pay as you plant” insurance for their seeds, fertilisers and other farm inputs. Local agro-dealers use camera phones to scan barcodes that immediately register the farmers with the insurance company. When the weather data determines that extreme weather conditions will cripple crops, the affected farmers will automatically receive payouts via the telecommunications provider’s mobile money transfer service, for up to 80% of their investments.

Case study 2: B2B marketplace to connect smallholder farmers with buyers and suppliers

Smallholder farmers with low-volume production of crops often do not have access to transparent market prices, with their only source of information for market pricing on crops coming from the middlemen. At the same time, large buyers do not want the hassle of getting the volume that they need from multiple small-volume farmers.

To launch a mobile marketplace solution for this conundrum, a start-up collaborated with a global technology firm to connect farmers directly with buyers, and eliminate the layers of middlemen. It also offer a group buying and selling platform that allow farmers to pool resources to increase their negotiating power, with all transactions made through an integrated mobile money transfer system. As a result, farmers have doubled their sales, and 97% of them have reported that they could sell their produce faster than before. In addition to charging transaction fees, the start-up also sells data to research organisations looking at consumer behaviour and food scarcity.



Key takeaways

The large segments of unserved and underserved clients along the farm-to-fork value chain, including the rural smallholder farmers and many MSMEs, present a significant untapped market. Digital disruption brings about a myriad of opportunities to provide innovative solutions to the various farm-to-fork challenges, for both traditional agricultural players and other players in adjacent and non-adjacent ecosystems. The future winners are likely to be those who are able to leverage digital solutions and create an ecosystem through partnerships, to create new value-add for the various rural smallholder farmers, industrial players, and consumers.

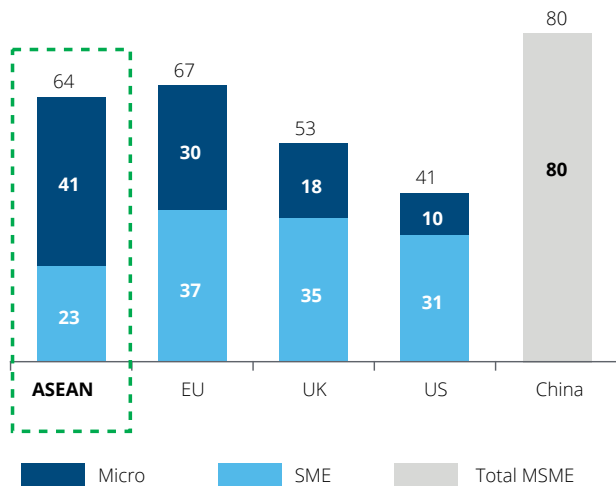
Learn-to-earn

In Southeast Asia, MSMEs represent almost 99% of all businesses, and influence millions of lives and jobs on a daily basis. The micro enterprise segment, in particular, represents close to 90%²⁸ of firms, or about 55 million enterprises. These firms are predominantly present in rural areas, which also tend to be hindered by a lack of basic access to skills, infrastructure, and capital.

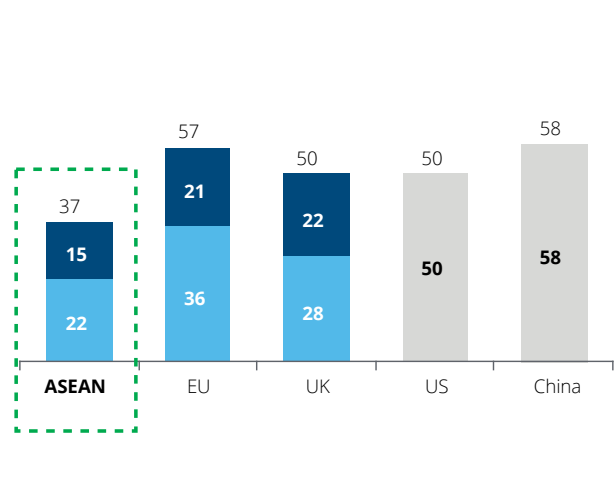
At the same time, a rising productivity gap is becoming evident: in certain OECD countries, the productivity (defined as value-add per employee) of micro enterprises is 25-30% lower than that of small and medium enterprises²⁹. Similarly, in Southeast Asia, micro firms contribute 41% to employment but only 15% to GDP (see Figure 9)³⁰.

Figure 9: Employment and GDP contribution by MSMEs^{31, 32, 33, 34}

Employment Contribution (%)



GDP Contribution (%)



Greater digital adoption can help to bridge this productivity gap, and drive additional GDP uplift. Examples of benefits that MSMEs have gained from increased digitisation include lower export costs, and a reduction in the amount of time consumed by export-related tasks such as sales generation³⁵. Although such benefits accrue to both urban and rural firms, studies have shown that rural firms generally enjoy higher revenue growth multipliers than urban firms³⁶ (see Figure 10).

As a significant proportion of micro enterprises in Southeast Asia are also “offline”, the multiplier effects of digitising this segment – in terms of increased revenues and greater productivity – could result in a 4-5% uplift in GDP, which translates to about USD 200-250 billion on top of the forecasted regional GDP of USD 4.7 trillion (see Figure 11).

28. IFC. MSME Country Indicators. 2014. <https://www.smefinanceforum.org/data-sites/msme-country-indicators>

29. OECD. SME Ministerial Conference. 2018. <https://www.oecd.org/cfe/smes/ministerial/documents/2018-SME-Ministerial-Conference-Plenary-Session-1.pdf>

30. “EC Annual Report on SME”. Publications Office of the EU. 2016. <https://publications.europa.eu/en/publication-detail/-/publication/0b7b64b6-ca80-11e7-8e69-01aa75ed71a1/language-en/format-PDF>

31. “Annual report on European SMEs 2017/2018”. European Commission. 2017. <https://ec.europa.eu/docsroom/documents/32601/attachments/1/translations/en/renditions/native>

32. OECD Entrepreneurship at a Glance. OECD. 2017. <http://www.oecd.org/sdd/business-stats/entrepreneurship-at-a-glance-22266941.htm>

33. “Financing SMEs and Entrepreneurs 2016”. OECD. 2016. https://www.oecd-ilibrary.org/industry-and-services/financing-smes-and-entrepreneurs-2016_fin_sme_ent-2016-en. “SME’s Account for over 60% of China’s GDP, Beijing Mulls Inclusion of Loans as MLF Collateral”. China Banking News. 2018. <http://www.chinabankingnews.com/2018/06/22/smes-account-60-chinas-gdp-beijing-mulls-inclusion-loans-mlf-collateral/>

34. World Bank Data. World Bank. 2017. <https://data.worldbank.org/>

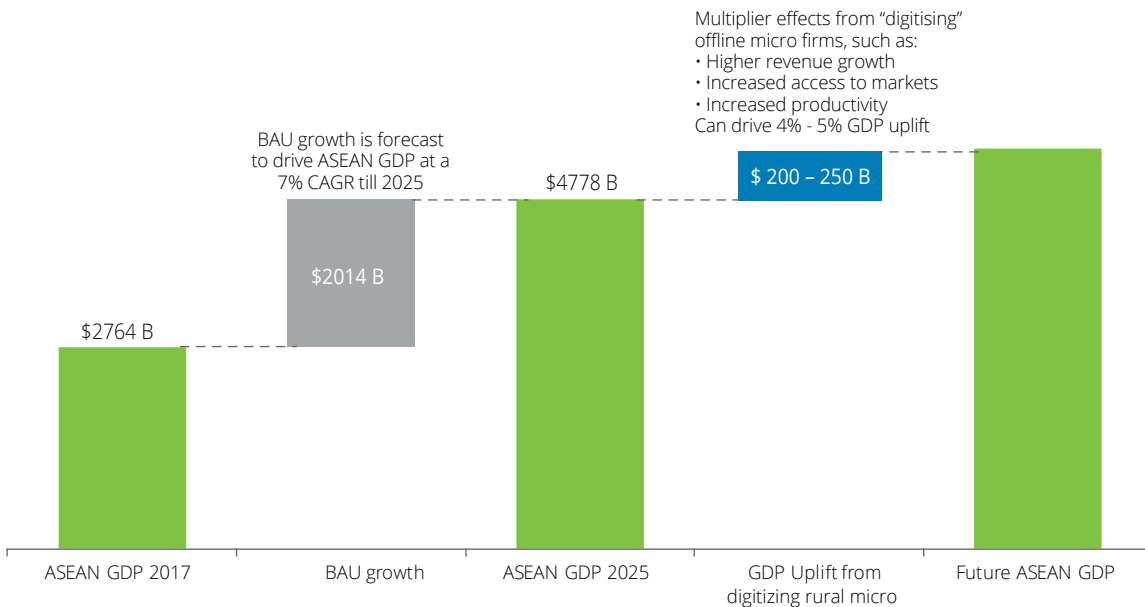
35. “Microrevolution: The new stakeholders of trade in APAC”. Asia Pacific MSME Trade Coalition (AMTC). 2018. <http://tradecoalition.org/wp-content/uploads/2018/02/MSME-Report-APAC-final.pdf>

36. “Connecting Small Businesses in the US”. Deloitte & Touche. 2018. <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/technology-media-telecommunications/us-tmt-connected-small-businesses-jan2018.pdf> “SMEs Powering Indonesia’s success”. Deloitte & Touche. 2015. <https://www2.deloitte.com/id/en/pages/financial-advisory/articles/smes-powering-indonesia-success-report.html>

Figure 10: Benefits of digital adoption



Figure 11: Impact of greater digitisation of micro enterprises in Southeast Asia



Barriers to digital adoption

Although the benefits of greater digitisation for micro firms in rural areas are clear, several consistent barriers to adoption continue to hinder efforts.

1. Perception of high technology costs

There is a perception that digitisation efforts are costly, and MSMEs remain reluctant to invest in major digitisation efforts. Over 82% of MSMEs in Vietnam, for instance, prefer to source for free software or tools, instead of acquiring paid licences³⁷.

2. Inadequate infrastructure

Despite the increasing connectivity in the region, the regional infrastructure remains largely inadequate to support widespread digitisation. In Southeast Asia, the average broadband penetration rate of about 25% remains significantly lower than other mature markets³⁸.

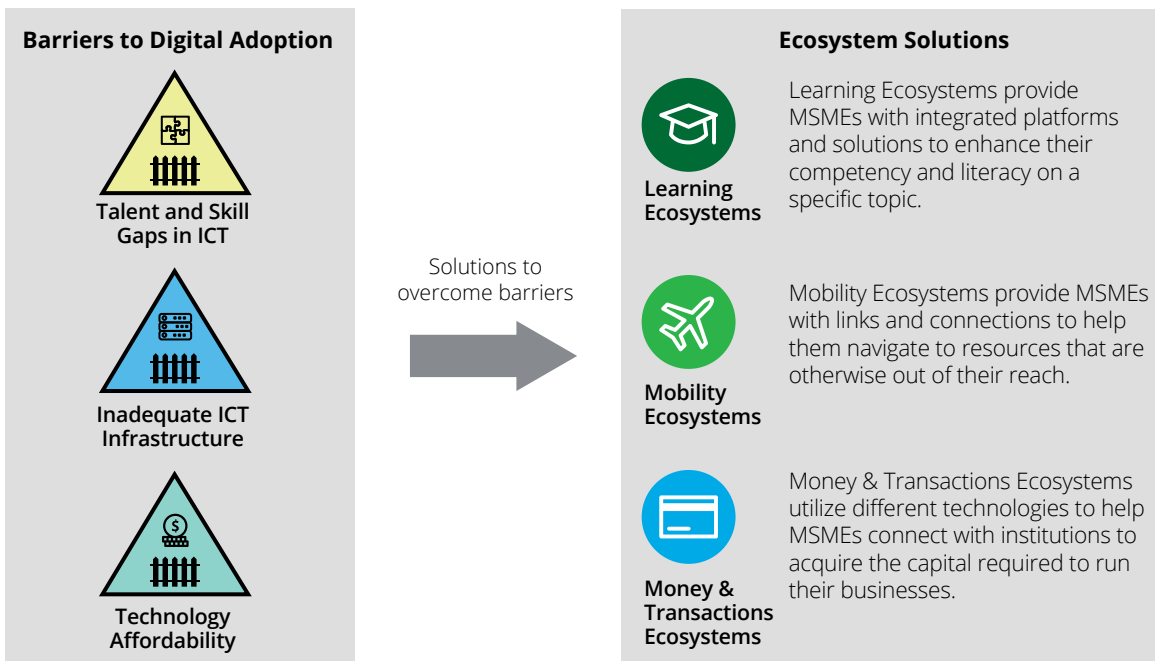
3. Talent and skills gap

Digitisation efforts require the support of a workforce that is sufficiently skilled in info-communications technology. However, this talent and skills gap remains a challenge in Southeast Asia. In Indonesia, for example, 40% of micro enterprises are managed by individuals with only a primary school certificate³⁹.

The digitally-enabled ecosystem approach

To overcome these barriers to digital adoption, an ecosystem approach – where a whole array of different players, including but not limited to financial institutions, telecommunications providers, and governments, work together to resolve micro enterprise issues – should be employed (see Figure 12).

Figure 12: Barriers to digital adoption by micro enterprises and corresponding ecosystem approach



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38. "The Future of Broadband in SE Asia". The Economist. September 2014. <https://eiuerspectives.economist.com/sites/default/files/SE%20Asia%20Huawei%20report%20Sep%202019.pdf>

39. "Rethinking Indonesia's Informal Sector", Australia & Indonesian Poverty Reduction Support Groups. 2015. https://www.researchgate.net/publication/282853144_Rethinking_Indonesia's_Informal_Sector

From Big Tech to Collaborative Tech

Traditionally, Big Tech approaches have been used to drive digital adoption amongst micro enterprises in rural markets, but these have not been met with great success. Typically, Big Tech deployments rely on two basic infrastructure pre-requisites: reliable Internet access, and smartphone adoption.

This poses a challenge for a number of markets in Southeast Asia, where broadband penetration and smartphone penetration rates are lower than the global average. The idea, therefore, is to move from Big Tech to Collaborative Tech, where a cross-industry ecosystem of players come together to overcome the traditional barriers to digital adoption. Examples of these transformations have been witnessed in the mobility, learning, and money & transactions ecosystems (see Figure 13).

Figure 13: Examples of transformations in the Mobility, Learning, and Money & Transactions ecosystems

	Talents and Skill Gaps in ICT		Inadequate ICT Infrastructure		Technology Affordability	
Barriers						
Ecosystems	A Learning	B Learning	C Mobility	D Mobility	E Money & Transactions	E Money & Transactions
Solution Provider	E-commerce Company	E-commerce Company	Telco + Food Provider	E-Commerce + Logistics + Digital Payment Provider	Bank + Telco + Mobile Payment	Fintech Company
Solutions	Digital tools workshop in rural UK	End-to-end digital support ecosystem for e-commerce SME	Provision of smartphones for street vendors	Online service centers deployed in rural villages	Mobile payment through SMS targeting rural businesses	Digital platform solving limited access to funds for rural SMEs in India
Impacts	<ul style="list-style-type: none"> • 2,000 SMEs • On-boarded 60% of UK businesses onto global e-commerce platform 	<ul style="list-style-type: none"> • 50,000 SMEs • 40% increase in monthly sales 	<ul style="list-style-type: none"> • Targeting 80,000 street vendors worldwide 	<ul style="list-style-type: none"> • Online transactions totaling USD \$ 4.4 B per year 	<ul style="list-style-type: none"> • Serving over 23 million users • Boost USD\$ 16b in e-money transactions in rural area 	<ul style="list-style-type: none"> • 500,000 MSMEs • USD \$290 million in loans disbursed

Exhibit 13: Case examples addressing key barriers to digital adoption among Micro enterprises in rural markets



Transformations in the Mobility ecosystem

Case study 1: Knowledge-sharing between street vendors

Street vendors account for over 90% of the informal sector, and over half of the population below the poverty line, in most countries. Often, these vendors do not possess adequate access to the Internet or a communication network to form a community for knowledge-sharing. Recognising the opportunity, a global food manufacturer and a telecommunications provider partnered to help street vendors overcome this challenge.

The collaboration focused on basic support, such as educating street vendors on the benefits of using the address book function of their mobile phones, instead of keeping manual ledgers, and fostering a communication network amongst the street vendors. The result has been an increase in the incomes of street vendors by 49% in several markets, with plans to impact some 80,000 street vendors worldwide.

Case study 2: e-Commerce support for rural MSMEs

In newly industrialised countries, rural MSMEs account for a large portion of the enterprise population, but have little or no access to the Internet, which limits their market to only their local vicinity. In China, the rural population accounts for over 40% of the national population, which indicates a large, untapped market opportunity.

To assist small local businesses in setting up their online presence on an e-commerce platform, an e-commerce giant set up several centres in rural villages to equip hundreds of thousands of MSMEs with customer analytics, sales analytics, and inventory management capabilities. In addition, the MSMEs also received support in terms of digital payment and logistics services to optimise their business operations in their shift from offline to online. This programme has since helped 33 million villagers set up their own online stores, and currently covers more than 70% of the rural population.



Transformations in the Learning ecosystem

Case study 1: Digital training for rural SMEs

Rural Micro enterprises are typically small businesses, such as mom-and-pop shops, local fisheries, or simple sewing and textile workers, with simple processes. Even with access to the Internet, operations are often manual and un-optimised. To address this issue, a major e-commerce provider launched a "Rural Academy" in the UK, running a series of learning workshops to help rural firms enhance their digital literacy.

The workshops consisted of different modules, focusing on digital tools and how they can be deployed in small businesses. These tools were designed to help the MSMEs expand their market by taking their products online, as well as connecting and engaging with their customers and other communities. Since the launch of these workshops, the programme has helped over 2,000 MSMEs and entrepreneurs in the UK, and enabled 60% of UK businesses to go global on the provider's e-commerce platform.

Case study 2: Ecosystem partnerships

Although MSMEs provide employment opportunities for a large portion of the population, remaining offline limits their reach to the immediate local areas. As e-commerce continues to experience high growth in Southeast Asia, one way to help MSMEs improve their business and status is to bring their businesses online. An e-commerce start-up is currently helping MSMEs within Southeast Asia to enhance their e-commerce capabilities, by providing end-to-end support on the development of their online presence.

As part of the solution, the start-up helps business build their website, as well as set up an integrated payment system that is required for online transactions, logistics, and inventory management. Sales insights and analytics derived from transaction data points can also be accessed through the use of its mobile application. To date, this company has helped 50,000 SMEs set up their online stores across Asia, and increased customer sales by over 40%.



Transformations in the Money & Transactions ecosystem

Case study 1: Electric wallet for rural businesses

Establishing a bank account is a crucial but challenging endeavour for rural businesses in Bangladesh. Local regulations allow banks to establish a maximum of 15 branches a year, limiting the number of physical branches that could be opened to serve rural businesses. To overcome this, a joint venture between a bank, venture capital firm, and local telecommunications provider, was set up to offer a mobile banking solution for rural businesses.

The solution relies on the use of an electronic wallet, which users can set up with a visit to an agent, where paperwork is also checked. This electronic wallet is then linked to the user's phone number, and transactions, including the transfer and withdrawal of money, can be carried out through the SMS interface. The service has since grown to offer other services, such as micro loans and micro financing, and is now in use at over 30,000 rural merchants in Bangladesh. In 2015, over USD 16 billion worth of e-money transactions were conducted through this platform.

Case study 2: Digitisation of underwriting process

Every business requires capital. For MSMEs in India, obtaining capital through traditional channels is a complicated affair. MSMEs often do not have access to the tools that they need to accurately file the statements that the banks require. To overcome this roadblock, a FinTech company has focused on developing a solution to digitise the underwriting process and accompany paperwork for MSMEs.

With the use of machine learning, the platform can analyse the lenders' capabilities and borrowers' ability to pay back the loan with over 800 data points, and work with the financial institutions to obtain loan approval for the MSMEs. The company has helped more than 500,000 firms find their appropriate financial institutions, and disbursed almost USD 290 million in loans.



Key takeaways

Micro enterprises in rural Southeast Asia generally operate at lower productivity levels, as compared to urban enterprises, presenting a potential upside opportunity if the gap can be bridged. Although technology can be used to cross the chasm, traditional Big Tech approaches have failed to overcome the barriers to digital adoption. Instead, Collaborative Tech, or partnerships that leverage multiple players within the ecosystem, should be deployed to enable micro enterprises in rural areas to scale up in the digital world.

Looking ahead

In this paper, we have showcased a number of global and regional case studies that illustrate the potential and promise of new proof of concepts that we believe can be applied to the rural environment in Southeast Asia.

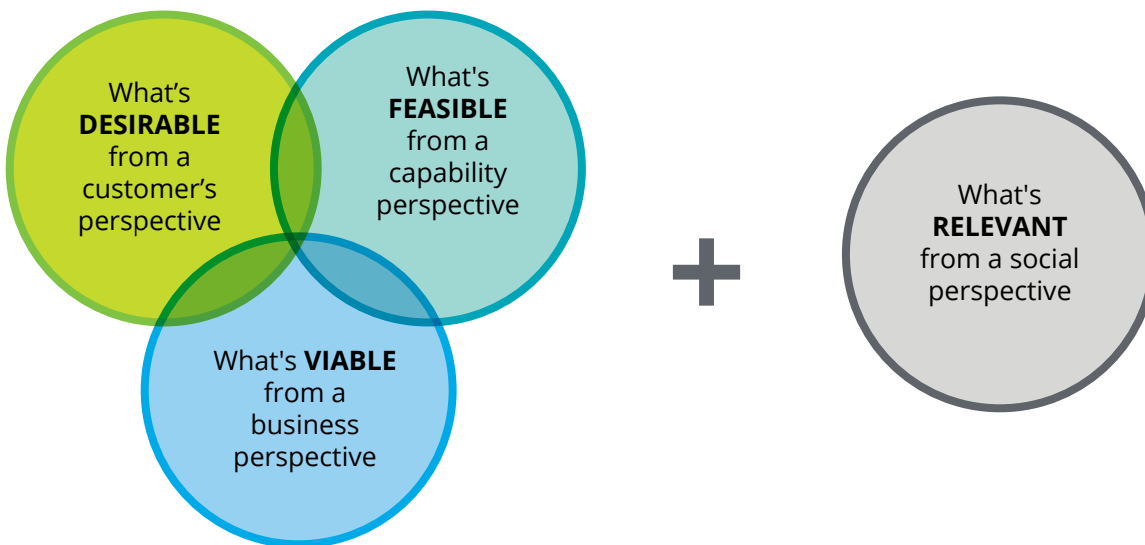
Making this happen, however, will also require a shift in the mind-set of businesses. Traditionally, businesses have often relied on three lenses when evaluating the viability of business models and value propositions. Specifically, successful business models in the past were able to answer the following three questions:

- What is desirable from a customer's perspective?
- What is feasible from a capability perspective?
- What is viable from a business perspective?

Looking ahead, as governments and businesses alike look to harness the potential of technology for social good, we believe that one additional lens needs to be added to this mix (see Figure 14):

- What is relevant from a social perspective?

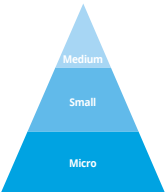
Figure 14: Lenses for a viable business model









Ultimately, we believe that the impetus to repurpose the rural opportunity in Southeast Asia has never been greater than now. Digitisation, combined with the power of ecosystems, will provide the much needed foundation for players to build inclusive and sustainable business models for economies within the region.

Appendix

Figure 15: Definition of MSME in select Southeast Asian markets⁴⁰



	 Indonesia		 Malaysia ¹		 Philippines		 Singapore		 Thailand ²		 Vietnam	
	Total Asset (USD '000) ³	Employee (No.)	Total Asset (USD '000) ³	Employee (No.)	Total Asset (USD '000) ³	Employee (No.)	Turnover (USD '000) ³	Employee (No.)	Total Asset (USD '000) ³	Employee (No.)	Turnover (USD '000) ³	Employee (No.)
Medium	164 - 3,300	20 - 99	720 - 4,800	30 - 75	280 - 1,900	100 - 200	< 72,000	< 200	900 - 6,000	50-200	≤13,000	51-100
Small	20 - 164	5 - 19	72 - 720	5 - 30	56 - 280	10 - 99			≤4,300	11-50		
Micro	< 20	1 - 4	<72	<5	<56	1 - 9			≤430	≤10		

Note:

¹ Not including manufacturing

² Figures differ across industries

³ October 29, 2018 exchange rate used: 1 USD = 15219 IDR, 1 USD = 4.18MYR, 1 USD = 53.7 PHP, 1 USD = 1.38 SGD, 1 USD = 33.2 THB, 1 USD = 23233 VND

40. OECD, SME Policy Index: ASEAN, 2018 <http://www.oecd.org/investment/sme-policy-index-asean-2018-9789264305328-en.htm>

Contact us



Mohit Mehrotra
Monitor Deloitte Co-leader
Asia Pacific
momehrotra@deloitte.com



Pua Wee Meng
Monitor Deloitte Executive
Director
Deloitte Southeast Asia
wpua@deloitte.com



Piyush Jain
Monitor Deloitte Executive
Director
Deloitte Southeast Asia
pijain@deloitte.com



Eugene Ho
Consumer Industry Leader
Deloitte Southeast Asia
eugeneho@deloitte.com



Ho Kok Yong
Financial Services Industry
Leader
Deloitte Southeast Asia
kho@deloitte.com



John Goeres
Technology, Media &
Telecommunications Industry
Leader
Deloitte Southeast Asia
jgoeres@deloitte.com



Lee Chew Chiat
Government & Public
Services Industry Leader
Deloitte Southeast Asia
chewlee@deloitte.com



Ng Jiak See
Energy, Resources &
Industrials Industry Leader
Deloitte Southeast Asia
jsng@deloitte.com



Mohit Grover
Life Sciences & Health Care
Industry Leader
Deloitte Southeast Asia
mogrover@deloitte.com

Acknowledgements

Arnub Ghosh
Monitor Deloitte Director,
Southeast Asia
arnubghosh@deloitte.com

Jack Ng Jieqi
Monitor Deloitte Manager,
Southeast Asia
jjng@deloitte.com

Ren Jinfeng
Monitor Deloitte Senior
Consultant, Southeast Asia
jjren@deloitte.com

Samrat Bose
Monitor Deloitte Senior
Manager, Southeast Asia
sambose@deloitte.com

Ng Kuok Shern
Monitor Deloitte Manager,
Southeast Asia
kung@deloitte.com



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