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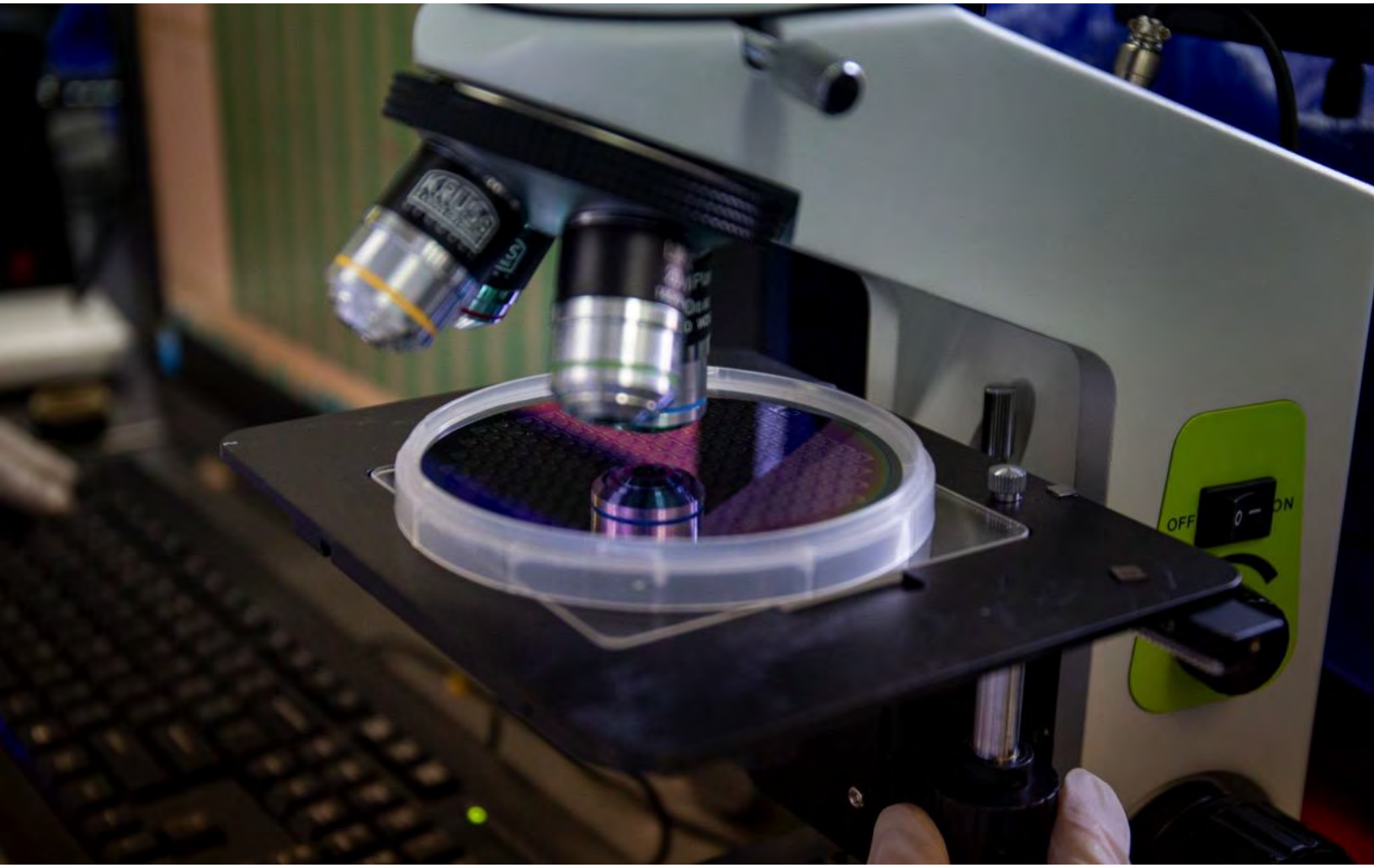

## VIETNAM DIGITAL INNOVATION ECOSYSTEM ANALYSIS

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# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| ADB | Asian Development Bank |
| AI | Artificial Intelligence |
| API | Application Programming Interface |
| ASEAN | Association of Southeast Asian Nations |
| B2C | Business to Consumer |
| BSSC | (Ho Chi Minh City) Business Startup Support Center |
| CNC | Computer Numerical Control |
| CPTPP | Comprehensive and Progressive Agreement for Trans-Pacific Partnership |
| CSIRO | Commonwealth Scientific and Industrial Research Organisation |
| DF | Digital Frontiers |
| DPI | Department of Planning and Investment |
| EVFTA | European Union Vietnam Free Trade Agreement |
| Fintech | Financial Technology |
| GVN | Government of Vietnam |
| HCD | Human-Centered Design |
| HCMC | Ho Chi Minh City |
| ICT | Information and Communications Technology |
| IoT | Internet of Things |
| IP | Intellectual Property |
| IPO | Initial Public Offering |
| IPP2 | (Vietnam-Finland) Innovation Partnership Program Phase II |
| IR | Intermediate Result |
| IR4.0 | Fourth Industrial Revolution |
| IRC | Investment Registration Certificate |
| IT | Information Technology |
| IVR | Interactive Voice Response |

| | |
|---|---|
| KYC | Know Your Customer |
| LoC | Law on Cybersecurity |
| LoCIS | Law on Cyber-Information Safety |
| MOET | Ministry of Education and Training |
| MOLISA | Ministry of Labor, War Invalids, and Social Affairs |
| MOST | Ministry of Science and Technology |
| MNO | Mobile Network Operator |
| MPI | Ministry of Planning and Investment |
| NAFOSTED | National Foundation for Science & Technology Development |
| NATIF | National Technology Innovation Foundation |
| NIC | National Innovation Center |
| NGO | Non-Governmental Organization |
| R&D | Research and Development |
| SME | Small and Medium-Sized Enterprise |
| SOE | State-Owned Enterprise |
| STEM | Science, Technology, Engineering, and Mathematics |
| USAID | United States Agency for International Development |
| USD | U.S. Dollar |
| VND | Vietnamese Dong |
| WB | World Bank |
| WISE | Women's Initiative for Startups and Entrepreneurship |
| WTO | World Trade Organization |
| YBA | Young Business Association |

# 1. INTRODUCTION

In recent years, the Southeast Asian economy has experienced a digital transformation of staggering proportions, with firms like Grab and Go-Jek rapidly transforming how large parts of the private sector do business. While Vietnam is not as far along in that transformation as other countries in the region, its internal market of nearly 100 million people, the second-highest mobile telecommunication penetration in Southeast Asia, and its technically capable workforce give it a strong base from which to work. Some observers even see parallels between Vietnam's current stage of digital development and the earlier stages of Indonesia's thriving online economy.

The COVID-19 pandemic is serving as a crucible for Vietnam's digital economy. The country's overall gross domestic product (GDP) growth fell to 1.81 percent in the first half of 2020, as compared to a growth rate of 6.7 percent for the first half of 2019; however, some companies in the financial technology (fintech) sector estimate that mobile banking transactions have increased six-fold in the same period. Prepared food, grocery, and household product delivery services have seen dramatic increases in orders, and a recent Nielsen poll shows that 63-64 percent of consumers are interested in using those services once the pandemic subsides.

Such a dramatic economic transformation brings both exciting opportunities and risk. To foster a digital economy that adds rather than subtracts value for small businesses, provides opportunities and protections for all Vietnamese people, and propels the country on its journey to self-reliance, the Government of Vietnam (GVN) must build the digital innovation ecosystem with care and intention. It will need support from the international community to do so.

## 1.1. SCOPE

Digital Frontiers is a $74.4 million buy-in mechanism that is available to U.S. Agency for International Development (USAID) Bureaus and Missions from 2017-2022. The project works closely with USAID's Global Development Lab, the Center for Digital Development, USAID Missions, the private sector, and international and local development organizations to identify successful and sustainable digital development approaches and scale their impact globally.

USAID/Vietnam executed a buy-in to Digital Frontiers to explore issues related to e-governance and the country's Industrial Revolution 4.0 strategy. Under that buy-in, a team was engaged to provide an analysis of the country's digital innovation ecosystem using a recognized framework in order to assess gaps that prevent Vietnam's private sector digital economy from being competitive, innovative, responsible, and inclusive, and to provide USAID with recommendations for areas of programming it could consider contributing to help address those challenges.

## 1.2. METHODOLOGY

The analysis team conducted extensive desk research to prepare for what was anticipated to be a wide-ranging series of site visits and in-person stakeholder consultations. Because of public health measures to contain the COVID-19 pandemic, those consultations were not possible and were replaced with a more focused set of virtual stakeholder consultations undertaken remotely. Twenty-four calls, most taking approximately one hour, were held with a range of stakeholders in the Vietnamese digital innovation ecosystem representing startups, investors, large enterprises, GVN officials, incubators and

accelerators, business networks, educators and researchers, NGOs, donors, and others. This analysis is based on those consultations, desk research, and the extensive knowledge of team members in Vietnam and the region.

## 1.3. THE USAID DIGITAL STRATEGY

In June 2020, USAID released its 2020-2024 Digital Strategy, intended to guide the Agency's approach "to achieve and sustain open, secure, and inclusive digital ecosystems that contribute to broad-based, measurable development and humanitarian-assistance outcomes and increase self-reliance in emerging market countries."

This analysis takes as its central organizing principle Specific Objective 2 of the Strategy ("Strengthen the openness, inclusiveness, and security of country-level digital ecosystems") – particularly Intermediate Result (IR) 5 and its sub-IRs:

> *IR 5: Digital economies led by the private sector are competitive, innovative, responsible, and inclusive*
>
> > *IR 5.1: Private sector investments in digital infrastructure and services align with internationally established best practices*
> >
> > *IR 5.2: Private sector skills, incentives, and capabilities contribute to development and promote inclusive and responsible service delivery in the digital economy*
> >
> > *IR 5.3: Local innovators, especially women, youth, ethnic and religious minorities, and Indigenous Peoples, participate in the digital economy*

## 1.4. THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY D-LAB INNOVATION ECOSYSTEM ANALYSIS FRAMEWORK

The *Understanding Innovation Ecosystems* framework by the D-Lab at the Massachusetts Institute of Technology is a useful lens through which to undertake this analysis. Unlike some other innovation ecosystem frameworks, the D-Lab framework is designed to cover a diversity of developing country environments and makes few assumptions with respect to the context of the ecosystem.


The D-Lab model places the user-definable purpose of the ecosystem at its center, organizing the actors and roles around that purpose, inside a context of resources and an enabling environment.

D-Lab defines the key roles as follows:

- ***Innovate***: *Innovators identify, develop,*

*and put into use new and improved ways of doing things within a specific local context.*

- ***Connect**: The role and activity of connecting different actors to each other, whether through social networking or value chain development.*
- ***Celebrate**: Actors who promote local innovators, whether through positive press, innovator showcases, competitions and prizes, and/or storytelling.*
- ***Train**: Training and capacity-building, whether in specific technical domains or more general business leadership skills, is a key activity within innovation processes.*
- ***Share knowledge**: Sharing knowledge between different domains, sectors, and types of actors contributes to the production of innovation and the spread of innovative practices throughout a system.*
- ***Convene and facilitate**: Bringing diverse members of the ecosystem together and facilitating productive, mutually beneficial interactions.*
- ***Advocate**: Advocacy for the conditions needed to support innovation and for a level playing field for community-based innovators and entrepreneurs is often necessary in order to address system-level constraints and barriers to success.*
- ***Fund**: In healthy innovation ecosystems, a variety of different actors offer a diverse range of funding types and sizes, ensuring that innovators and entrepreneurs can obtain the financing they need at each stage in their innovation process.*

The ecosystem purpose at the center of this analysis is that of IR 5 of the USAID Digital Strategy: "Digital economies led by the private sector are competitive, innovative, responsible, and inclusive." While the D-Lab framework addresses a broad range of resources and enabling environment factors, we have focused on the legal and regulatory enabling environment as the most critical addressable area for development intervention.

The analysis below addresses each of the D-Lab's actor categories (businesses, networks, government, funders, research and education, and CBOs and NGOs) and adds international donors as an additional actor category. The roles these various actors play in the ecosystem are highlighted in italics in the text.

## 1.5. INDUSTRIAL REVOLUTION 4.0

The term "Industrial Revolution 4.0" or IR4.0 was popularized by Prof. Klaus Schwab of the World Economic Forum, who made the case that new technologies are blurring the lines between digital, physical, and biological spheres, with consequent opportunities and disruption. The core digital elements of this shift in Schwab's view are artificial intelligence (AI), the Internet of Things (IoT), and big data.

GVN has pushed an aggressive innovation strategy under the banner of IR4.0, with the Central Committee resolving to "promote applications; develop science, technology and innovation; improve access; and actively participate in the Fourth Industrial Revolution." While GVN contemplates policy to address some of Schwab's specific IR4.0 elements, particularly AI, it is fairly clear that the intention is a general emphasis on promoting innovation, without necessarily tying it to arbitrary trends or technologies. "IR4.0" is commonly used to refer to various topics around innovation, but to avoid confusion, this document does not adopt the IR4.0 terminology except when referring to Schwab's IR4.0 concept or the GVN strategy; it instead speaks broadly to digital innovation.

# 2. THE VIETNAMESE DIGITAL INNOVATION ECOSYSTEM

## 2.1. SUMMARY

The Vietnamese digital innovation ecosystem is marked by enthusiasm and a sense of tremendous possibility. The country's entrepreneurial spirit, combined with a solid technical education system and a domestic market of almost 100 million people, make it a strong contender to have a vibrant digital economy in the near future. The government has clearly communicated its intent to foster that growth.

In examining the key features of the ecosystem and comparing them to successful innovation hubs elsewhere, the primary tendency that emerges is a disconnection of actors in the Vietnamese ecosystem. Many startups serve a market of small and medium-sized enterprises, but that relationship is often one-way, with little feedback sought by or offered to the startup. Large domestic enterprises rarely acquire startups; instead, they invest in them primarily as a matter of social responsibility than of market imperative. Foreign tech companies offer little in terms of technology transfer or transformative development of a foundational innovation workforce. Government programs are too often built on a supply rather than a demand basis, offering support that is not much wanted or that adds little value. Academic research lacks links to market application or need. There are exceptions to all of these features, but the general tendencies remain.

The legal and regulatory framework is improving, but major challenges remain, particularly with respect to the investment and business environment, intellectual property, the uncertain environment for fintech, and use of data. Some of these issues create significant barriers to progress.

USAID might consider programming that is organized along human-centered design principles to help alleviate some of these problems and better connect the ecosystem's actors to one another and to consumers – particularly consumers from underserved communities. A range of options for such programming is presented at the close of this document.

## 2.2. ACTORS AND ROLES

In the D-Lab model, organizations and individuals that create, support, and enable innovation are known as actors and may play any number of eight key roles in the ecosystem: *innovate, connect, celebrate, train, share knowledge, convene and facilitate, advocate*, and *fund*. This section addresses businesses, networks, government, funders, research and education, community-based organizations (CBOs) and non-governmental organizations (NGOs), and donors as actors in the ecosystem. It also describes the key roles they play.

### 2.2.1. BUSINESSES

We will examine four key classes of businesses involved in the digital innovation ecosystem: 1) startups and their related infrastructure; 2) small and medium-sized enterprises (SMEs); 3) large domestic enterprises; and 4) foreign technology companies.

#### 2.2.1.1. Startups and Related Infrastructure

Startups are often seen as primary drivers of technological progress, and are prominent in the GVN plans for innovation. A small company, usually led by young professionals, unencumbered by existing business models, customer relationships, and entrenched attitudes, can take risks that an established

company would not. The spectacular success of once-scrappy upstart technology companies like Google, Amazon, Facebook, Uber, and Airbnb serve as templates worldwide for the staggering growth potential of the right idea implemented well in a conducive context. In Southeast Asia, Indonesia's Go-Jek, Singapore's Grab, and many others have demonstrated that the startup model can be similarly transformative in the region. These successes have led to intense interest in the potential for startups to likewise drive explosive growth in Vietnam.

Unfortunately, there are no reliable government or private statistics tracking the number of startups. While the number "more than 3,000" has been quoted for years in official and unofficial sources, it is difficult to say how many startups exist in Vietnam, since their business registrations are not distinguished from more traditional SMEs. Vietnamese startups are often registered in Singapore, as many investors consider this a precondition of investment (see *Legal and Regulatory Enabling Environment* below), making the problem of tracking them even more difficult. The popular Startup Wheel competition attracted about 1,800 applicants last year; given that the competition primarily attracts only early stage startups, the oft-cited 3,000 figure seems likely to be low; however, without better statistics it is difficult to be sure.

The history of Vietnam's startup scene is commonly divided into three phases:

> *Early 2000s.* The wide adoption of the Internet brought new business opportunities in Vietnam just as it did elsewhere. Companies that successfully built products and services on the Internet in this period include Yeah 1 and VinaGame (VNG).
>
> *Late 2000s – early 2010s*. A second phase produced some of the top tech startups in e-commerce and marked the entrance of several regional venture capital funds like CyberAgent Capital and pioneering accelerator/incubators like Ho Chi Minh City's Business Startup Support Center (BSSC). Successful startups from this period include Tiki, an e-commerce venture sometimes referred to as the Amazon of Vietnam; and Foody, a food and beverage review platform acquired by Singapore's Sea Ltd. for $64 million in 2017.
>
> *Present day.* One of the characteristics seen in the current phase of startup development is the internationalization of the Vietnamese startup. A number of companies have management in Silicon Valley and tech and operations based in Vietnam (e.g., ELSA, Got It Inc., Earable, and Bonbouton). Some stakeholders view internationalization as an endorsement and an investment in Vietnamese tech talent. Today's Vietnamese startups and their investors generally consider it important to consider the international market from day one.

COVID-19 may well be marking another transition point in the evolution of the startup subsystem. Many startups that were in a poor cash position at the beginning of the pandemic have not been able to stay in business. Investors have become more risk-averse in this period, and foreign investors in particular have found it operationally difficult to do due diligence and make deals. Some startups that offer good prospects for digital transformation of traditional business sectors have seen dramatic growth driven by sudden need, but many others have been eliminated by the general economic downturn. Investors interviewed for this analysis viewed this shakeout as a good and healthy development for the startup subsystem and were optimistic about what it means for the post-COVID era.

The primary role of startups in the ecosystem is to *innovate*. While there are exceptions, Vietnamese startups' innovations do not generally take the form of technological advances, but rather

implementation of digital business models that are novel to the context. Usually these models have been implemented successfully elsewhere and are being imported to Vietnam. While this approach may fall short of the GVN's vision of bold technological innovation driven by startups, it does provide an important avenue for digital transformation of the economy. For many SMEs, it may be the only realistic means to successfully help drive digital transformation.

Stakeholders had various views as to why Vietnamese startups generate few technological innovations. Most commonly cited was a lack of creativity, either because the education system fails to inculcate it or because Confucian cultural tendencies inhibit it. From a Western perspective, one obvious hypothesis is that because the intellectual property (IP) regime is weak, it is difficult to make an asset of technological innovation around which one can build productive exchange. Interestingly, while all stakeholders agreed the IP regime is weak, and most agreed this weakness was a problem, none could offer an example where the IP regime prevented them from undertaking anything they were otherwise inclined to do. These stakeholders included investors; none cited weak IP protections as having dissuaded them from making an investment in an otherwise attractive idea. A healthier IP economy might create new circumstances from which innovation could better grow, but stakeholders notably do not feel a need for this change.

Several clusters of views emerged from stakeholders around the ecosystem of deficits within the startup subsystem that limit its development:

- *Creativity*. The rolls of Vietnamese startup founders include incredibly talented people, many with world-class technical and creative skills. There was general agreement, though, that just as the workforce in general lacks creative problem-solving skills, so does the pool of prospective founders. Many stakeholders saw this deficit as a reason for what some described as a "copy-and-paste" approach to applying business models from other contexts in Vietnam, with varying degrees of reference to local context.
- *Business experience*. Startup founders often begin with an idea and at least an outline of a plan of how to implement it technically. They may not have the business experience or knowledge of the market they are entering to execute their plan properly. This approach is not limited to Vietnamese startups, and the incubator/accelerator system exists primarily to offer support to companies and founders as they gain a practical understanding of the business considerations of their chosen model.
- *Connection to market*. Some stakeholders expressed a view that startups too often offer their product or service without actually engaging with its intended customers, leading to poor outcomes.

#### 2.2.1.2. The Exit

Most startups fail. Failure is a necessary function of the experimentation and risk-taking process that is central to the idea of the startup. While startup founders dream of Grab-like success, only a few will be lucky enough to achieve even a more modest exit.

A successful exit strategy, or "exit," for a startup involves either an initial public offering (IPO) on a stock market or acquisition by another company. On achieving an exit, a startup's investors realize a return on their investment, and the founders and sometimes early hires are able to monetize their ownership stakes. Often a successful founder will reinvest those earnings in new startups, either as a repeat founder or as an "angel investor," contributing to an innovative cycle.

Because the exit provides the primary financial incentives for investors and founders as well as a source of capital for future investment, it serves as the engine for startup-driven innovation. In Vietnam, parts of that engine may be missing or broken.

Only one Vietnamese tech startup, Yeah 1, is listed on a stock exchange (though one other, VinaGame (VNG), is traded over the counter). Almost all stakeholders cited a requirement of the Securities Law that listed companies must be profitable for two consecutive years before IPO as a reason for this absence. Even Tiki, considered a hugely successful startup, is not eligible under these criteria, having booked losses of trillions of Vietnamese Dong (VND). This dynamic contrasts with major U.S. exchanges, which have income rather than profit requirements; however, the Vietnamese prerequisite is not as stringent as other major exchanges in the region (see table below).

TABLE 1: LISTING REQUIREMENTS FOR SELECTED STOCK EXCHANGES

| EXCHANGE | CAPITAL REQUIREMENT (USD EQUIVALENT)* | INCOME/REVENUE/PROFIT REQUIREMENT (USD EQUIVALENT)* |
|---|---|---|
| Ho Chi Minh City Stock Exchange | $5.2M (VND 120B) | Profitability for two consecutive years |
| Hanoi | $1.3M (VND 30B) | Profitability for two consecutive years |
| Australian Securities Exchange | $7.8M | $777,000 net profit over last three years; $310,000 net profit in most recent year |
| Hong Kong Stock Exchange | $26.5M | $3.8M profit over last two years; $2.5M profit in most recent year |
| NASDAQ | $4M | $750,000 income before tax in latest fiscal year |
| NYSE | $500M | $10M adjusted pre-tax income over last three years |
| Singapore Stock Exchange | n/a | $4.9M pre-tax profit over last three years |
| Tokyo Stock Exchange | $16.6M | $5.2M pre-tax profit over last three years |

*Listing requirements are complex, and these equivalents have been simplified for the sake of comparison.

Many stakeholders expressed the belief that technology investments are simply not attractive to most Vietnamese investors, who prefer real estate opportunities. For this reason, a local IPO is not a good way to raise capital.

Acquisition is thus the primary means of exit for Vietnamese startups. An established company might want to acquire a startup for many reasons, but the following are typical:

- *To acquire intellectual property.* A startup may have developed a patented innovation or valuable trademark that an established company sees as important either to own or to keep out of the hands of competitors. In an ecosystem like Silicon Valley, this is how startups form an important part of the research and development (R&D) system, and many startups are founded and funded specifically with the aim of developing IP that is likely to be attractive to acquisition-minded companies. The difficulty of declaring and transferring ownership of IP makes this route to exit difficult, reducing the incentive to produce innovative IP.

- *To absorb talented teams.* A startup that has assembled and motivated a particularly talented team can be an acquisition target for a company that would rather absorb that team than build its own organically. In Vietnam there are examples of this approach, said to be one reason for Vingroup's acquisition of Money Lover; however, because connections between startups and companies that have the capital to make such acquisitions are weak in Vietnam, such transactions are less likely.
- *To access a new market.* Often a company will acquire a startup in a complimentary sector to get access to a new geography. Vietnamese startups are proving to be attractive acquisition targets for foreign companies for this reason, but this sword is two-edged. Vietnamese entrepreneurs gain capital and exposure to international markets, but some portion of the value produced by their companies is thenceforth exported from the country.
- *To access an existing user base.* A startup that has succeeded in attracting a user base for its product or brand might be an acquisition target for a company seeking an easy way to reach that audience.
- *To eliminate a potential competitor.* An established company that sees a growing startup with the potential to disrupt its market may choose to acquire the startup rather than face the risk. The startup's product can then be integrated into the purchaser's portfolio or quietly eliminated. None of the stakeholders interviewed believed that large Vietnamese enterprises see startups as enough of a threat to make this a likely reason.

While many of the incentives for acquisition are missing or weaker in Vietnam than in other countries, and while an IPO is not seen as a viable option by most, investment in the startup sector is rising. A recent report from Do Ventures put 2019 investment in Vietnamese startups at $861 million, as compared to Singapore's $693 million for the same year, a remarkable comparison.

Exit-driven innovation is not universally popular and can serve to make an ecosystem less inclusive. It encourages quick wins over long-term value generation, often for the benefit of a short list of specific players that are known to be likely acquirers. Innovative ideas that will not obviously lead either to an acquisition in the short term or a large-scale IPO in the medium term can struggle for funding even in very well-developed ecosystems.

#### 2.2.1.3. Accelerators and Incubators

Incubators and accelerators are key infrastructure elements for launching early-stage startups. Both offer founders help in growing their businesses and attracting investment.

Incubators aim to hatch disruptive ideas to build them into business models and companies. Participants in incubator programs typically get co-working or office space (often at concessionary rates), mentoring, business assistance like legal and accounting services, and some connection to a larger community of other incubated companies and interested parties. Many incubators are organized around a specific market or vertical. Because first-time founders typically have limited connections and little business experience, an incubator can play a critical role in launching a promising idea – or in giving it space to change when the original concept runs into problems. The most effective incubators offer an intentional program of services and support that helps the incubated companies transform to more effectively meet their intended market challenge.

Accelerators seek to turbocharge the growth of existing early-stage companies. Offerings differ from program to program, but a typical accelerator provides a small seed investment – generally in exchange

for equity in the accelerated company – mentorship, and connections to investors. Accelerator programs are usually structured around a small group of accelerated companies, selected through a competitive application process. This cohort progresses together along a fixed schedule of mentorship and development, with "graduation" from the program typically culminating in a pitch day for prospective investors. Accelerators can nurture a promising early-stage startup, turning it into a more serious growth prospect. A strong accelerator lends its graduates credibility and access to investors and other connections.

The primary roles of incubators and accelerators in the ecosystem are to *share knowledge* – providing critical mentorship to startup founders – and *connect* – creating communities of innovators and plugging them into existing parts of the ecosystem. While participation in an accelerator program can provide *funding*, capital is not the primary value added. The private sector ecology of incubators and accelerators in Vietnam is robust and serves these roles well. There are not enough places in these programs for all prospective startups, but this is normal and imposes a certain amount of healthy competition, and the level of that competition would not seem to indicate a severe mismatch between supply and demand. Many public sector programs billed as incubators and accelerators in fact offer little more than free or concessionary-rate office space, and do not attempt to serve these roles at all – or do not serve them well because they are not actually connected to the market systems in which startups will need to operate.

As with much of the infrastructure of the innovation ecosystem in Vietnam, incubators and accelerators are clustered in Ho Chi Minh City (HCMC) and Hanoi, and to a lesser degree in Da Nang, leaving entrepreneurs and markets outside these areas underserved. Other gaps in the incubator/accelerator landscape when compared to other countries include involvement from large corporations and programs focused on specific verticals or "deep tech" innovations (substantial scientific advances like AI, robotics, etc.).

#### 2.2.1.4. Small and Medium-Sized Enterprises

The lion's share of Vietnam's private sector lies in SMEs, which are understood to comprise 98 percent of all businesses and generate 40 percent of GDP. While many Vietnamese SMEs doubtless engage and benefit from process innovation and make iterative product improvements, traditional SMEs – as differentiated from startups – are not considered to be drivers of technological innovation.

Digital transformation of SMEs in Vietnam is proceeding largely without their intention, and the COVID-19 pandemic has only accelerated that process. Without the capacity and funding to undertake their own digital transformation, SMEs depend largely on startups' platforms in order to access digital ordering, inventory, customer management, and similar services. There are significant upsides to traditional businesses from many of these platforms, but SMEs are also vulnerable to the downsides.

Worldwide, the most conspicuous recent startups have been platforms for facilitating transactions between private individuals to provide services or access otherwise underutilized resources – a model known as the sharing economy. Go-jek, Grab, Uber, and Airbnb are prominent examples. The net economic impact of sharing economy businesses is hotly debated; they clearly generate new transactions by enabling novel or more efficient interactions, but they also cannibalize existing transactions by undercutting or otherwise competing with existing businesses. Similarly, business-to-consumer (B2C) e-commerce sites like Tiki and Amazon are formidable competitors to local retailers, but e-commerce platforms like Alibaba and eBay can enable SMEs to reach customers in distant markets – also potentially

displacing local SMEs in those markets. The net effect is hotly debated, but it is clear that these platforms create downward pressure on prices while extracting rent for the platform owner.

For good or ill, these platform-driven transformations have accelerated for many SMEs because of the disruptions caused by COVID-19. Many retail SMEs like restaurants have had to shift to interacting with customers primarily through platforms, since in-person contact has been limited.

Stakeholder interviews left the impression that few startups engage in human-centered design processes with the SMEs they expect to serve, tending instead to make a platform offering and expecting SMEs to want to engage with it on its inherent merits.

#### 2.2.1.5. Large Domestic Enterprises

Large domestic companies and state-owned enterprises (SOEs) are heavily involved in technological *innovation*, with Viettel's ambitious 5G research program and Vingroup's efforts on AI being high-profile examples of increased R&D spending. With relatively large budgets to work with, these companies have had good success in luring qualified overseas Vietnamese back to the country. With exceptions, these companies generally approach innovation with little interaction with outside actors. Collaboration with universities on research does not often align with the enterprises' R&D, as will be seen below, and none of the interviewed stakeholders saw R&D of value coming from the startup community.

Some large enterprises have provided funding to the startup subsystem, but this investment is generally made due to a sense of social responsibility rather than the perception of a sound financial or R&D investment. Acquisitions of startups by these companies are rare, with Vingroup being the most active corporate player. Few other large companies seem interested in acquiring startups, and SOEs are not legally permitted to do so.

Notably, several large Vietnamese enterprises have established their own universities – FPT University and VinUniversity are prominent examples in the digital innovation space. In some cases, these universities were founded to train workforces suitable for the needs of the enterprises, either because the quality or quantity of those produced by the public system were seen as lacking, or to tap into a perceived lucrative education market. Interestingly, none of the large corporate or education stakeholders interviewed for this analysis saw these private universities as major drivers of commercial research.

Together with extensive training programs for new employees – six weeks seems to be typical – the efforts of these universities mean that large enterprises in Vietnam fulfil a different *training* role than is common in other countries.

#### 2.2.1.6. Foreign Companies

A number of large foreign technology companies have made investments in production facilities in Vietnam. Intel, Samsung, and Apple are among the most high-profile of these. Typically, these investments are touted as bringing the prospect of technology transfer, workforce upgrades, and other benefits to the economy. These benefits would make these companies important actors in the Vietnamese digital innovation ecosystem, but the evidence for them to date is thin.

Certainly some middle management cohorts gain valuable experience working with global supply chains, international standards, and top-tier production and management practices; however, these workforces are small, and it is not clear how mobile they really are. Production floor workers also gain experience

with modern production equipment, processes, and standards, but it is not apparent that this experience is readily transferable to other jobs in Vietnam or that these employees circulate widely. Technological supply chain inputs to these production facilities come almost exclusively from overseas, and no obvious local ecosystem to produce them is being created or strengthened.

These firms see the local workforce as having acceptable quality and being reasonably competitive on cost. Infrastructure and geographical advantages are similarly seen as good but not exceptional. For the most part, the motivations for these large foreign technology companies to produce goods in Vietnam is based on the tax and other incentives national and local governments offer rather than on fundamentals.

### 2.2.2. NETWORKS

There are robust traditional business networks in Vietnam, with strong roots across conventional SMEs and large enterprises. The Young Business Association (YBA), for example, is a vibrant organization with more than 70 local chapters around the country. There are also well-established special interest networks, like the HCMC Association for Women Executives & Entrepreneurs, that address the specific needs of targeted underserved groups. These general business associations promote trade and partnerships among member businesses. Various industry-specific associations that advocate for the interests of specific sectors are also active across the country.

These networks seem to be an obvious entry point for startups to more closely engage with the SMEs whose sectors they hope to transform. They could serve a variety of roles in the innovation ecosystem: *connecting* startups and other innovators to SMEs, *advocating* for policies that would improve prospects for digital transformation, *sharing knowledge* among the various actors, and *convening and facilitating* diverse actors.

Startups have begun to be active participants in some of these networks, like the HCMC chapter of the YBA. In practice, however, this connection is not always made smoothly. Because conventional SMEs make up the lion's share of the Vietnamese economy, they are also the largest part of the membership base of business networks. Startups face very different business challenges than conventional SMEs, and as startup founders and staff join these networks, many find it difficult to engage meaningfully with membership. These cultural issues, combined with the relatively small startup cohort within the networks, mean that startups are often relegated to the margins.

### 2.2.3. GOVERNMENT

The GVN effort to promote innovation through its IR4.0 strategy is taken seriously throughout the ministries charged with carrying it out, but the approach differs from ministry to ministry. There is no unified set of key performance indicators, and those that do exist – such as those for Project 844 (see text box) – focus on metrics like numbers of startups and amount of investment in startups. These are not necessarily good indicators of the quality or economic transformation enabled by startups, and moreover are difficult to track across the whole ecosystem given current systems for capturing statistics.

**Project 844** is a GVN initiative led by the Ministry of Science and Technology (MOST) to support the national startup ecosystem. Taking its name from the Prime Ministerial decision that founded it (Decision No. 844/QD-TTg/2016), Project 844 aims to create favorable conditions to dramatically grow the national innovative startup ecosystem by 2025 by:

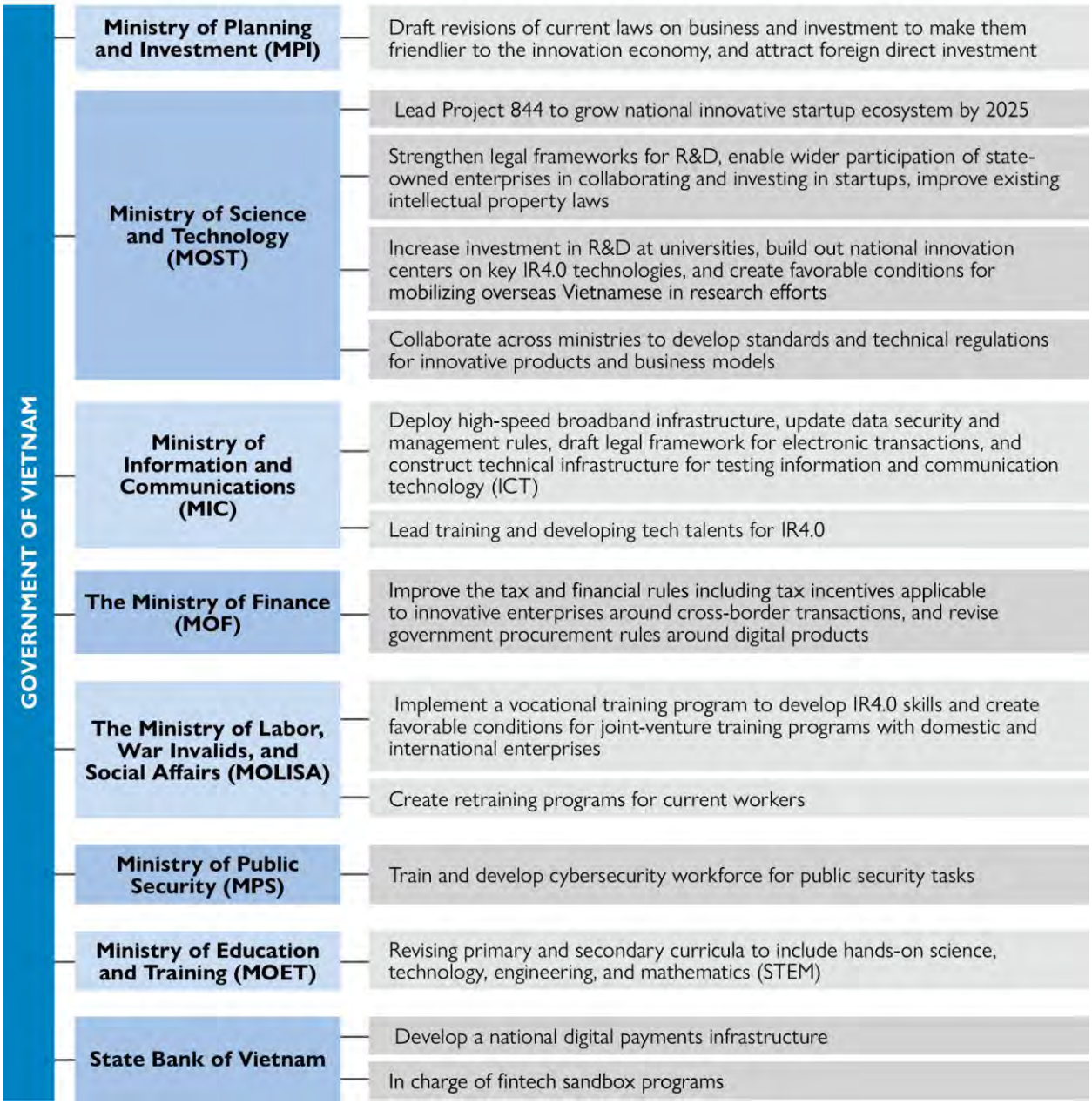
- Developing a national startup portal;
- Establishing startup service centers to provide physical and digital workspace for startups and provide these at concessional rates;
- Renovating office space for incubators, trade promotion organizations, and other support services for startups;
- Funding an annual technology event called TECHFEST;
- Creating infrastructure to assist startups with networking;
- Funding training startup personnel; and
- Drafting new legislation and regulations favorable to the ecosystem.

This initial effort by GVN remains in the early stages of implementation – for example, approval, funding allocation, monitoring of disbursement, and evaluation of project quality are works in progress. While Project 844 is breaking new ground for public-private partnership in the innovation ecosystem, it is somewhat hobbled by government budgeting rules.

Many GVN efforts to boost the digital innovation ecosystem are markedly disconnected from the existing ecosystem. They often focus on provision of office space, labs, and other facilities, but these needs are rarely the most restrictive for the growth of innovative businesses. Areas of focus seem to be chosen based on the input of international consultants on perceived hot growth areas like smart factories, rather than by examining the current capacity and demand, and analyzing what capacity could be most readily built to address existing market needs, or what capacities would be most pertinent to the most likely applications.

At least six separate ministries, the State Bank of Vietnam, 63 provincial governments, and People's Committees from across the country are specifically charged with governing and/or supporting the innovation ecosystem under the GVN IR4.0 plan (see chart). Their responsibilities and legal authorities are often ambiguous, sometimes overlapping, and not answerable to a unified set of key performance indicators. Under Vietnam's civil code legal system, legal normative documents issued by one ministry may not be consistent with those issued by another, and new provisions may conflict with those issued by the same ministry earlier. Furthermore, international treaty obligations often interact with this mix in complex ways (see Legal and Regulatory Enabling Environment, below). Even given the best of intentions, a unified purpose, and a lack of bureaucratic protection of turf, such a fragmentary approach would structurally tend to lead to inefficiencies and missed opportunities. A unified data collection structure such as that outlined in *Opportunities for Programming*, below, would provide a necessary infrastructure for unifying and managing a coordinated GVN innovation effort.

**Government of Vietnam and the Innovation Ecosystem**




All of the ministries interviewed have processes in place to review and recommend changes to legislation and regulation, and reported that these were actively engaged. With the exception of Project 844, however, it was not clear that these processes connected to stakeholders outside government. So while the various ministries are in a unique position to *advocate* for the ecosystem, a lack of connection to other ecosystem stakeholders hampers their effectiveness in that role.

At least one notable event sponsored by GVN, 844's TECHFEST, is effective at *connecting*, *celebrating*, and *convening and facilitating*, and it is worthwhile to build on this success.

### 2.2.4. FUNDERS

For Vietnamese startups, finding funding for early stages of development – ideation, R&D, prototype development and testing, and market validation – is difficult. Bank loans are difficult to obtain for companies without a track record, and venture capital is focused on later-stage startups.

Because funding for innovation is focused in major cities, specifically HCMC, innovators from other areas are at a particular disadvantage in getting started. Documents reviewed in desk research, and consultations with Women's Initiative for Startups and Entrepreneurship (WISE, described below in *CBOs and NGOs*), indicated that women entrepreneurs face particular barriers in accessing finance, due to inherent bias and weaker networks with funders.

#### 2.2.4.1. Banks

Banks are generally reluctant to give the small loans that early-stage startups need, preferring to deal with large enterprises that are seen as low risk and are able to cultivate long-term relationships with the banks. Banks will give loans to traditional SMEs that can put up assets as collateral, but startups have few physical assets. Intellectual property is difficult to secure and transfer, and there is little legal basis for valuing it. For these reasons, banks are not a major source of funding for startups.

#### 2.2.4.2. Venture Capital and Angel Investment

The domestic venture capital scene in Vietnam is nascent, and the majority of deals are small. Domestic venture capital was only legalized in 2018, with the promulgation of Decree 38/2018/ND-CP, and because of restrictions and ambiguities in that law (see *Legal and Regulatory Framework: Investment*, below), there are still few active local funds. A seed-round deal is generally in the range of $200,000, far smaller than, for example, a typical Silicon Valley deal. There is very little Series A and B investment. That said, 2019 was a record year for tech investment in Vietnam, with South Korean, Singaporean, and Japanese investors leading the way.

While angel investment is growing, it is a less significant contributor to overall startup investment in Vietnam than in other innovation ecosystems. The typical angel investor in Vietnam is someone already heavily involved in the ecosystem, a businessperson who is tempted by stories of fantastical growth of startups, or in a few cases, successful former founders. Typically, these investors put $30,000-50,000 each into one to three deals per year, also providing their expertise, mentoring, and networks. Inexperienced investors sometimes run into or create problems by having unrealistic expectations, e.g., requiring an outsized stake in the company, demanding an early cash out, or presuming unrealistic returns.

Because comprehensive government data on the startup sector are weak, investors rely on their networks with other investors and actors in the ecosystem to crowdsource information on what is happening and what opportunities may be promising. Stakeholders from the investment community reported confidence in this information, but because it relies on personal connections, it likely inadvertently excludes groups who for various reasons are not connected to the existing core players.

#### 2.2.4.3. Large Enterprises

Large companies have occasionally served as investors in startups, notably FPT in the form of FPT Ventures. The larger companies generally see those transactions less as potentially advantageous investments and more as the fulfillment of a social responsibility. Because of this dynamic, large companies cannot be considered to be major or consistent funders of startups. They do, of course, in some cases underwrite large internal R&D budgets, though the details of these dealings are often closely

held either for commercial or, in the case of SOEs, national security reasons. Vingroup, through the Vingroup Innovation Foundation, does provide some grants for basic and applied research, particularly in so-called "deep tech" fields like AI, robotics, nanotechnology, and materials science with an eye toward commercialization.

#### 2.2.4.4. Government

Some GVN programs provide funding for private sector innovation, notably the Ministry of Science and Technology's (MOST)'s National Technology Innovation Foundation (NATIF). Legally a non-profit, NATIF is meant to provide no-equity grants and preferential loan guarantees for technology companies to invest in R&D, innovation, and technology transfer. NATIF funds basic and applied research, but its selection criteria focus more on the novelty of the proposed research than in its possible commercial applications.

The National Agency for Technology, Entrepreneurship, and Commercialization Development (NATECD) under MOST provides training, mentorship, incubation/acceleration, and funding to startups, but was mentioned as a driver in commercial R&D by none of the stakeholders interviewed, apart from those from MOST. The National Foundation for Science and Technology Development (NAFOSTED), also under MOST, provides funding for research in a wide variety of areas but seems principally to benefit academia.

Some of the public sector incubator/accelerator programs like Vietnam Silicon Valley also provide cash funding, but their contributions are primarily in-kind in the form of office space and other support services.

In addition to the non-financial support it provides, HCMC's BSSC makes loans available at concessionary rates to HCMC-area startups, effectively as fund manager for the HCMC government. It has extended more than VND 100 billion in credit to more than 1,000 projects to date. Because these loans are made within the context of BSSC's support structure for startups, the default rate is quite low.

#### 2.2.4.5. Donors

There are cases where international donors have provided financial assistance to the Vietnamese private sector to promote innovation. The Vietnam-Finland Innovation Partnership Program Phase II (IPP2) gave some grants to startups, and grants under the Aus4Innovation project (see *Annex A* for more on both) have gone to Vietnamese universities to work toward commercializing their research. But while these efforts have had an outsized impact on the impressions of stakeholders of donors' role in the ecosystem, direct financial support to the private sector by donors is rare and not really a feature of the ecosystem.

The GVN has called on the International Finance Corporation (IFC) to invest in startups, but thus far there seem to be only limited initiatives in that direction, with the IFC pledging to support three agriculture tech firms with $15,000 each through an accelerator program. The Asian Development Bank (ADB) has supported SMEs and women-led SMEs in Vietnam through loans and access to finance. Recently, the U.S. Development Finance Corporation (DFC) expressed its interest in investing in Vietnam; however, these investments are for established sectors, not for startups.

### 2.2.5. RESEARCH AND EDUCATION

With remarkable consistency, stakeholders across the ecosystem cited a lack of creativity, problem-solving skills, and teamwork skills as being central deficits of the Vietnamese workforce. Most believed that universities produce a workforce for digital innovation that is technically credible but lacking in these soft-skill areas. While some also cited cultural factors, there was broad agreement that the education system, starting from primary school, is the best place to look to solve these deficits in soft skills.

#### 2.2.5.1. Primary and Secondary Education System

The Ministry of Education and Training (MOET) is in the process of revising primary and secondary curricula to follow a more learner-centered model than has traditionally been the case, and a new hands-on science, technology, engineering, and mathematics (STEM) curriculum is part of this effort. The curriculum revision effort appears to be serious and based on widely recognized best practices, but it faces a number of obstacles.

The hands-on learner-centered model being promoted by MOET is a departure from the traditional examination-focused model, and as such faces conscious and unconscious resistance from teachers, parents, and students. Many parents react negatively to the unfamiliar curriculum and teaching style, worrying that because their children do not learn the same facts they did when they were in school, the new model of education is less rigorous. The heavy social focus on exams as arbiters of educational success is also difficult to dislodge. Teachers need training and retraining in order to implement the new curricula effectively.

The revised hands-on STEM curriculum encourages teamwork to build projects, conduct experiments, and engage in creative problem-solving, but this effort requires more classroom space to implement than is available in many schools. These projects and experiments require consumable materials that will place pressure on school budgets and administration to keep stocked.

In recent years, private education companies have been providing extracurricular STEM education activities for a fee or, in some cases, with support from a sponsor. The robotics and science clubs and competitions offered by these companies have become popular in some areas, primarily in the larger cities. Some stakeholders allege that these private companies push back on MOET's efforts to provide STEM education through the public schools, a charge the companies deny.

An annual STEM Festival, held at Hanoi University of Science and Technology since 2015, has served to *celebrate* the achievements of students, *convene and facilitate* educators, and *connect* various stakeholders in STEM education.

Female students are underrepresented in STEM subjects in Vietnam and have slightly lower average scores in math and science than their male counterparts. That said, data from the mid-2010s shows that 40.7 percent of graduates with STEM degrees in Vietnam are women, which while well less than half, beats the United States (31.9 percent), Australia (31.0 percent), and South Korea (27.9 percent).

#### 2.2.5.2. University System

With few exceptions, the stakeholders engaged in this analysis rated the technical quality of university graduates highly. (It should be noted that almost all of these informants work in software, so the quality of hardware engineering talent was largely unaddressed.) University stakeholders agreed that students lack soft skills when arriving at university, and many emphasized intensive efforts by the university to

inculcate a sense of inquiry in incoming students. An unwillingness to proffer a potentially unpopular idea was one quality often cited by university educators as being a common problem in incoming students. Many also cited English language proficiency as lacking.

The universities engaged for this analysis said they seek regular formal feedback from industry and graduates on the suitability of the topics taught. Industry stakeholders gave mixed reactions to this process, though some indicated they see improvement. Few people with industry experience take faculty jobs, limiting faculty connection with commercial needs; however, student internships in the private sector are increasingly common.

The increasing pace of technological change is a challenge, making it difficult to keep both pre-service and in-service training current.

#### 2.2.5.3. Research

Research produced by the university system is largely disconnected from commercial considerations. The primary method by which academic research reaches the market is that a faculty member goes outside the university to commercialize it. The vast majority of research funding is provided by the state, with no inherent connection to the market. Patents filed for state-sponsored research are permitted to be licensed only after going through a poorly-defined valuation process that is rarely completed (see *Legal and Regulatory Enabling Environment*, below). This is likely why patents are rarely filed by universities – in the 2006-2016 period, universities applied for 811 patents, of which just 99 were granted.

This breakdown in the commercialization of university IP means that the feedback loop that provides substantial funding for many U.S. universities[1] — cannot develop in Vietnam, inhibiting incentives for keeping research market-oriented. For these incentives to overpower the always-powerful imperative for faculty to publish, a much more efficient process of commercializing university IP will be necessary.

Even when funded by enterprise, research is often not actually tied to the needs of the sponsoring enterprise, whose motivation is instead merely to build the country's capacity to do research. A notable exception is the VinTech Fund, which sponsors commercially relevant university research.

### 2.2.6. CBOS AND NGOS

Several NGOs play important roles in the digital innovation ecosystem, notably:

- *Business Startup Support Center (BSSC)* was launched in January 2011 as a non-profit organization under the HCMC People's Committee and Youth Union to provide support for startups and young entrepreneurs in HCMC. BSSC has developed a wide range of programs and activities. In addition to providing financial and non-financial support for startups and entrepreneurs, BSSC seeks to kindle an entrepreneurial spirit among Vietnamese youth and to promote startups as a valid career path in that segment. BSSC provides *training* on business management and

[1] Research done by faculty and students is patented and licensed to industry, funding more research aimed at securing future licensing arrangements.

entrepreneurship skills for aspiring founders, *connects* through regular networking events, and *connects* and *celebrates* through the nationally known Startup Day and Startup Wheel events.
- *Women's Initiative for Startups and Entrepreneurship (WISE)* is a support network for female entrepreneurs supported by USAID, Australian Aid, the Asian Development Bank, ANDE, and other donors. WISE offers diverse programming to its stakeholders, including an accelerator program, *training* and capacity building, programs to ease access to finance, and *connection* through networking support.
- *Viet AI* is a small NGO working to build the capacity of Vietnamese developers to work with artificial intelligence tools and frameworks. They provide low-cost training and hold events to discuss relevant issues in the field.

These are a few high-profile, high-impact examples of CBOs and NGOs that lead in the innovation ecosystem in Vietnam in specific areas of expertise. In general NGOs and CBOs are not major players in the innovation ecosystem. Though when they are involved, CBOs and NGOs can play a key role in mobilizing social resources to build up the innovation ecosystem in Vietnam through facilitating the participation of different players in the ecosystem.

### 2.2.7. DONORS

International donors have long taken an interest in the Vietnamese digital innovation ecosystem and have at various times served to *train* through capacity building programming, *connect* and *share knowledge* among various actors domestically and internationally, and *advocate* for and in limited cases *fund* innovators. Major non-USAID efforts are catalogued in Annex A.

## 2.3. LEGAL AND REGULATORY ENABLING ENVIRONMENT

From 1954 in the North and 1975 across Vietnam to 1986, Vietnamese business law centered around the operations of state-owned enterprises and cooperatives. The "*Doi Moi*" ("Renovation") reforms of 1986 aimed to shift the country to a "socialist-oriented market economy." Since then, many areas of law, particularly those on investment, have been converging toward values found in Western law systems.

Vietnam's legal framework has shifted rapidly in recent years, with changes to the Civil Code, enterprise law, and investment law, as well as major treaty obligations arising from Vietnam's participation in the World Trade Organization (WTO), Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), and European Union Vietnam Free Trade Agreement (EVFTA). These changes generally have been perceived positively by the business community, but there remain some shortcomings that affect the digital innovation ecosystem.

### 2.3.1. INVESTMENT

Investment in the digital innovation ecosystem, as other areas, is governed by the Investment Law of 2014 and the Enterprise Law of 2014 and their guiding regulations. Additional regulations may apply to investment in certain sectors – for example, investments in fintech businesses may be subject to restrictions in the Law on Credit Organizations (2010), Law on Insurance Businesses (2014), and the Law on Securities (2006).

#### 2.3.1.1. Foreign Investment

Only certain sectors of the Vietnamese economy are required by treaty obligations to be open to foreign businesses, including investors. Restrictions on foreign involvement in other sectors take various forms, including limited ownership ratios, mandatory investment forms, and limited scopes of operations. This "positive approach," in which only specified sectors are open, means that all other sectors are subject to the discretion of diverse state bodies on a case-by-case basis. The uncertainty created by this regime causes confusion and likely dissuades foreign investment. While other economies in the region, like Singapore, also impose restrictions on foreign investment, they do so on the basis of a "negative approach" – i.e., clear restrictions are placed only on specific sectors (banking, finance, media, and real estate in the Singaporean case), providing investors with a more predictable regulatory environment.

Foreign investors are subject to a licensing process to which domestic investors are not. For a "greenfield" investment – that is, investment in a new venture rather than acquisition of an existing concern – a foreign investor making a first investment in Vietnam must present its "investment project" – similar to a business plan – to the provincial Department of Planning and Investment (DPI) or, if inside an industrial zone or similar zones, to the provincial authority of these zones, to obtain an investment registration certificate (IRC) for the project. By law, this process should take from 15 to 45 days, but in practice often takes longer. Licensing authorities have wide autonomy in how they interpret the foreign investment concessions agreed to by treaty, which often leads to wildly inconsistent results.

In the case of mergers and acquisitions, a different process is followed; however, foreign investors are still required to seek approval from licensing authorities, which is not required of Vietnamese investors.

Because of these procedures, prospective foreign investors typically insist that startups be registered in Singapore rather than Vietnam before making a deal. Savvy founders or those with access to good advice will generally make their initial registration in Singapore for this reason. A second likely impact of this process is that investors may steer clear of projects outside the most populous provinces, where an unfamiliar DPI may seem like a greater risk than one that is more used to the process.

Vietnamese individuals are prohibited from taking offshore loans, a restriction that can serve to inhibit angel investment.

#### 2.3.1.2. Venture Capital

Decree 38/2018/ND-CP dated March 11, 2018 (Decree 38) was promulgated specifically to address limitations of the existing legal framework with respect to venture capital. Fewer local venture capital firms have been founded to date than had been hoped for, which may be explained by some limitations imposed by Decree 38:

- Venture capital funds' total investment in a startup cannot exceed 50 percent of the startup's charter capital (paid-up equity) post-investment. Because it is unclear how that 50-percent cap is to be interpreted, some investors feel uncertain on how much they can invest and how much control they can have over their investment. This rule also obviously limits startups' ability to raise capital.
- The decree calls for accounting guidelines for venture capital funds to be issued by the Ministry of Finance, but to date these have not been forthcoming, potentially creating risks for funds.
- The number of investors in a venture capital fund can be no more than 30.

- Foreign investors must open local accounts in order to invest – no direct transfers from overseas are permitted.

By contrast, none of these restrictions exist under Singaporean law.

Decree 38 encourages provincial authorities to use state funds to invest in startups, but no such investment has yet been made, as another existing law on state budgets (Decree 138/2007/ND-CP of August 28, 2007) does not consider startups to be eligible entities for state funding.

#### 2.3.1.3. Crowdfunding

Crowdfunding – seeking relatively small investments from a large number of investors, often through a specialized platform – is increasingly popular in many countries but is not yet accounted for in Vietnamese law. Without specific guidance on the roles and responsibilities of the parties, including the crowdfunding platform, opportunities to grow this means of funding are limited. By contrast, crowdfunding is well-regulated in Singaporean securities law, and used to good effect.

#### 2.3.1.4. Shares and Shareholders' Rights

Vietnamese enterprise law does not give specific guidance on the enforceability of funding documents that are commonly used in other jurisdictions, such as voting agreements and shareholders' agreements. Another common international practice, that of giving different rights to different shareholders of the same class, *is* specifically restricted by Vietnamese law. These variances from common international practice narrow the potential exit options of investors and the flexibility of investors and businesses to create mutually beneficial investment arrangements.

The dissolution process of a solvent company is also lengthy and involves multiple state organs, sometimes taking one or two years to resolve.

### 2.3.2. INITIAL PUBLIC OFFERINGS

As noted above, the Law on Securities requires that companies making an initial public offering be profitable for two years preceding the year of the IPO, a rule that even the most successful startups find difficult. Many stakeholders pointed to this as a barrier to IPO, citing high-profile U.S. startups like Uber and Lyft that have had successful IPOs despite being unprofitable. Other major stock exchanges in the East Asia region, though, have similar or more restrictive rules than Vietnam's.

### 2.3.3. DATA

The Law on Cybersecurity (LoC) dated June 12, 2018 imposed controversial provisions that could have a chilling effect on the digital economy in Vietnam. It is distinct from the Law on Cyber-Information Safety (LoCIS) dated November 19, 2015, but the two laws overlap to some degree.

The most controversial elements of the LoC involve requirements to:

- Verify users' information when they open digital accounts;
- Block or delete users' information within 24 hours of GVN request;
- Store any users' data and personal information locally in Vietnam for a period to be specified in the guiding decree; and
- Maintain a mandatory commercial presence in Vietnam.

These onerous, ambiguous, and, in many cases, impractical requirements of the LoC fall broadly on all "domestic and foreign service providers on telecom networks and on the Internet and other value-added services in cyberspace in Vietnam," making the scope far broader than data security laws in Thailand, Singapore, and most other countries.

Some of these requirements would ostensibly violate Vietnam's international treaty commitments under the WTO and CCTPP. They would certainly have a chilling effect on the availability of digital services from both domestic and international providers. It is unclear how providers could actually perform user validation, but it is likely that it would be more difficult for users in rural and ethnic minority communities, just as is the case with Know Your Customer laws in the financial sector.

Because the LoC still lacks a guiding decree, it is effectively not currently being implemented. None of the stakeholders interviewed cited the LoC as stopping them from doing anything they otherwise wanted to do, but it is certainly possible that investors and entrepreneurs may be holding back until they see how implementation of this law evolves.

### 2.3.4. FINTECH

Financial technology (fintech) – the use of digital tools and platforms to improve and automate the delivery of financial services – is a sector that has seen a lot of activity in Vietnam and is of particular interest from a development perspective. However, the legal framework around financial services is adapted to a traditional banking structure. Know Your Customer (KYC) laws require in-person presentation of documents in order to open financial accounts, effectively negating much of the benefit fintech can bring to rural and other underserved areas. Other financial rules can be subject to ambiguous interpretation, since fintech approaches were not contemplated in the existing rules.

The lack of a clear legal framework prevents startups from offering services and creates ambiguity for fintech companies and investors. This vacuum has created space for peer-to-peer lending apps from China – technically illegal in Vietnam – to mushroom in popularity. There is broad recognition of the positive potential of fintech, but there is a debate as to whether to take a *laissez-faire* approach or to put fintech activities under the strict control of the State Bank of Vietnam.

A draft decree on a regulatory "sandbox" for fintech is currently available for public comment. The sandbox arrangement is meant to create an environment limited in territory and time, in which services can be tested so that regulatory bodies can assess how to create an appropriate permanent framework. The proposed sandbox arrangement is a positive step, but it has some problems:

- Key terms remain vague. In order to qualify, fintech projects must be "feasible and commercially viable" and "contain no risks that may affect the banking/financial sector in particular and the economy in general." This ambiguity leaves room for interpretation that creates unnecessary risk for entrepreneurs and investors.
- The sandbox takes a "positive approach" – allowing only seven specified activities, rather than creating a true sandbox for experimentation that would allow room for truly innovative ideas.
- The sandbox is intended to cover banking activities, excluding other financial applications such as insurance.
- It is not clear what happens to fintech companies that were operating before the decree comes into effect.

By way of comparison, Thailand also has no specific laws on fintech, generally regulating these activities under the existing Payment Systems Act of 2017. The Kingdom also has a regulatory sandbox program, administered by the Securities and Exchange Commission rather than the national bank.

### 2.3.5. INTELLECTUAL PROPERTY

Vietnam's intellectual property regime comes from a combination of domestic laws – primarily the 2005 Law on Intellectual Property and its numerous implementing circulars – and international treaty obligations. Vietnam is a party to the Paris Convention for the Protection of Industrial Property, the Berne Convention for the Protection of Literary and Artistic Works, the Rome Convention, the Patent Cooperation Treaty, and the Madrid Protocol. Many of Vietnam's free-trade agreements, including EVFTA, CPTPP, and numerous bilateral agreements, contain provisions on IP. All told, there are 34 legal instruments and 38 guiding decrees and circulars dealing with IP. Some of these conflict with other areas of law – for example, one of the possible penalties for IP violation is revocation of the violator's enterprise registration certificate, a sanction not actually provided for in the Enterprise Law. A draft law that could drastically change the IP regime is on the docket for review in 2021 and scheduled for issuance in 2022.

It is effectively not possible to patent software in Vietnam, a fact that came up in several stakeholder interviews. Software patents are controversial but are permitted in at least some cases in the United States, Canada, Europe, Australia, Japan, and elsewhere. (Thailand and Indonesia are among the countries that do not permit software patents.) Trademarks eligible for protection in Vietnam are limited to those that have "a visible sign in the form of letters, words, drawings, or images including holograms," excluding trademarks based on sound or scent.

Cutting-edge technology creates new issues that are not addressed in the Vietnamese IP regime, such as ownership of IP created by AI and the status of shape files used for 3D printing and other computer numerical control (CNC) processes, but Vietnam is certainly not alone in dealing with these issues.

Valuation of IP produced with public funds was a particular sore point for some stakeholders interviewed for this analysis, as this is a substantial barrier to licensing university research. Under Article 18.4 of Decree 103/2006/ND-CP, the Ministry of Finance and MOST are charged with coordinating to provide detailed guidance on determining the value of IP produced with state funds, but as yet no such guidance has been issued, leading to inconsistent application of or simple failure to implement the law.

More than the law itself, stakeholders found the IP registration process to be problematic. By law, trademarks should be issued within 12 months of application, but in practice they can take significantly longer. Some stakeholders spoke of patents that took five or more years to register, effectively making them useless. One problem is likely the capacity of the National Office of Intellectual Property, which is said to be overwhelmed with the number of applications and lacking modern equipment and processes.

Three avenues of recourse are open to IP holders in the case of violations: administrative action, civil court action, and criminal court action. Vietnam is unusual in that administrative action is the most commonly used. Administrative penalties are most often levied on counterfeit goods and are relatively light. The rarity of civil and criminal court action may be due to a lack of trust in the judicial and enforcement system in such cases.

### 2.3.6. GOVERNMENT SUPPORT TO THE ECOSYSTEM

The primary laws directly affecting GVN support and subsidies to the innovation ecosystem are Decision 844 (commonly known as Project 844) and the Law on Provision of Assistance to Small and Medium Enterprises (commonly known as the SME Law).

Decision 844 focuses exclusively on support of startups and serves mainly as a policy-guiding document, requiring specific projects developed by GVN and provincial governments for implementation, without a central implementing authority. This dynamic leads to somewhat inconsistent application across the country. The law envisions direct assistance to startups as well as to support services, but in fact only support services are covered through the project's most recent annual workplan (*nhiem vu hang nam)*. Decision 844 sets targets of 2,000 startup projects yielding 600 startups, 100 of which will receive venture capital or capital through mergers and acquisitions (M&A) by 2025. So far, the project reports 500 startups receiving investment of VND 900 billion.

The SME Law was introduced on June 12, 2017, shortly after Decision 844. It provides for general support to SMEs, such as improved access to support capital from banks; tax, accounting, legal, and technology support; access to industrial zones and clusters for production; training; incubators; and more. The SME Law places startups in a legally defined category of "innovative SMEs."

The SME Law creates some tax incentives for SMEs that are not actually reflected in the tax laws. The National Assembly is currently reviewing this issue, but there is no clear timeline on a change. The law provides for interest-rate subsidies on loans for startups and tax- and land-related incentives for incubators, but neither has been implemented through guiding documents.

### 2.3 7. AUTONOMY OF UNIVERSITIES

Prior to 2012, universities were under the direct supervision of relevant ministries. For example, Hanoi University of Law was managed by the Ministry of Justice, and the International Relations Institute was run by the Ministry of Foreign Affairs. The Law on Higher Education of 2012 (as amended in 2018) developed a framework for autonomy for universities in the areas of organization, personnel, finances, property, training, science and technology, international cooperation, and quality assurance. Resolution 77, issued in 2015, gave the new law a guiding document, implementing university autonomy on a pilot basis. Currently 23 universities operate under the umbrella of Resolution 77.

While Resolution 77 and other implementing documents of the Law on Higher Education have produced some positive outcomes, some major issues remain unresolved due to conflicts with clauses of other relevant laws, such as the Law on Bidding on 2013, the Law on Management and Use of Public Property of 2017, the Law on Construction of 2013, and the Law on Public Employees of 2010. These conflicts lead to confusion and inconsistent implementation by various state bodies and the universities themselves. Because Resolution 77 is only a pilot scheme – and has officially ended – its implementation gets low priority with respect to conflicting laws and codes. The inability to fully realize autonomy in financial and personnel matters has the biggest impact on the role of universities in innovation.

Some universities believe their spending plans are still subject to approval by state bodies such as the provincial Departments of Finance. These departments are known to refuse universities' proposals to increase tuition rates on the grounds of outdated regulations. Without sufficient budget to make investments in facilities, equipment, and infrastructure, universities remain dependent on state budgets.

Even given sufficient resources, universities' "autonomous" decisions to invest may well be blocked by conflicts with the Law on Construction or the Law on Bidding.

The Law on Public Employees neutralizes universities' autonomy on personnel to some extent, making it difficult to offer competitive employment packages to attract the highest quality talent.

# 3. OPPORTUNITIES FOR PROGRAMMING

Many of the barriers to creating a more competitive, innovative, responsible, and inclusive digital innovation ecosystem in Vietnam stem from a lack of connection. Government programming meant to promote private sector innovation is disconnected from feedback from the market and the ecosystem at large. University research is disconnected from commercial considerations and applications. Too often, innovative products and services are disconnected from the stakeholders they are meant to serve, and particularly from traditionally underrepresented communities. The entire ecosystem is poorly connected to people living outside the major urban areas of Hanoi, Ho Chi Minh City, and Da Nang.

Intermediate Result 5 of the USAID Digital Strategy encourages the application of human-centered design (HCD) to achieve the IR, and an HCD lens is most useful in evaluating solutions to these disconnections. HCD is simply an approach to problem solving that involves the end users and other stakeholders in all aspects of the scoping, ideation, development, and execution of a solution to a given problem. There are many frameworks for implementing HCD approaches, and neither the USAID Digital Strategy nor this analysis take any view with respect to the use of a given framework. Typically, they involve ideation, prototyping, testing and iteration, and deployment phases, all with the end users and other stakeholders included in the design loop. The best HCD approaches are flexible and intuitive.

From the gaps identified in the above analysis and the approach encouraged by the USAID Digital Strategy, it seems clear that building structures and capacity to implement human-centered design approaches is a natural theme for USAID/Vietnam programming in this area. This would include encouraging HCD thinking in the primary, secondary, and post-secondary education systems; promoting the use of HCD in the private sector, particularly among startups; and promoting HCD thinking and structures to implement HCD approaches in government programming aimed at the digital innovation ecosystem.

## 3.1. RECOMMENDATIONS

### 3.1.1. DIRECT SUPPORT TO GOVERNMENT

**Support to the Ministry of Planning and Investment (MPI) and other GVN stakeholders on legal and regulatory reform**. The issues described in the *Legal and Regulatory Enabling Environment* section above are complex and involve many stakeholders, including multiple GVN and local government stakeholders with interests that potentially oppose one another. While there is broad agreement that reform in these matters is needed – and is, in many cases, already in progress – executing that reform in a way that supports the GVN's ambitious goals, accounts for the needs of the private sector, provides responsible protections for the public, and includes considerations of more vulnerable stakeholders will be a huge challenge.

USAID could serve a valuable facilitation and support role by providing technical, advisory, and material support to the reform process. Convening a broad base of stakeholders to provide transparent feedback, building realistic results frameworks based on that feedback, and mapping proposed legislation and regulation transparently to that feedback could make the process more legible so that a broader array of stakeholders could more actively engage in the process. Providing research support to answer legislative, regulatory, or operational questions or analyze scenarios could provide GVN officials with critical information to base the legal framework on specifics. Supporting and designing domestic and

international study tours for stakeholders could bring them in closer contact with people and issues that are crucial for decision-making and help connect the process to international best practices. And an inclusive approach that includes all GVN stakeholders could provide diverse actors with a basis for common understanding.

Outstanding legal and regulatory issues that warrant particular attention follow:

- ***Investment***
    - Provision of a level playing field for foreign and local investors, eliminating the IRC procedure and drastically streamlining the licensing process.
    - Adoption of a "negative approach" to restrictions on areas for foreign investment – i.e., certain categories of business are restricted to foreign investors, rather than permitting only certain categories.
    - Introduction of a fast-track approach to IRC applications and M&A and other approval requirements for foreign investors.
    - Promulgation of detailed, responsible, and permissive guidance on crowdfunding platforms.
- ***Data***
    - Ideally, implementation of the LoC should be permanently shelved. Failing this step, the law's more impractical obligations, such as authentication of users, should be removed, and other onerous items applied only to a narrower list of affected entities. These actions should be taken – or at least telegraphed – as soon as possible to minimize the chilling effect of uncertainty and potential abuses of power that are possible without an implementing decree.
    - Data privacy protections that follow international best practices would provide security for Vietnamese consumers as well as a framework for Vietnamese companies to build trust in international markets should be drafted and enacted.
- ***Fintech***
    - Accelerated issuance of the Sandbox Decree, including:
        - Removal of subjective, ambiguous criteria for participation.
        - Adoption of a "negative approach" – restricting certain business activities or sectors rather than permitting specific ones.
        - Inclusion of a wider variety of financial activities, giving as open-ended a field for experimentation as possible.
    - Provision of clarification that fintech activities that may not have negative socioeconomic impacts should be subject to partners' agreements under the Civil Code, in order to eliminate ambiguity.
- ***Intellectual property***
    - Engagement of a broad cross-section of innovation ecosystem stakeholders in the IP law revisions currently underway.
    - Provision of international perspectives and exposition of best practices on this complex topic.
- ***Government support to the ecosystem***
    - A reconciliation of Decision 844 and the SME Law could resolve some of the overlap between the two and provide for more consistent implementation.

- ***University autonomy***
    - Issue a permanent decree generalizing the provisions of Resolution 77 and other implementing guidance of the Law on Higher Education, and allowing those provisions to prevail over conflicting laws that cover issues of construction, investment, and personnel.

**Institutional support to the National Innovation Center**. The National Innovation Center (NIC) is MPI's flagship program to support the innovation ecosystem. It has resources and a great deal of ambition, but its agenda is still emerging and is not well connected to the needs of stakeholders. USAID support could provide structure and capacity to help the NIC become a more effective facilitator of private sector innovation. Potential support could include:

- *Building an advisory structure rooted in the ecosystem*. Assembling a diverse advisory board for the NIC and, to the extent legally possible, giving it a role in the Center's governance would put diverse stakeholder perspectives at the heart of the initiative. Board members would represent expertise and experience from across the ecosystem and could be selected to ensure an inclusive range of voices. USAID could engage international expertise on various topics to introduce best practices and ideas from around the world.
- *Developing an HCD-based strategic planning process*. USAID could support a more responsive NIC by providing technical and material support to a NIC strategic planning process that is based on HCD principles, convening diverse stakeholders, and designing feedback mechanisms so that the connection to stakeholders is maintained.
- *Building capacity for leadership and staff*. Providing training and mentoring to leadership and staff of the NIC could provide them with tools to better understand the drivers of the innovation ecosystem, effectively engage with stakeholders, and track and adapt to changes in performance indicators. A cohort of local and international trainers and mentors could be assembled to serve the NIC's future programs.
- *Developing a truly useful data source for the ecosystem*. Reliable data on the innovation ecosystem is difficult to come by. While GVN performance indicators include metrics like number of startups launched and the amount of investment in them, these data are not actually collected across the whole ecosystem. Comprehensive, reliable data would help GVN better understand the impact of its interventions. Investors, entrepreneurs, and other actors in the ecosystem also suffer from the lack of this information. Including gender metrics could enable better management of inclusive support to women in the ecosystem. Collecting these data and putting into place sustainable procedures to ensure continued data integrity is not a trivial task but could be accomplished with USAID support, starting with an inclusive process to identify the key data points of value to all ecosystem stakeholders.
- *Encouraging better, open-access market data*. Building on the data portal infrastructure, collection and open access provision of more granular market data on all economic sectors would be an even larger task but would bring legibility to underserved sectors like agriculture and textiles to make them more accessible to startups, other entrepreneurs, and their investors.

**Launching other government programming in support of the ecosystem**. Harder for MPI to implement on its own, these initiatives could be undertaken in partnership with other GVN entities like Project 844, perhaps using NIC facilities or other collaborative resources:

- *Support for establishment of an international standards facility*. A primary concern for the current generation of startups in Vietnam is the need to appeal to an international market. As with other sectors in the country, the understanding of and ability to work with international standards is a barrier to accessing global markets. The establishment of a facility that would assist entrepreneurs with understanding and certifying products, processes, and services against International Organization for Standardization (ISO) and other standards could provide an invaluable tool in accessing international markets.
- *Supporting a government interface with private sector innovators.* A service window for various GVN departments to access innovators, and vice versa, would help create important connections useful to both sides. This facility could provide clarity on government procurement procedures for startups and other innovators and advocate with GVN departments for a more expansive pool of potential suppliers. Programs similar to the U.S. National Science Foundation's i-Corps and the Small Business Administration's Small Business Innovation Research (SBIR) could provide substantial value to the GVN and the innovation ecosystem alike. Incentives for women- or minority-owned businesses, similar to those provided in U.S. Government programs, could be included.

**Support to Intellectual Property Enforcement**. Capacity building for courts and enforcement agencies on IP issues could be undertaken, perhaps in cooperation with other U.S. Government entities with an interest in the area. This work could be done with freestanding programming or integrated as a goal of the IP Support Center (below), or both.

### 3.1.2. SUPPORT TO INNOVATORS

**Public-Private Incubator/Accelerator Partnership.** Many government programs billed as incubators or accelerators provide office space for free or at concessionary rates but provide little else. These programs can be found around the country, and in many underserved areas they are the only "incubator/accelerator" programs available.

Connecting these programs with a strong private or non-profit incubator/accelerator partner could yield benefits in both directions. By leveraging the facilities of the public program with the program content and experience of the private program, potentially with additional subject matter expertise, the capacity of the public incubator/accelerator to run a more effective program would be enhanced. The private program, presumably based in one of the major cities, would gain experience in working in unfamiliar sectors, value chains, and contexts, and these connections could bring lasting benefits. Programming could target specific, promising, underserved value chains like agriculture. Ideally, innovator cohorts from urban areas could be embedded with local innovators to foster the growth of additional networks, and targets for participation of women founders could be included.

**Building connections between innovators and SMEs**. Many startups' business models revolve around platforms for digital transformation of SMEs, but few founders come from a traditional SME background or have a deep understanding of the context of the businesses whose problems they aim to solve. SMEs, in turn, may have an incomplete or incorrect understanding of how platforms work or the benefits and risks they may entail.

USAID could build connective tissue between these two actors by supporting programming to connect them with facilitators who have experience in both areas. Subject matter experts in sectors of interest could help innovators better understand prospective partners' market contexts, which are often

complex. Capacity building could improve SME awareness of the issues around digital transformation. Programming that explains an HCD approach would lead both to a better product and increased capacity to adopt these approaches in the future.

Business associations would seem to be natural partners for such programming. Women or other specific underserved SME sectors or groups of entrepreneurs could be targeted. Alternatively, programming could be general.

**Capacity building for women and other vulnerable entrepreneurs on digital transformation issues**. SMEs often do not have the awareness of digital issues or platform business models that would enable them to engage as full partners with the startups trying to transform their industries. This obstacle is especially problematic for women, with work/life balance issues that put them at a further disadvantage; for ethnic minorities, who face language and cultural barriers; and for other vulnerable populations. Capacity building for these groups of entrepreneurs can help put them on a secure footing in a platform-driven digital transformation.

**Support to a fintech industry association.** Vietnamese fintech companies have formed an informal industry association, referred to as the "Fintech Club," that gives them a venue to advocate for common interests. Because fintech can have a transformative impact on marginalized communities with little access to traditional financial services, USAID might consider technical and other support to this association to build its capacity to advocate, develop best practices, integrate gender sensitivity into business models and implementation, and serve as a platform for future programming.

**A technical platform to enable reach to underserved communities**. Several interviewed stakeholders noted that some underserved communities are difficult to reach because they have no access to Internet services. Rural areas have limited bandwidth, the poor are less likely to have access to a smartphone, and literacy can be an issue – as can Vietnamese language ability for ethnic minorities, some of whose languages are not well-supported by Unicode.

An interactive voice response (IVR) system could enable access to these underserved communities if entrepreneurs could access the system through an application programming interface (API). Users could interact with fintech and other services without needing an Internet connection or smartphone, or being literate in Vietnamese. Such a system would also be very useful for a variety of development programming unrelated to innovation.

Very good open source frameworks for IVR exist, and development of an instance with support for Vietnamese and ethnic minority languages would not be technically difficult. Local mobile network operators (MNOs) would need to be persuaded to make the system available on their networks. Fees for API users could be imposed to ensure continued maintenance and sustainability of the system.

Potential local partners to own this system could include MNOs, entrepreneurs through public-private partnership, business associations, or NGOs that may wish to use the system for development objectives but maintain it with fees from private sector customers.

**Competitions to promote innovations in under addressed areas**. Some areas of potential innovation may be of interest to USAID (e.g., e-government tools or smart cities); however, because of gaps in GVN procurement mechanisms or other reasons, they attract few startups. Competitions that

attract startups to these issues could allow them to create attractive solutions and build the case for startup involvement in those areas.

### 3.1.3. SUPPORT TO EDUCATION

The MOET is revising the primary and secondary school curriculum to be more learner-centered and to include an explicit hands-on STEM component. Curriculum change is always difficult but would be the best way to address the creative problem-solving, teamwork, and other soft-skill gaps in the workforce that stakeholders identified. USAID could provide support to this process directly, indirectly, or both.

**Direct support to curriculum change.** This change will require extensive teacher training and retraining to adapt to the learner-centered model. Development of teacher-training materials and retraining of the current teacher corps could require significant resources but would be a one-time cost with ongoing benefits to workforce development.

Hands-on STEM exercises require consumable materials. While the materials needed for the MOET curriculum are not expensive, this will be a permanent ongoing need. The group work and hands-on exercises also require more space than is available at most current school facilities. While fulfilling these needs directly would be difficult to justify, there may be value in pilot programs that demonstrate how the curriculum could be successfully accommodated, giving GVN the tools to plan its own investments.

**Support to ancillary activities**. Because of the cultural and historical centrality of exams in Vietnamese education, the shift to a hands-on model of learning faces some resistance from teachers, parents, and to some extent, students. Supporting the expansion of organizations and events that provide opportunities to celebrate student achievements in STEM, and offering the prospect of alternative credentialing of hands-on work, are two ways to support this shift. Awards for outstanding work in these areas, and media amplification of those stories, could help change the cultural value ascribed to academic performance outside of examinations.

The annual STEM Festival, held at Hanoi University of Science and Technology, is one such event, providing also the opportunity for educators and government officials to network on topics of STEM education. The Vietnam instance of the International Science and Engineering Festival is another. USAID/Cambodia supported bringing the Technovation program to that country, specifically targeting technology achievement for girls, with great success for a limited investment.

In the United States and elsewhere, Maker Faire and similar events provide an opportunity for enthusiasts of all ages to demonstrate compelling things they have made. They have provided a cultural touchstone for creating excitement around intrinsically motivated problem solving, showing that such programming need not be restricted to schoolchildren.

**Introduction of HCD training in the university system.** It will be decades before the pupils trained through the new MOET curriculum enter the workforce. In the meantime, training university students in human-centered design principles would create a workforce better equipped and more likely to apply them. Support to the development of curriculum, ideally with real-world applications, could improve graduates' ability to responsively solve problems.

**Support to U.S.-Vietnam university partnerships**. Pairing U.S. higher education institutions with Vietnamese ones could provide valuable perspective on international practices in advanced training. Deans and administrators could provide models for connecting curriculum to commercial needs and

keeping up with the pace of technological changes. Faculty-to-faculty interaction could introduce new ideas for inculcating creative problem-solving among students.

**Introduction of ethics in training around AI and responsible data use**. AI is perhaps the hottest single topic in the digital innovation ecosystem right now, with a great deal of training happening in the university system and elsewhere; however, little attention is paid to the many ethical issues with applied AI. Making sure that practitioners understand the ethical risks around AI is critical to ensuring a responsible digital innovation ecosystem if these technologies have their anticipated impact. Supporting curriculum development in universities and with other partners like the NGO Viet AI would help. Similarly, issues around responsible use of data are under-addressed, and strengthening education in this area would make for a more responsible ecosystem.

**Improvement of cybersecurity training**. Cybersecurity will be an ongoing critical need in maintaining a responsible digital innovation ecosystem. Support to curriculum development and perhaps centers of excellence in this area would squarely align with the USAID Digital Strategy.

### 3.1.4. SUPPORT TO RESEARCH

**An IP support center.** Licensing for commercial use of IP produced by research is a major source of funds for many international universities and creates incentives for connecting research areas and facilities to market needs, a self-reinforcing cycle. Because of Vietnam's weak IP regime and simultaneously restrictive and ambiguous requirements around valuing IP created with state funds, this connection is broken in Vietnam.

Supporting the creation of an IP support center affiliated with one or more universities but incorporated as a separate entity, could provide a solution. The center could sponsor research on topics of particular interest to industry, seeking industry contributions to do so, and could register IP on that research – either domestically or internationally – in the name of the support center. Proceeds from licensing that IP could go to the university producing the research, with a percentage withheld to support the center. This approach would give corporations and other interested parties a place to go to sponsor targeted research with commercial application, with the knowledge that the produced assets could be protected and properly licensed, while also building a longer-term feedback loop for university-driven research to remain commercially relevant.

The center could also provide guidance and support to innovators on IP issues, promote awareness of IP rules and their importance, advocate for better IP rules, and build the capacity of legal and other advocates to work in this area.

**Twinning**. Aus4Innovation's partnership grants for research (see Annex A), pairing Vietnamese and Australian researchers in selected areas and with an eye toward commercialization, have been well-received. There is ample room to replicate this model in research areas of specific concern to USAID or of central relevance to GVN's IR4.0 strategy.

# ANNEX A: RELEVANT DONOR PROJECTS

Australian Aid

**Aus4Innovation (2018-2022)** is an AUD 11 million program implemented by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) to strengthen Vietnam's innovation system to prepare it to meet its IR4.0 goals. The project has four workstreams:

- ***Digital foresight***. Working with MOST, CSIRO has thus far produced two reports – one analyzing the state of Vietnam's digital economy (*Vietnam Today*) and the other examining the trends affecting the development of Vietnam's digital economy through 2045 (*Vietnam's Future Digital Economy: Towards 2030 and 2045*).
- ***Innovation partnership grants***. Currently in the awards process for its second of two rounds of competitive grants, Aus4Innovation is funding technologies or activities with an existing proof-of-concept, an articulated path to impact, and an existing relationship with a Vietnamese or Australian entity. Under the first round, Aus4Innovation funded:
    - *University of Technology Sydney (UTS)* and *The Vietnamese National University of Engineering and Technology (VNU-UET),* to transfer a model of commercializing university research and demonstrate its application in water treatment and monitoring systems using IR4.0 technologies.
    - Australia's *University of the Sunshine Coast (USC)* and Vietnam's *Research Institute for Aquaculture Number Three (RIA3)* to produce a hormone to boost the productivity of sea cucumber farming.
    - *The University of Sydney* and Vietnam's *National Health Strategy and Policy Institute* to introduce a methodology to transform breast cancer diagnostic efficacy.
- ***Science Commercialization Partnerships***. Working specifically in the agriculture and food sector, Aus4Innovation aims to build more robust pathways to connect research to markets, build the capacity to commercialize research, and scale these connections for sustainability and impact. Activities in this workstream include:
    - *A training-of-trainers program* on commercialization issues for staff of technology transfer offices in three partner universities covering areas like IP considerations, business model development, market analysis, and gender and social inclusion.
    - *Helping to develop a ten-year commercialization strategy* for the Vietnam Academy of Science and Technology.
    - *Helping to develop a national commercialization guide* for agriculture and food technology.
    - *Seven technology transfer pilots* for projects like zero-waste pig farming and nano-fertilizers for greener farming.
    - *A regional innovation cluster in the Central Highlands* exploring opportunities for innovation in coffee, tea, and pepper.
    - *An agri-food innovation club* connecting agriculture and food SMEs with researchers to foster innovation.
    - *An industry-focused graduate program* to tailor education to current and emerging food processing industry needs.
    - *An intermediary innovation pilot* to explore how intermediary food and agriculture companies can better collaborate with public sector research organizations.
- ***Policy Exchange.*** Aus4Innovation runs policy exchange activities in collaboration with MOST to address challenges related to the implementation of GVN's innovation agenda. The three activities undertaken to date are:

- A collaboration with MOST to develop economic models to assess the impacts of technology creation and adoption efforts on productivity and GDP growth in Vietnam.
- Support to the Vietnam Institute for Science, Technology and Innovation (VISTI) in developing an Innovation Center using best practice models and policies from Australia.
- Bringing together an expert team to advise the GVN on effective inclusion of innovation in the national science and technology strategy development process.

**The Mekong Business Initiative (MBI) (2015-2019)** was a development partnership between the Asian Development Bank and Australian Aid to accelerate growth in Cambodia, Laos, Myanmar, and Vietnam based on the premise that sustainable business growth in the Mekong region will require innovation, flexibility, and a willingness to take risks. MBI's programming in Vietnam included:

- ***The Women's Initiative for Startup and Entrepreneurship (WISE)*** described above in *Incubators and Accelerators.*
- Assistance to the public-private partnership to found the ***Saigon Innovation Hub***, a business support facility.
- ***Entrepreneur and Venture Support Programs in Ho Chi Minh City, Da Nang, and Phnom Penh***, a 2016 report describing young companies and their founding entrepreneurs in those three cities, and an assessment of the venture support programs for their growth; ***Fintech Vietnam Ecosystem Report 2017***, a publication describing the Fintech ecosystem; and ***Vietnam Entrepreneurial Ecosystem Assessment***, a 2019 report on the entrepreneurial ecosystem.

Asian Development Bank (ADB)

**The Second Secondary Education Sector Development Program (SESDP II) (2016-2023)** is a $100-million loan from the ADB with a $7-million contribution from the GVN to support the development of innovative curriculum and pedagogical models for education. SESDP II is meant to support 440 schools nationwide in implementing the new models, including training 30,000 teachers. STEM subjects are a particular focus of the project.

**University of Science and Technology of Hanoi Development (New Model University) Project (2011-present)** is a $190-million loan package for planning, constructing, and equipping a new university on the grounds of Hoa Lac High Tech Park. The project has experienced numerous delays, and construction is expected to begin in 2021.

Finnish Ministry of Foreign Affairs

**The Vietnam-Finland Innovation Partnership Program Phase II (IPP2) (2014-2018)** was an €11 million program – of which GVN contributed 10 percent – to enable the development of an ecosystem to support innovative companies, promote collaboration with Finnish and other international partners, and contribute to innovation-led economic development. The program's three workstreams were:

- *Institutional development and capacity building*. IPP2 developed an open-source curriculum on innovation and entrepreneurship and trained more than 150 instructors from 50 universities on its delivery.
- *Partnerships for innovation* focused on creating linkages between Finnish companies and market opportunities in Vietnam.

- *Innovation funding*. IPP2 offered support to Vietnamese companies through coaching, networking support, and competitive grants.

### The World Bank

**The Vietnam Inclusive Innovation Project (2013-2017)** sought to strengthen Vietnam's capacity to undertake inclusive innovation by financing the development, adaptation, adoption, scaling up, and commercialization of inclusive technologies, as well as building the innovation capacity of SMEs and R&D organizations. Original funding in the amount of $55 million was reduced to $6.4 million, and the project was prematurely cancelled. Less than $1.4 million was actually disbursed. The Bank rated the project's outcome as "unsatisfactory," citing:

> *a) lack of enforcement by MPI in implementing institutional and legal agreements; b) implementation capacity constraints at the level of MPI and the technical level of NAFOSTED within the Ministry of Science and Technology (MoST) the main implementing agency for the matching grants components of the project; and c) weak inter-ministerial collaboration between MPI and MoST and other implementing agencies.*

The Bank nevertheless concluded in its final assessment report that the goals of the project remained sound.

### The British Council

**Applying the U.K. STEM Approach in Vietnam (2016-2017)** was a pilot project to build the capacity of teachers and school leaders in 15 schools to teach STEM topics, develop and revise relevant textbooks and teaching materials, and design materials for extracurricular STEM education like science clubs and competitions, and camps.

### United Nations Development Programme

**UNDP Accelerator Lab Vietnam** is part of a network of 60 such labs around the world that started in early 2019. These labs aim to bring a systems-thinking approach to UNDP's development work. The Vietnam lab is fairly young but is currently engaged in some work with Da Nang's Department of Natural Resources and Environment on an experimental approach to waste sorting.