



DIGITAL JOBS IN BHUTAN

Future Skilling and Demand Creation

August 2021

An initiative undertaken by the TVET Reform Initiative, Prime Minister's Office in partnership with UNDP Bhutan with fund support from the Government of Japan.

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From
the People of Japan



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2021



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ACRONYMS AND ABBREVIATIONS

AI	Artificial Intelligence
APAC	Asia Pacific
ASCIO	Asian Oceanian Computing Industry Organisation
BCCI	Bhutan Chamber of Commerce and Industries
BGT	Burning Glass Technologies
BICTTA	Bhutan ICT and Training Association
BITE	Bhutan Innovation and Technical Education
BPO	Business Process Outsourcing
CEO	Chief Executive Officer
CSO	Civil Society Organisation
DDD	Digital Divide Data
DHI	Druk Holdings and Investment
DIKSHA	Digital Infrastructure for Knowledge Sharing
ECCE	Early Childhood Care and Education
EHF	Edmund Hillary Fellowship
EMEA	Europe Middle East and Africa
ESL	English as a Second Language
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GNH	Gross National Happiness
GNHC	Gross National Happiness Commission
ICT	Information and Communication Technology
IEIT	International Entrepreneur Initiative Taiwan
ISSP	Impact Sourcing Service Providers
IT	Information Technology
ITO	Information Technology Outsourcing
M&E	Monitoring and Evaluation
MIT	Massachusetts Institute of Technology
MoE	Ministry of Education
MoIC	Ministry of Information and Communication
MoLHR	Ministry of Labour and Human Resources
MOOC	Massive Open Online Courses
MVP	Minimum Viable Product
Q&A	Questions and Answers
ROI	Return on Investment
RUB	Royal University of Bhutan
S4YE	Solutions for Youth Employment
TVET	Technical and Vocation Education Training
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme

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EXECUTIVE SUMMARY

“I want you to know that as King my passion will always be to nurture our youth, day after day, year after year – for it is their skills, their labour and commitment to the country that will build our future. There is no other path – no other tool – for Bhutan’s future success”

- His Majesty the King Jigme Khesar Namgyel Wangchuck

Imagine a Bhutan that ensures 100% employment for an entire generation of young people with future-oriented skills that are transferable, relevant and meaningful. Imagine that these young people are matched to diverse, equitable, and digitally empowered job pathways, enabling them to thrive and advancing a high-income flourishing, sustainable economy for all people in Bhutan. What if we started with such a North Star? This is the question that guides this report, which will help inform and contribute to Bhutan’s broader future skilling strategy.

This report consists of two parts: Part A which focuses on Demand Creation and Part B which focuses on Future Skilling. With an awareness that supply-side approaches on skilling must be matched to the demand, the report begins by delving deeply into job and demand creation as a starting point for the conversation on future skills. Given its size, Bhutan lacks economies of scale and the operational efficiencies to out-compete neighbouring Asian countries in attracting global talent, investors, and companies that can contribute to its innovation and future of work ecosystem. Therefore, Bhutan needs to be highly strategic in leveraging its globally recognized brand and tourism industry as an entry point but build a nuanced, private sector-led, and professional follow through to turn that initial connection into deep FDI and skilling engagement.

Part A lays out both the local and global evidence that has led to these insights. It also offers various strategies on how to generate jobs in the ICT sectors as well as across other industries, both for the short-term as well as the long-term. Second part of the report delves into future skilling and the future of work. Part B brings attention to the rising foundational skills of the digital economy as well as the future skilling system-wide challenges that are specific to Bhutan. It then explores a variety of different approaches that can match demand-to-supply and advance improvements in future skilling across the various systems, stakeholders, and providers that are already in place. The report concludes by sharing research insights on global innovation labs and offers a strategy for future skilling specific to the BITE Hub ¹as an anchor for TVET system reform.

1 <http://www.bbs.bt/news/?p=144784>

1. BACKGROUND

“We can design our own future within the realm of our own practicality and we can pursue that future by means we have to determine for ourselves, picking and choosing the policies and resources we need to create the society we want. Either we will surrender our future to technology or we will consciously determine what technology we need for what purposes, and actively pursue it.”

- Professor Mark Mancall, former Director of the Royal Education Council

1.1 The Big Picture: Envisioning Bhutan’s North Star in the Future of Work

Bhutan’s strategy for future skilling should be rooted in the deep aspiration of His Majesty the King of Bhutan for the youths of Bhutan towards building a resilient and dynamic economy. As technological and global trends reshape societies for better and for worse, we have to start with the end in mind. These forces are powerful and inevitable, so how might Bhutan envision its place among them without being lost or subsumed?

For centuries, the North Star, the night sky’s brightest light, has been used for the purposes of navigation. People have looked to its guiding luminosity in the sky to calibrate and ensure they are travelling in the right direction. In the work of positioning Bhutan for the ever-changing future, clarifying this North Star is critical. What might that North Star be? ***Imagine a Bhutan that provides 100% employment to an entire generation of young people with future skills that are transferable, relevant and meaningful, with diverse, equitable, digitally empowered job pathways to thrive - advancing a high-income flourishing, sustainable economy for all people.*** It begs several questions: What values and principles should fundamentally guide a strategy that could lead to such a future? What would need to be in place for Bhutan to not only improve incomes but also increase personal agency and aspiration? How might Bhutan not only consider the number of jobs and those employed at this critical moment but also forge a wellbeing economy that promotes collective quality of life and the thriving of future generations?

In envisioning that North Star, this strategy is informed by global trends and guided by 8 key principles drawn from the National Task Force, TVET Curriculum Framework, and other local stakeholders addressing future of work and skilling in Bhutan. Given the tremendous challenges and opportunities ahead, “good work” and future skilling should strive to be:

- **Dynamic:** innovating to meet this moment and an increasingly digital future
- **Prosperous:** improving collective wealth, well-being, and quality of life
- **Inclusive:** ensuring equitable, safe, and diverse opportunities for all
- **Sustainable:** advancing a sustainable economy for future generations
- **Rooted:** maintaining mindfulness and authenticity to Bhutan’s culture and values
- **Interdependent:** collaborating closely within Bhutan and with the world
- **Growing:** strengthening pathways to quality jobs and professional development
- **Purposeful:** fulfilling the potential, agency, and aspirations of the people



Figure 1: Guiding Principles

1.2 The Context: Youth Unemployment, COVID-19 and TVET System Reform

In 2019, Bhutan's overall unemployment rate was 2.7% and the youth unemployment rate was 11.9%. Youth unemployment has, however, predated and been exacerbated by the on-going COVID-19 pandemic. As of July 2020, more than 13,000 people have lost jobs and nearly 30,000 Bhutanese are seeking jobs. Bhutan's GDP is expected to contract by 2.1% this year. This research reiterates the challenges outlined by the Royal Government of Bhutan, which are summarised below:

- As a largely rural and agrarian economy, 54% percent of Bhutan's employment is concentrated in (largely informal) small-scale and subsistence agriculture, livestock, and forestry. As a result, the ratio of informal employment to total employment is high.
- As an urbanizing economy, Bhutan struggles to integrate rural-to-urban migrants into urban labour markets and sees much higher unemployment rates in urban as compared to rural areas. Unemployed youth are also concentrated in urban areas as opposed to rural areas. The growth in the urban population is also exerting pressure on public services in urban areas, with potential for increased vulnerability among urban populations.
- As a resource-rich country, Bhutan struggles to translate its capital-intensive resource wealth into the creation of a sufficient number of jobs.
- Due to its small size and remote, landlocked location; diversification of the economy and the export base are more difficult to achieve in Bhutan than in some other countries. The small size of the population and market also means Bhutan is unable to benefit from economies of scale.

There is an immediate opportunity with remote learning and work, but digital transformation both now and in the future can increase inequities across gender, rural-urban, income, and educational divides. Addressing the urgent current unemployment challenge and future economic revitalization therefore requires a principled-centered system change approach, meaning not only shifting policies, practices, and resource flows but also relationships and mental models beneath the surface. This strategy attempts to incorporate a system lens looking at Bhutan's stakeholder ecosystem in the future of work and skilling.

DIGITAL JOBS IN BHUTAN

Bhutan is a small country and there are already many existing programs and initiatives. It is believed that the TVET Reform Office is well positioned to convene actors to transform the conversation on future skilling.

1.3 Overview: Towards a Demand Creation and Future Skilling Strategy

Through remote interviews, data collection and literature, the views of a broad cross-section of relevant stakeholders including the TVET Reform Initiative, Prime Minister's Office, GNHC, MoLHR, MoE, MoIC, MoEA, Thimphu TechPark, TCB, DHI InnoTech, Code for Bhutan, FDI investors, CSOs, private sector stakeholders, UNDP, and more have been drawn upon. Through the GNHC-TVET Reform Office-UNDP partnership specifically, valuable systems data and youth personas ethnography collected by the UNDP Accelerator Lab team were also accessed to inform this strategy. The report structure focusing on demand creation is intentional given the understanding that supply-side approaches on skilling do not work if they are not first driven and matched by demand-side strategies; therefore, the report outlines demand creation and then consider the future skilling initiatives based on the assessment of local, regional, and global demand. The BITE Hub and international linkages will be key systems change fulcrums for innovative future skilling and demand creation approaches in TVET reform.

In March 2021, the TVET Reform Office and UNDP Accelerator Lab hosted two co-design workshops on future skilling and demand creation. In the demand creation workshop, the stakeholders participated in a lively discussion on the opportunities, challenges, and possibilities for strategic tourism, FDI, youth employment, and the digital economy in Bhutan. In the future skilling workshop, participants explored future skilling possibilities together to help equip young people to succeed in a fast-changing world and advance a digital economy for Bhutan. The learnings and insights from these workshops have been integrated into the findings of this report as well as inform the strategic guidance offered.

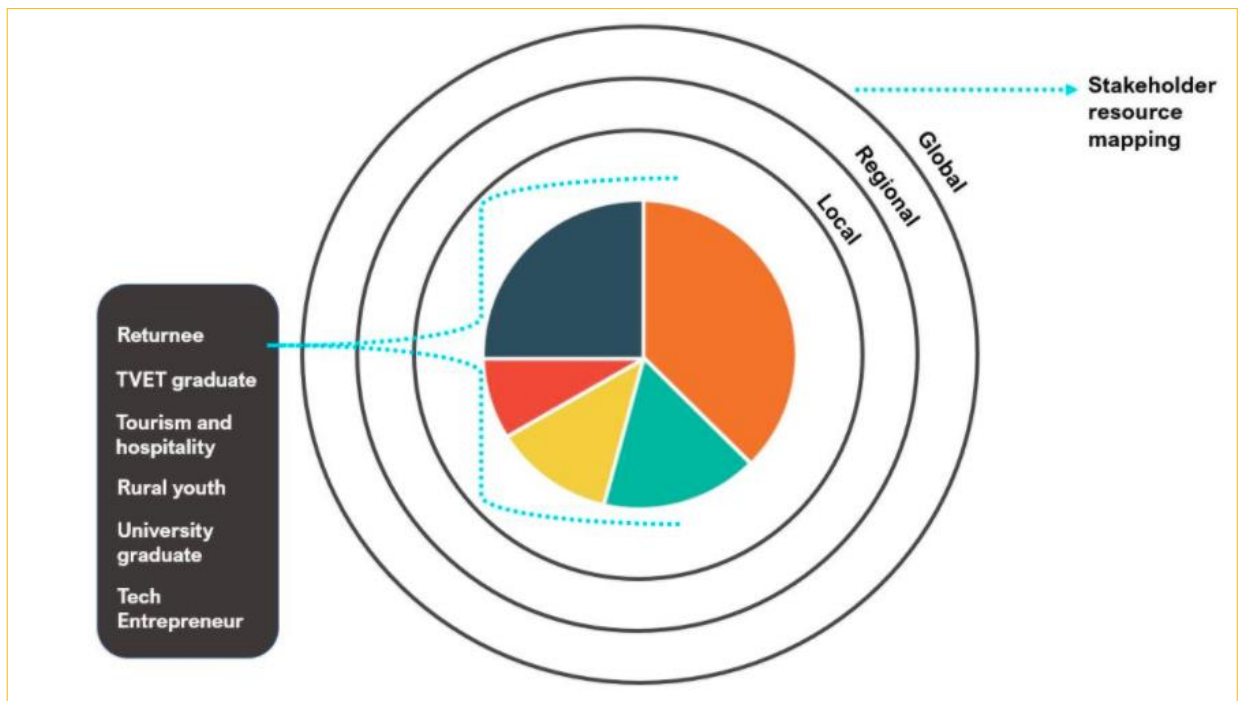


Figure 2: Mapping the Approach: Local, Regional, and Global

PART A: DEMAND CREATION

A 1. DEMAND CREATION AND EMPLOYMENT

Key Insight	Main Recommendation
Assessing global, digital and future trends while finding Bhutan’s place among them	
In the global BPO/ITO sector, Bhutan will not outcompete leading countries like India and China on the basis of operational efficiency, cost and economies of scale. Big Tech is also not a great fit for Bhutan due to similar reasons.	Prioritize ICT-related job creation based on the highest return-on-investment: scale up what has already worked by recruiting small- and medium-sized foreign BPO/ITO/ISSP companies such as those employing over 800 youth at the TechPark.
Leveraging Brand Bhutan and strategic tourism to promote Bhutan’s ICT sector an attractive FDI destination and recruit global talent to build capacity of a local innovation ecosystem	
While the updated FDI policy improves ease-of-doing-business in Bhutan, there still remains limited global awareness and targeted marketing of Bhutan’s tech-specific FDI opportunities to ICT industry associations, tech entrepreneur associations, and other relevant global platforms.	<p>Launch “Tech meets Happiness” investment summit, learning trips, and global network to accelerate FDI in the ICT sector.</p> <p>Pilot a Bhutan Digital Nomads Fellowship program to attract global remote-working talent and foster local talent in future skilling.</p>
Several of the FDI companies currently at Thimphu TechPark were initially connected to Bhutan through the former Bhutan ICT and Training Association (BICTTA).	Enable Bhutan’s ICT industry private sector stakeholders (BCCI, DHI, Google Developers Group, Global Shapers, etc.) to lead and integrate across demand creation initiatives
A thriving “future of work” ecosystem requires long-term local capacity, institutional knowledge, and Bhutanese-driven innovation that intersects with other local sectors, industries, and stakeholders.	Expand the industry of home-grown BPO/ ITO/frontier technology companies long-term through increased undergraduate and graduate scholarship pathways to top global universities and global tech jobs.
Transformation in the broader FDI and local innovation regime	
<ul style="list-style-type: none"> Align “future of work” demand creation with the broader economic development (including FDI) strategy of the nation Facilitate a mindset shift in policymaking from “regulate first” to “innovate first” in new industries pertaining to the “future of work” Streamline the approval process and create a single window for government interface: a digital FDI one-stop-shop that makes a clear ICT sector investment case Offer “return and innovation” incentives for Bhutanese talent who study/work abroad Improve FDI knowledge management systems through contact documentation, etc. Continue to address structural issues such as streamlined immigration and visa processes, increased quality of bandwidth through a national fiber optic network, etc. Domestic demand creation efforts in high-potential adjacent Bhutanese industries that intersect with the future of work including regional ESL, agtech, e-commerce, etc. 	

A 1.1 Global, Digital and Future Trends: Sensing the Field

According to the World Bank’s Solutions for Youth Employment (S4YE) initiative, almost two-thirds of youth employment programs fail to have any impact on youth employment due to the lack of demand-side integration with companies to ensure that enough good quality jobs are available or being created in the first place. We use S4YE’s framework on “Drivers of Demand for Digital Jobs” to examine many of the potential sources of jobs made possible by digital and frontier technologies. These jobs can be in industries dependent or directly focused on ICT as well as adjacent to and enhanced by ICT.

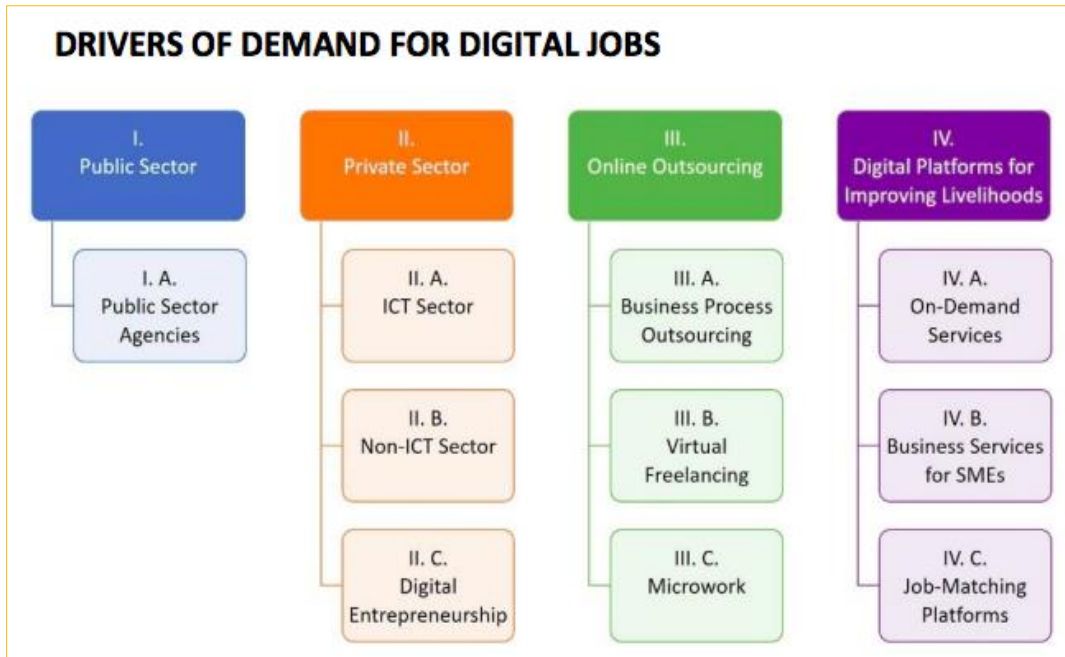


Figure 3: Drivers of Demand for Digital Jobs

Since current employment in Bhutan is limited for drivers that are not within the Business Process Outsourcing category, we are first zooming in on ICT-dependent and ICT-intensive jobs connected to global and regional external demand beyond Bhutan through outsourcing. We examined the outsourcing trends that are driving the digital economy of the future. Outsourcing may be thought of as contracting various business functions of a company to a third party outside of the organization. Outsourcing may be grouped into 2 main categories, Business Process Outsourcing (BPO) and Information Technology Outsourcing (ITO). BPO commonly includes customer service, accounting, payroll, human resource management, and other business functions while ITO mainly encompasses services related to IT.

BPO and ITO have proven to be steady growth markets servicing 3 main regions: America, Europe and APAC (Asia-Pacific). In 2019, the market size of BPO was 92.5 billion US\$ with an 8% growth from 2018. Information technology outsourcing constitutes 66.5 billion US\$ while business process outsourcing constitutes 26 billion US\$. The revenue for global outsourcing industry is the highest in the US region, followed by EMEA (Europe, Middle East, and Africa) and increasingly Asia Pacific at 17.5 billion US\$ in 2019.

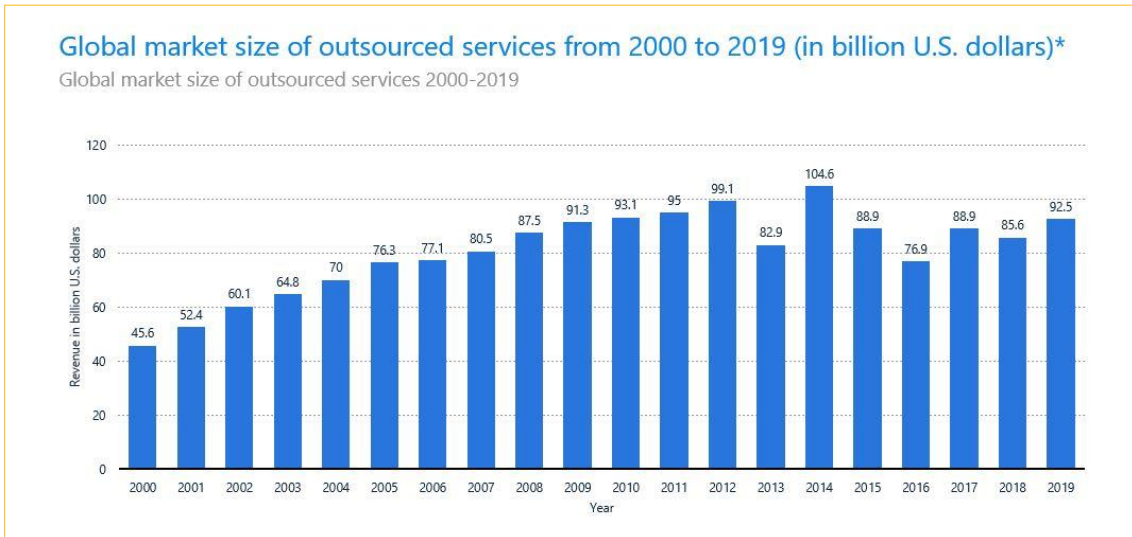


Figure 4: Global Market Size of Outsourced Services

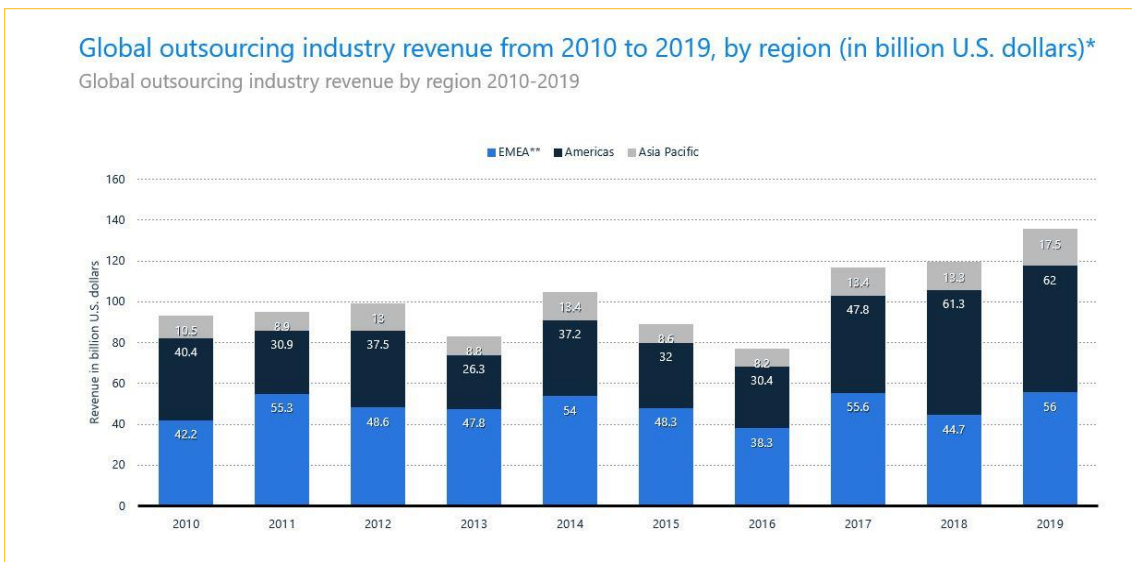


Figure 5: Global Outsourcing Revenue

There is clearly a high demand for BPO and ITO worldwide - demand that has been increasing at a rapid pace. Capitalizing on meeting this demand poses some daunting challenges for Bhutan, which includes entering an already established existing global infrastructure at this stage, the high churn rate, competition on the basis of high operational efficiency and low-cost services, and most importantly, the need to constantly re-skill and up-skill existing and future workforce talent pool to meet BPO demands. The figure below shows that countries serving the offshore business remain concentrated in the APAC region namely India, China, Malaysia, Indonesia, Vietnam, and Thailand, where economies of scale are paramount. Bhutan would have to compete with these larger neighbors and well-established players within them.

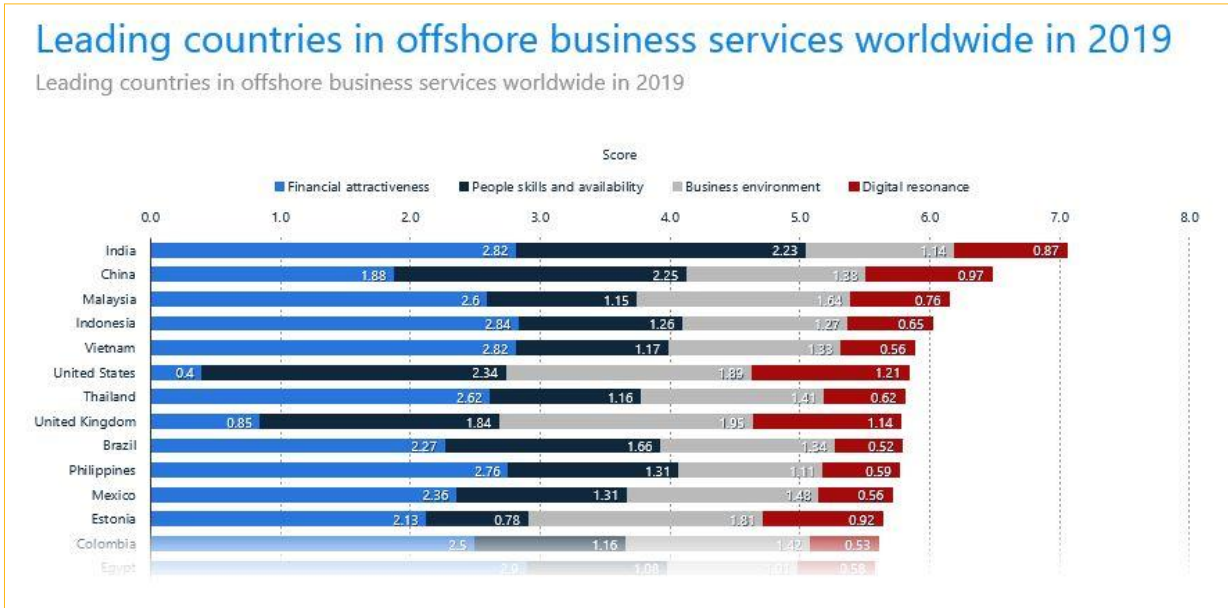


Figure 6: Leading Countries in Offshore Business Services

Moreover, there is price competition with an abundance in the supply of services trying to capture and be competitive in the growing BPO/ITO market. Countries that are able to operate in the market will need to prove high operational efficiency and low-cost service in order to compete. This also tends to lead to a high churn rate of 30-50%. Leading and established vendors such as Accenture and Tata Consultancy Services already have competitive market access and hold prominent market share in APAC, EMEA, and America.

Meanwhile, we have taken a close look at “Big Tech”, the largest and most valuable global technology companies based mostly in Silicon Valley. Big Tech predominantly hires from 20 leading universities in the USA and India. The competitiveness of this sector demonstrates that an individual’s network and connections are often paramount to securing a job and having quality growth opportunities at these top companies. The following graphics demonstrate this trend:

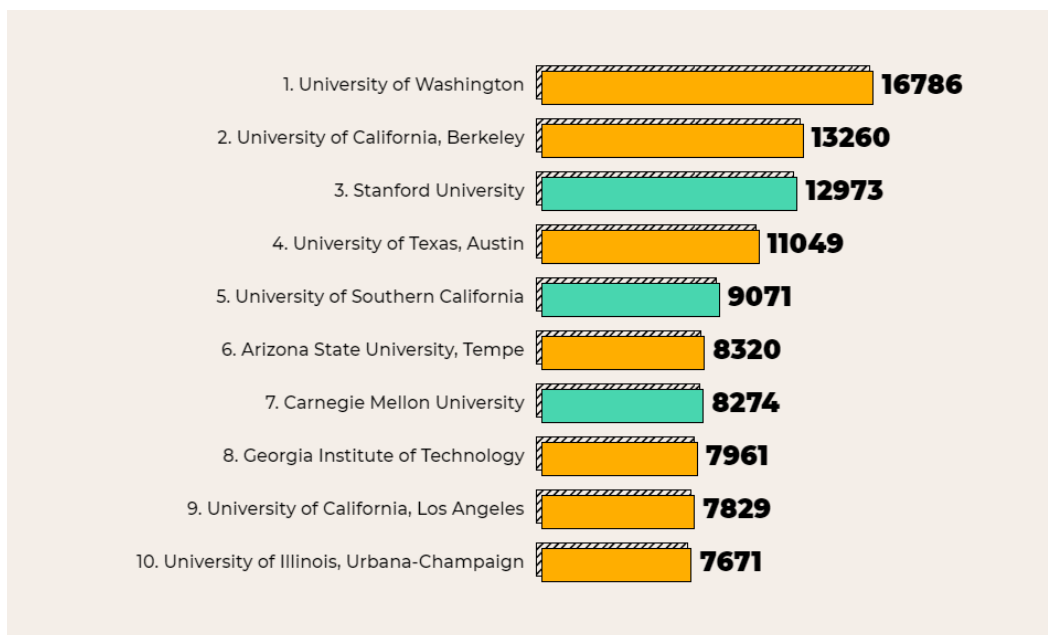


Figure 7a: Top US Universities into Big Tech Companies

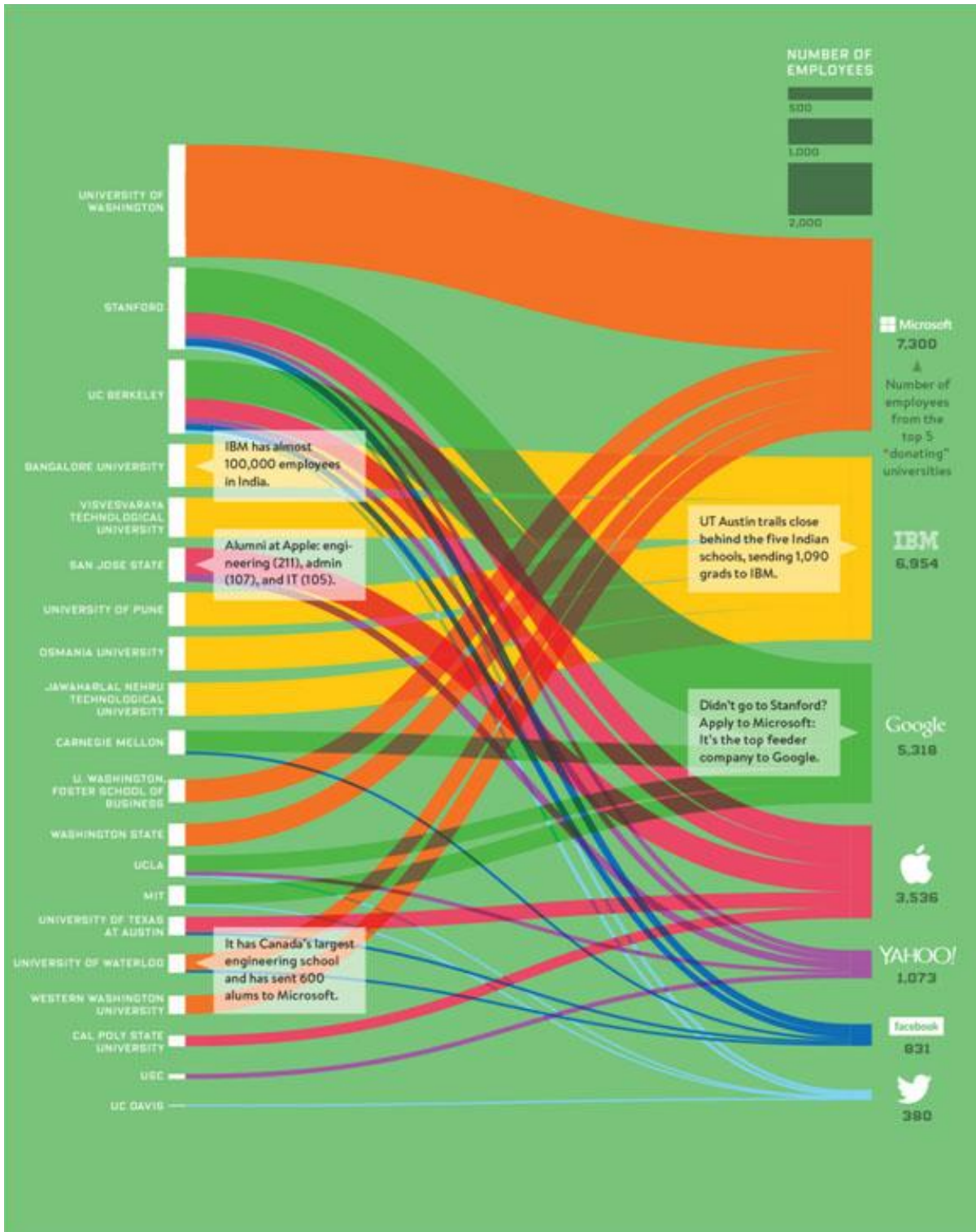


Figure 7b: Global Higher Education Pathways into Big Tech Companies

Securing direct employment within Big Tech companies is extremely competitive. It requires not just advanced tech and soft skills, but as the university credentials demonstrate, signaling through networks and connections. Direct employment in Big Tech's global offices in the Asia-Pacific region are mostly based in urban regional hubs across Asia - Bangalore, Delhi, Mumbai, Singapore, Hong Kong, Shanghai, Seoul, Tokyo, Bangkok, Jakarta, Kuala Lumpur, and other major cities, where there are large pools of tech talent. Outsourcing to top BPO companies are again based in those same urban regional hubs where there are economies of scale.

A 1. 2 Finding Bhutan’s Place Globally: Past Lessons and Key Insights

From Bhutan’s experience launching the Thimphu TechPark in 2012 with support from the Department of Information Technology and Telecom, Ministry of Information and Communications, Royal Government of Bhutan, World Bank, Assetz Property Group of Singapore, Druk Holdings and Investments (DHI), it became clear early on that attracting India’s Big Tech, companies like Wipro, Genpact, and Infosys, as the anchor tenant would not be possible despite considerable efforts to recruit them. As a small country, Bhutan simply lacks the economies of scale and economic competitive advantage. These Big Tech companies will not choose Bhutan when it is cheaper and more efficient to host their operations in neighboring countries like India.

Key Insight: Big Tech is not a fit for Bhutan, but smaller tech can be

Dr. Tshering Cigay
Thimphu TechPark

The Bhutanese pioneer who steadily grew Thimphu TechPark



“Given our small market size and limited talent pool, Bhutan is not attractive enough for large companies like Infosys, Genpact, or Wipro, for whom economies of scale are of paramount importance. Bhutan learnt this the hard way, because we had tried and failed to secure one of these companies as anchor tenant.

Gaining the trust and confidence of potential investors by dealing with them in a consistent, professional and credible manner, while keeping that personal touch of Bhutanese hospitality, played a key role in attracting the FDI companies that we got.”

Figure 8: Key Insight: Dr. Tshering Cigay of Thimphu TechPark

Since that time, Thimphu TechPark has become a success story in its own right - contributing 180 million Nu. to the economy annually with 19 current FDI and local tenants that have consistently provided direct employment to over 800 youth. Through recruiting and retaining Bhutan-aligned investors, small- and medium-sized global BPO/ITO companies at the TechPark, Bhutan has begun to validate what works to grow its nascent tech industry from the ground up.

Key Insight: Entrepreneurs come and invest because of Brand Bhutan

Nuren Dubey
ScanCafe


The entrepreneur and investor who fell in love with Bhutan



“[Tech entrepreneurs] will come to Bhutan only because they love Bhutan. They are not going to come simply because of talent. They are going to come because they love the country. Then when they find the talent and they are willing to put in investment and capital with government support, that’s the way to do it - with a joint partnership from the get-go.”

Figure 9: Key Insight: Nuren Dubey of ScanCafe

Eric Meunier
ZOOP



The entrepreneur and investor who moved to Bhutan with his family for 2 years

"I lived the Bhutanese life for 2 years. For me, Bhutan has been a personal experience. I went to Bhutan of course because we were attracted by the Shangri-la story, the mountains, the happiness. We stayed because we see a competitive advantage. Do not go into the land of imagination or copying others, but to ask yourself what are the true competitive advantages of Bhutan."

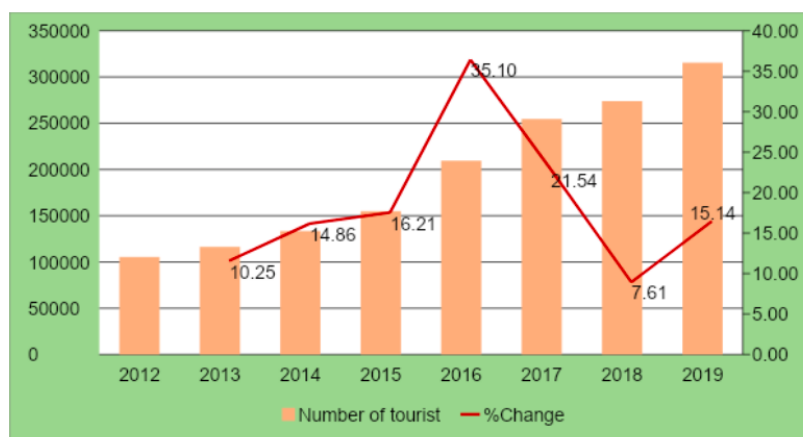
Figure 10: Key Insight: Eric Meunier of ZOOP

Two of the FDI entrepreneurs at Thimphu TechPark, Nurey Dubey of the TechPark’s largest employer ScanCafe and Eric Meunier of ZOOP, share what initially drew them to Bhutan was its unique story and qualities. They each had a deeply personal connection to Bhutan, coming first as tourists who fell in love with the country. What encouraged them to stay and invest was discovering the loyalty and strengths of the Bhutanese people, ease of doing business, untapped albeit small tech talent pool, the reasonable cost of running operations, and distance to the international airport. However, according to Dr. Tshering Cigay, challenges remain, including “stringent immigration rules and other bureaucratic bottlenecks [which] discourages potential investors.” With continued investments and diligent strategies to attract and retain Bhutan-aligned companies, Thimphu TechPark has the potential to be the main focal point and foundation for Bhutan’s nationwide experiment of digital job creation and future skilling.

A 1.3 From Strength to Strength: Leveraging Brand Bhutan and Strategic Tourism

As a small country that clearly will not outcompete neighboring Asian countries on the basis of cost and economies of scale, Bhutan therefore needs to be highly strategic and leverage its greatest assets - its globally recognized Gross National Happiness brand, the unique capacities of the Bhutanese people, its high English literacy, a highly educated and young population, and the competitive advantage of an already thriving tourism industry. Bhutan has already been featured as a top global travel and cultural destination by CNN, Lonely Planet, National Geographic, TED and several other major media outlets. Unsurprisingly, tourism is now Bhutan’s largest foreign exchange earner and second largest source of revenue after hydropower.

Chart 1: Visitor Arrival growth trends



(Source: TCB & DOI)

Figure 11: Visitor Arrival Growth Trends for Tourism in Bhutan

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The nation's focus on sustainable growth in tourism through a high-value, low-volume approach also tends to bring higher-income, more well-connected travelers - many who are corporate executives, entrepreneurs, and leaders in their fields who want to visit an exclusive, high-end destination. These leaders have the clout and capacity to make key decisions about their companies and organizations. We have already seen this in practice and believe that Bhutan should be able to continue to attract these travelers to the country, however, it is critical for Bhutan to be strategic on how it engages them and leverages the talent that is attracted to come. Given these promising trends along with qualitative research on the decision-making process of Bhutan's foreign investors and entrepreneurs, there is potential for tourism and Brand Bhutan as a gateway for future economic development, foreign direct investment, future skilling and job creation; not only for the tourism industry itself, but also for targeted and adjacent industries, including technology, production, agriculture, healthcare, and education. Balancing Bhutan's goal of self-reliance with global openness and connectivity is critical to overcoming the structural limitations to a thriving private sector with more jobs for young people, technology transfer, and scalability.

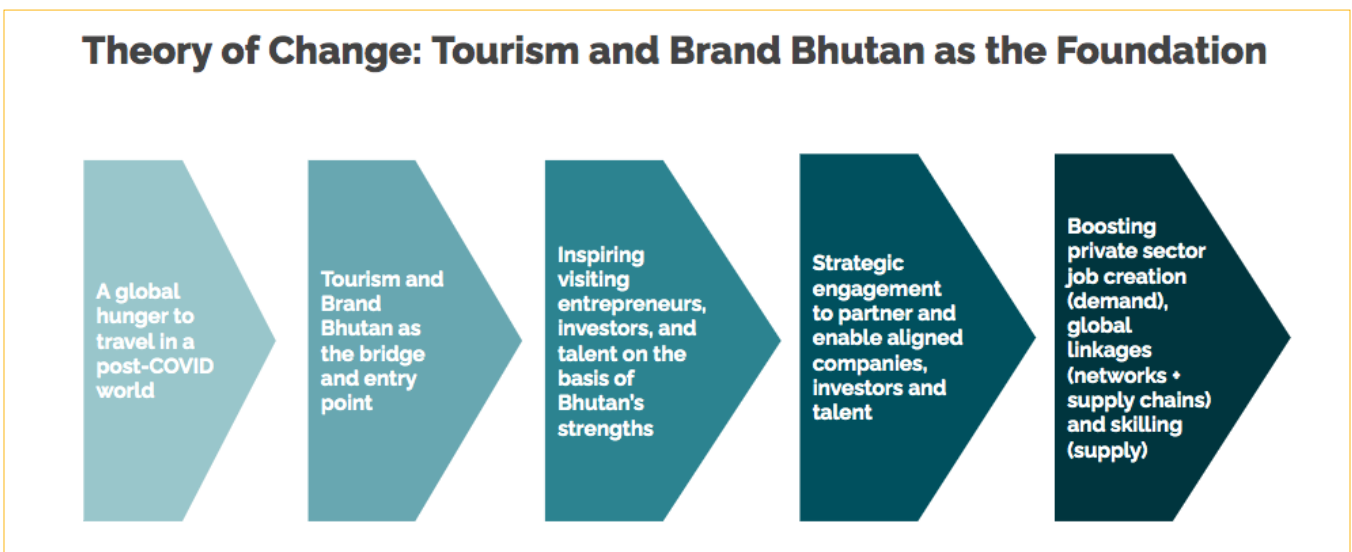


Figure 12: Theory of Change: Leveraging Strategic Tourism and Brand Bhutan

Our theory of change on how to boost regional and global demand (leading to local Bhutanese job creation in technology and other sectors) is as follows:

- COVID-19 has already accelerated the tech exodus from Silicon Valley to smaller markets around the United States. The disbursement of tech talent and capital is also democratizing, globalizing, and expanding the edges of the industry to new frontiers.
- In post-pandemic world, as soon as 2021-2022, global entrepreneurs, investors, and talent will have a hunger to travel for personal reasons as well as with the codification of remote work as a new norm in technology industry
- Tourism and Brand Bhutan are well-positioned to inspire, attract, and recruit these global investors and talent through its ability to tell a story about happiness, well-being, and connection in a world that desperately needs it post-pandemic
- Strategic engagement and partnership by the Bhutanese government and private sector are key to retaining and enabling these companies, investors, and talent to commit and contribute meaningfully to Bhutan's national development
- This ultimately boosts private sector job creation, global linkages through networks and supply chains, and future skilling efforts

One important note is that tourism, GNH and Brand Bhutan are only entry points. It is critical to move beyond these through the deeper engagement of global talent and investors by enabling different stakeholders including the private sector to drive digital transformation as well as true partnership for job creation and future skilling, rooted in not only a goodwill for Bhutan as a country but in the practical benefits for investors and the Bhutanese. Developing a more nuanced and fuller narrative of Bhutan as a country that can hold the entire spectrum of experiences and businesses beyond its current associations with GNH and tourism will be essential. We believe young entrepreneurs and private sector actors are already painting a broader picture of what is possible in the creative industries, technology space, and other fields. The government should take note of these and create enabling environment for an innovation ecosystem led by these actors to grow over time.

A systems map of these possibilities is framed below, showing the interconnections between tourism and global demand to job creation and supply of talent through future skilling. BITE Hub, Thimphu TechPark, and education system reforms will be the foundation of the future skilling needed to feed into the supply of local talent for emerging jobs and the innovation ecosystem needed to seed new outward-facing ventures that reinforce this global demand.

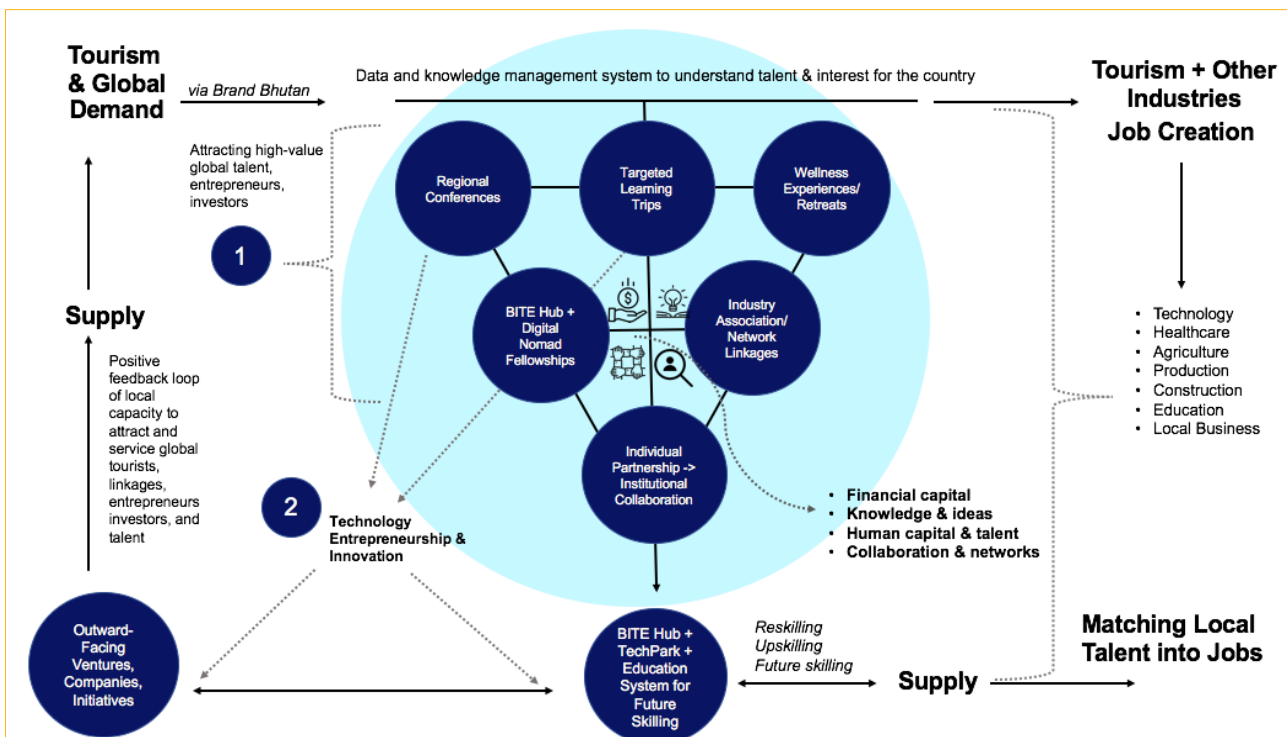


Figure 13: Systems Map for Demand Creation and Future Skilling in Bhutan

A 1. 4 Talent Attraction & Retention: Mapping Pathways to Demand Creation

This systems map starts with tourism and Bhutan’s existing global demand through Brand Bhutan. Bhutan needs to focus on investing its limited resources in the sector that already has existing demand and has the strongest competitive advantage, which in this case is tourism. Strategic tourism is the critical mechanism to bring high-value talent, investors, and companies to the country to foster and strengthen the country’s economic and human resource development.

At the wide-part of the funnel of the systems map, potential ideas to attract high-value global talent, entrepreneurs, and FDI investors include organizing regional conferences, learning trips, wellness experiences, retreats, industry focused trips, and digital nomad fellowships. Through strategically organized tourism experiences aimed at this global talent and investor segment, the country will be able to mobilize

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human capital and talent, financial capital, knowledge and ideas, and sustainable collaboration and networks to the country. These strategic experiences for global talent stimulate the tourism sector, ICT sector as well as other industries and job creation opportunities. Bhutan already possesses some existing resources and infrastructure that can attract global talent and investors from abroad, especially in the ICT industry, but the value of these resources are not yet well-known to those who might potentially want to invest and start companies.

After attracting them to the country, the key is to bridge and channel this global talent and investors into the narrow part of the funnel: the future skilling system anchored in the BITE Hub, Thimphu TechPark, and the TVET and education systems including RUB. In doing so, Bhutan can build the capacity and skills of Bhutanese learners who supply the local talent into these new jobs created by FDI as well as launch homegrown Bhutanese companies that strengthen the country's young but burgeoning innovation ecosystem. These educational institutions are well-positioned to capitalize on the global networks and professional talent that come through Bhutan to transfer knowledge, skills, and technology to the next generation. However, these research, training and academic institutions should be capacitated to leverage on potential of technology, knowledge and skills transfer into the jobs market

Beyond attracting global talent, investors, and companies, Bhutan also needs to consider how to retain them. The questions that we must ask are (1) how can the country be strategic in maintaining engagement with global talent that are entering Bhutan through tourism in order to add value to the different industries in the country? (2) how might Bhutan retain global talent to invest in the country for the long-term?

Talent retention requires a multi-pronged approach. Because of Bhutan's lack of economies of scale, Bhutan must focus on building strong relationships with influential individuals who are invested in the country beyond the economic incentives. The individual's heart for Bhutan can then translate into an institutional partnership because of his or her influence at the company or institution. In the long-term, establishing institutional partnerships will lead to sustainable investment and in country job creation, however, in the short term, it immediately poses some challenges due to which Bhutan could also focus on building practical affiliation and linkages between/within local institutions. For example - Dedicated financing and targeted linkage between public sector agencies and tech sectors, academic and private sectors to generate innovations and skills.

Strategically, Bhutan should invest in creating a data and knowledge management system to track inflow of talent that is coming into the country, their interest, and link key talent to potential opportunities and collaborations that can be a value add to the country. ***Building a data infrastructure to compile information of the high-value global talent and investors along with a clear navigation system to share with those who enter the country of how they can engage with the country can help bridge human resources to contribute back to the country in the long-term.*** Increasing global demand through strategic tourism to make Bhutan a leading FDI destination stimulates the economy and creates new job opportunities. Over time, this will create a positive feedback loop to develop a quality supply of skilled, local talent who can fill in these jobs and create their own homegrown Bhutanese companies to create even more jobs.

A 1.5 How to Prioritize Technology-Specific Job Creation Opportunities

Given the key insights above, we recommend prioritizing tech-specific job creation in this way:

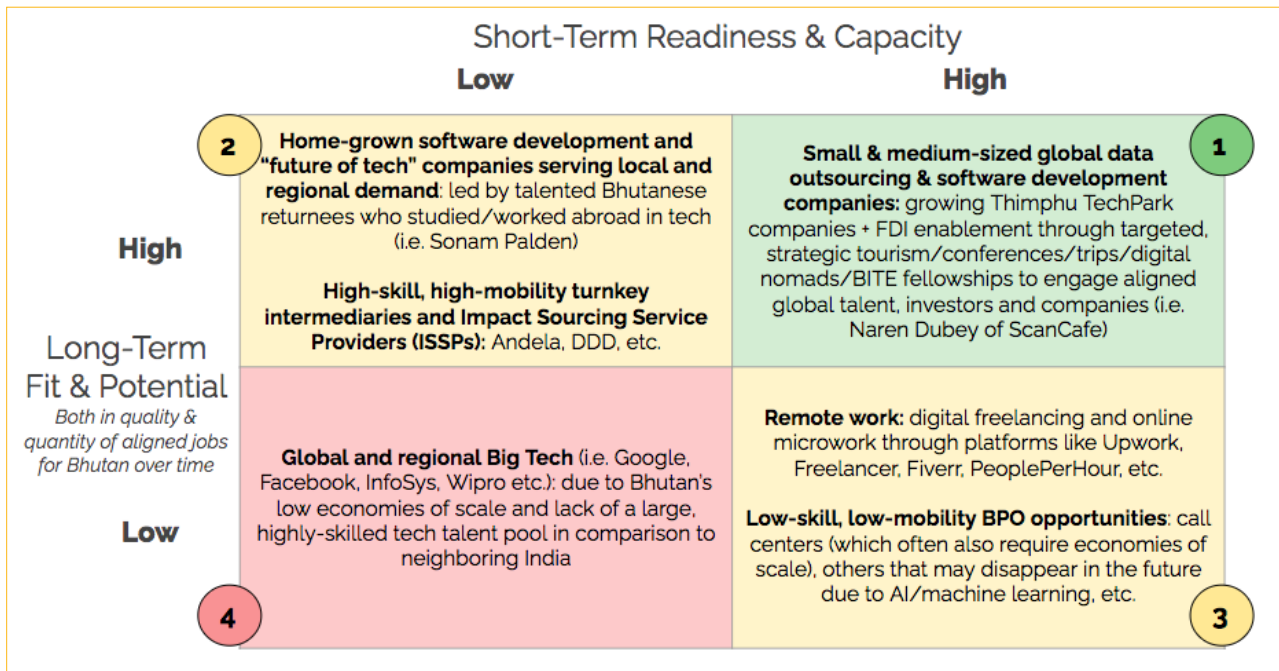


Figure 14: Prioritization Matrix for Tech-Specific Demand Creation

The first priority is recruiting more **FDI small- and medium-sized BTO/ITO companies**, which will generate both immediate employment and sustainable long-term quality job pathways for more young people entering the tech industry. Many of these companies are already based at Thimphu TechPark and have demonstrated a commitment to Bhutan through its aligned investment. The key is to scale up what already has worked to recruit these 19 Thimphu TechPark companies in finding more companies like them regionally and globally. Many of the FDI companies now at Thimphu TechPark had come through initial contact via ICT association conferences and connections, personal networks and tourism. How might then more regional and global tech entrepreneurs and investors discover and fall in love with Bhutan, and more importantly, learn about what it has to offer as a place for setting up their business? According to the UNCTAD, “opportunities for investors include outsourcing of data centres, software development, business process outsourcing in the areas of back office operations, transaction processing, content development, design and animation, geographic information system services, and related sectors, both for export as well as for domestic consumption. Further opportunities might arise in up- or downstream services.”

The second priority which is good on long-term fit and potential for demand creation but which Bhutan perhaps does not yet have the full capacity for is expanding the **home-grown Bhutanese software development and “future of tech”** industry. This is the North Star for long-term, Bhutan-rooted equitable, quality job opportunities that serve both local and regional demand while advancing a thriving innovation ecosystem. We explore how to build this industry in the next section. Meanwhile, **high-skill, high-mobility turnkey intermediaries and Impact Sourcing Service Providers (ISSPs)** such as Andela, DDD and Samasource also offer a potential avenue for demand creation. If Bhutan is able to recruit some of these intermediaries, they could provide the entire spectrum of services from recruitment to skilling to employment with plenty of high-quality opportunities for career progression within technology. We believe there is potential to establish strong partnerships with Impact Sourcing Service Providers (ISSPs) in particular. ISSPs function as intermediaries providing turnkey BPO and ITO solutions to Big Tech through the training and employment of talent in the developing world. Many of the Founders and CEOs of the

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ISSPs are themselves former Silicon Valley executives and entrepreneurs who have now committed to use their expertise and strong existing networks to build social enterprises that benefit the unemployed in low-income countries. For instance, iMerit, an existing company at Thimphu TechPark employing 125 youth, is an Impact Sourcing Service Provider whose Founder Rahda Basu was the former head of Hewlett-Packard's Enterprise Solutions group. These ISSPs are therefore among the leading global future skilling providers (and direct employers) with strong existing BPO/ITO networks delivering software development, data, AI services to top tech companies in the US and other developed countries:

- **Andela:** Andela builds remote engineering teams to serve startups and big tech companies that have shortages in engineering talent in their own geographies. The company sources and provides 6-month training and on-going professional development, and potentially secures employment for 4 years as Andela software developers enroll in the Andela fellowship program. Andela has trained and employed over 1400 young people in Nigeria, Kenya, and Ghana with a 96% match rate to Big Tech and leading tech companies around the world.
- **Digital Divide Data (DDD):** DDD is a social enterprise that trains and employs young professionals to work on digital content and technology services. DDD serves as a reliable BPO option for large tech companies and businesses around the world. The types of services include content and data science solutions, AWS cloud solutions, machine learning solutions, and social research solutions. DDD is the largest technology-related employer in Cambodia and Laos, and also runs training programs in Kenya. DDD has trained over 3,000 marginalized young people in these countries, and on average, DDD graduates earn USD \$175,000 more than their peers throughout their lifetime.
- **Samasource:** Samasource is a leading training data provider to address the full training data lifecycle for AI and machine learning models. They built a data training platform that employs those in developing countries to reduce time to quality using automation, advanced analytics, and a highly agile training data methodology. Samasource has trained and employed over 2,900 young people in Costa Rica, Kenya, Uganda, India, Haiti, Pakistan, Ghana, and South Africa.
- **Global Impact Sourcing Coalition:** ISSPs are a growing section of the broader global BPO and ITO industries. Bhutan should leverage its existing relationship with iMerit, which is a member of the Global Impact Sourcing Coalition, to connect with additional potential ISSPs within this network and market the TechPark as an attractive ISSP destination.

The third priority is **remote work and low-mobility, low-skill BPO opportunities** (such as call centers). While remote work has the benefit of flexibility and low-skill BPO jobs may provide an initial entry into the ICT sector, these opportunities tend to have high attrition rates due to high competition, intense workload, lower pay, fewer career advancement pathways, and other reasons. Bhutan is not well-suited to compete on a large scale through low-mobility, low-skill BPO opportunities due to its lack of economies of scale. These opportunities often travel to the next cheapest country as demands change and may disappear as frontier technologies such as AI displace these jobs. With remote work and online freelancing, we have seen this as a solid option for those who have the capacity and willingness to engage on shorter-term contracts with less stability. However, at scale and on the aggregate, remote work does not provide a large quantity of jobs that provide pathways to higher-quality employment and income generation.

The lowest priority we have identified is **global and regional Big Tech**. As Bhutan learned the hard way, these large tech companies are not well-suited to direct employment of Bhutanese youth in-country. This is not to say there is no role for Big Tech to play in Bhutan's development or that Bhutanese youth cannot secure employment in those companies in the long-term. There are tangible pathways to Big Tech through long-term government talent investment programs such as undergraduate and graduate education scholarships that send Bhutanese to top global universities that Big Tech tends to recruit from. This is the case because these global Big Tech companies value the brand equity and reliability of recruiting from these top universities where they already have formal and informal talent pipelines. For the Bhutanese

who are provided government scholarships to study and work abroad, perhaps some of them in Big Tech, they can bring their critical global perspectives, knowledge, and skills back home, incentivized through additional government supports to enable them as tech entrepreneurs that can innovate and advance Bhutan's broader tech and entrepreneurial ecosystem.

A 1.6 Looking Long-Term: A Thriving Homegrown Entrepreneurship Ecosystem

The biggest long-term opportunity for demand creation and future skills development is through homegrown tech BPOs/ITOs and local ICT-sector companies that can eventually have regional or global reach. This solution also aligns with the vision of a Bhutan-led future skilling system and “future of work” economy that enables self-reliance, connecting increasing numbers of youth to quality jobs in the country then to the regional and global arenas. This model has proven successful for entrepreneurs in Thimphu TechPark who have already established their presences in Bhutan. The government needs to commit more efforts to scaling this high-ROI effort: lowering the barriers for global entrepreneurs and investors to start companies in Bhutan by reviewing economic, tax, foreign investment, and immigration policies; providing incentives to boost local digital economy, build capacity of the talented local, and invest in skilling Bhutanese youth. Over time, more and more new young entrepreneurs in Bhutan will be created - and new employment, capacity, and networks increase as well, creating a spiraling positive feedback loop that enables more self-reliance and global reach.

At first glance, Big Tech may seem attractive; however, if we compare the uncertainty of young Bhutanese being employed by Big Tech and also the amount of investment needed to get a small number of Bhutanese into companies such as Facebook, Google, Apple, and Amazon, we will find it is a major opportunity cost for investment in and the development of Bhutan's own homegrown BPO/ITO sector. In terms of return on investment, Big Tech is among the lowest for Bhutan. After all, we have found through our research that Big Tech companies mostly recruit from leading higher education institutions in the US. The chance of being recruited into Big Tech increases with a higher education degree from top global universities like Stanford, UC Berkeley, and MIT where Big Tech already has informal and formal talent pipelines. In an increasingly digital world, the brand equity of these universities still hold large sway as reliability of the talent that comes out of these universities are more worthwhile for these companies than recruiting and providing a US H1B work visa to a foreign engineer which can be a time-consuming and costly process. Therefore, for an individual to gain employment at a Big Tech company, in addition to the education institution enrolled, getting a job referral and being able to network with alumni who work in the company is also very important. Due to the competitive nature of Big Tech, the companies heavily rely on current employees to attract additional talent to the companies.

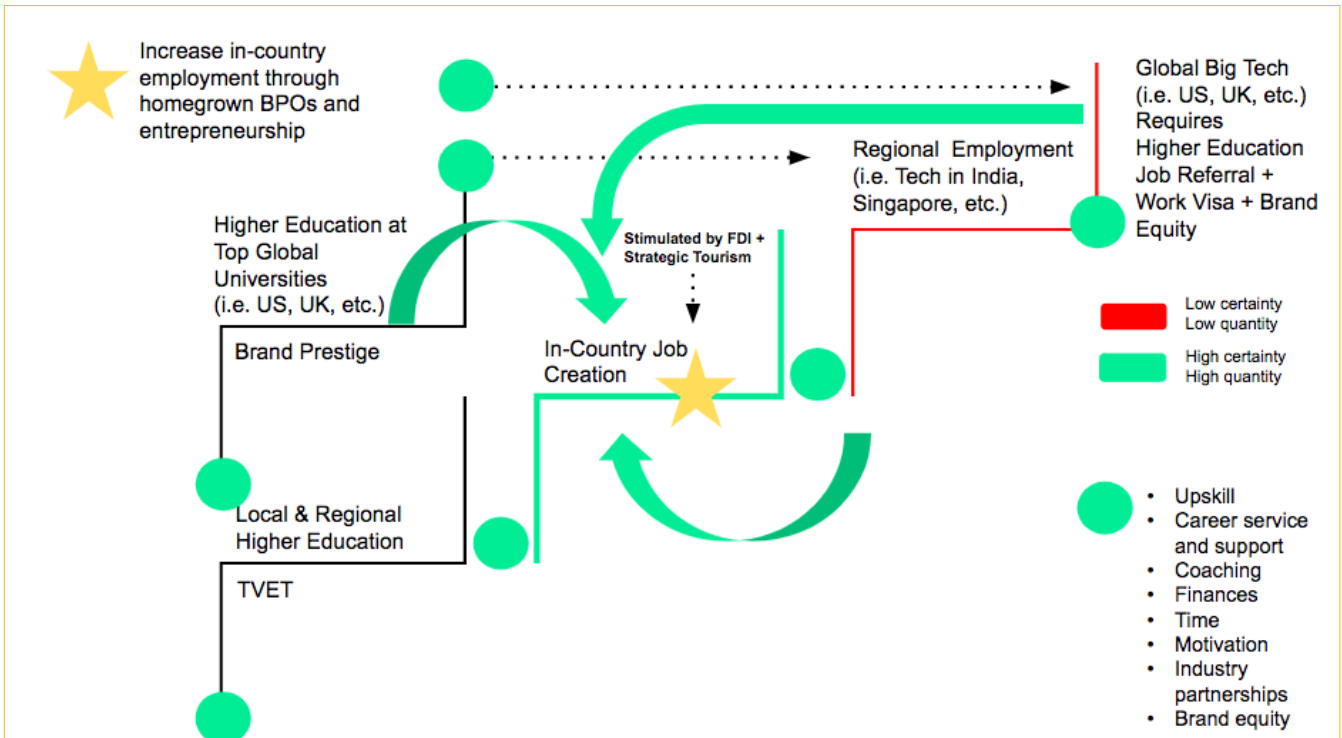


Figure 15: Pathways to Regional and Global Tech to Foster Homegrown Entrepreneurs

The image map above shows the two main education and skilling pathways that can lead to various types of employment opportunities such as local BPO companies to Big Tech, with the North Star being increasing long-term quality job opportunities in Bhutan through the home-grown ICT sector and entrepreneurial ecosystem:

- (1) TVET and/or higher education in-country and regionally (India, etc.)
- (2) Top tier university abroad through Bhutan’s undergraduate and graduate scholarships

Although gaining employment is an important goal of skilling, skilling alone is not sufficient. To secure a position at a big or medium size tech company, strategies must be considered in a comprehensive manner. In the image map, the green circle signifies the upskilling and support areas that are critical to secure various employment opportunities at each of the transition points including but not limited to career coaching, credentials, and company referrals.

It is clear that Big Tech is not the best long-term fit for Bhutan but there is high potential for attracting small-medium-sized foreign tech companies and moreover growing Bhutan’s own entrepreneurial ecosystem for ICT in the next 10 years. There can be longer-term pathways into Big Tech, but in order to achieve this pathway, this will need to be an effort that is focused on higher education scholarships for only a handful of highly talented Bhutanese youth to ensure that they are able to enter top universities in leading institutions that Big Tech hires from. This strategy will be a value-add to the country if there are guarantees that the Bhutanese talent will come back after working in order to bring best practices to help develop Bhutan’s nascent ICT sector further. This is a long-term strategy that will require investment, time, resources, and supportive infrastructure.

For TVET and higher education graduates in-country or regionally, job opportunities in-country and especially in technology BPOs can be attractive employment opportunities to acquire skills and work on projects locally and internationally. After BPO work, there are possibilities for further education and opportunities to perhaps transition to Big Tech offices that are in the region (Bangkok, Singapore, etc.)

before possibly going into the headquarter offices in the USA. With this local education and skilling pathway, similar to the top global universities pathway, Bhutanese who make it to Big Tech should be incentivized to return to the country, innovate, start a company, and build capacity of the ICT sector.

A 1.7 Transformation in the Broader FDI and Local Innovation Regime

Since the adoption of the first FDI policy in 2002, FDI inflows to Bhutan have been quite limited beyond the service and tourism sector, which make up nearly 65% of the investments. Bhutan continues to be among the Asian countries that attract the lowest FDI. The United Nations Conference on Trade and Development (UNCTAD) reports that foreign investors appreciate the government’s “open, flexible and forthcoming approach” and a “readiness to entertain innovative ideas that are in line with the country’s development philosophy” but that “some processes are still perceived as overly complex, time consuming, or unclear.” These information externalities are a market failure that inhibit investors’ ability to identify and pursue opportunities in Bhutan. Both the promotion of Bhutan’s ICT sector globally through trade association linkages and a FDI e-services platform such as a simple digital one-stop-shop for all tech-related FDI investments can go a long way in recruiting and retaining foreign investors. While Bhutan has already mapped out relevant regulations pertaining to FDI on I-Guides and other locations online, a more specific ICT sector case for investment alongside the business registration process, immigration application process, Thimphu TechPark set-up, job recruitment of local talent, and government incentives should be accessible at one convenient digital focal point. A promising case study for Bhutan is Taiwan’s International Entrepreneur Initiative. The initiative has set up a simple online interface to provide a clear picture of value proposition for investors and enable them to access all the services they need to set up their business in Taiwan immediately.

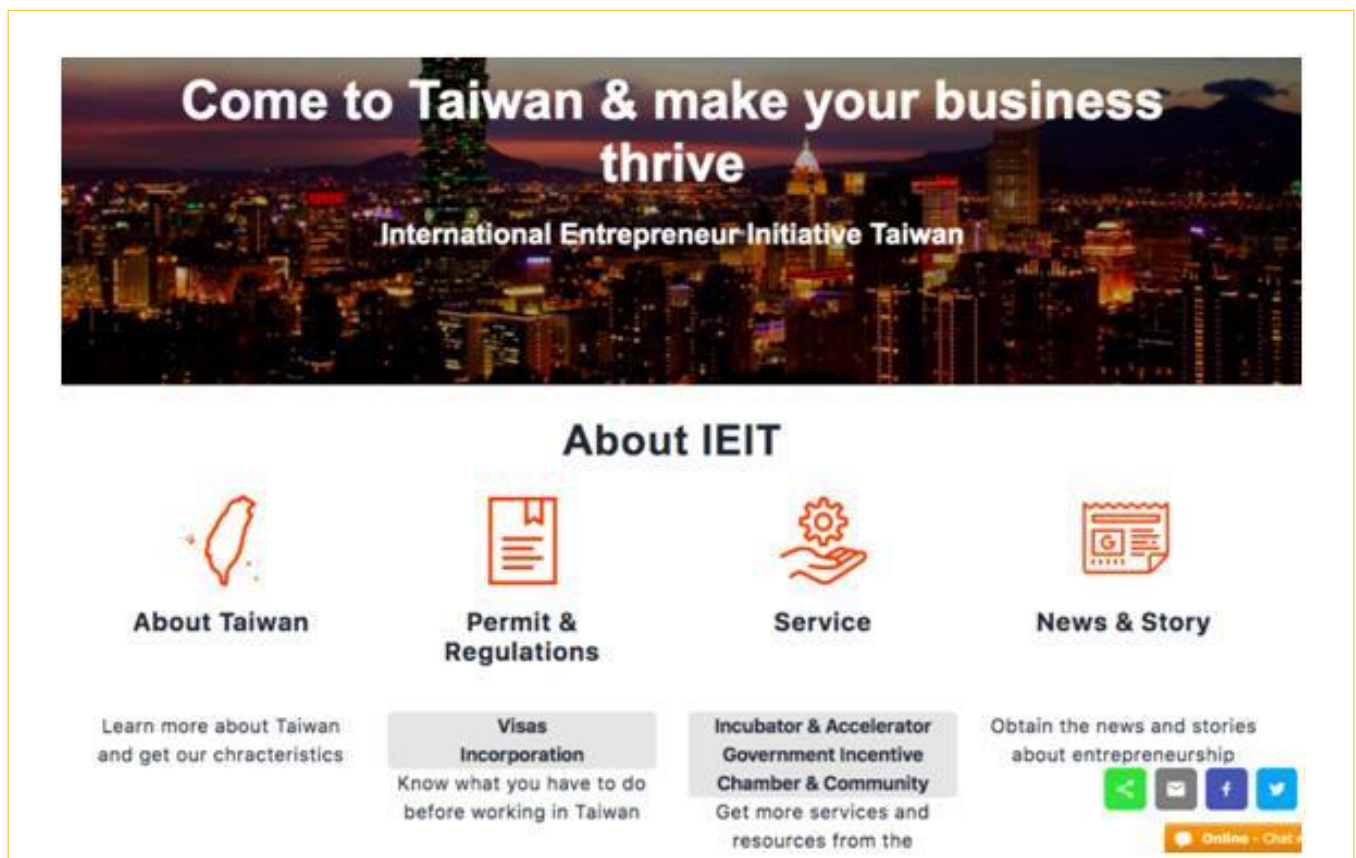


Figure 16: Digital Portal: International Entrepreneur Initiative Taiwan

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Meanwhile, coordination failures also remain a challenge. Some Thimphu Techpark resident companies, for instance, still rely on the MoLHR for connecting to and hiring potential employees rather than through an open database of all ICT-related job seekers – which would allow the TechPark to better market Bhutan’s talent pool to attract foreign investors. While government interventions and regulation do produce positive results under the necessary conditions and a well-provided service, an over-reliance on government coordination also can constrain private sector flexibility, adaptability, and innovation over time. We know that Bhutan’s ability to recover and grow its economy post-pandemic is dependent upon its ability to develop its private sector and existing entrepreneurs.

Key Insight: Global tech talent already exists in Bhutan, but needs support!

Sonam Pelden
Code for Bhutan



The Bhutanese tech entrepreneur who studied and worked abroad but chose to return and build her country
Bhutan -> UWC -> Brown -> Oxford -> Asia Tech Scene -> Bhutan

"Some [Code for Bhutan] students came in with zero knowledge, literally zero, but the improvement I saw over the four weeks was extremely significant.. Seeing the personal perseverance was very inspirational for me."

"Bhutan needs revenue engendered by the success of the innovative entrepreneur. Regulations need to be reined in with common sense."

Figure 17: Key Insight: Sonam Pelden of Code for Bhutan

Therefore, broader investments and changes in the FDI and local innovation regime are needed. With these industry-wide transformations, we believe Bhutan can not only welcome aligned investors and global talent to provide ICT-related jobs and build capacity for the future of work, but also stimulate a broader start-up ecosystem that favors local entrepreneurs creating these jobs in the long-run to boost Bhutan’s “future of work” economy. We make several recommendations that can lead to such an endgame:

- Align **“future of work” and ICT-related demand creation** with the broader economic development (including FDI) strategy of the nation
- Facilitate a mindset shift in policymaking from **“regulate first” to “innovate first”** in new industries pertaining to the “future of work” (i.e. blockchain, cryptocurrency, etc.) - both with local and global entrepreneurs, minimize the need for initial approvals, as long as they show that they conform with Bhutan’s operational and sector-specific regulations as well as broader labor and human ethics guidelines
- Streamline approval process for foreign investors and create a single window for government interface, **a one-stop-shop for FDI** that functions as a clear digital focal point for e-government services as well as makes a clear investment case for the ICT sector
- **Facilitate new FDI inflows** into rapidly growing urban mid-size markets in the South and East (i.e. Phuentsholing and Samdrup Jongkhar)
- Improve **FDI knowledge management systems** such as documentation of all ICT association contacts, “Tech meets Happiness” and potential investor data, along with a FDI welcome package, existing Thimphu TechPark investor Q&A videos, etc.

- **Return and innovation incentives** for Bhutanese talent that has studied/worked abroad, such as start-up grants, no-interest loans, increased access to capital, mentorship, incubator and accelerator programs, a voice at the policy-making table, etc.
- Continue to address structural issues such as **streamlined immigration and visa processes**, increased quality of bandwidth through development of the national fiber optic network backbone as well as state of the art broadband infrastructure that meets existing and near-term needs, etc.

A 1. 8 Driving Demand: Prototyping High ROI Strategic Initiatives

To target the top priorities specific to tech sector, we recommend launching low-fidelity prototypes of high Return on Investment (ROI) strategic initiatives to first bring in more of these high-value, Bhutan-aligned global investors, entrepreneurs, and talent that will foster local talent and build capacity for a thriving local digital economy and innovation ecosystem:

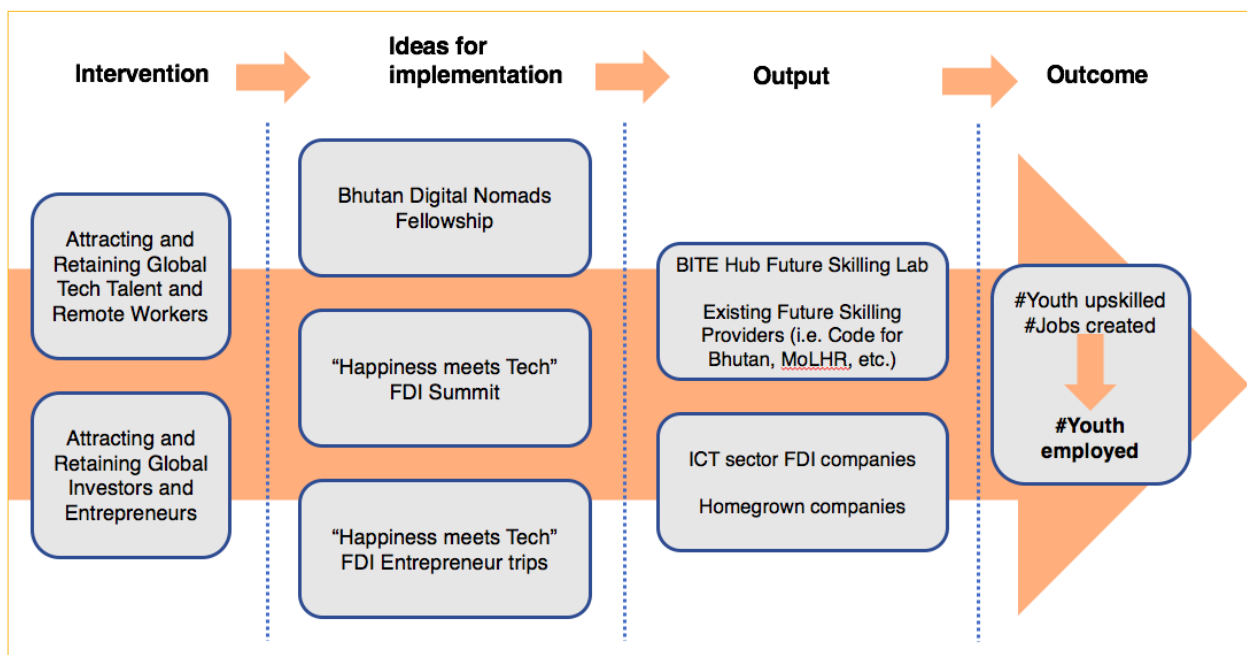


Figure 18: Strategic Initiatives to Upskill and Create Digital Jobs

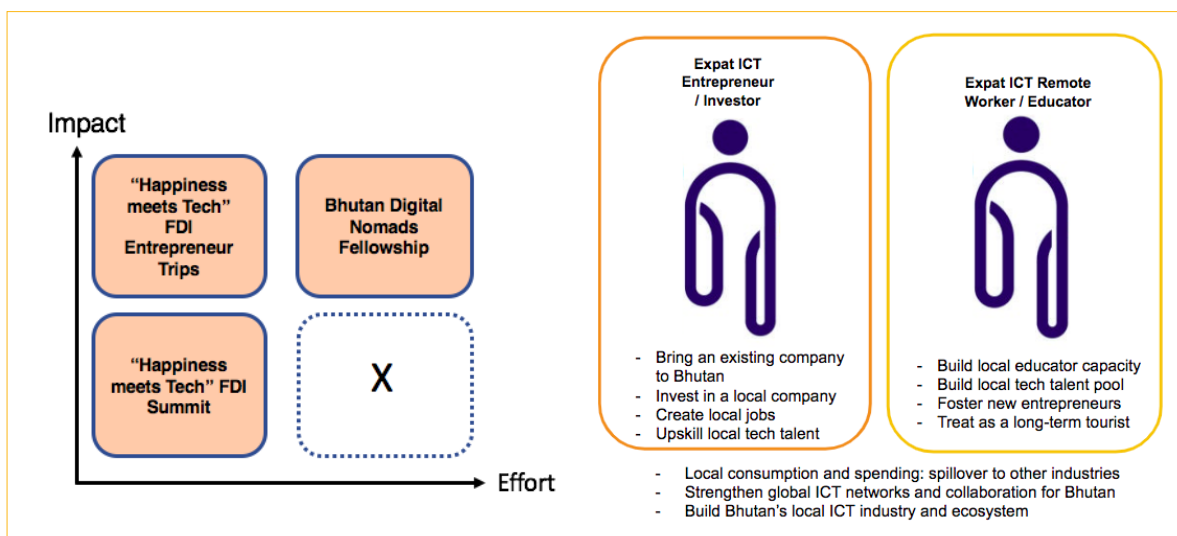


Figure 19: Effort by Impact Matrix and Two Target Personas

A 1.9 “Tech Meets Happiness” FDI Summit, Trips and Global Network

“Tech meets Happiness” FDI Summit, Trips, and Global Network is a targeted regional and global tech investor and entrepreneur recruitment strategy.

Recruitment of cohorts of ICT sector entrepreneurs, innovators, and leaders via:

1. Open application process and rigorous selection
2. ICT industry association linkages
3. Government-industry multilateral trade visits

Investor Benefits: exclusive program, access to Bhutanese entrepreneurs and leaders, nature and ecotourism, wellness, culture, networking, rest, relaxation

Strategic FDI Enablement: visit to Thimphu TechPark, networking sessions, on-going knowledge/relationship management via global network (global Zoom events, etc.)

Potential Lead Stakeholders: MoEA, TCB, DITT/MoIC, Thimphu TechPark, MoLHR

“Tech meets Happiness” is a potential way to brand Bhutan’s ICT sector to raise its profile and position the country as a competitive ICT FDI destination. “Tech meets Happiness” is a potential brand for an annual conference or investment summit, learning trips, and global network to recruit and retain global investors and entrepreneurs who can bring their companies and create jobs for unemployed youth. Because we believe strategic tourism is the entry point and bridge to recruiting and engaging FDI investors, these “Tech meets Happiness” experiences build on Bhutan’s strengths and global image. The annual conference and regular learning trips can offer an exclusive program, access to Bhutanese leaders, nature and ecotourism, wellness, culture, happiness, rest and relaxation that appeal to these investors as successful individuals who make lifestyle decisions and want to visit Bhutan as a high-end travel destination.

A key to retaining global talent and value-add for Bhutan is bridging these visiting investors and entrepreneurs with private sector entrepreneurs, Thimphu TechPark, a potentially revitalized Bhutan ICT industry association, DHI, BCCI, and more in order to foster collaborations.

Bhutan can make the initial connection with regional and global ICT entrepreneur associations such as the ones below. We believe inviting existing Thimphu TechPark investors to leverage their own social capital networks of acquaintances and fellow entrepreneurs can accelerate global awareness of Bhutan’s appeal as an FDI destination. Targeted marketing of “Tech meets Happiness” to these high-impact individuals and global ICT associations can then lead to an influx of Bhutan-aligned investors.



Figure 20: Examples of Global Tech Associations

To make the “Tech meets Happiness” investment summit or learning trips cost-effective, there should be a global willingness to pay for flights, hotels and visas if Bhutan could arrange a high-value, in-country itinerary that includes programming, networking, access to Bhutanese leaders, and tourism. After that initial draw, deeper engagement with current Thimphu TechPark foreign investors, presenting Bhutan’s strengths for technology-specific FDI. Few factors to leverage on are as following:

- i. Bhutan’s high educational standards and English literacy
- ii. Competitive wages, cheap electricity and low rent,
- iii. Creating a clear economic value proposition for investment through a FDI welcome package and,
- iv. “Concierge service” from the local Bhutanese counterpart, and on-going FDI network to transform that personal connection into a professional one can help to empower these foreign investors to set up their BPO/ITO companies in Bhutan, expanding the job market for Bhutanese youth.

In essence, professional, diligent, and hospitable follow-up engagement is necessary to guide these foreign investors to take the next step of bringing their companies to Bhutan.

A 1. 10 Bhutan Digital Nomads Fellowship

Purpose: Recruit Bhutan-aligned, purpose-aligned, high-talent ICT sector remote workers to contribute to Bhutan’s digital economy and future skilling efforts

Pilot program: Open global application with upfront application fees to find the most Bhutan-aligned candidates + rigorous selection process for a very limited number of spots

Benefits to Digital Nomad: Nature, wellness, culture, trekking and ecotourism, networking, innovation, co-working space at Thimphu TechPark, BITE Hub Future Skilling Lab, etc.

Visa: Special category to travel and work in Bhutan for a short or extended period

Requirement or expectation to volunteer/mentor local youth, TVET students, entrepreneurs, ICT workers in Bhutan’s innovation ecosystem

Increasingly, younger entrepreneurs and global talent are riding the wave of the digital economy and remote work, particularly during COVID-19. This pandemic has accelerated the decentralization of tech based in larger markets like the Silicon Valley to new frontiers. As the pandemic comes to its end and the world returns to some sense of a new normalcy, it is believed that global entrepreneurs, investors and talent will have a hunger to travel and work in new places, both for personal reasons and with the growing norm of remote work in the ICT sector. Eric Meunier, President of ZOOP and current Thimphu TechPark investor, explains that “digital nomads would want to come to Bhutan - it’s an extraordinary opportunity for your country.” In partnership with DHI’s InnoTech department, Thimphu TechPark, BITE Hub, and other ICT-specific national actors in the country, there is tremendous opportunity to create a new program for digital nomads and global talent as a recruitment and human capital development strategy for Bhutan’s nascent innovation ecosystem.

Through its high-end global brand of Gross National Happiness, there is potential for the Royal Government of Bhutan to inspire and attract global entrepreneurs, investors, practitioners, academics, and leaders in their fields through a national fellowship initiative similar to New Zealand and Hawaii. To align with Bhutan’s high-value, low-volume tourism philosophy, these can be small, high-impact cohorts of global talent, entrepreneurs and leaders that are recruited through a competitive global application and selection process based on targeted industries and needs in Bhutan, such as technology. Thimphu TechPark has the potential to host the “Bhutan Digital Nomads” program that plugs into the ICT sector immediately to build capacity of local talent, generate jobs through FDI and new ventures, and expand social capital through global connections. Island Innovation, a social enterprise that drives sustainable change across islands

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and rural areas around the world, recently hosted a webinar on Adapting Tourist Destinations For Remote Workers & Digital Nomads In 2021 that has relevance for what a digital nomads program could look like for Bhutan - with valuable case studies and governments sharing best practices.

To serve as a core fulcrum for digital nomads and global remote working talent to dedicate their time to connecting their valuable networks and resources to Bhutan, mentoring the next generation of talent coming through the system, and supporting home-grown Bhutanese tech companies and organizations, a dedicated hub is critical. Ultimately, a Bhutan Digital Nomads program run through the Hub can help build global bridges to access top talent and resources in major innovation hubs such as Silicon Valley and elsewhere. We believe this can be done in a way that honors Bhutan's self-reliance and inward identity while fostering connectivity and outward openness required for innovation and new job creation particularly as it relates to the future of work.

A 1. 11 Private Sector Leadership, Coordination and Integration

The Bhutan ICT and Training Association (BICTTA) was a member-led association “to represent the ICT & Training industry of Bhutan at national, regional and international level for the development and promotion of the industry” as well as act as a policy forum and bridge for the industry with the government. Moreover, the association was a key platform for connecting the national ICT industry to regional and global stakeholders including many that ended up investing and setting up their firms in Thimphu TechPark, but unfortunately, the association is no longer active. BICTTA, for instance, was a core member of the Asian Oceanian Computing Industry Organization (ASOCIO) helping to facilitate multilateral trade visits, key networking opportunities, and promotion of the ICT industry to FDI investors and companies. We believe there is an opportunity to reimagine and revitalize the association as a private sector-led, government-enabled national platform for demand creation in the ICT field or to empower other existing private sector actors (such as Thimphu TechPark, Google Developers Group Thimphu, private entrepreneurs, etc.) to fill in the gaps of some of BICTTA's previous roles. Bhutan needs now more than ever to create an innovative leading voice or set of voices to represent and promote the private ICT sector outside of the country, tying together various demand-side initiatives from Thimphu TechPark, GDG Thimphu, DHI, MoIC, MoLHR, MoE, Association of Bhutanese Industries (ABI), Bhutan Association of Entrepreneurs (BAE), Bhutan Chamber of Commerce and Industry (BCCI), AB Ventures, and others.



Figure 21: ASOCIO Members

Private sector leadership can help with not only advancing Bhutan's attractiveness as a FDI destination of tech-specific investments but also help young start-ups in Bhutan connect with outside talent and investors. Through a variety of formal and informal networking opportunities, international conferences and events, speakers, incentives, grants, and more, the association can function as a nerve center for ICT industry demand creation both domestically and through FDI. We also see possibility of the association being closely connected to the former BITE Hub along with Thimphu TechPark to promote an innovation ecosystem across Bhutan.

Empowering the private sector to serve as the lead for market coordination and expansion addresses some of the constraints to private sector development in Bhutan, including an over-reliance on government agencies like the MoLHR to facilitate job creation. Market coordination through the association also helps with a more nimble government alignment to the sector's needs, assets, and future directions. Generally, stronger trade associations lower barriers for companies seeking to expand to new markets, pursue new services, and facilitate more capital reinvestment. While this type of sector-led, government-enabled association platform does not require high financial costs or administrative efforts from the government, it will require increased levels of trust between the stakeholders along with institutionalized transparency standards to avoid industry exploitation or monopolization. Critical to success is the private sector's own capacity to self-initiate partnerships with regional and global actors in partnership and open communication with government. As many FDI activities are already being organized by the MoLHR and MoIC, an economic system with a stronger ICT industry private sector will eventually alleviate pressure on the government to need to implement and manage new programs and policy guidelines.

A 1. 12 Global Case Studies on Demand Creation

Hawaii: Movers and Shakas Program

Hawaii, a Pacific island off the coast of mainland North America, is 50th state of the United States of America. Given its small size and population, Hawaii has struggled with brain drain and the loss of its talent to create a robust local economy. During COVID-19, Hawaii has just initiated an innovative digital nomads program called "Movers and Shakas" to attract "movers and shakers" - purpose-driven remote workers - from around the mainland United States to come work remotely in Hawaii and contribute to the economy while enjoying the natural beauty of the islands. Participants of this program are required to volunteer at a local nonprofit or community organization to give their time and skills to build local capacity and global networks. Their consumption and spending in Hawaii also helps the state generate additional revenue to boost and sustain the economy through the pandemic.

- Required organization volunteering and skill-sharing (career development for youth, mentoring, and project consulting with local nonprofits): <https://www.moversandshakas.org/program-overview/#caring-for-hawaii>
- Movers and Shakas program: <https://www.moversandshakas.org/about/movers-shakas-program-faq/>

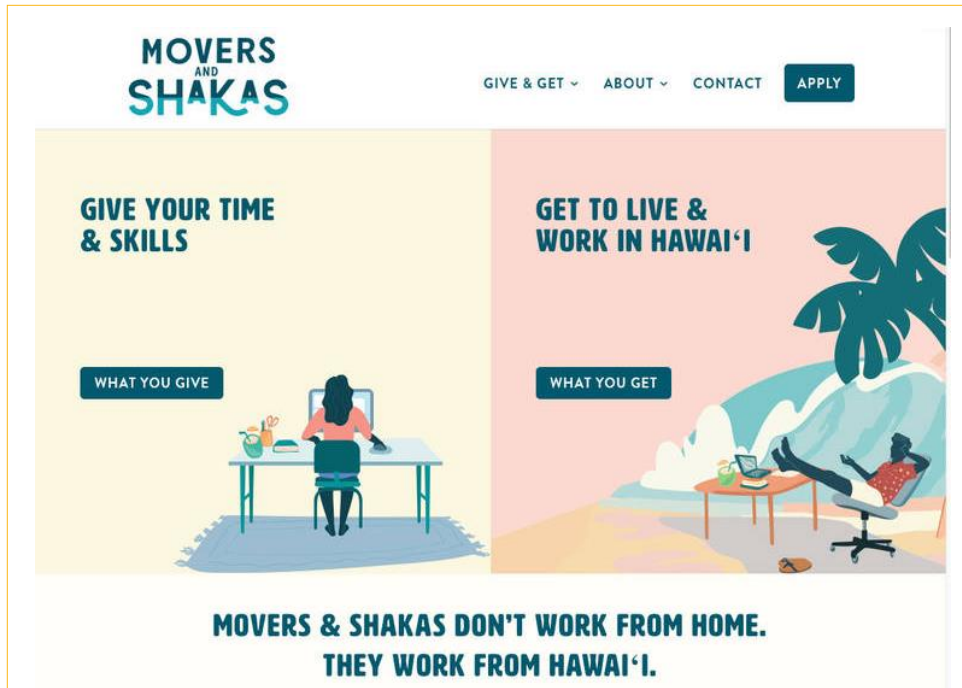


Figure 22: Movers and Shakas in Hawaii

New Zealand: Edmund Hillary Fellowship

In New Zealand, the government launched a national initiative called Edmund Hillary Fellowship (EHF), which now has 8 cohorts totaling 532 Fellows who are entrepreneurs, investors, and leaders in their fields, including technology, health, climate, and education. Each year up to 100 fellows are accepted alongside 20 citizens of New Zealand who help orient them and create lasting connections. Together, these fellows go through an exclusive program in New Zealand in which they learn about the culture, network with local stakeholders and their global peers, and contribute to the local innovation ecosystem through access to start-ups, government leaders, mentors, investors, research and development institutes. During and beyond the time they spend on the island, these Edmund Hillary Fellows become champions of New Zealand and connectors to the global industry partners. They have the chance to visit and stay in New Zealand as well, generating additional revenue, jobs, and capacity for the country over the long-term. EHF has launched a 4-year pilot with New Zealand's immigration department to offer a special Global Impact Visa category that enables 400 fellows to live and work in New Zealand for up to 3 years to create, support, and incubate ventures that can create jobs and positive impact for the country that could scale to the world. One can only apply for a Global Impact Visa after being selected by the Edmund Hillary Fellowship.

- EHF program and impact: <https://www.ehf.org/blog/a-new-wave-of-entrepreneurial-talent-for-new-zealand>
- Online network: <https://www.ehf.org/live-sessions>
- Global Impact Visa: <https://www.immigration.govt.nz/new-zealand-visas/options/start-a-business-or-invest/i-want-to-invest-or-do-business-in-nz/the-global-impact-visa>



Figure 23: Edmund Hillary Fellowship in New Zealand

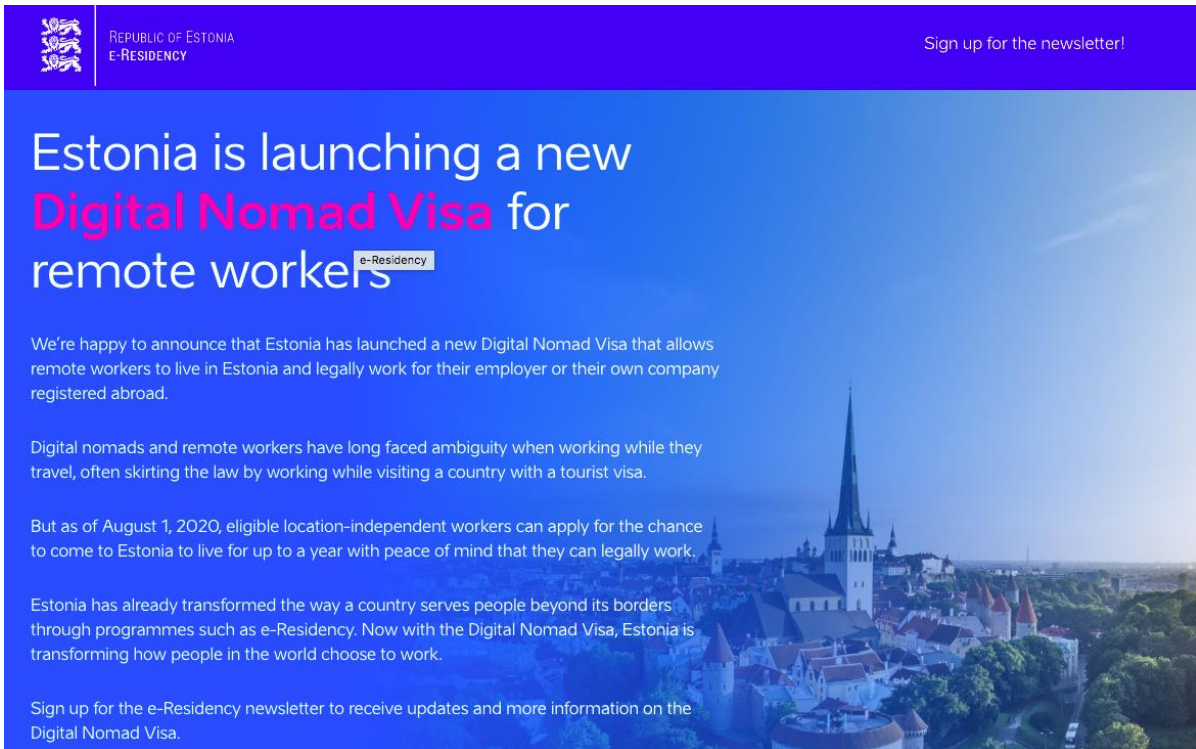
Estonia’s Digital Nomad Visa

Estonian Digital Nomad Visa (DNV) covers a broader range of digital nomads — in addition to freelancers, it also allows teleworking from Estonia if the person has a foreign employer or is a partner in a company registered abroad. The intention behind the DNV is to attract talented people from around the world to Estonia, who can work independent of location and timezone.

When applying for a DNV, one can apply for either an Estonian long-stay visa (D-visa) or a short-stay visa (C-visa), depending on the planned period of stay. The DNV provides eligible digital nomads a temporary basis to live and work remotely in Estonia for up to a year. No person is automatically eligible for a DNV and their application and background will be checked as carefully as for any other visa applicants.

Anyone can apply for Estonia’s digital nomad visa if they meet the following requirements: (1) able to work independent of location; (2) can perform your work duties remotely using telecommunications technology; (3) either have an active employment contract with a company registered outside of Estonia, conduct business through your own company registered abroad, or work as a freelancer for clients mostly outside of Estonia; (4) provide evidence that your income met the minimum threshold during the six months preceding the application. Currently, the monthly income threshold is €3504 (gross of tax).

- Estonia’s Digital Nomad Visa FAQs: <https://medium.com/e-residency-blog/faqs-about-estonias-digital-nomad-visa-b04f12551e30>



REPUBLIC OF ESTONIA
e-RESIDENCY

Sign up for the newsletter!

Estonia is launching a new Digital Nomad Visa for remote workers

We're happy to announce that Estonia has launched a new Digital Nomad Visa that allows remote workers to live in Estonia and legally work for their employer or their own company registered abroad.

Digital nomads and remote workers have long faced ambiguity when working while they travel, often skirting the law by working while visiting a country with a tourist visa.

But as of August 1, 2020, eligible location-independent workers can apply for the chance to come to Estonia to live for up to a year with peace of mind that they can legally work.

Estonia has already transformed the way a country serves people beyond its borders through programmes such as e-Residency. Now with the Digital Nomad Visa, Estonia is transforming how people in the world choose to work.

Sign up for the e-Residency newsletter to receive updates and more information on the Digital Nomad Visa.

Figure 24: Estonia's Digital Nomad Visa

Work from Bermuda Certificate

As a beautiful Caribbean island, Bermuda boasts a reputation as an open and comfortable island destination. Now more than ever, factors that drive visitors to choose a destination are also influencing where business executives, entrepreneurs and students retreat to work remotely. Bermuda is seeking to meet the demands of each of these audiences in a world that has rapidly changed in the face of Covid-19.

To address this growing need and desire, the Government of Bermuda introduced the Work from Bermuda Certificate, allowing executives, entrepreneurs, and students to work and study remotely from the island in a stunning and worry-free environment. The Government of Bermuda also gathered resources workers may need connecting their tourism offerings to work requirements, such as electric car rentals in addition to broadband and remote workspaces. The certificate program is a partnership between the Bermuda Tourism Authority and Business Development Agency.

- Work from Bermuda Certificate FAQ: <https://forms.gov.bm/work-from-bermuda/faq>
- Work from Bermuda Certificate Application: <https://forms.gov.bm/work-from-bermuda/Apply>

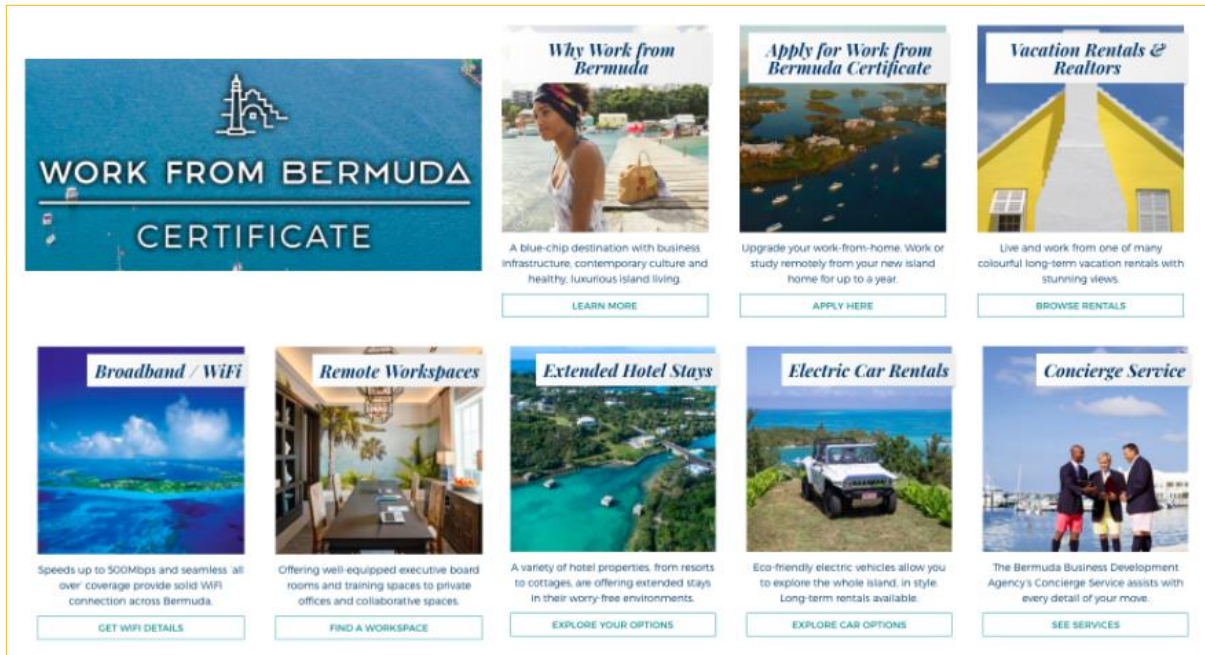


Figure 25: Work from Bermuda Certificate

A 1.13 Next Steps and Upstream Experiments

In the Demand Creation Co-Design Workshop, the participants identified some potential additional stakeholders, questions and upstream experiments to continue moving forward, including as a part of the broader systems portfolio of the UNDP Accelerator Lab:

Systems leadership and coherence

- Which government agency would be well-positioned to be the anchor to generate more systems coherence and alignment to support piloting these strategic initiatives?
- How can private sector actors such as Thimphu TechPark, DHI, BCCI, ABI, Google Developers Group Thimphu, Global Shapers Hub Thimphu, and others lead or integrate closely within “Happiness meets Tech” FDI experiences and Digital Nomads?

Visa

- Would the Department of Immigration (DOI), Ministry of Home and Cultural Affairs be open to creating a separate pilot Digital Nomad Visa?
- What visa restrictions might need to be in place (i.e. restrictions of digital nomads to work for a Bhutanese company/organization/employer, setting an income requirement and asking for proof of income, etc.)?
- How might DOI set up Special digital nomad visa fee to experiment the nomad culture and ease application process to create an exclusive program given that Bhutan already has a strong global brand to attract global talent (i.e. Antigua and Barbuda’s Nomad Digital Residence charges \$1500 upfront to apply for the program)?

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Taxes and currency

- In the case of the [Estonian Digital Nomad Visa](#), if a DNV-holder stays in-country for more than 183 days in a consecutive 12 month period, they are considered an Estonian tax resident and should declare and pay taxes to Estonia. How should Bhutan's Department of Revenue and Customs treat digital nomads in terms of taxes given that they may also be paying taxes to their home countries as well?
- What role should the Royal Monetary Authority (RMA) play in creating an enabling environment for currency exchange given foreign income generation by digital nomads?

PART B: FUTURE SKILLING

B 1. BITE AND FUTURE SKILLING

Key Insight	Main Recommendation
Assessing demand-side trends and forecasting future skills relevant to Bhutan	
<p>Almost two-thirds of youth skilling programs fail to have any impact on youth employment due to the lack of demand-side integration with companies to ensure that enough good quality jobs are available or being created in the first place. The future skills most relevant to Bhutan are constantly changing, dependent on the needs of FDI BPO and homegrown companies.</p>	<p>Survey Thimphu TechPark FDI/BPO/local companies annually as well as empower the revitalized ICT industry association to be an assessor and voice for the private ICT sector’s future skilling trends.</p> <p>Forecast future demand through an ICT Academy - Industry Board</p>
Advancing future skilling systems change for a thriving innovation and “future of work” ecosystem	
<p>There are a plethora of existing and new future skilling providers: Thimphu TechPark resident companies, TTIR, private TVET providers, TVET/BITE mainstreamed into schools, MoE and ICT integration in schools, RUB (Gyalpozhing College of IT and CST), MoLHR programs, Code for Bhutan, FabLab, DITT under MoIC, DHI and InnoTech, BETA Park, Loden, other CSOs, etc.</p>	<p>Decide which agency would be the key player as a potential convener, coordinator, funder, and enabler of future skilling and innovation initiatives unlocking value creation among decentralized actors, assets, capabilities, and opportunities in the growing digital and “future of work” economy.</p>
<p>Several challenges prevent a full systems transformation for future skilling, digital employment and innovation that will drive the Bhutanese economy of the future:</p> <ul style="list-style-type: none"> • Lack of clarity, coordination, and complementarity among initiatives • Skills gap and mismatch with demand • Weak information flow between job seekers, employers, and government • Need for quality, scalability and sustainability across the system • On-going issues with digital access, literacy, equity and inclusion 	<ul style="list-style-type: none"> • Leverage the Hub to pilot new experiments for the future skilling ecosystem • Map and build inclusive skilling-job linked pathways to ensure equity and inclusion for diverse youth population groups • Align and provide incentives across future skilling providers, such as financing through the hub to enable high-impact existing programs and providers to thrive • Leverage an existing free, open-source platform like Sunbird to launch a “societal platform” as a blended/digital learning infrastructure for future skilling
Creating the Hub Future Skilling Lab as a bridge between demand-side initiatives such as digital nomads and supply-side skilling initiatives for TVET students	
<ul style="list-style-type: none"> • Bridge demand-side initiatives such as digital nomads and FDI entrepreneurs with supply-side programming with TVET youth/students to advance mentorship and experiential learning • Grow community events and innovation ecosystem in close conjunction with local and global stakeholders as well as the BITE Hub’s other three components • Empower the spillover effect for TVET instructors undergoing training at former BITE Hub to bring back digital transformation and future skilling efforts to their TTIs, thereby accelerating broader TVET systems change and scaling the impact to more TVET youth/students 	

B 1.1 Future Skills and the Future of Work: Global Data and Trends

There is no one set of future skills perfectly aligned to the future of work for Bhutan. That future is being created. Therefore, we choose to define future skills broadly - as skills that will be needed to meet the future of work, an increasingly digital, global, interconnected, uncertain, and fast-paced future. There are however several leading platforms, companies, and institutions that have helped map, forecast, and project some of the key global data trends regarding the clusters of skills that appear most often in emerging job descriptions in several sectors such as technology that will lead the future.

- Burning Glass Technologies (BGT) is one of the USA's leading data analytics companies for the labor market. BGT has looked at job growth and labor market data trends, assessing the 14 foundational skills that are already in wide demand from employers, command salary premiums, and are most crucial for workers and learners to keep pace with the changing job market. They place these 14 future skills in 3 main buckets:
 - *Human skills*: communication, creativity, critical thinking, collaboration, and analytical skills
 - *Business enablers*: communicating data, digital design, project management, and business process
 - *Digital building blocks*: analyzing data, managing data, software development, computer programming, digital security and privacy



Figure 26: New Foundational Skills of the Digital Economy

- In their Future of Jobs Report released this year, the World Economic Forum has named their top 10 skills that will be most in demand come 2025. They group these future skills into 4 buckets:
 - *Problem solving*: analytical thinking and innovation; complex problem solving; critical thinking and analysis; creativity, originality, and initiative; reasoning, problem-solving, and ideation
 - *Self-management*: active learning and learning strategies; resilience, stress tolerance, and flexibility
 - *Working with people*: leadership and social influence
 - *Technology use and development*: technology use, monitoring and control; technology design and programming



Figure 27: Top 10 Skills of 2025 according to the World Economic Forum

- LinkedIn, the world’s largest professional networking and employment-oriented platform, has tracked the following “rising skills” based on its own internal data on global technology, services, manufacturing, production, and sector-wide job trends:
 - *Compliance*: data compliance, risk management
 - *Social media marketing*: digital marketing, product promotion
 - *Continuous integration*: development operations, full stack
 - *Workflow automation*: project management, business operations
 - *Gesture recognition and technology*: human-computer interaction (HCI), mobile engineering
 - *Blockchain*: blockchain development and management
 - *Artificial intelligence*: data science, machine learning
 - *Robotic process automation*: robotics engineering, business analysis
 - *Human-centered design*: UX design, graphic design, product design
 - *Frontend web development*: web development, frontend development

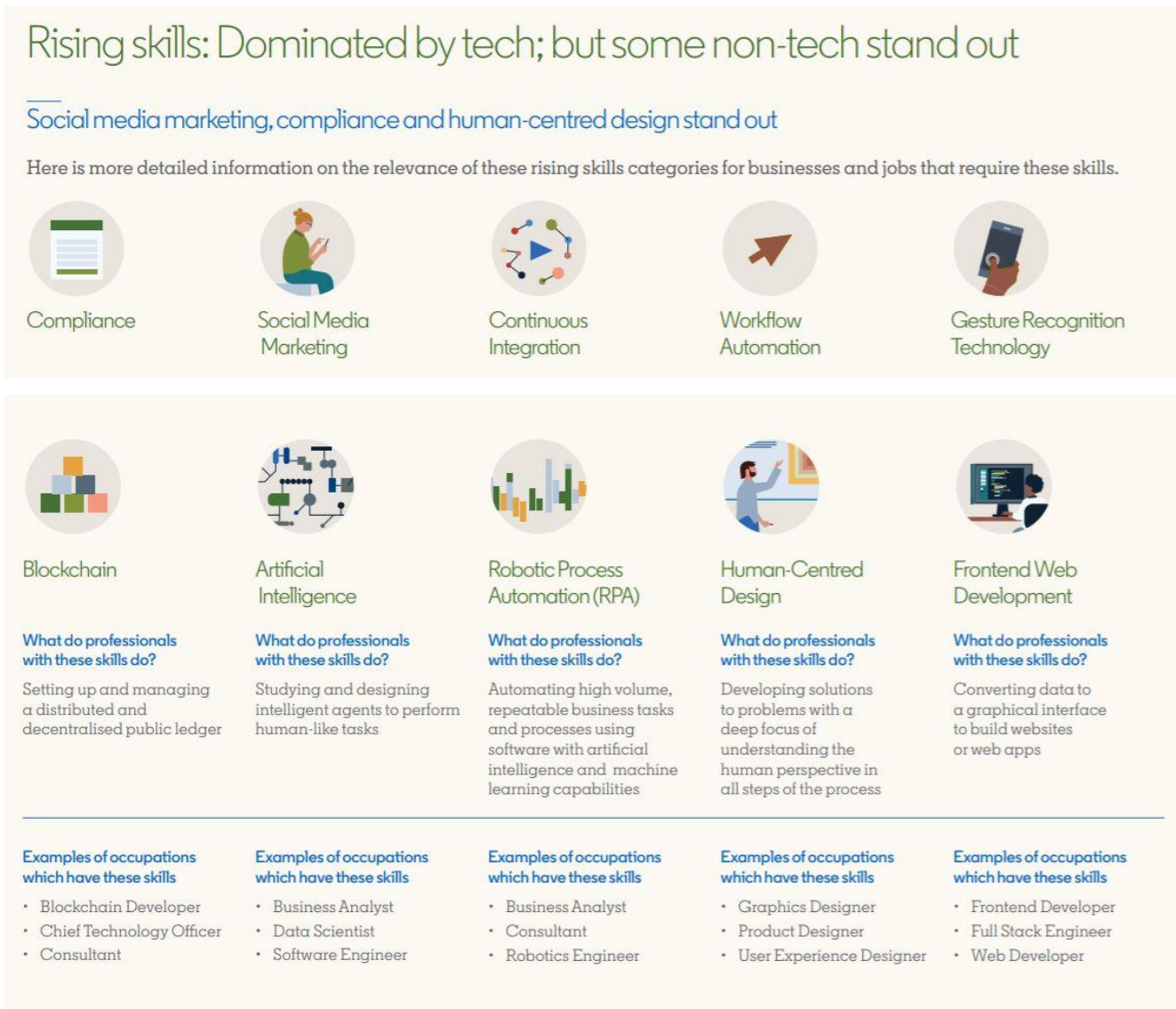


Figure 28: Rising Skills According to LinkedIn

Some of these domains are also captured in a more contextual way within Bhutan’s 2019 TVET Curriculum framework, which delineates four buckets of workforce readiness, soft skills, technical skills (which would include digital skills) and entrepreneurship:

Skill Categories	Definition	Purpose	Examples	Teaching & Training Methodology
Workforce Readiness	Foundational to individuals' entry and ongoing success in the workplace, ranging from initial job search to maintaining continuous employment	To support youth in finding and securing employment, and succeeding within the workplace	Literacy, numeracy, digital literacy, resume writing, self-presentation, time management, professionalism, etiquette, social norms	<ul style="list-style-type: none"> • Team-based • Project-based • Practical application • Experiential • Case simulation • Business exposure • Job shadowing • Mentorship • Coaching
Soft Skills	Personal attributes, social skills, and communication abilities that support interpersonal relationships and interactions with others	To support youth as they integrate and collaborate with internal and external workplace stakeholders, such as customers, co-workers, and management	Communication, critical thinking, creative thinking, collaboration, adaptability, initiative, leadership, social emotional learning, teamwork, self-confidence, empathy, growth mindset, cultural	
Technical Skills	Knowledge and capabilities to perform specialized tasks	To give youth technical or domain expertise to perform job-specific tasks	Computer programming, coding, project & financial management, mechanical functions, scientific tasks, technology-based skills, & other job-specific skills (e.g., nursing, farming, legal)	
Entrepreneurship	Knowledge and abilities that support success in creating and building a workplace opportunity or idea	To support youth in establishing their own business, supporting entry into freelance, contract work, or gig work, and/or developing as a self-starter within a work environment	Initiative, innovation, creativity, industriousness, resourcefulness, resilience, ingenuity, curiosity, optimism, risk-taking, courage, business acumen, business execution	
<p>Lifelong Learning: A continuous process of gaining new knowledge and skills as individuals progress through their professional and personal careers</p>				

Figure 29: 2019 TVET Curriculum Framework

B 1.2 Future Skills in Bhutan: Matching In-Country Demand to Curriculum

According to the World Bank’s Solutions for Youth Employment (S4YE) initiative, almost two-thirds of youth skilling programs fail to have any impact on youth employment due to the lack of demand-side integration with companies to ensure that enough good quality jobs are available or being created in the first place. Progress Report 1 on Demand Creation and Employment have focused on how to grow the presence of aligned small- and medium-sized BPO/ITO/FDI companies in Bhutan, the companies that present the highest return on investment for job creation, while also planting seeds for a homegrown innovation and entrepreneurial ecosystem with locally-led companies that can expand globally. In summary, three major mid-term pathways for ICT-led and “future of work” employment can be identified namely:

1. FDI-based BPO/ITO/ISSP companies in and beyond Thimphu TechPark
2. Home-grown technology companies launched by local entrepreneurs
3. Others that are difficult for jobs at scale: online freelancing, microwork, low-skill BPO opportunities, public sector ICT, long-term pathways to Big Tech, etc.

Given Bhutan’s necessary focus on these categories of ICT-sector and other employers, future skills needed for Bhutan must then match the specific skills identified in the local market by actors who have already committed to employ Bhutanese job seekers. To build mass or universal skilling programs for unemployed young people around other future skills without consideration of that local demand in Bhutan, is both ineffective and unproductive in the short term. In the longer-term view however, it makes sense to invest in the broader, more globally-identified advanced future skills (i.e. blockchain, AI, machine learning) for only a select group of local Bhutanese talent that may receive targeted upskilling courses or study

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abroad at top global tech universities, returning to build capacity for the entire system. Therefore, future skilling curriculum development, standards, and certification frameworks at large must be guided by real-time forecasting to the existing ICT industry partners in Bhutan. To institutionalize better forecasting of future skills to real and emerging demand on the ground in Bhutan, a few standard operating procedures can be put in place:

1. MoLHR to survey Thimphu TechPark FDI/BPO/local companies annually and produce a clear data-driven picture of skilling needs, released through an annual report with easy-to-read charts. In this process, MoLHR can empower a revitalized ICT industry association to be an assessor and voice for the private ICT sector's future skilling trends as this association would also be leading new demand creation efforts in recruiting FDI companies.
2. The Hub should also establish an ICT Academy - Industry Board to ensure that existing industry partners and FDI companies have a channel to communicate their ever-changing needs in the industry while informing the types of market-ready skilling courses that can plug into their work. Likewise, these companies can hear the perspectives of the "ICT Academy" - the future skilling providers and academic institutions on the frontlines of training. For a stronger global perspective, the Hub can set up a Global Advisory Board with leading international institutions and partners such as Singapore's NYP and ITE, Australia's TAFE, Coursera, Harvard Kennedy School's Project on Workforce, and more. This informal advising will ensure Bhutan is also paying attention to broader trends beyond its borders.
3. Rather than prescribing specific list of future skills, specific courses, and curriculum frameworks which will constantly be changing based on the drivers of demand and the actual ICT sector FDI companies in Bhutan, institutional operating procedures has to be put in place to ensure that the country can constantly adapt to a changing future. Upon identifying the key future skill buckets, competencies, and categories, the hub should use the MoLHR's "Guidelines for TVET Curriculum Development" and other curriculum development tools to guide future skilling providers on course selection and development, curriculum framework creation, and requisite standards and certification.

B 1.3 The State of Future Skilling in Bhutan: Mapping Stakeholders across the System

Based on field research, there are already a plethora of existing and potential new future skilling providers including but not limited to:

- Thimphu TechPark resident FDI companies in-house skilling programs
- Technical Training Institute Rangjung (TTIR) and the new TTI in Thimphu
- Private actors and providers
- TVET/BITE mainstreamed into schools
- MoE and ICT integration in schools
- RUB (Gyalpozhing College of IT; College of Science and Technology)
- MoLHR programs (MOOCs, online freelancing program, and more)
- Code for Bhutan
- FabLab and Super FabLab
- Loden Foundation and other CSOs (YDF's Innovate Bhutan Center, etc.)
- iHub Thimphu
- DITT under MoIC
- DHI and InnoTech
- Bhutan Education and Technology Academy (BETA) Park

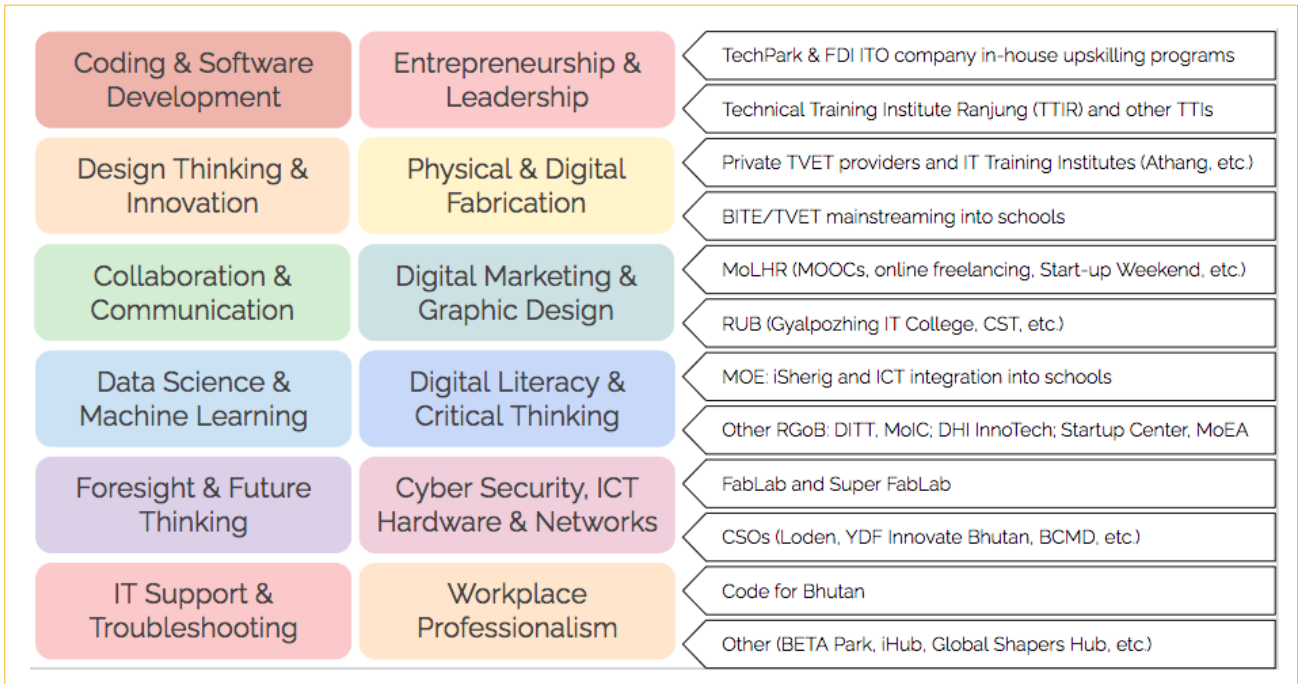


Figure 30: Future Skills and Existing Providers

These providers plug into different parts of the education, skilling, and employment systems, offering various formal and informal pathways for developing future skills. These include everything from an entrepreneurship and design thinking program led by Loden Foundation to a new python curriculum for Class XII integrated in all secondary schools to digital and physical manufacturing spaces like FabLab to innovation programs like iHub Thimphu and the YDF's Innovate Bhutan Center to formal coding education at the Gyalpozhing College of IT to network security workshops through DITT to the MoLHR's online freelancing program with a private training provider. There is not one system that these various puzzle pieces all fit into.

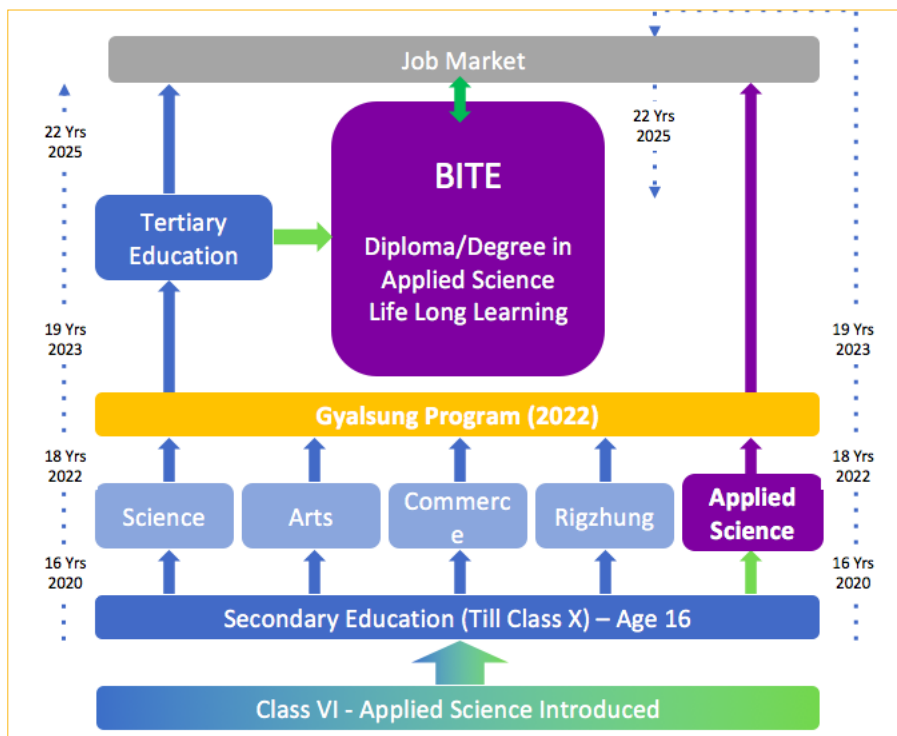


Figure 31: Proposed BITE Pathways

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Each of these providers addresses a different part of the digital and future skills spectrum. For instance, in schools, students learn digital literacy and “basic digital skills” such as using a keyboard and online search; whereas at a FDI BPO company in-house training program or Code for Bhutan, a job seeker may be learning and using intermediate digital skills like digital marketing and graphic design, or even advanced digital skills such as full software development and cloud computing. Each part of this spectrum is important and it is critical that each future skilling provider in Bhutan plays its part to form a pipeline of future skills development from basic to advanced.

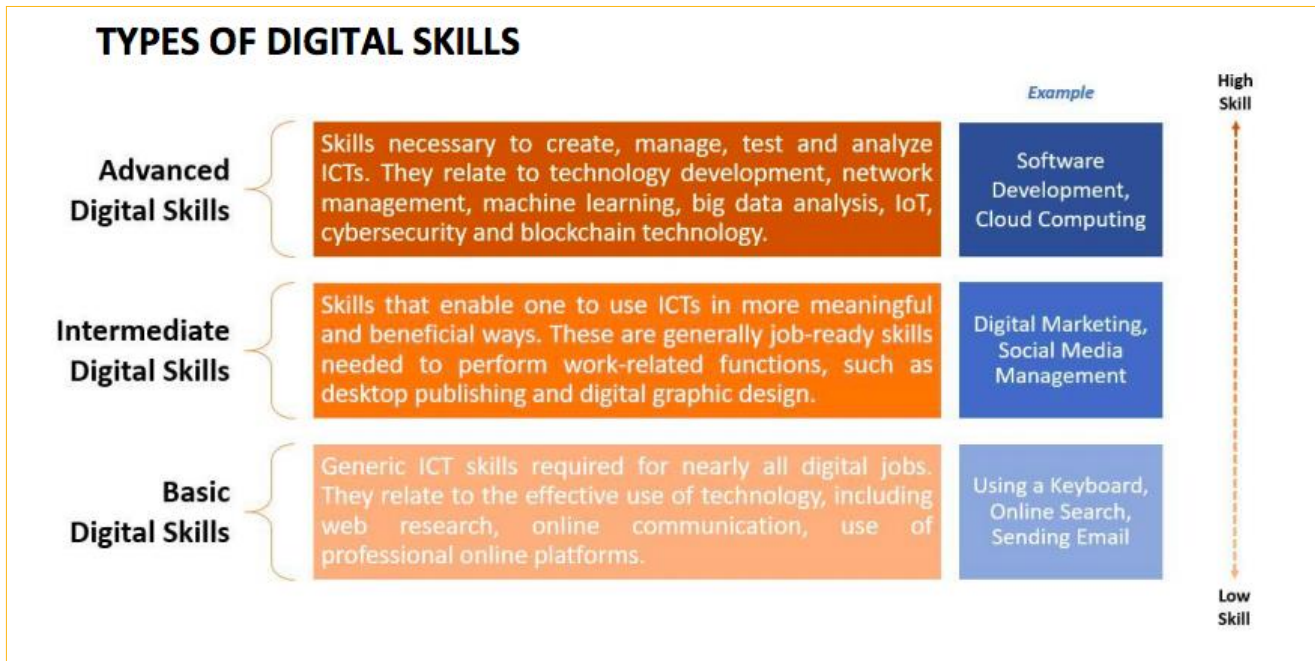


Figure 32: Spectrum of Digital Skills

A smooth pipeline from basic to advanced future skills unfortunately does not exist currently in Bhutan. This is emblematic of several other large challenges in creating a coherent, high-quality, and equitable future skilling system for Bhutan:

- Lack of clarity, coordination and complementarity among the numerous governments, CSO, and private future skilling initiatives, especially in the absence of a proper future skilling strategy and system. Several initiatives by individual actors cannot bear fruit collectively for a country as small as Bhutan because each of them will become rapidly stymied by their inability to leverage Bhutan’s limited resources and scale up what works. The need for quality, scalability, and sustainability among future skilling programs are equally critical and connected to the lack of clarity and coordination among the various providers. For the system to thrive as more than the sum of its parts, it must promote exponential and collective quality improvement at scale. Meanwhile, issues with digital access, literacy, equity and inclusion, particularly for marginalized and rural groups, continue to present major barriers to true systems change that ensures all young people in Bhutan have opportunities to thrive through future skills.
- Skills gap and mismatch, including limited feedback loops and pathways for skills transfer: Although Bhutan has a robust education system pathway including for ICT, misalignment in skills and the gap in market-ready, industry-relevant competencies remain, resulting in lost opportunity for the hundreds of new ICT and university graduates added to the market every year. Meanwhile, the lack of data on skills needs and job demand along with the inability to feed the limited data back into skilling initiatives further exacerbates this issue. This is all on top of limited skill building opportunities from on-the-job experience as well as coordination and learning between and across firms.

- Weak information flow between job seekers, employers, and government: the UNDP Accelerator Lab has identified and articulated well several of the weaknesses in information flows across the system: “individuals lack information about jobs and skills, employers lack information about upcoming trends and their skills needs and opportunities, and sectors lack mechanisms for coordination (e.g. between firms or with government and other partners). Information silos in government departments lead to silos in policy implementation and regulations and mechanism for oversight that are not fit for needs. The system needs stronger distributed capabilities for learning and collective intelligence at all levels in order to have the capacity to continually adapt and renew itself.”

Because there is not currently a formalized system for future skilling in Bhutan, the former BITE Council as an autonomous government agency is well-positioned to be the central convener, systems coordinator, funder and enabler of all future skilling and innovation initiatives. However, considering how the future skilling efforts are not well coordinated, a dedicated agency to leverage on is critical for Bhutan to unlock value creation among its decentralized actors (training providers, companies, job seekers, etc.), assets, capabilities, and opportunities in the growing digital and “future of work” economy.

B 1.4 Moving Towards Systems Change for Future Skilling

Given the challenges above, we believe the key to future skilling systems change is not one-off project solutions but rather larger adaptive actions that facilitate better systems coordination, enablement, and acceleration. In terms of former BITE’s role, we think this was possible with several high-level mindsets and broader systems approaches. BITE could first begin by asking existing future skilling providers and actors: What would help increase the impact, quality and scale of your work?

As discovered during the Future Skilling Co-Design Workshop with relevant stakeholders, many future skilling providers face challenges in financing to sustain and scale their programs to reach more young people. There are additional bottlenecks in terms of reducing regulation or facilitating visas for programs like Code for Bhutan which recruit instructors from abroad. We see many different possibilities for where BITE could “play” and “not play”:

- Recruit global talent, digital nomads, and investors that can support future skilling initiatives
- Bridge demand (employers) and supply (job seekers) through future skills industry linkages
- Map and build inclusive skilling-job linked pathways to ensure equity for diverse youth population groups such as rural youth, university graduates, TTI graduates, and more
- Align and provide incentives across future skilling providers, to enable high-impact independent programs like Innovate Bhutan Center to thrive
- Leverage the Hub to pilot new experiments that benefit the TVET system more broadly
- Track data including learner outputs (i.e. course completions) and outcomes (i.e. # of jobs)
- Know when to allow providers to take the lead and reduce bureaucracy and regulation, thereby allowing them to innovate and drive effectiveness in their work

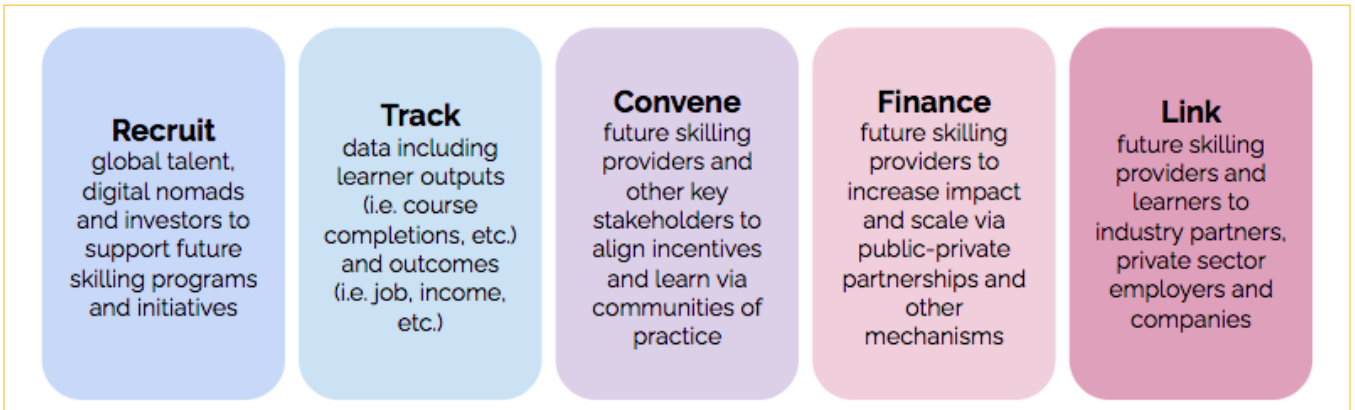


Figure 33: The Hubs Potential Systems Roles

Given the lack of complementarity, coordination, and collective learning among future skilling providers, other recommendation is to co-create an open “societal platform” as a national digital learning infrastructure for future skilling to empower learners and training providers at scale through blended learning. To develop this platform, more concretely, the following recommendations are presented:

1. Convene industry partners and employers, future skilling providers, and learners to backwards map skilling pathways, assess blended learning needs of providers, integrate and activate stakeholder agency, and co-design the societal platform features
2. Leverage the existing free, open-source Sunbird digital learning management infrastructure, which was used to develop DIKSHA - India’s national teacher platform
3. Bring together a team of local future skills curators from among providers to populate the platform with relevant existing best-in-class learning experiences and rich digital content, supplemented by user-generated content, online community, and e-credentials

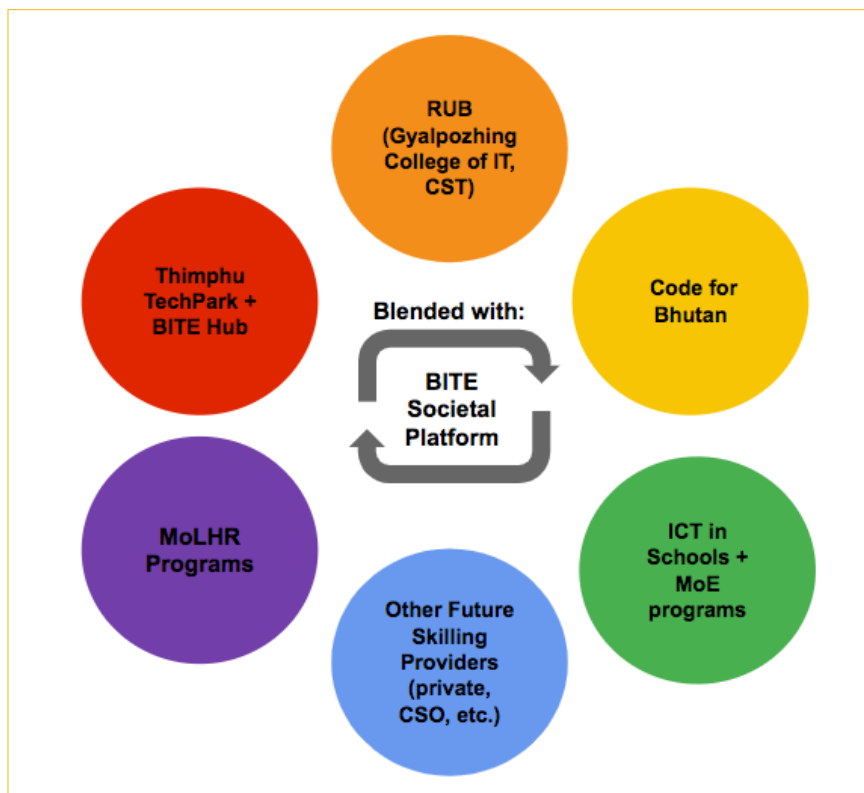


Figure 34: Blending a BITE Societal Platform

B 1.5 Leveraging a Blended Learning Approach

What is a blended learning approach?

- Part online, at home on your own free time
- Part in-person, away from home at a classroom location with other peers in a group or with individualized support/attention
- Along a learning path - integrating both online and in-person to improve the learning experience and outcomes

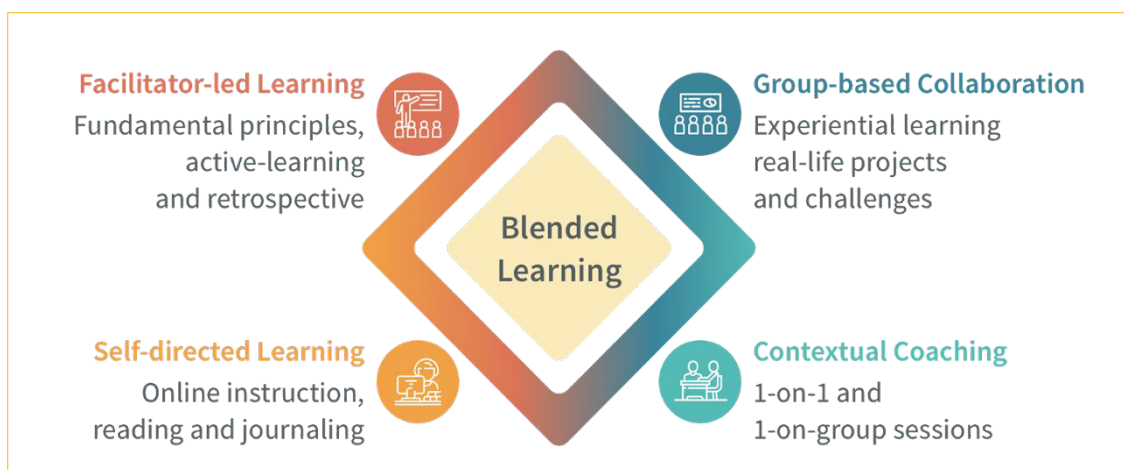


Figure 35: Blended Learning Framework

Why use a blended learning approach?

- Enhance the impact of in-person classroom teaching on student motivation, student engagement, knowledge retention, and skills development through digital teaching aids (i.e., use of videos in the classroom, etc.)
- Provide rich digital content and courses for students to supplement in-person learning outside of the classroom and after the course is complete
- Expand an instructor's teaching reach beyond in-person sessions and gives each student the ongoing individual support and digital learning that he/she needs.
- Improve collaboration through online peer support, Q&A with instructors/coaches/experts, online community, and the exchange of additional digital resources outside of the in-person classroom sessions
- Drive greater scale by reducing the cost of continuing education that requires more personnel, travel, and meeting expenses
- Improve instructor assessment of the student through digital supports

How to design and implement a blended learning approach?

In this case, the future skilling provider is implementing the blended learning approach, integrating the in-person course with the BITE societal platform as the digital learning infrastructure.

1. Start with the end in mind: what's the learning goal or skilling/job outcome the instructor/provider wants the course to achieve?
2. Assemble the team: how many instructors, alumni of the course who come back to help as coaches/mentors, consulting experts, IT support, etc.

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3. Choose the technology: online learning platforms like Coursera, Skillshare, etc.; digital learning management platform like Moodle, Canvas, etc.; societal platform / digital learning infrastructure like the BITE societal platform. Students should be introduced and on-boarded onto the technology during the in-person course/first classroom session.
4. Choose the blended learning model: Here are 7 different blended learning models that are commonly used in the educational setting but there are other types of models as well
5. Implement blended learning approach in the course and beyond, especially with on-going lifelong learning once the students are on the platform and know how to use it. The goal is to motivate and teach students how to learn on their own so they can choose/curate their own online digital content and courses to continue learning.
6. Monitor/assess learning constantly and improve the implementation of the blended learning model for better outcomes

B 1.6 What is a Societal Platform?

A Societal Platform is an innovative concept inspired by leveraging open-source digital platforms as a societal public good to address a system change challenge at scale, with speed and sustainability. Societal Platforms seek to answer the question of “what works at scale” starting at a systems-level rather than a one-off project with the mentality of “scale what works.” In principle, they function as both digital impact amplification networks and innovation co-creation enabling environments that bring together various stakeholders and actors to develop contextual solutions. Societal platforms strive to “distribute the ability to solve” rather than distribute a predetermined solution that may or may not work in context, thereby promoting individual agency at the local level to learn, adapt, and lead change. Its principles are as follows:

Societal Platform	Commercial Platform
1. Public good, for societal development	1. Private venture, for shareholder returns
2. Accrues value to society and partners	2. Accrues value to platform and owners
3. Makes scarce resources abundant	3. Captures scarce resources to compete
4. Nurtures open and adjacent networks	4. Increases dependence on the platform
5. Empowers the ecosystem with data	5. Controls the ecosystem with data

Figure 36: Societal Platform versus Commercial Platform

Case Study: DIKSHA - India's national digital infrastructure for school education

DIKSHA (Digital Infrastructure for Knowledge Sharing) is a societal platform for school education initiated by the Government of India. DIKSHA serves as a national digital infrastructure for teachers and learners across the entire nation, with millions upskilling and learning on the mobile app platform in 33 languages, 90,000+ unique pieces of user-generated digital content, 275+ million content plays, 1.85+ billion learning sessions, and 15.9+ billion learning minutes. Each of the 36 States and Union Territories in India have their own virtual space on DIKSHA as tenants, with the autonomy to decide on the solutions most relevant to them. The platform has eight solution verticals that address school education in India through various approaches including teacher professional development, access to teaching and learning content, school leadership and others. What is powerful about DIKSHA is its linkage to real-world textbooks and the prescribed school curriculum as a portal into digital learning. By scanning a QR code in the textbook using the DIKSHA app, teachers or students can access a plethora of additional quality resources and content including videos, study guides, activities, and more. Through DIKSHA, teachers have access to aids like lesson plans, worksheets and activities, to create high-quality classroom experiences. Students understand concepts, revise lessons and do practice exercises. Parents can follow classroom activities and clear doubts outside school hours. DIKSHA enables, accelerates and amplifies local solutions in the realm of school education, aiding teachers and learners to continue to learn, upskill, and assess themselves to improve their capacity in the education system. It also helps teachers to access personalized learning pathways, develop their own profiles with earnable badges, utilize best-in-class resources and assessment aids for blended learning, and benefit from an online teacher community of practice. The DIKSHA platform allows for organization-led and teacher-led digital content creation and contribution to the open-source resource library with lesson plans, teaching videos, and much more. This is to ensure quality learning resources are available to students and teachers across the country.

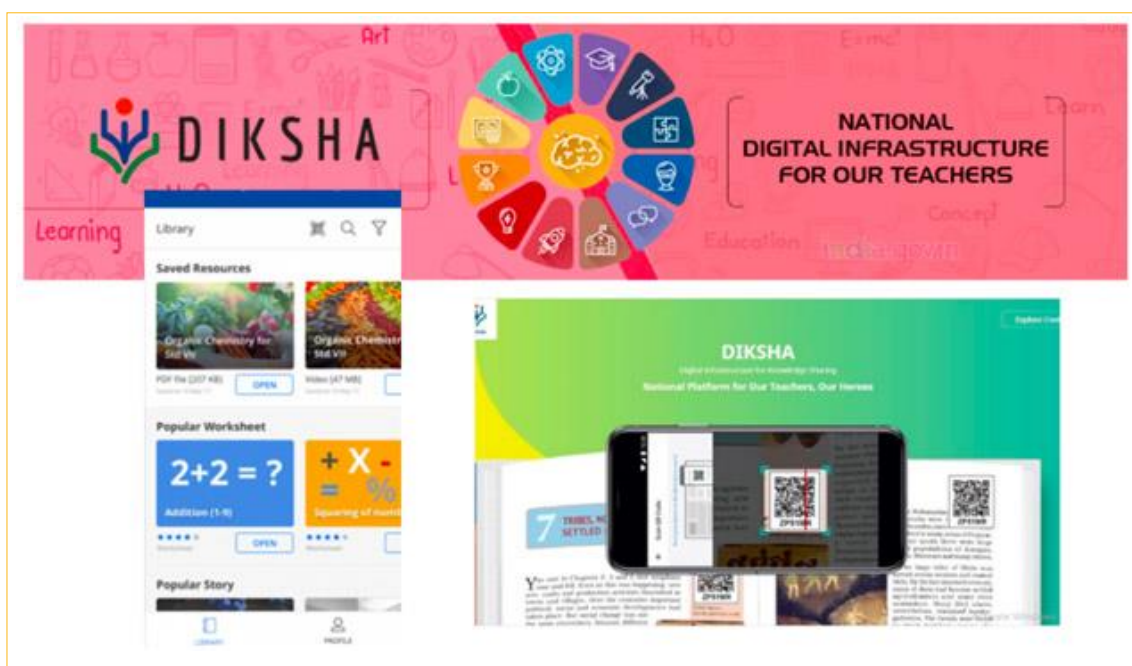


Figure 37: Example of Societal Platform - DIKSHA in India

Sunbird is a free, open-source, configurable, extendable, modular digital learning management infrastructure designed for scale and available under the MIT license. For a comprehensive overview and digital architecture of Sunbird, please view this video. Sunbird has been designed to support multiple languages and multiple teaching and learning solutions by providing the building blocks for the development of platforms and learning solutions to suit various use cases, contexts and needs. It can be

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used by any organization, be it government, non-profit, or private. Sunbird also comes with reference solutions built by the community that can be readily used. Architecture of Sunbird is purposely designed in a generalized and externalized manner, it can be configured and extended by any organization to run a platform that enables solutions in their context and domain. Sunbird is designed for diversity and scale so that it caters to multiple domain needs, and scale & diversity of India. Sunbird has been developed by EkStep Foundation to fulfill its education mission to enhance access to learning opportunities at scale for millions of learners particularly in the K-12 space. The Sunbird community (both user and developer) has grown over the last couple of years, thanks to its successful adoption at India scale.

Sunbird is the digital infrastructure beneath DIKSHA and several other platforms such as the InfoSys Wingspan next generation learning solution for upskilling. Sunbird various capabilities and a use case example of InfoSys Wingspan can be found below:

Sunbird Capabilities

- Infrastructure architecture**
Allows multiple organisations and communities to exist on the infrastructure
- User and organisation registry, profiles**
Allows organisations to store verified information about users and organisations
- Support online and offline consumption**
Designed for offline distribution, sharing, downloading of content and data
- Courses, trainings and lesson plans**
Designed for offline distribution, sharing, downloading of content and data
- Open taxonomy infrastructure for organising knowledge**
Designed for offline distribution, sharing, downloading of content and data
- Open content resource library**
Content created or uploaded can be published under the creative commons license framework
- Curation**
Allows for review and curation workflows prior to publishing of the content
- Data and dashboards**
All interactions with the user interface and content are available as data
- Badges for creation**
Allows for badges to be issued for activities like course completion, proficiency and content contribution
- Card and feed based user interface optimised for mobile access**
Architected to stream or feed the content most relevant to users by matching the user's profile to the profile of the content

The figure also displays three mobile app screenshots for a user named Akansha Goyal, Senior Systems Engineer, ETA. The first screenshot shows a notification for completing the course 'Mobile App Development Using Android M' and a 'You have earned' section with three badges. The second screenshot shows the 'Add Interests' section with a search bar and a list of interests: Big Data Testing, API Economy, and Mainframe Modernization. The third screenshot shows search results for 'machine learning', displaying a course card for 'Machine Learning' with 6.6K views and another card for 'Explore Machine Learning' with 17.4K views.

Figure 38: Sunbird Capabilities and Use Case Example (InfoSys WingSpan)

B 1.7 BITE Societal Platform for Future Skilling

For Bhutan to address its future skilling and employment systems challenges, a BITE-enabled Societal Platform can be the fulcrum and lever that makes the difference, addressing many of the challenges we listed above through one national digital coordination and collective learning mechanism. The platform can serve as a resource aggregator and national digital infrastructure for all future skilling education, with several key design principles: human-centered, personalized, contextualized, on-demand, data-driven, open-source, secure, learning-functional, and systems-interconnected.

As the frontline of contact with students, learners, and jobseekers, future skilling providers should be the initial connection point for usage of this digital societal platform. The hub should encourage its adoption and usage as a blended learning tool across all future skilling provider communities, whether at the Gyalpozhing College of IT or Code for Bhutan or MoLHR online freelancing course. Thereby all the students and learners in these future skilling courses will be empowered and supported to utilize the societal platform to blend with their in-person training and improve the quality of the program and their learning. The cross-system incentives are as follows: the societal platform serves as a resource aggregator and best-in-class blended learning platform for providers, a skills assessment tool for employers, and a digital one-stop-shop for learners seeking to upskill, get certified, and gain employment.

Some of the key functions would include:

- 1) **Assess** learner and trainer skills, competencies, aspirations, learning progress, and outcomes (i.e. monitoring through data – where do students who go through this provider end up? Where are they employed? etc.)
- 2) **Map** skilling pathways and career pathways to create clarity, inspiration and alignment among learners as well as providers and employers
- 3) **Connect** with an online learning community including coaches, mentors, peers, and employers through your own personalized profile – linkages to additional Q&A forums, Zoom groups, Facebook groups, Messenger/WhatsApp groups, etc.
- 4) **Learn and upskill** through curated, best-in-class future skills content, training, short courses, long e-courses via a digital library of existing online content (MOOCs such as on SkillShare, Coursera, etc.) and user-generated content (prepared by the future skilling providers, learners, etc.)
- 5) **Certify** with micro-credentials (stackable blockchain badges, etc.) and e-certifications through a secure, portable, digital e-credentialing system (see attached Indian Ministry of Skill Development and Entrepreneurship “Adopting e-Credentialing in the Skilling Ecosystem” brief which provides a valuable conceptual and operational framework)
- 6) **Match** learners to jobs through digital linkage and interface with the MoLHR’s job portal system whereby learners’ skills assessments, micro-credentials, e-certifications, GitHub code, etc. are available for employers to access

Some of the next steps with this platform include:

- Attract and gain support of future skilling providers by understanding their needs and challenges, adapting the features of the platform to their usage.
- Partner with the leading providers and employers who are looking to hire young people. Understand the skills that are in-demand and the specificity of the jobs.
- Build M&E and data system that corresponds to the needs of the training providers such as tracking job outcomes after youth have gone through the different courses and training programs.
- Develop a prototype of the platform using Sunbird, which is free and open-source (used to build DIKSHA) and integrate other critical third-party technology platforms and tools such as GitHub, Coursera, and Moodle.
- Implement and continuously get feedback to iterate and improve the platform.

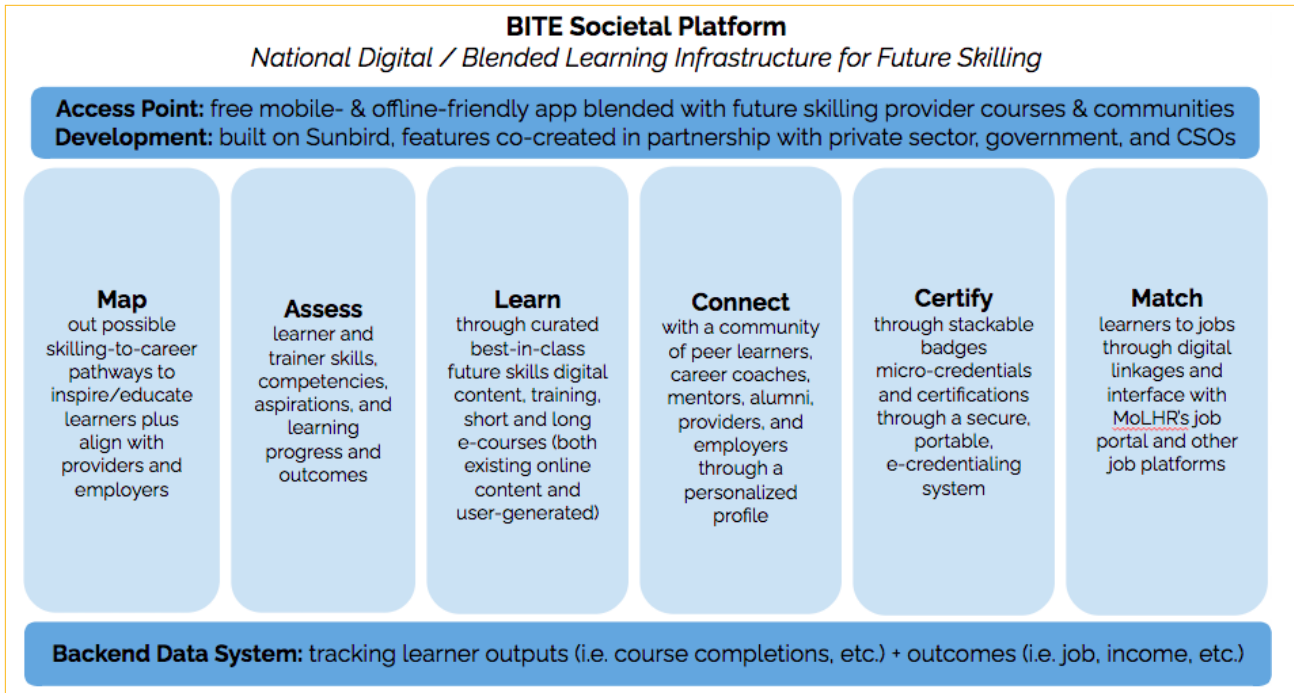


Figure 39: BITE Societal Platform Possibilities

B 1.8 Insights from Global Innovations Labs: Stanford, Harvard, MIT



The Stanford Hasso Plattner Institute of Design, known as the d.school, is a hub for innovation, collaboration and creativity, with the mission to help people become everyday innovators, everywhere. The d.school is a leading global design thinking institute with collaborative open working, teaching and learning spaces on Stanford University’s campus. The d.school was founded in 2004 by 7 Stanford Mechanical Engineering Professor David Kelley, who is also the founder of the global design firm IDEO.

The d.school’s project-based classes bring together students and faculty across all seven schools (engineering, medicine, business, law, the humanities and sciences, earth sciences and education) to use design thinking process in collaboratively tackling real-world local and global challenges. Each year, the d.school offers around 35 of these quarter-long classes for academic credit, and about 40 shorter learning experiences called Pop Up classes or Pop Out workshops with leaders, practitioners and experts across various fields. One of the d.school’s most well-known courses is called Design for Extreme Affordability, which teaches students human-centered design methods to design products and services that will change the lives of the world’s poorest citizens. Students and alumni of the d.school have designed and launched hundreds of new products, social ventures, and companies such as Embrace infant warmer, d.light solar lanterns, and LinkedIn Pulse.

Key learnings:

- Stanford d.school embraces 7 unique design thinking mindsets (d.mindsets) that create a culture of innovation across disciplines – with design thinking methodology serving as a shared language for groups to navigate the ups and downs of messy challenges. The d.school utilizes modular learning spaces that foster active learning and collaboration, such as movable white boards and furniture. A 100% opt-in culture ensures that students, faculty, and collaborators who get involved d.school classes want to be there and contribute meaningfully. No one is required to participate.
- Stanford d.school also occasionally launches broader systems-level experiments such as the Emerging Tech Initiative to provide radical access to technologies like artificial intelligence and Reimagining Higher Education to illuminate innovation pathways and possibilities for how higher education institutions can evolve to meet the rapidly-changing future.
- Stanford d.school leverages its executive education programs, area-specific labs such as the K12 Education Lab, proximity to Silicon Valley, project partnerships with non-profit, corporate, and government organizations, and Fellows in Residence program bring in real-world context, learning, resources, and networks to transform ideas into ventures, products, and impact.



Figure 40: Stanford Hasso Plattner Institute of Design d.mindsets



Founded in 2011, the Harvard iLab is an innovation hub at Harvard University which aims to promote team-based and entrepreneurial activities among Harvard students, faculty, entrepreneurs, and members of the Allston and Greater Boston communities. The iLab is available to all current students from any Harvard school who is looking to explore innovation and entrepreneurship at any stage. While the iLab does not offer specific academic courses for credit, it serves as a hub for innovation activities and provides the physical and intellectual resources current Harvard students and practitioners need to develop and grow their ideas and ventures, including one-to-one advising, an innovation competition, a venture incubator program, office hours with industry experts, tactical skills workshops, alumni circles, pitch sessions, and an open co-working space.

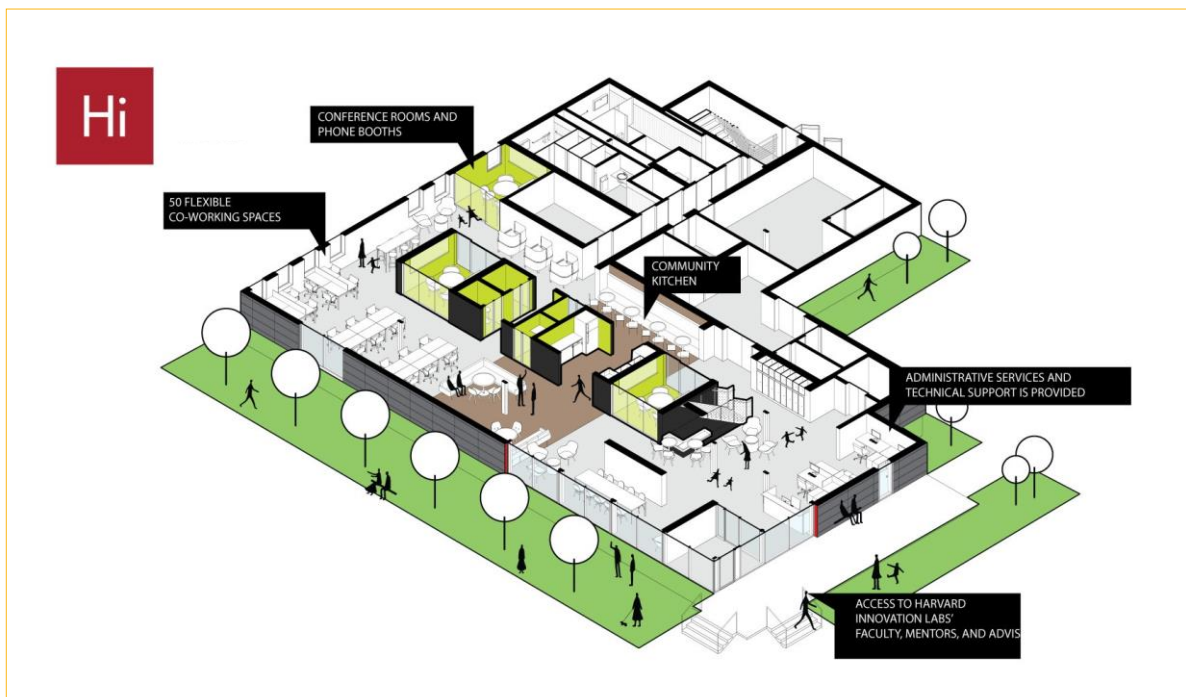


Figure 41: Harvard iLab Building

Key learnings:

- Harvard iLab has positioned itself at the praxis of the academic-research environment and the broader innovation ecosystem, including Boston's leading biotech and life science industry sandbox. Accordingly, the iLab provides a life sciences web laboratory with co-working space for early-stage, high-potential biotech and life science start-ups founded by Harvard students, alumni, faculty, and postdoctoral scholars.
- Harvard iLab also offers industry-specific round tables to support entrepreneurs and start-ups across fields, including life sciences, financial technology, social impact and international development, and more – thereby bridging industry partners and leaders with students and young entrepreneurs to transform their ideas into thriving ventures.

- In addition to industry linkages, Harvard iLab offers university-supported venture funding opportunities as well as connections to broader incubation ecosystems and VC networks. Each year, the Harvard President's Innovation Challenge provides more than \$510,000 in seed funding awarded to the winning teams whose venture proposals are evaluated by a panel of professional judges.
- In addition to co-working and modular learning spaces that foster collaboration and active learning, Harvard iLab has a VR/AR Studio equipped with emerging technologies such as VR headsets and AR software that allow students experiment and innovate, a Maker Studio equipped with high-quality physical and digital manufacturing workstations as well as product design and prototyping tools such as 3D printers, and Media Studio for students to create multimedia assets such as videos and audio for marketing and outreach.



Founded in 1985, The MIT Media Lab is an interdisciplinary research laboratory that brings together world-renown researchers, practitioners, entrepreneurs, engineers, educators, technologists, designers, artists, scientists to reinvent the future. The lab is structured into research clusters with specific areas of knowledge and depth of focus. Each research cluster is led by a faculty with depth of knowledge related to technology, media, science, art, and design. Each lab houses research assistants who enrolled as master and doctoral degree students in the Media Arts and Sciences (MAS) program, as well as, visiting researchers who contribute their area of expertise to the specific research group. The lab members work together on hundreds of projects in diverse disciplines that range from artificial intelligence, cognitive prosthesis, social robotics, wearable technology, to new models of learning.

To maintain the impact and innovation of its work, the Media Lab allows companies to become Consortium Lab Member, where companies provide yearly membership funding for the MIT Media Lab to have access to Lab's research and publication, strategic brainstorming sessions, IP rights, and speaker events. The Media Lab currently has 80 partnered companies that include leading industry leaders, such as, Ford, Google, Comcast, Temasek, Citigroup, Panasonic, and Hyundai.

Moreover, The Media lab also focuses on educating future global innovators and offers both master and doctoral degrees, as well as classes for others in the MIT ecosystem to access and learn from the Lab's faculty and research. Research and publication of the Media Lab become the foundation of breakthrough and innovation, and many research and initiatives at the Media Lab have led to becoming spinoff companies, and technological and innovation infrastructure for those inventing for the future.

Key learning:

- MIT Media Lab establishes a key focus area and positioning itself in the global arena as a lab that invents the future with interdisciplinary research and cross-disciplinary collaborations.
- MIT Media Lab structures its financial suitability and impact by securing sources of funds from private companies who are invested in developing cutting-edge research and technology and interested in becoming long-term collaborators.

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- MIT Media Lab is structured modularly by a key area of focus that responds to the future current lab groups including biomechatronic, fluid interfaces, mediated matter, modular machines, nano-cybernetic bio trek, sculpting evolution, and tangible media.
- MIT Media Lab creates an open platform for innovation by organizing guest speaker events, site visits, and learning resources for those in the MIT ecosystem, as well as, visiting scholars both local and international.

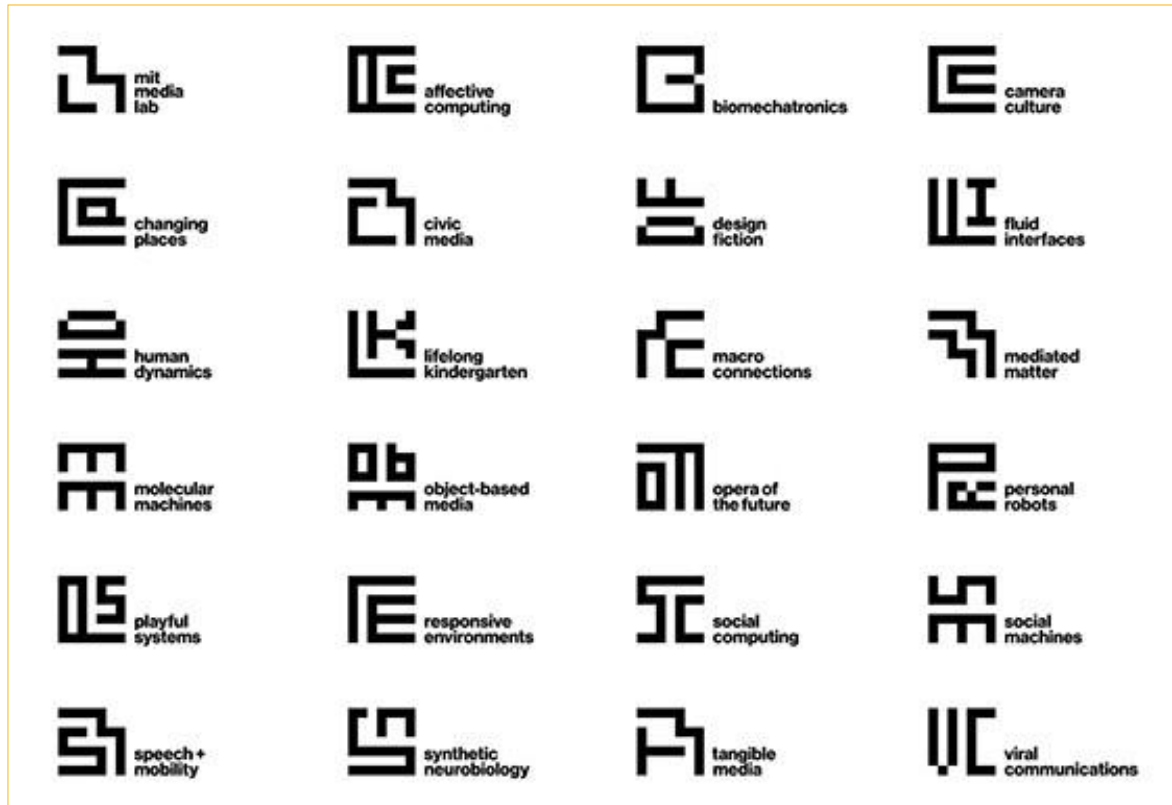


Figure 42: MIT Media Lab Modular Labs

B 1.9 BITE Hub Future Skilling Lab Concept

The Bhutan Innovation and Technical Education Hub (BITE Hub) was the first prototype project by the TVET Reform Initiative of the Royal Government of Bhutan. This is part of a larger initiative of establishing an eventually autonomous BITE Council that will have an overall scope at the national level to advance skilling and employment for the 21st century. The BITE Hub will have the mission to promote innovation, creativity and enterprise in general but with the specific function of reforming the image, curriculum and the relevance of TVET in Bhutan. The BITE Hub will include state of the art civil infrastructure, building design, equipment for the PEA Labs, and online and digital facilities. Within the BITE Hub, there are four major components:

- 1) Plumbing, Electrical and Automobile (PEA) Labs
- 2) Teaching Factory Lab with Applied R&D
- 3) National Technical Teachers Training Institute (NTTTI)
- 4) Future Skilling (FS) Lab

At the BITE Hub, the Future Skilling Lab (FS Lab) will play a role in the broader future skilling strategy for TVET Reform by bridging supply and demand through value-added programming and industry linkages.

The FS Lab will support existing TVET students and instructors to advance skills development needed for an increasingly digital economy. Because the key demand-side strategies in this report involve recruiting global talent, digital nomads, and investors to support innovation, skilling, and job creation, the FS Lab will heavily leverage these strategies and local partnerships with existing agencies, private sector actors, and civil society (such as Thimphu TechPark, DHI InnoTech, Code for Bhutan, Global Shapers Hub, Google Developers Group, RUB, FabLab Bhutan, etc.) to create stronger cross-sectoral linkages to support Bhutan's burgeoning innovation ecosystem.

Overview

The FS Lab will serve as a platform to connect TVET students and instructors to digital nomads, talent, and entrepreneurs, both global and local – to support the endgame of both future skilling and employment. The FS Lab aims to bridge the demand of digital jobs and supply of youth in the TVET system who have aspirations to work in the digital economy or gain 21st century skills for whatever career they choose. The FS Lab will be resourced with quality physical infrastructure, technology, and equipment as well as programming that focuses on mentoring, rising digital skills, and youth market-ready soft skills, a key gap identified during the Co-Design Workshops with stakeholders. The FS Lab, if established will aim to serve as a welcoming space for global mentorship, relationship building, career discovery, and community engagement. It will be a place where individuals can unlock their potential by experimenting, lifelong learning, and diving into future skills development, project-based learning, and career building. One key value-add is that given the FS Lab's proximity to the BITE Hub's National Technical Teachers Training Institute, its programming to support digital and soft skills for the future through digital nomad and FDI entrepreneur mentorship will have a spillover effect on the knowledge and skills proficiency of TTI instructors and teachers, who can bring back some of their learnings to their TTIs across Bhutan.

Proposed Programming

Through cross-assessment of the key lessons and quality features from the global innovation labs, it was found that Bhutan already offers many of the components that were identified in the global case studies through existing organizations and providers:

- Loden Foundation – entrepreneurship programs, financing, and networks
- MoEA's Startup Center – business incubation and co-working spaces
- Innovate Bhutan (iBhutan) – design thinking and social entrepreneurship programs
- iHub – entrepreneurship programs, business incubation and co-working space
- Thimphu TechPark – business incubation and co-working spaces
- FabLab Bhutan – physical and digital manufacturing laboratory
- Other government, private, and civil society lab spaces

As a result, the programming for the BITE Hub FS Lab should be in a niche area that benefits TVET and the broader future skilling system more broadly without duplicating efforts. That said, within the FS Lab, we see potential value-add for programming that is TVET student-targeted and TVET instructor-targeted. These groups rarely get the extra upskilling and mentorship support for the digital economy as well as their own dedicated tech and co-working spaces. The global digital nomads will also have the chance to use the FS Lab as a co-working space and hub for their own activities, allowing them to use high-tech facilities and giving TVET students/instructors opportunities to engage and learn from this global talent.

Rather than offering specific skills courses (which many existing government, private, and civil society skilling providers already do), the FS Lab should focus on a supplemental mentorship and experiential upskilling program where a digital nomad is paired with 5-10 TVET students and a TVET instructor to form a team that works on a real-world project with a participating industry partner/company (i.e. a DHI

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company, Thimphu TechPark FDI company, private sector company, start-up, etc.), organization (i.e. UNDP Accelerator Lab, CSO, etc.), or government agency (i.e. TCB, etc.) that has a digital transformation need. This will ideally be a requirement or expectation for digital nomads when they receive their special visa to come to Bhutan, give TVET students an opportunity practice digital and professional soft skills, and offer TVET instructors an opportunity to improve their own competencies to bring back to their TTIs.

The experiential future skilling and mentorship program will be the highest priority due to its direct impact on youth upskilling and employment. The power of this approach for TVET students is that the FS Lab program can be combined with any existing future skilling course whether it is Code for Bhutan, MoLHR courses, DHI BizAp digital skill-up freelancing program, or all-online courses, such that the TVET student is learning digital skills in a more formal course environment paired with the additional support from this FS Lab mentorship and experiential upskilling program with digital nomads. Digital nomads will play a central role with two main responsibilities - mentors/coaches and project leads/team mentors for 5-10 TVET students working on a real-life project. The program will focus on both hard skills and soft skills with emphasis on communication, professionalism, and collaboration.

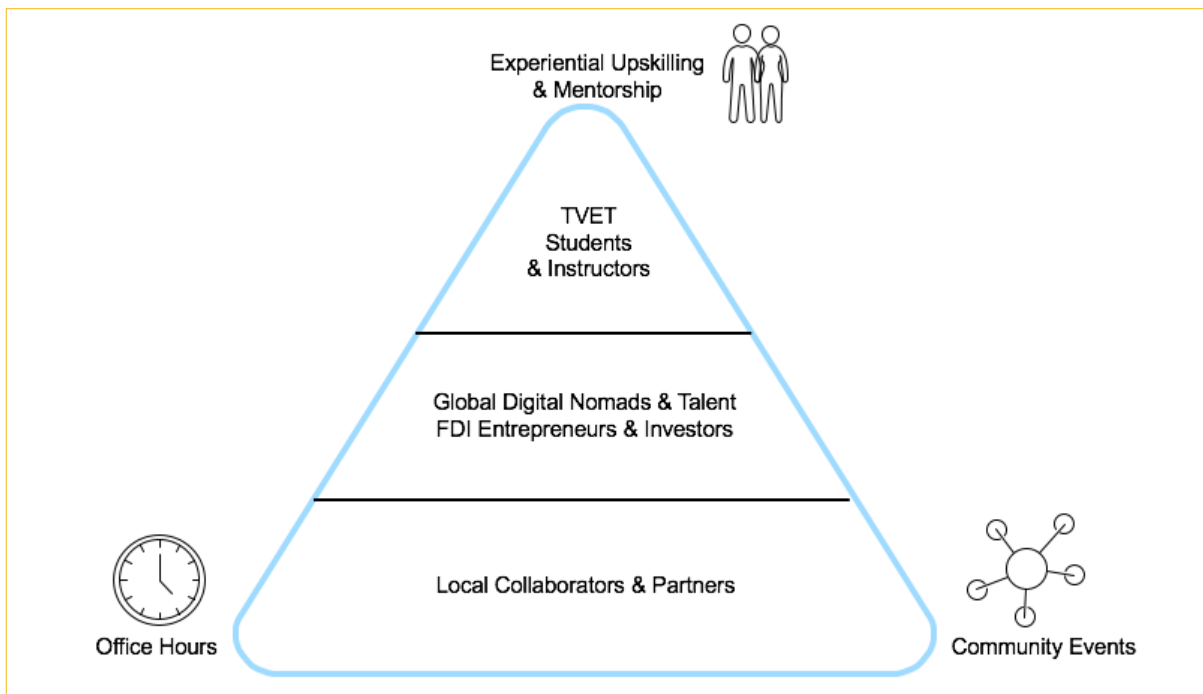


Figure 43: BITE Hub Future Skilling Lab Programming

Through the FS Lab, TVET students and youth will gain globally value-added employable skills, work on hands-on experiential projects with concrete deliveries to showcase potential future employers, gain mentorship from digital nomads, and be part of a life-long community of inspiring learners and practitioners. The BITE Lab will also be a community space for knowledge and collaboration of ideas related to future skilling and opportunities in the digital economy that have high impact for young people. Additional community events like speaker events with various local and FDI entrepreneurs will help create industry linkages for students to explore and secure potential job opportunities.

For digital nomads, the FS Lab will provide the opportunity to spend their year in Bhutan an opportunity to volunteer and support young people. For these expats, the FS Lab can provide a supportive environment for their remote work with high-speed internet and comfortable facilities, but also meaning through channeling their skillsets to build the capacities of the next generation of youth. The FS Lab will also offer a co-working space, equipment, and event spaces for digital nomads to perform work and also share their

knowledge to the wider community via office hours and events such as occasional skill share workshops. In addition, it will provide a unique platform to network with other local stakeholders and global digital nomads who are also leaders in their fields and use this space.

For some global investors and entrepreneurs who choose to invest in Bhutan and establish ITO/BPO companies at Thimphu TechPark, the function of the FS Lab is as a place to connect with global digital nomads, local innovators and entrepreneurs, and recruit TVET youth talent into the jobs they are offering. They can also learn about what digital opportunities exist through community events. This could help to solve a current pain point that entrepreneurs have of needing to invest time and resources to upskill youth for employment in-house.

In order to successfully implement this type of programming at the FS Lab, the Bhutanese lead needs to be well-versed in global and local perspectives, hard and soft skills, and collaborative with coordinating the mentorship experiential learning program with digital nomads, TVET students, TVET instructors, and a participating partner organization. Recruiting the right person to lead the FS Lab will be critical to the success of this proposed programming. Exchange programs to various global innovation labs to build the capacity of the Bhutanese lead could also support implementation and the long-term development of it as an innovation space.

Proposed Physical Space and Equipment

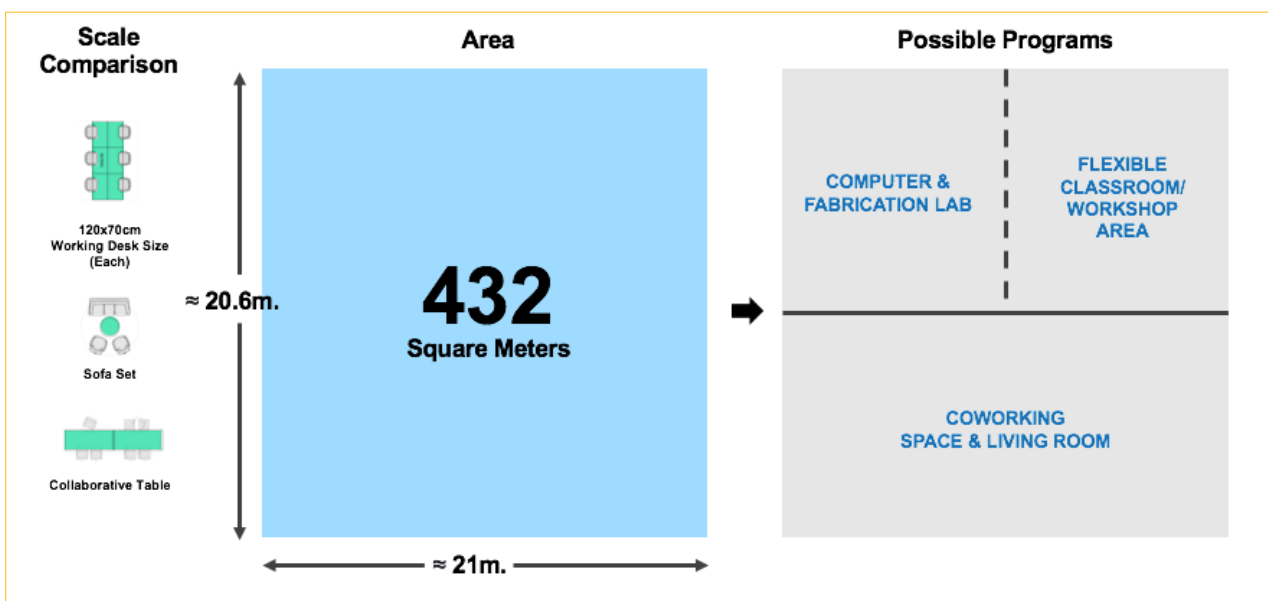


Figure 44: BITE Hub Future Skilling Lab Physical Space Possibilities

The proposed FS Lab space is designed for a multi-purpose usage, adaptable and flexible to accommodate various types of programming and community building activities. It is also modeled after research we have conducted on the types of modular and functional needs in global innovation labs.

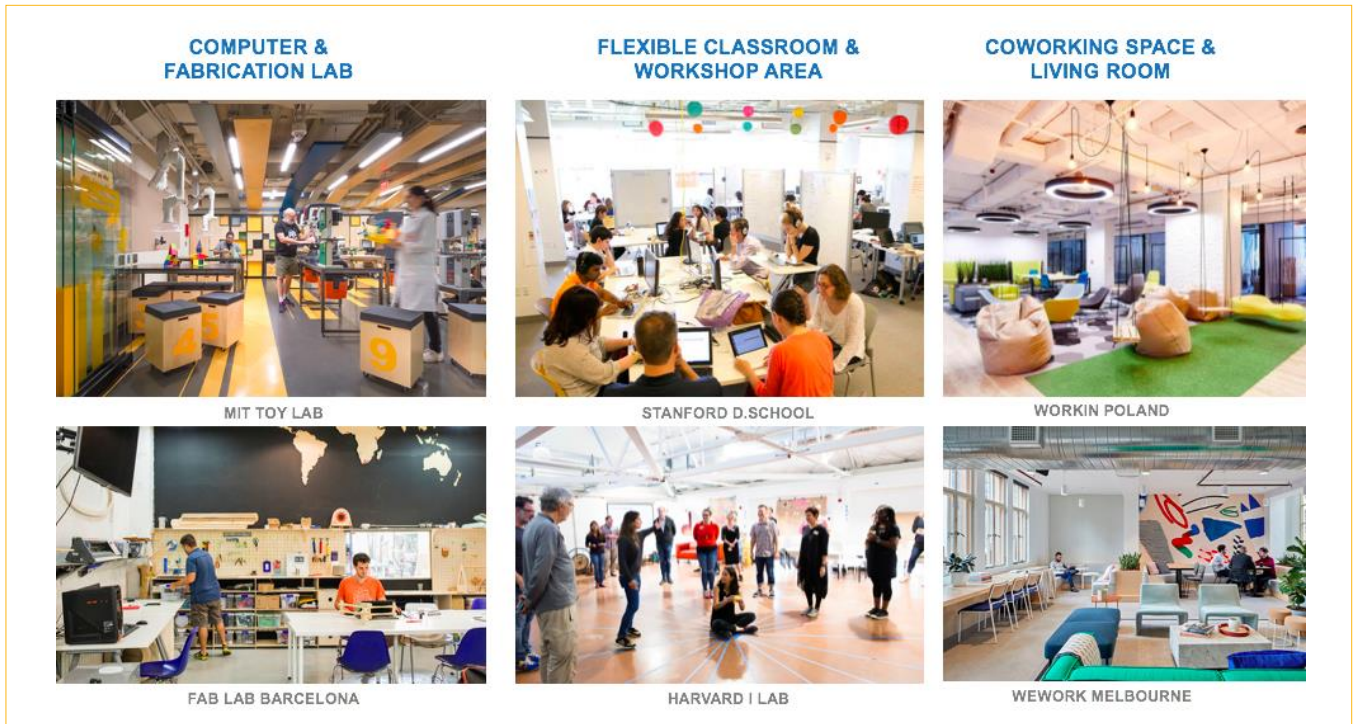


Figure 45: Global Case Photos of Active Learning, Modular Spaces

In addition to a computer lab, inclusion of AR/VR components for skilling purposes was also explored, not just at the FS Lab but for the BITE Hub more broadly. There is also potential of skilling youth and students for the actual development of software for AR/VR use across Bhutan, beyond the BITE Hub. In the last decade, the advancement of AR and VR technologies has found increasingly diverse use cases across sectors, including for education and training. On the backend, skills needed for AR development span a full range including UX and UI skills, 3D digital presentation, visualization skills, interactive skills, natural language processing, deep learning/AI skills, content management skills, graphic design, and 3D gaming engine among others.² In the VR sphere, the skills include technology development of VR equipment itself, VR content development, VR storytelling, VR content marketing, VR video editing, 3D modelling, CAD (computer-aided design), VR operation tools, Java and C# programming, graphic design, animation, audio design, and more.³

Some of the leading AR/VR equipment includes:

- Alienware
- The HTC Vive
- Oculus Rift and Touch
- PlayStation VR
- Samsung Gear
- Google DayDream View
- Microsoft Hololens
- Software from Unity and Unreal

² Makarov, A. 10 Augmented Reality Trends in 2021: The Future is Here. <https://mobidev.biz/blog/augmented-reality-future-trends-2018-2020#:~:text=According%20to%20MarketsandMarkets%2C%20the%20market,to%201.73%20billion%20by%202024>

³ Sharma, T. General Skills Needed for a Virtual Reality Developer. Global Tech Council. December 20, 2019. <https://www.globaltechcouncil.org/virtual-reality/skills-needed-to-become-a-virtual-reality-developer/>

Upon research of the local landscape of future skilling providers in Bhutan, we discovered that FabLab Bhutan in collaboration with MoLHR, Mercantec Technical College and VIA University College in Denmark is introducing a VR/AR plumbing laboratory in two TTIs in Bhutan. FabLab Bhutan already has VR/AR equipment in their space along with many other physical and digital fabrication tools. FabLab Bhutan also offers a “Traditions meets Technology” using a variety of skills and tools such as CAD, CNC milling, electronics, 2D design software, 3D design software, laser cutter, and soldering iron for traditional Bhutanese motifs such as *Dezo* (Paper Making), *Shingzo* (Woodworking) and *Trözo* (Silver- and Gold-Smithing).



Figure 46: FabLab Bhutan’s AR/VR Plumbing Laboratory

In addition, in terms of software, MoLHR partners with LabTech Academy, an online TVET providers that features advanced interactive and graphic rich content for technical and vocational education subjects. It is meant to be used by individual learners that may be already taking courses at their local TVET institutions but can also be used for reskilling for a new job or to acquire new skills. LabTech offers supplemental learning to existing curriculum, interactive animations and simulations using physics-based advanced gaming technology, advanced LMS content delivery system, self-paced and on-demand learning options, instructional workshop-based how-to videos, photo realistic illustrations of objects in high-detail using advanced digital rendering, formative and summative assessments and reviews to track learning progress, and blended learning integration possibilities.

B 1.10 BITE Hub Future Skilling Lab Budget

Category	Item	Price (NU)	Quantity	Cost	Notes
Computer Lab	Computer	75,000	24	1,800,000	iMac
	Printer	18,000	1	18,000	Multi-function
	Chair	3,000	24	72,000	Swivel, rollable
	Long Desks	9,000	3	27,000	Long
	Projector	43,000	1	43,000	Global standard
Workshop Room	White boards	8,500	8	68,000	Upright, movable
	Standing Desk	3,500	8	28,000	Standing, movable
	Tall chair / stool	3,000	24	72,000	Movable
Living Room	Bean bags	1,500	15	22,500	Multicolor
	Pillows	700	10	7,000	Large, soft
	Coffee table	2,500	4	10,000	
	Coffee machine	12,000	1	12,000	Global standard
	Coffee cups	250	20	5,000	
General stationary (post its, notebooks, pens)		12,500	1	12,500	Annually
Coffee, tea, snacks for students and digital nomads		14,000	1	14,000	Annually
Estimated Total				2,211,000	

B 1.11 International Resources, Financing, and Collaborations

Generation Unlimited: A global multi-sector partnership including UN, governments, companies and NGOs – already invested over \$1 billion for skilling youth across 10 developing countries including India, Bangladesh, Argentina and Kenya. Partnerships should be initiated through high-level government and UN engagement.

Co-Impact: A systems funder collaborative consisting of the Bill and Melinda Gates Foundation, Rockefeller Foundation, Skoll Foundation, and other large foundations that provides grants of US \$10-25 million over 5 years, for systems change initiatives in the areas of health, education, and economic opportunity.

International Labour Organisation (ILO): General funding streams through ILO's focus areas on labor and decent work, but also special and country-specific Skills Innovation Challenges for financing through ILO's Skills Innovation Facility.

UNESCO International Centre for Technical and Vocational Education and Training (UNESCO-UNEVOC): UNESCO's designated centre for TVET. Through its innovative projects, capacity-building programmes and collaborative activities with more than 250 UNEVOC Centres around the globe, UNESCO-UNEVOC is working towards ensuring access to quality skills training and development for all.

MIT Solve: over \$2 million in prize funding from MIT and partners currently available for Solve's 2021 Global Challenges, including a Digital Inclusion Challenge to address the design question: how can everyone have access to the digital economy?

Asia Philanthropy Circle: A collective of Asia-specific philanthropists and foundations, based out of Singapore. APC funds child/youth, community development, and social impact initiatives

Asian Venture Philanthropy Network (AVPN): A network of impact investors and private funders based out of Singapore working to build a vibrant and high impact social investment community across Asia. AVPN investors tend to fund social businesses and enterprises but also certain investors fund high impact not-for-profit organizations and institutions without the expectation of financial returns.

Generation: A leading nonprofit workforce development provider spun out of the global management consulting firm McKinsey & Company in 2014 that has developed a demand-led, data-driven model for skilling young people for employment in 14 countries.

2. CONCLUSION

“As a small country, unencumbered by the complexities faced by much larger countries, we can do things faster and better than others. Our institutions can be smart, flexible, responsive, dynamic and efficient. It is my aspiration that, when my son Jigme Namgyel, grows up and when his generation, which includes your children, come of age, they will be able to actualize their full potential and contribute to nation building.”

- His Majesty the King Jigme Khesar Namgyel Wangchuck

Many of the core ingredients for future skilling and demand creation already exist in Bhutan. Looking forward, leveraging “Brand Bhutan”, FDI and strategic tourism can help Bhutan continue to attract global talent and investors as a growing destination for technology and future of work industries; however, retention of digital nomads and FDI entrepreneurs will require critical investments as well as professional engagement and follow-through that moves beyond the narrative of GNH alone. Meanwhile, many existing efforts, stakeholders, and initiatives lack the momentum and coordination they need to thrive together in a broader future skilling ecosystem and digital economy, especially with the lack of private sector leadership, integration, and enablement. To accelerate systems-wide transformation for the long-term, continued cross-sectoral efforts and societal platforms in addition to government flagship programs like Digital Drukgyul will help break down siloes and facilitate collective impact.

The BITE Council and BITE Hub or equivalent agency or setup will also have an important role to play in expanding an equitable youth future skilling and employment agenda particularly as it pertains to reimagining the TVET system for the 21st century – promoting not only a new image and relevance but also a new way of working that empowers young people based on their diverse aspirations and unlocks their full potential as change agents for Bhutan’s economy. The BITE Hub Future Skilling Lab will help to bridge the demand-side and supply-side through the targeted value-add programming and innovation ecosystem community building. As key stakeholders take forward the findings from this report, it will be critical to deepen linkages and advance implementation between the various aspects of future skilling, demand creation, stakeholder alignment, private sector leadership, local and international collaborations, and BITE Hub prototyping.

3. APPENDICES

3.1 More Room to Grow in Brand Bhutan and Tourism + 1 Industries

Beyond direct employment in the ICT sector, we also see several domestic demand creation possibilities intersecting with the “future of work” in high-potential adjacent Bhutanese industries such as production, e-commerce, wellness, ESL, and more. Similar to technology, these opportunities must be built on Bhutan’s strengths and competitive advantages - Brand Bhutan and strategic tourism. We see these high-potential industries as a “+1” to the foundation of tourism which draws global interest and talent. These industries’

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local job generation and future skilling broadly defined can serve more diverse segments of the youth population, particularly rural youth and marginalized youth, as well.

- *Creative Industries and production: culture, arts, crafts, textiles, music, film, and more:* At a global level, Bhutan is increasingly becoming known for its high-quality cultural, crafts, and textile products through the work of pioneering artisans such as Chandrika Tamang of CDK, who are interested in exporting their works regionally and globally. These producers can serve as a champion of Bhutan's strategic tourism approach and Brand Bhutan adopting the same "high-value, low-volume" approach. They should therefore focus on creating high-value products to serve a growing market of art and culture connoisseurs who appreciate these products as works of art and are not necessarily as quantity- or price-sensitive. In addition to products, there are also new creative industries that emerging in music and film that are allowing for platforms such as Beskop Bhutan to export the pioneering work of young Bhutanese creatives like Dechen Roder who produced *Honeygiver Among Dogs*, which won several international film festivals including the Taipei and Berlin film festivals in 2017. These films are also painting a fuller, more nuanced narrative of Bhutan only GNH, allowing the younger generation to define Bhutan on their own terms.
- *Production: Agriculture:* Given its image as a green, organic GNH country, Bhutan may also consider exporting its high-quality agricultural products (i.e. organic red rice, chilies, and honey) through limited but high-value channels using both e-commerce and global supply chains as a vehicle to extend connections regionally and globally. Mountain Hazelnuts, for instance, is already Bhutan's largest FDI and private sector employer of 800 young people in the rural eastern regions and has focused on this unique juncture serving major global hazelnut buyers. There is potential to tap even more of this market for high-value organic agro-products at a regional level as well. Through additional investments Bhutan is now making in agtech, integrated logistics and digital supply chains management, this sector has the potential to grow even more jobs for youth.
- *Retail channels and e-commerce:* Bhutan should also consider partnerships between larger, quality producers such as SABAH or Tarayana and global companies that have a strong offline retail channel that share similar values with the country and can market boutique, high-quality Bhutanese products to its high-end consumer base. Partnerships with global brands with market access, such as Muji, a leading Japanese retail brand, could form unique collaborations such as a Muji "Bhutan collection" with a dedicated shelf section of seasonal and limited, high-quality products. Now, innovative e-commerce tech platforms like Inspired by Bhutan and Druksell are beginning to further grow the global demand for Bhutanese products and therefore its connected supply chains (and jobs along the supply chains) to boost Bhutan's economy. Bhutan should consider exploring partnerships with Asia's leading e-commerce platforms like Alibaba in China and Lazada, which is a subsidiary of Alibaba in Southeast Asia.
- *Wellness experiences:* Wellness is now a rapidly growing \$4.2 trillion USD industry, with wellness tourism making up a \$639 billion chunk of that pie. The Asia-Pacific is the second-largest region for wellness tourism, only behind Europe, with 258 million wellness-oriented trips in 2017 alone. Bhutan has long understood this and has been growing its local wellness experiences within the tourism sector: yoga, massage, meditation, traditional medicine, etc. Beyond the wellness product, the people experience of wellness in country is also a crucial way to attract new FDI companies and create jobs, as those personal experiences and connections to Bhutan as a memorable place of personal well-being can become a more professional engagement from tech entrepreneurs who work in high stressful environments and are craving well-being.
- *Education and International Exchange:* Education is one of the best human capital investments a country can make. Early childhood care and education (ECCE) is an even better return on investment.

We know from Nobel Laureate James Heckman's economic research that every dollar spent on early childhood education in the lives of young children under 6 years of age produces a much higher economic return to society, as much as 13% annually, than any later efforts in primary and secondary education, job training, or rehabilitation. Fortunately, the MoE and RGoB have already committed to the ambitious goal of 100% ECCE center coverage by 2030. However, in order to get there, Bhutan needs hundreds of new early childhood education teachers and facilitators. This is a massive employment and future skilling opportunity to invest in Bhutan's future workforce in their early formative years. Beyond ECCE, we believe investment in education can be beneficial not only for the learning of local Bhutanese but also for global students who want to connect with the country through study abroad and exchange programs. Globally, Bhutan's competitive advantage of high English literacy and high-end brand has already helped to expand this industry through special educational tourism offerings with leading companies like National Geographic. This strategy can also create employment opportunities and overseas linkages with students and with educational institutions abroad to build Bhutan's local innovation ecosystem.

- *English as a Second Language (ESL)*: Compared to neighboring countries, Bhutan's competitive advantage is its high English literacy. An emerging market trend worth exploring is ESL, which continues to see promising growth in the Asia-Pacific region. As the world becomes more globally connected and distributed in terms of talent, English becomes a fundamental skill necessary for employment and improving economic mobility. There are already several companies in China namely (VIPKid and 51Talk) and Japan (Rare Jobs) that leverage video conference technology to connect language coaches in countries, such as the US and the Philippines, to teach English to Chinese and Japanese citizens without needing to know the local language. There are also models in Southeast Asia, such as Globish, which is an ESL startup serving the Thai market and Topica Native, which is servicing the Vietnamese market. In terms of employment opportunities, particularly for university graduates, Bhutanese ESL tutoring can serve as an attractive career option to cater to the Asia-Pacific market. Possible models for Bhutan include establishing partnerships with companies directly or possibly establishing a homegrown DHI company that focuses on offering ESL services abroad.

3.2 More Photos of Active Learning, Modular Spaces from Global Innovation Labs

Stanford d.school



Harvard iLab



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MIT Media Lab



G-Lab, Thammasat University





Prime Minister's Office
Gyalyong Tshokhang
Langjophakha, Thimphu
Telephone: +975-2-337100
Email: pmo@cabinet.gov.bt
Website: www.pmo.gov.bt