TECHNOPRENEURSHIP GOVERNANCE BLUEPRINT

ABOUT ISIP

The Innovation for Social Impact Partnership (ISIP) is a 3-year project that aims to support promising innovative Social Enterprises (SEs) in the Philippines to be able to collectively contribute to the acceleration, achievement, and sustainability of the UN Sustainable Development Goals (SDGs). ISIP is co-implemented by the United Nations Development Programme in the Philippines (UNDP) and Philippine Development (PhilDev) Foundation, with generous support from the Australian Embassy in the Philippines.

About the Australian Government's Aid Program to the Philippines

The Australian Government's development cooperation program in the Philippines aims to accelerate inclusive economic growth and political stability. Australia's aid program will support these goals by focusing on the following objectives as outlined in the Aid Investment Plan: enhancing the foundations for inclusive economic growth; building stronger institutions for transparent and accountable governance; and improving the conditions for peace and stability.

About PhilDev Foundation

The Philippine Development Foundation (PhilDev) is an independent, non-profit organization that aims to eradicate poverty in the Philippines through its three (3) pillars: education, innovation, and entrepreneurship. PhilDev brings together government organizations, the academe, private industry, and the community in harnessing science and technology for sustainable and inclusive economic growth in the Philippines.

About United Nations Development Programme

UNDP is the leading United Nations organization fighting to end the injustice of poverty, inequality, and climate change. Working with our broad network of experts and partners in 170 countries, we help nations to build integrated, lasting solutions for people and planet.

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LIST OF ACRONYMS

Main Concepts

CHED	Commission on Higher Education
DepEd	Department of Education
DICT	Department of Information and Communications Technology
DOST	Department of Science and Technology
DTI	Department of Trade and Industry
GAA	General Appropriations Act
HEI	Higher Education Institution
IP	Intellectual Property
IPOPhil	Intellectual Property Office of the Philippines
ISIP	Innovation for Social Impact Partnership
KTTO	Knowledge and Technology Transfer Office
LGU	Local Government Unit
MVP	Minimum Viable Product
NGO	Non Governmental Organization
OECD	Organisation for Economic Co-operation and Development
PASUC	Philippine Association of State Universities and Colleges
PCIEERD	Philippine Council for Industry, Energy and Emerging Technology Research and Development
PDP	Philippine Development Plan
PhilDev	Philippine Development Foundation
RDC	Regional Development Council
SEC	Securities and Exchange Commission
SME	Small and Medium Enterprises
STEAM	Science, Technology, Agro-fisheries, Engineering and Mathematics
SUC	State Colleges and Universities
TBI	Technology Business Incubator
TESDA	Technical Education and Skills Development Authority
TGB	Technopreneurship Governance Blueprint
UNDP	United Nations Development Programme - Philippines

INTRODUCTION

"Technopreneurship", as a practice, leverages technology and entrepreneurship to address development concerns. Similar to Science, Technology, Engineering, Agro-Fisheries and Mathematics (STEAM) programs, it bears the potential to contribute to human capital development and economic growth, as well as drive research and innovation. It reflects, specifically, how technology and innovation can be used to *"answer market demands and social issues to diffuse wealth through entrepreneurship".*[1]

Having emerged recently in the Philippines, Technopreneurship is still in its infancy. The academe – more specifically, higher education institutions (HEIs) – play a significant role in cultivating it as a discipline among students. With their three-fold function in instruction, research and extension, HEIs may provide favorable conditions to create a pipeline of enterprises that address development concerns. Innovation in research that is intended for commercialization can potentially support national development while creating mutually beneficial arrangements between the academe and industry through licensing agreements, sales agreements, spin-offs and others.[2]

Several initiatives have been undertaken to embed entrepreneurship foundations within Philippine engineering education. These, notably, include the signing of a Memorandum of Understanding (MOU) between the Commission on Higher Education (CHED) and Philippine Development Foundation (PhilDev), which resulted in the formation of a new general education course, Technopreneurship 101.[3]

Nevertheless, evolving Technopreneurship as a practice requires a governance blueprint that sets the direction for establishing appropriate frameworks, institutional setups, resources and collaboration, among others. The Technopreneurship Governance Blueprint (TGB) is one of the first steps to advance its development as a field in the country. It builds on the growing traction of HEI-contextualized technopreneurship initiatives in the country, including those from the Department of Trade and Industry (DTI), Department of Science and Technology (DOST), and the Department of Information and Communications Technology (DICT), and aims to address the need for HEIs to evolve.

In 2019, the Innovation for Social Impact Partnership (ISIP) initiated a readiness assessment sample of 14 universities in the Philippines with

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1   *Implementing Guidelines for the Engineering Faculty Training on Technopreneurship 101.* (2016). CHED Memo 57. https://ched.gov.ph/wp-content/uploads/2017/10/CMO-57-s.-2016.pdf.

2   Cosh, Andy, Alan Hughes, and Richard K. Lester. *Just How Innovative Are We? Findings from the Cambridge-MIT Institute International Innovation Benchmarking Project,* UK Plc, 2006.

3   CHED Memo 57, Series of 2016.

existing business incubators. The study aimed to generate baseline information for creating a Technopreneurship Governance Blueprint through desk research, key informant interviews, surveys, and validation activities. The following sections provide main insights and recommendations from these activities.

THE TECHNOPRENEURSHIP GOVERNANCE BLUEPRINT

The Need for a Governance Blueprint

ISIP's readiness assessment finds the need for the development of a Technopreneurship Governance Blueprint, which will set the goal for integrating innovation and social impact in technopreneurial activities in HEIs.

CHED Memo 57, S. 2016 officially makes Technopreneurship 101 (Techno101) a mandatory 3-unit course for students in engineering disciplines. The course aims to expose undergraduate engineering students to the fundamentals of entrepreneurship. It also marks the starting point of a learning program that develops the entrepreneurial mindset of students and trains them in the development of engineering or technological designs and projects that benefit society in ways that are responsible and ethical.[4]

In order to effectively deliver Techno101 to students, higher education institutions would benefit from developing and becoming Technopreneurial Universities themselves. This will entail an administration-led governance process that creates a mandate for Technopreneurship-based pedagogy and institutional culture, while fostering collaboration among degree programs and adding value to research products.[5]

An exact definition of a 'Technopreneurial University', set in the Philippine context, however, does not exist. The closest framework available is the OECD Guiding Framework for Entrepreneurial Universities, which provides guidance to universities in exploring seven key areas that govern the management of the entrepreneurship agenda.

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4   Examples of such initiatives include using available resources efficiently; being economical; safeguarding health and safety; being environmentally sound and sustainable; and generally managing risks throughout the entire life cycle of a system.

5   Moreover, the institutionalization of Technopreneurship governance in HEIs can lead to solutions-oriented innovation in program implementation and research; opportunities for improved extension services in solving immediate needs of their target communities; protection of patents, utility models, trademarks, and copyrights of stakeholders; interdisciplinary and intra-university collaboration for innovative products; improved access to industry for increased funding and partnerships; and improved local economic development.

The Technopreneurship Governance Blueprint in Detail

The Technopreneurship Governance Blueprint (TGB) builds on the OECD Framework (2012) on Entrepreneurial Universities. As a guiding framework for the academe, the blueprint aims to promote a minimum standard for HEI-based technopreneurial activities in the Philippines and provides a checklist of basic principles, human resources, operational costs, physical and digital infrastructure considerations for rolling out the course in institutions. It also includes proposals for the inclusion of social impact in Technopreneurship 101 courses and provides a plan for the effective and efficient implementation of relevant university-led engagement and initiatives where social impact has a natural entry point.

The TGB can support HEIs' assessments of their current tools, mechanisms, policies, infrastructure vis-à-vis technopreneurship governance, plans, programs, and activities. Nevertheless, HEIs are best reminded that it does not serve as a tool to measure actual technopreneurship governance and success.

Policy Framework of the Technopreneurship Governance Blueprint

Government direction, policies and implementation are the key components in the Technopreneurship Governance Blueprint. The policy enablers of the TGB include:

- **Philippine Development Plan (PDP)[6]**

  The document articulates prioritization in vigorously advancing science, technology, and innovation through establishing the National Quality Infrastructure and an Inclusive Innovation Center; and encouraging innovation and adoption of new technologies, among others. The Science, Technology, and Innovation ecosystem is seen to be key to long-term growth. Technology adoption will be promoted and accelerated, and innovation will be stimulated in all economic sectors to build the foundation for a globally competitive knowledge economy.

- **Education component of the Republic Act no. 11337 Innovative Startup Act.**

  Signed on April 26, 2019, RA 11337 creates the Philippine Startup Development Program. As per its Implementing Rules and Regulations, the assigned implementing agencies are DOST, DTI, and DICT. The law also directs CHED, as well as DepEd and TESDA, in coordination with the implementing agencies, to develop and integrate in their respective

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6   Philippine Development Plan 2017 – 2020 is presented by the National Economic and Development Authority in 2017.

curricula entrepreneurial programs and intellectual property that would foster industry-aligned innovation and provide incentives for academic institutions to award funds to the research of their students and faculty.

- **1000 Startups of the Department of Science and Technology.**

  The DOST has committed to generate 1,000 start-ups by 2022. It has mandated the DICT to develop the Startup Philippines Website, which provides information on statistics, events, programs, benefits, and incentives for startups and startup enablers, among others.

Objectives and Building Blocks

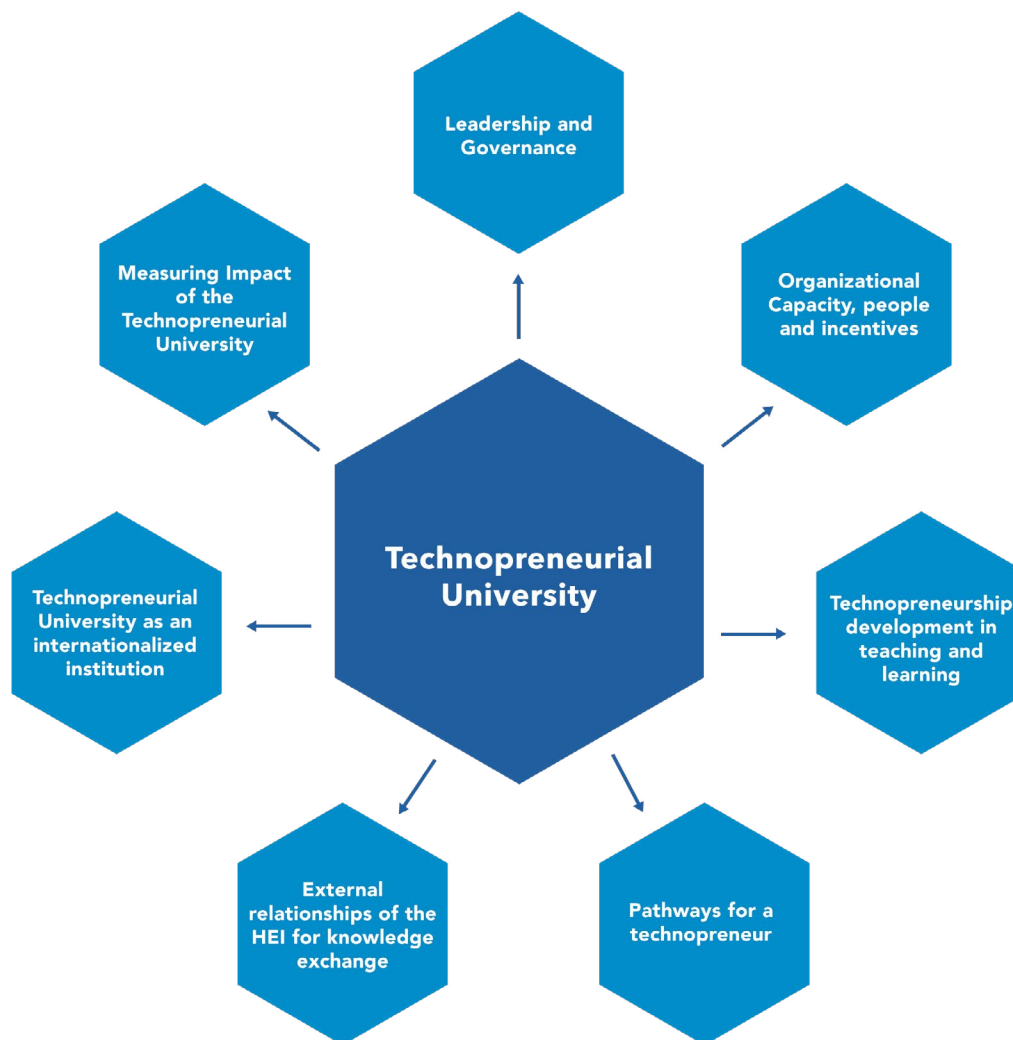The Technopreneurship Governance Blueprint aims to achieve the following objectives:

a. Improve Technopreneurship education in Philippine HEIs;

b. Strengthen the Extension Service of Philippine HEIs;

c. Increase number of university-based Social Enterprises; and

d. Contribute to the sustainable stream of Social Enterprises in the Philippines.

The blueprint follows a conceptual framework that comprises of essential 'building blocks' for higher education institutions to transition into Technopreneurial Universities. The framework is also supported by the existence of institutional policies, manpower, synergies, network and connections. The key elements of the conceptual framework are briefly defined below and visualized in *Figure 1:*

- **Leadership and Governance:** the presence of strong administration support for Technopreneurship initiatives to further develop the technopreneurial culture in the HEI

- **Organizational Capacity, People, and Incentives:** the HEI's organizational structure, financial strategy and availability of staff to implement technopreneurial activities that support the strategic objectives

- **Technopreneurship Development in Teaching and Learning:** the HEI's organizational capacity to support technopreneurial development and provide the right tools to deliver education and training opportunities

- **Pathways for Technopreneurs:** the ability to access internal and external opportunities for staff and student entrepreneurs facilitated by the HEI

- **External Relationships of the HEI for Knowledge Exchange:** the active building and sustaining external partnerships to promote Technopreneurial strategies in the HEI

- **Technopreneurial University as an Internationalized Institution:** the influence of an international environment in various aspects of teaching, research, talent development, opportunities and culture within the institution

- **Measuring Impact of the Technopreneurial University:** the capacity to measure impact of Technopreneurial strategies to its internal and external stakeholders

FIGURE 1. The Technopreneurship Governance Blueprint Conceptual Framework

RECOMMENDATIONS ON DEVELOPING TECHNOPRENEURSHIP GOVERNANCE BLUEPRINT

The following discussion presents several important factors for the consideration of HEIs that wish to strengthen their Technopreneurship agenda. Each recommendation is discussed regarding the key element it connects with and provides policy- and people-focused suggestions.

Leadership and Governance

While strong leadership and good governance are critical to the successful development of a technopreneurial culture in a higher educational institution, enabling policy structures, mandates and legitimacy, and the participation of the right people are also critical to supporting the advancement of the Technopreneurship agenda.

Policy

Enabling policy structures for Technopreneurship governance are necessary precursors to the effective implementation for Technopreneurship programs. As a key driver to leadership and governance, such policy structures translate the high-level direction into mandates that operationalize TGB adoption and ensure coordination within the institution and with other stakeholders in the local ecosystem. Recommendations for this component are provided below.

- **Integrate the TGB in the HEI's vision, mission and goals**

  By incorporating the Blueprint into the institution's main thrust, the HEI provides a mandate for Technopreneurship to trickle down into an agenda with associated strategic plans, policies and activities at the program level. It also signifies the commitment of the institution in the rollout of Technopreneurship and facilitates the creation of models for the planning and implementing stages of such rollout.

- **Translate VMGs to champion the technopreneurship agenda**

  Policies are usually guided by the VMGs, agenda, and strategic plans of an HEI. Embedding the TGB within VMGs will help complement the efforts of champions in the HEI. Moreover, its adoption would strengthen Technopreneurship adoption among faculty and staff, which result in the creation of programs and activities on a program level and Technopreneurship learning and practice across various departments and offices.

- **Build capacity and legitimacy for implementation**

  The implementation of Technopreneurship goes beyond formalized

policies and structures. High-level HEI officials should have the capacity to implement and to actively promote Technopreneurship in their HEIs by virtue of position, mandate, and delegation.

People

The participation of key officials is crucial in the lobbying, creation, and implementation of the Technopreneurial agenda of HEIs. More specifically, securing their engagement and buy-in is key to the increased engagement of colleges, departments, faculty, and students to Technopreneurship-related initiatives. These officials also ensure coordination, which eliminates duplication of activities, and enhances stakeholder engagement between HEIs and their external entrepreneurial ecosystem.

When relevant HEI decision-makers are involved, Technopreneurship adoption may avoid the bureaucratic red tape and follows an expedited process of creation of policy structures and program implementation.

- **Be conscious of and navigate well around the hierarchy of the HEI**

  Depending on the model of the HEI, the hierarchy of officials may be in the order of:

  1. University President or Rectors or Chancellors
  2. Regent Level in the form of Interest Representative
  3. Vice Presidents for Research and Extensions, Academic Affairs
  4. Deans or Directors
  5. Department or Program Chairs

- **Leverage the influence of Deans and Department Chairs**

  Deans and department chairs can implement and approve the Technopreneurship activities of their academic units. These personalities can champion and influence university administration and other high-ranking officials to approve the Technopreneurship agenda. HEIs with strong commitment at a high level will revisit and revise strategies to keep them up to date.

Organizational Capacity, People, and Incentives

Organizational capacity is the level of an HEI's capability to deliver Technopreneurship activities that not only satisfy present stakeholders, but continually anticipate future marketplace opportunities. This element highlights some key areas an HEI may look at to minimize organizational constraints in fulfilling its technopreneurial agenda, namely: financial strategy, attracting and retaining the right people, and incentivizing technopreneurial behavior in individuals.

Policy

Evidently, specific policies and support mechanisms should be in place to promote the practice of Technopreneurship in HEIs. The investment of HEIs in technopreneurial activities is likewise essential to the sustainability of its programs. However, Technopreneurship stakeholders should venture into accessing innovative financing and not rely on HEI-funding alone. Nonetheless, incentives and a reward system are clearly outlined to support the continued development of their faculty and staff on technopreneurial skills development. The ISIP assessment finds that several HEIs are currently implementing incentive schemes for teaching, research, and learning Technopreneurship.

Some recommendations for consideration are:

- **Foster a technopreneurial culture**

  Building a culture within the faculty and staff is also essential for an HEI to increase and improve the quality of technopreneurial activities. Formal policies for career development of the staff may be in place to promote the Technopreneurship agenda of the HEI. This provides a clear and proper incentives for the staff to pursue Technopreneurial tracks to be integrated into their academic, research, lab, or extension work.

- **Allocate budget for Technopreneurship activities in the TGB Financial Strategy**

  The financial strategy should provide sufficient financial resources to support the implementation of Technopreneurship activities by the HEI. This would maximize the use of existing facilities and optimize the purpose of researches being undertaken. However, it should not prevent universities from generating additional income, especially in state colleges and universities (SUCs) that receive limited budget allocation from the government. Technopreneurship activities may provide additional resources as well as add value to its existing facilities in the HEI. Revenues generated from the activities are redirected back to the general budget or directly to support the Technology Business Incubator (TBI) operations.

- **Set up mechanisms to support stakeholders, including incentives**

  The HEI should have mechanisms in place to maximize the potential of its stakeholders towards Technopreneurship. This may be achieved through programs such as shared activities across colleges and faculties, student-staff structures, and cross-faculty teaching and research groups.

  Provisions such as shared risks mechanisms for projects and rewards for engagement unburden the individual of receiving 100% of the anticipated resource risk of a project. These mechanisms make

Technopreneurial activities more attractive for staff to implement despite the lack of incentives and risk to be technopreneurs. Institutionalized policies for opportunities on fellowships, associateships, industrial professors, or as guest lecturers will help attract talent in their institutions.

For HEIs with limited financial capabilities, funds and grants should be included in their strategies in carrying out the Technopreneurship agenda. Available funding may come from various sectors such as government (e.g. DOST 1000 startups, etc.) or private industries or non-governmental organizations (NGOs) grants (e.g. IdeaSpace Foundation). Venture capital funds capitalized and run by major corporations are becoming more popular, and they can invest significant capital and provide strategic investments. These however are based on the strong partnership of the HEIs with its stakeholders or partner industries.

People

Academic staff are a key resource in strategy delivery, Technopreneurship education, support and all technopreneurial activities the HEI wants to develop. Academic personnel engaged in Technopreneurship should be given opportunities for career development and incentives for pursuing technopreneurial activities internally in their HEI.

- **Tap into entrepreneurs and industry practitioners as teaching pool**

  Entrepreneurs and Industry practitioners are ideal candidates to become part of teaching faculty and staff in technopreneurial activities. Industry experience provides practical solutions and experience that are valuable to students and participants during technopreneurial activities. Experts can provide consultancy and networking options for technopreneurs in the organization.

- **Notable alumni can be tapped for legacy naming of a building or facility**

  These facilities or spaces when shared may also be a source of funds. Cooperatives and other foundations are also probable sources of funding. Funds for Technopreneurship activities may also be derived from partnerships, hackathons, and others among others. These funding when lumped together should support the incentive and reward systems for staff members that actively support technopreneurship activities. Policies on incentives in the form of innovation, collaboration, cross-collaboration with other departments or colleges, other HEIs and industry.

Technopreneurship Development in Teaching and Learning

Technopreneurship Development may take place in various areas – and this element provides a reflection of the need for the organizational structure to support the technopreneurial development as well as provide the right tools to deliver education and training opportunities.

Policy

Established policies can institutionalize knowledge-sharing and continuous learning for faculty, staff, administration and students. Some recommendations for policy are:

- **Establish policies that provide diverse teaching and learning opportunities**

  The faculty, staff, administration, and students should be provided opportunities to share new learning and information internally to improve on Technopreneurship learning in the university. The HEI should also offer formal and informal teaching and learning opportunities to support the technopreneurial journey.

  Inter-university collaborations, partnerships for research, internships, and networking activities offer the academe multiple benefits such as knowledge exchange, fund generation, review of current curricula and programs, among others. Integration of experience and expertise into Technopreneurship education is promoted through these practices to create a better pipeline of enterprises in the future.

- **Reflect assessments of previous learning outcomes and use up-to-date research in planning sessions**

  Assessment of learning outcomes from technopreneurial activities in the institutional level should be available during planning sessions as they provide feedback and promote continuous improvement in the teaching and learning process.

  Emerging market trends and research need to be relevant in Technopreneurship education. In their transformation towards innovation and commercialization, HEIs may also benefit from using existing multi-disciplinary research.

- **Encourage constant review and revision of curriculum**

  EIs would benefit from encouraging educators to consistently revise their curriculum with relevant and applicable information to ensure quality technopreneurial endeavors by the HEI's stakeholders. Faculty members are to be cognizant of societal problems to ensure that student researches are providing solutions.

People

The engagement of entrepreneurs, businessmen, and industry experts provide invaluable contribution to the praxis of Technopreneurship in HEIs. External stakeholder engagement can provide a variety of opportunities from internships to fund-generating partnerships that are mutually beneficial to the HEI and industry partners. Faculty, staff, administration, and students should be provided opportunities to share new learning and information internally to improve on Technopreneurship learning in the HEI.

To strengthen such engagements, recommendations for HEI consideration include:

- **Maintain open and consistent communication with ecosystem stakeholders**

  Involving key players in the external technopreneurial environment such as chambers of commerce, alumni, and local entrepreneurs in Technopreneurship teaching can provide learning and application opportunities for faculty, staff, and students. HEIs are encouraged to consistently communicate and partner with these players to be updated with information relevant to integrate social impact and synergize Technopreneurship efforts with other key stakeholders in the community. External players provide the necessary context to inform the development of solutions that will be relevant and useful to the community.

- **Consider including entrepreneurs as staff or board members/advisors**

  Partner entrepreneurs as part of staff or board seats are valuable decision-makers for technopreneurial governance. Decision-making bodies like the board of trustees determine the direction of the Technopreneurship agenda of the HEI. They can also act as mentors who are good sources of information. In both ways, entrepreneurs and academicians should have an equal playing field in technopreneurial teaching and learning. They need to be in synergy as they both promote theory and actual practice. In situations where staff development is limited, HEIs should be able to provide capacity building activities in Technopreneurship.

Pathways for Entrepreneurs

Becoming a technopreneur needs the involvement of internal and external stakeholders for support. HEIs should provide support mechanisms through infrastructure and policy incentives to potential technopreneurs, as well as provide opportunities for students, faculty, and staff to experience Technopreneurship transform ideas into actual enterprises.

Policy

HEIs need to provide opportunities for students and staff to experience Technopreneurship. The following are policy recommendations to enable this:

- **Support individuals to transform Technopreneurship ideas into action**

  HEIs can provide opportunities to evolve groundbreaking ideas into action, especially through pre-incubation phases of development, networking, and minimum viable product (MVP) creation. Infrastructure and development support services (mentoring, networking, access to finance options, operational management, impact measurement, etc.) are necessary to translate Technopreneurial ideas into tangible products.

- **Leverage partnerships to provide additional opportunities**

  Partnerships with external stakeholders unlock opportunities for students and faculty to encounter and experience Technopreneurship. Short-term and long-term engagements have beneficial contributions to the Technopreneurship agenda of HEIs though off-shoot activities and programs with partner stakeholders. Means of providing staff and students the Technopreneurship experience can include training, lectures from entrepreneurs, exposure to on the ground and day-to-day community challenges, awards and other means of recognition, education activities are integrated with enterprise-related activities. Strong communication strategies within HEIs will aid in the promotion and engagement of HEI stakeholders.

People

Higher education institutions can design a wide range of mechanisms to support fostering a technopreneurial mindset among students. These should be integrated into enterprise-related activities to ensure that technopreneurs are adequately prepared for creating start-ups through their education. Faculty and staff are equally critical to this process.

- **Provide mentorship opportunities**

  Mentorship is invaluable to budding technopreneurs. Mentors, whether academicians or alumni with entrepreneurship experience, may unlock new pathways for the personal and professional development of students. Academic mentors, in particular, provide structure so that students have a better understanding of the short- and long-term technopreneurial tracks, as well as have better access and knowledge to HEI-based learning tools and opportunities for students. Industry mentors, on the other hand, provide field experience and can provide access to networks, which are critical to technopreneurs who are just starting out. These mentors may come from the HEI's industry, alumni

and government networks. Depending on the availability of resources and financial capacity of the HEI, mentors may be among the academic staff with remuneration.

- **Explore various opportunities for funding**

  There are several funding facilities that can offer equity funding from private industry for HEIs. The HEI's establishment of Intellectual Property (IP) system and various offices such as Knowledge and Technology Transfer Offices (KTTO) or Intellectual Property Office may strengthen further the drive for technopreneurship. The IP system may provide an environment in which everyone benefits from one's creativity and innovation since IP is a tool for economic and socio-cultural development.

- **Invest in academic patenting and licensing**

  Academic patenting and licensing is essential for Technopreneurial Universities. Patents and licenses protect intellectual property and offers opportunities for commercialization. For instance, Intellectual Property Offices, such as Stanford's Licensing office has generated approximately USD 1.66 billion since its establishment in 1970. In general, most patent owners are private or corporate firms that have funded research activities (Schneider, 2006). The Philippines, however, ranks low in patents with only 1,327 grants in 2019. The Intellectual Property Office of the Philippines (IPOPHIL) due to low patent applications from HEIs conducted Patent Skills Upgrading in 2018 exclusively for the academe with the objective of increasing their delivery of patent services.

  The creation of IP offices[7] may translate to allocation of resources which is an added cost to the HEI's expenses. Although, if IPs are efficiently commercialized it may be used as an income generating option for any HEI.

- **Tap into external sources of funding and support**

  Government agencies such as the DTI, SEC, DOST, DICT and other institutions have spearheaded their own projects that promote innovation, technology, research and entrepreneurship. Alternatively, since 2009, Technology Business Incubators have been rolled-out in the country and are typically lodged in HEIs. These facilities foster business development with technical services provided through technology hardware, management, and physical facilities.

  Other possibilities of funding through legislation may be in the Regional Development Council (RDC), Local Government Unit (LGU) funding and General Appropriations Act (GAA). Blended finance may however be

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7   Unfortunately, Intellectual Property Offices lodged in universities have yet to mature in the Philippines. The Intellectual Property Office of the Philippines (IPOPhil) launched a promotional campaign with the Philippine Association of State Universities and Colleges (PASUC) and the CHED in 2012.

dependent on the availability of funding incubation, staff and absorptive capacity of the HEI to manage and sustain the funding. There are other alternatives to incubation facilities like cross-border incubation[8], Techhubs, and TBIs and off-site incubation facilities. Some are government- monitored through DOST PCIEERD (e.g. DOST University of the Philippines Los Baños TBI, etc.) and privately-run Incubators and Accelerators (e.g. AIM-Dado Banatao Incubator, QBO, Startup Village, etc.)

External Relationships for knowledge exchange

Support mechanisms for coordinating relationships should be established by the HEI to be able to facilitate mutual sharing of learning between HEI and industry. These mechanisms should be proactive in sustaining and searching for collaboration for knowledge exchange with industry, society, and public sector partners.

Policy

Knowledge exchange should be part of institutional policies in HEIs to be able to efficiently implement Technopreneurial activities with external partners. Institutional policies provide guidelines for streamlined implementation, monitoring and evaluation, and management of Technopreneurship engagements. Some considerations for policy interventions include:

- **Access and engage multi-stakeholder networks**

  Multiple stakeholder networking is integral for HEIs and industry engagements. Networks also unlock business opportunities that provide market access, financing, tax incentives, use of space or facilities, among others. Strong linkage between HEIs and external institutions such as business parks and accounting firms contribute to the improvement of the Technopreneurship agenda in HEIs. Management services offered by HEIs enable them to leverage facilities and privileges to attract aspiring technopreneurs.

- **Provide policies and incentives that support external engagement**

  HEIs may adopt policies that foster the active participation of businesses and external stakeholders in Technopreneurship programs. Examples of such opportunities include collaboration to create a for-profit entity for technopreneurship-related programs and activities; and equity stake with technopreneurs to allow cashflow through income generating activities.

  Opportunities for student and staff mobility can also facilitate knowledge exchange and will benefit from the provision of stipend,

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8   Cross-border incubation is a bilateral business relation between borders that provides incubation space and other services.

endorsements, scholarships, grants and mechanisms for paid leaves/ hiatus. HEIs may also explore linking academic output (research, innovation, activities, etc.) with the technopreneurial landscape in their immediate community at various levels, including at LGU level, HEI, TBI and networking events.

- **Disseminate internally acquired learning and knowledge**

   To fully realize the potential of the technopreneurial ecosystem in their community, HEIs should be able to create mechanisms by which the HEI can absorb information and experiences from its external engagements. This may be done through collaborative partnerships, contract work, and lecture/teaching opportunities to promote the exchange of knowledge among the stakeholders. It is important to properly document these activities and publish findings and experiences of HEI-industry linkages to further improve existing Technopreneurship activities and develop new ones with reliable data.

People

HEIs' academic staff involved in external relations for knowledge exchange need to have a full experience from the wider technopreneurship ecosystem. It may be a form of research, internships, nominated business chair positions among others from partner stakeholders (SMEs, social enterprises, alumni, and entrepreneurs).

Technopreneurial University as an internationalized institution

Internationalization is an integral component of the HEI's Technopreneurial strategy. While ambitions to 'internationalize' are critical, HEIs should also ensure that any commitments made are aligned with their Technopreneurship goals.

Policy

HEIs can support international exchanges through scholarships and internships. Reward systems may also be in place to encourage the international mobility of staff and students. Access to new ideas for teaching and learning in the international environment can increase the HEIs ability to further develop its Technopreneurship models and methodologies. International linkages are avenues for the HEI to explore in its goal to become a Technopreneurial University.

People

HEIs can consider attracting international and entrepreneurial staff. Several government programs support the idea of bringing in international talent,

such as DOST's "Balik Scientist Act" (R.A. No. 11035), which encourages Filipino experts in other countries to return to the Philippines. HEIs can request assistance from the government to fund depending on the length of engagement with the host HEI.

Measuring the impact of the Technopreneurial University

Monitoring and evaluating the HEI's progress is essential to capturing and providing a complete picture of the changes that have occurred since the institutional Technopreneurship journey has started. In particular, an impact assessment of Technopreneurship and Technopreneurial agenda can provide important insights to inform the continuous quality improvement within a higher education institution.

Policy

The HEI should be able to demonstrate the achievement of the Technopreneurship agenda through its various teaching and learning activities, methodologies, policies, linkages among others. The evaluation tool should be able to measure the attainment of the outcomes and the impact to its stakeholders and community. Regular feedback mechanisms are essential too in the determination of the potential impact of the technopreneurship programs and activities. A full assessment and evaluation should be conducted on a regular basis for the HEI to further strengthen its programs and activities. A quantitative measure of the success of the Technopreneurship program may be the number of successful startups, patents, new research ideas, new partnerships among others. Qualitative approach may include the perceived impact among stakeholders.

People

Quality assurance in the implementation of the Technopreneurship program requires capable staff to collect evidence across all faculties and departments with the technopreneurial teaching and learning. Involvement of internal and external stakeholders in the quantitative and qualitative measurements provides a validation of the impact of the Technopreneurship University.

CONCLUSION

The Technopreneurship Governance Blueprint (TGB) is believed to be one of the first steps to advance the evolving Technopreneurship practice in the country. The adoption of the TGB will improve Technopreneurship education and strengthen the Extension Service of the Philippine HEIs. This will lead

to an increase in the number of university-based Social Enterprises, thereby contributing to the sustainable stream of Social Enterprises in the Philippines.

Furthermore, through the adoption of the TGB, HEIs will increase awareness on measuring impact and achieve their targets aligned with the set outcomes for their communities and stakeholders.

Lastly, the success of the Technopreneurship Governance Blueprint is guided by its performance indicators coupled with its appropriate assessment rubrics. The performance indicators can be easily derived if TGB is integrated in the vision, mission and goals of the HEI. The output of the TGB assessment and evaluation can be used by funding agencies to provide assistance in the creation of Technology Business Hubs and Incubators among HEIs. This will ensure the sustainability of the technopreneurship ecosystem in the Philippines.

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CURRENT LAW	YEAR ESTABLISHED	BRIEF DESCRIPTION
Republic Act 7042 as amended by RA 8179: Foreign Investment Act of 1991	1991	Provides guidelines for ownership of corporations with foreigners and compliance.
RA 6977 The Magna Carta for Small Enterprise amended by RA 8289	1991	Created the MSME Council to coordinate various government and private-sector agencies to support MSMEs through progressive regulation and policies.
RA 9178: Barangay Micro Business Enterprise Act	2002	Encourages the formation of micro enterprises (Assets worth Php 300,000 to Php 3,000,000) through exemption from the Minimum Wage Law; access to special credit windows; and income tax exemption
RA 9501: Magna Carta for Small Enterprises	2008	Mandated to coordinate with government agencies (Secretaries of Agriculture, DILG, DOST, Chairman of Small Business enterprise, and other relevant agencies) to review policies and government progress.
RA 10644: Go Negosyo Act	2015	Aims to foster national development, promote inclusive economic growth, and reduce poverty by creating MSMEs. Instrumental in establishing the Go Negosyo Centers that provide business registration, business advisory services, monitoring and evaluation for MSMEs
Ease of Doing Business Act	2018	Act was signed by President Duterte to strengthen the Anti-Red Tape Act of 2007 which promised to shorten processing times for *Simple transactions* (anything that requires nothing more than a ministerial action or an inconsequential issue that asks for nothing more than a resolution) should be acted on within 3 days.

		Complex transactions (those that require evaluation in the resolution of complicated issues) should last no more than 7 days in their agency/office. It has also limited the number of signatories to most of three people.
Balik Scientist Act	2018	An Act institutionalizing the Balik Scientist Program that would give more incentives to returning Filipino experts, scientists, inventors, and engineers who would share their expertise in the country.
Innovative Startup Act	2019	An Act providing benefits and programs to strengthen, promote and develop the Philippine Startup Ecosystem. The state shall provide incentives and remove constraints aimed at encouraging the establishment and operation of innovative new businesses, businesses crucial to their growth and expansion, and to strengthen, promote, and develop an ecosystem of businesses and government and nongovernment institutions that foster an innovative entrepreneurial culture in the Philippines.