A Retrospective Study of Technology Business Incubators in the Philippines

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Abstract

This study aims to assess Technology Business Incubators under (TBIs) the Higher Education Institution Readiness for Innovation and Technopreneurship (HeIRIT) with the auspices of the UPSCALE Innovation Hub, University of the Philippines-Diliman and the Department of Science and Technology-Philippine Council for Industry, Energy and Emerging Technology Research and Development (DOST-PCIEERD). Twenty TBIs were identified to give feedback and used as study participants using a questionnaire created by researchers based on the existing DOST metrics. The study's findings provided insightful information for implementing authorities both internal and external reforms.

Keywords: Technology Business Incubator, TBI ecosystem, Technopreneurship, Startups and spinoffs, TBIs in the Philippines, Technology Incubation Program, DOST-PCIEERD, Angel Investors, Seed capital, Funding, Startup Enabler.

1. Introduction

"We achieve more when we chase the dream instead of the competition."

—Simon Sinek, Author of Lean Startup Books

The Higher Education Institution Readiness for Innovation and Technopreneurship (HeIRIT) Program, a 12-month training course for founding Technology Business Incubators (TBIs), was launched by the Department of Science and Technology-Philippine Council for Industry, Energy and Emerging Technology Research and Development (DOST-PCIEERD) with the guidance of UPSCALE Innovation Hub held in the National Engineering Centre of the University of the Philippines-Diliman.

The HeIRIT Program aims to assist universities in meeting the Council's TBI funding requirements and train their managers to run DOST-affiliated TBIs. The program was launched in April 2018, and the Council's Panel of Experts selected 20 out of 45 nationwide universities. At the same time, two more universities were added as part of the Director's Save Award.

The HEIRIT program granted 20 universities, including Adamson University, Bicol University, Bulacan State University, Cagayan State University, Cebu Institute of Technology, Holy Angel University, Iloilo Science and Technology University, Mapua Institute of Technology, Miriam College, Nueva Vizcaya State University, Silliman University, St. Loius University-Baguio, Technological Institute of the Philippines-Manila, Technological University of the Philippines-Visayas, University of Mindanao, University of San Carlos, University of Santo Tomas, University of Southeastern Philippines, University of the Cordilleras, University of the Philippines-Mindanao.

Dr. Rizalinda de Leon, Executive Director of the National Engineering Centre, emphasised the importance of universities supporting innovation and entrepreneurial initiatives. She emphasised the need for universities to develop and implement fresh concepts that contribute to the public's value. Ms. Russell M. Pili, program manager of the PCIEERD TBI Program, highlighted the DOST's goal to foster public-private partnerships and create jobs. She emphasised the need for colleges to tap into creativity and ideas, and the DOST plans to establish 1000 startups over five years by replicating startup communities in the regions.

Professor Raneses, the HeIRIT project head, highlighted the importance of Technology Business Income in fostering innovation and entrepreneurship. He urged academic institutions to create a difference and develop entrepreneurs and graduates. After a one-year program, all HeIRIT-grant universities should have a business plan, target markets, partnerships, and a sustainability plan. Success factors for TBIs include passion, clarity of purpose, teamwork, feedback, and investors. The HeIRIT program's slogan, "Ideate. Create. Innovate. Incubate." energised participating universities to give their best.

2. Literature Review

2.1. Technology Business Incubation

The PCIEERD describes a TBI as one of the DOST-identified initiatives to support innovation and technopreneurship for the nation's socioeconomic development in a knowledge-based global economy. TBI consists of an environment where invention commercialisation is encouraged and supported. It strives to support newly established technology-based enterprises by offering a range of tools, facilities, and services required for their growth. TBI aims to create businesses that can compete in the market and are both operationally and financially successful when they exit the incubation program.

According to Mohan and Chinchwadkar (2022), TBIs are among the major players in the entrepreneurship and innovation ecosystem and offer a range of resources (both material and intangible) and services for the growth of high-tech startups. It is essential to have a thorough understanding of all the many facets of TBI. While Technology-Based Firms (TBFs) lay the

groundwork for new wealth-creating industries, Mian (2011) notes that policymakers seeking to be relevant in their planned interventions continue to face challenges in the race to develop appropriate policy and program mechanisms to help create and develop regions that enable new technology startups (Mian, Lamine, and Fayolle, 2016).

Mian, Lamine, and Fayolle (2016) suggested different titles, including technology/business incubators, innovation/technology centres, science/research/technology parks, and business/seed accelerators, referring to technology business incubators (TBIs). The terminology reflects both the location and the scope of the function. After defining TBIs, the development of different incubator mechanisms is summarised. The gaps between incubation practice and scholarship are illuminated through a systematic review of the extant literature (Mian, Lamine, and Fayolle, 2016). Next, an introduction to the papers included in this special issue highlighting their contributions is provided. Finally, the concluding remarks provide direction for further study.

2.2. Technology Business Incubator

“An incubator helps an entrepreneur put their house in order before beginning to commercialise the technology they are developing." Nicolas Castonguay is BDC's Senior Account Manager for the technology Industry (www.bdc.ca, 2023).

A building where startups are housed and business development services are offered is called a technology business incubator (TBI). DOST-funded TBIs provide office space, technical services, and facilities so aspiring technology entrepreneurs and startups can launch their firms. It strives to advance public-private partnerships in regional economic growth, create jobs, and foster entrepreneurship.

TBI is one of the strategies identified by the DOST to promote innovation and technopreneurship for the nation's socioeconomic development in a knowledge-based global economy. TBI encompasses an ecosystem that fosters and supports innovation in the direction of commercialisation. Its goal is to assist newly established technology-based enterprises by offering a variety of facilities, services, and resources required for the development phase. TBI's main objective is to produce businesses that can compete in the market, maintain operations, and be financially sustainable after the incubation program. The three main goals of the DOST TBI program are to foster public-private partnerships in regional economic development, to create jobs, and to train entrepreneurs.

Business incubation has evolved from the experiences of earlier small business support systems, attempting to link affordable workspace to focused counselling, training, and information as well as to external networks, university capabilities and finance (BTDS, 2000:27)

A business incubator program provides mentorship, investors, and support to early-stage companies to help them establish themselves. These programs help entrepreneurs move beyond their embryonic phase by providing coaching and support for new businesses with promising ideas. They help early innovators achieve a minimum viable product (MVP) and create an achievable plan to take the product to market. Business accelerators are more suitable for those at an advanced stage of development. In addition to mentorship and investment opportunities, incubators offer logistical and technical resources and shared office space and can last from

several months to a few years. The goal is to equip startups with the tools and knowledge they need to succeed. Some incubators operate as non-profit organisations, while others provide seed capital and support in exchange for equity positions (TCBD Start up Business Incubator, member of TC Group Education) in the companies.

2.3. What is a startup?

Steve Blank defined a startup as a temporary organisation designed to search for a repeatable and scalable business model (Bakker, Blaga, and Wolf, 2019). A startup is a short-lived company established to find a scalable and replicable business model. A startup and a large corporation are very different. Using a customer development methodology, startups may make the most of their time searching for a scalable and repeatable business model. This technique enables them to rapidly and accurately determine the market for their product (Kauffman, 2023).

Symonds (2023) emphasises the importance of operating in chaos and identifying patterns in data in startups. Kenton (2022) defines a lean startup as creating new companies or products based on market desires. This approach focuses on developing consumers' desired products, ensuring a market exists immediately after product launch. Lean startup uses validated learning to assess consumer interest, focusing on customer-related information like churn rate, lifetime customer value, and product popularity. Experimentation is favoured over rigid plans, and small prototypes are released to assess customer reactions.

Ries (2011) provided five principles on the lean startup method: (1) Entrepreneurs are everywhere, regardless of their location. Ries (2029) a startup is a human institution designed to create new products and services under extreme uncertainty. This approach can work in any size company, sector, or industry; (2) Entrepreneurship is management, requiring a new kind of management geared to its context of extreme uncertainty. Entrepreneurs should be considered a job title in modern companies that depend on innovation for future growth; (3) Validated learning is essential for startups to build a sustainable business. This learning can be validated scientifically through frequent experiments; (4) Build-Measure-Learn is the fundamental activity of a startup, focusing on turning ideas into products, measuring customer responses, and learning whether to pivot or persevere; and (5) Innovation accounting is crucial for improving entrepreneurial outcomes and holding innovators accountable. This study requires a new kind of accounting designed for startups and their stakeholders.

2.4. Studies on Startups

Zhai and Carrick (2019) analyse academic literature on startup valuation methods using bibliometric analysis and systematic review. The systematic review highlights the need to identify startup funding sources due to high uncertainty and risk. The authors highlight multiple valuation methods and the importance of analysing determinants influencing value at different maturity stages and adopting unconventional valuation methods.

Li (2019) explained that private firms' M&As result in less efficient asset reallocation than public ones due to information imperfections. The study demonstrates that efficiency loss in private acquisitions is not due to the acquirer's quality but rather a lower probability of completing deals.

It also suggests that undertaking acquisitions before IPO signals firm quality during stock issuance, supported by empirical evidence.

Aggarwal and Gupta (2018) examined companies like Naaptol, yaatra.com, Snapdeal, Paytm, Myntra, and BigBasket, focusing on their net worth, turnover, and funding losses. These young companies, often a startup bubble, are analysed using secondary sources like research articles, annual reports, and websites. They found that unicorns are attracting significant funding despite incurring losses.

2.5. Success Stories

A private company valued at over $1 billion is called a unicorn company or unicorn startup. There are more than 1,200 unicorns in the globe as of October 2023. Some well-known ex-unicorns are Google, Facebook, and Airbnb. A decacorn, valued at more than $10 billion, and a hectocorn, valued at more than $100 billion, are examples of variations. Get the complete list now to view investors, valuations, and other details for every company (cbinsights.com, 2023).

Unicorns are startup companies with a value exceeding one billion dollars, coined by Cowboy Ventures founder Aileen Lee in 2013. However, these companies, like Facebook and Amazon, are no longer considered unicorns as they both list and are sold on the stock market. Southeast Asia is experiencing a surge in unicorn startups, primarily in developed ASEAN markets like Singapore and Indonesia, thanks to Sea's public offering in 2017. China currently has over 60 unicorn startups, with e-commerce and fintech dominating the global market.

In 2021, several Asian unicorns emerged, including Blibli.com, Bukalapak, Carosell Group, Carro, Carsome, Flash Group, Gojek, Grab, J&T Express, Nium, Online Pajak, OVO, Patsnap, Razer, Revolution Precrafted, Sea, Tiket, Tokopedia, Traveloka, Trax, VNG, VNPay, and Xendit. Blibli.com was one of the first online malls in Indonesia, while Bukalapak launched its most extensive local listing in 13 years. Carosell Group secured a $100M financing round, raising its valuation to US$1.1 billion. Carro experienced a 2.5x revenue growth in 2021 and is EBITDA-positive for the second year. Carsome, a Malaysian unicorn, offers end-to-end car solutions across Indonesia, Thailand, and Singapore. Flash Group raised $150 million and plans to increase its domestic market share to over US$16 billion.

ASEAN Equity Research's latest report, ASEAN Unicorns, Scaling New Heights, features Mynt, the only Philippine startup in the list of Southeast Asia's 35 unicorn startups. The report identifies companies with a value of over $1 billion or received at least $800 million in funding in the past year and shows strong market momentum. Mynt has capitalised on these trends by changing its GCash service into an app that includes e-commerce and financial services. The company raised over $175 million in fresh capital from existing investors and Bow Wave Capital Management (inventive. co, 2023).

Rattan (2020) discusses India's two unicorns, Swiggy and Paytm, a mix of digital and physical payment services. Unicorn startups need thorough market analysis, targeting the right segment, and avoiding competitors. Proper funding and marketing can lead to unicorn status. Unicorns tap their niche early, like Swiggy and Paytm, leveraging advantages for long-term success.

In this context, the researchers would like to determine the status of the 20 established TBIs in the country under the DOST-PCIEERD's HEIRIT program.

3. Objectives of the Study

This study sought to provide information to improve the university TBI operations, particularly the TBIs funded by the DOST-PCIEERD under the HeIRIT Program.

The study was designed to determine:

1. the TBI characteristics in terms of (a) incubatees, (b) mode of incubation, (c) programs services, (d) physical facilities, (e) length of incubation, (f) percentage of total incubatees, (g) rental fees, (h) royalty, (i) income, (j) incubatee's maximum of years, (k) basis for graduation, (l) sustainability plan, (m) number of partnerships, (n) gross income, (o) jobs generated, (p) policies, and other TBI concerns;

2. the extent to which the TBI services provided to the incubatees in the incubator are used in their current startup and

3. the adequacy and applicability of the TBI.

3.1. Paradigm of the Study

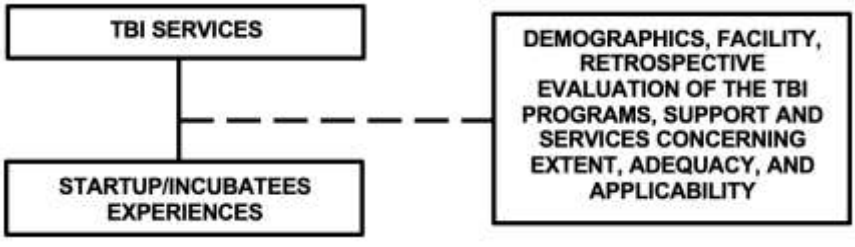

Figure 1. The Study's Paradigm.

Figure 1 illustrates the journey of the TBI's incubatees through their experiences and challenges to becoming a graduate of the TBI facility. The data gathered are critical in providing other support considered vital to scaling up the business.

4. Methodology

4.1. Research Design

To describe a population or group of people's characteristics, this study employed a descriptive survey method phenomenon during its conduct. Assessing how effectively the incubatees or graduates have accomplished the objectives of their program serves in part as a curriculum product review that documents the incubation efficacy, relevance, and sufficiency (Gines, 2014).

4.2. Respondents and Sampling Plan

Palinkas, Horwitz, Green, Wisdom, Duan, and Hoagwood (2015) expounded on the qualitative and quantitative research concepts based on the following literature. Recent requests to use mixed method designs in implementation research include those from Proctor et al. (2009), Landsverk et al. (2012), Palinkas et al. (2011), and Aarons et al. (2012). The realisation that the difficulties in putting into practice evidence-based and other novel practices, therapies, interventions, and programs are so complex that a single methodological approach needs to be revised has sparked this. This approach is especially true for initiatives to use evidence-based practices (EBPs) in state-wide systems where linkages among important stakeholders stretch both vertically (from the state to local organisations) and horizontally (between organisations situated in various regions of a state).

As in other research fields, mixed method designs are preferred in implementation research since they offer a more profound comprehension of study concerns than qualitative or quantitative approaches alone (Palinkas et al., 2011). In these designs, qualitative approaches are used to investigate and thoroughly understand the factors contributing to the success or failure of adopting evidence-based practice or pinpointing the best ways to speed up implementation. Comparatively, quantitative approaches are employed to test and validate hypotheses based on a conceptual model already in place and to comprehensively understand the factors that influence effective implementation (Teddlie & Tashakkori, 2003).

For this study, the researchers purposely chose twenty (20) TBIs in the Philippines funded by the DOST-PCIEERD. The two years of operations are the highlight of this study to determine the status of the TBI program in terms of services and support provided by the facility. A structured survey questionnaire and an interview schedule were the main instruments of the study. TBI data were collected using the questionnaire in a Google form format sent to the TBI managers and project leaders. Interviews through calls with the TBI officials were also utilised for other responses not included in the questionnaire, especially to gain important information for generating new policies for the sustainability of TBIs in the country. The outcomes of the TBI practices were validated by observing their facilities and equipment, organisational structure, financing opportunities, partnership and linkages, and entrepreneurial mindset.

4.3. The Instrument

The researchers used a custom-made tracer study form that was fitted to the study's anticipated results. The DOST Forms No. 2B-3 and Proposed Establishment of TBIs criteria were used to design the questionnaire, which brought out the key elements. The questionnaire's hard copy and online versions only contained items pertinent to the current investigation. The questionnaire has the following questions/items for each section: TBI information, 7; TBI facility, 11; other concerns, 2; program assessment, 4; program adequacy, 4; program content adequacy; and retrospective program assessment, 13. Below is a portion of the questionnaire for the respondent's evaluation.

4.3.1. TBI program assessment

Please rate the extent to which skills learned in the TBI program are used in your current startup company using the following scale:

Range	Interpretation	Description
3.25-4.00	To a great extent	The TBI has highly extended its services to current startups.
2.50-3.24	To some extent	The TBI has extended its services to current startups.
1.75-2.49	To a limited extent	The TBI has reasonably extended its services to current startups.
1.00-1.74	Not at all	The TBI has not extended its services to current startups.

Activities	4	3	2	1
Knowledge/Technical Skills	[ ]	[ ]	[ ]	[ ]
Communication Skills	[ ]	[ ]	[ ]	[ ]
Human Relation Skills	[ ]	[ ]	[ ]	[ ]
Research Skills Problem-Solving Skills	[ ]	[ ]	[ ]	[ ]

4.3.2. TBI adequacy of program content

Please rate the TBI adequacy of the contents taught using the following scale:

Range	Interpretation	Description
3.25-4.00	Highly adequate	The TBI program has very adequate program content.
2.50-3.24	Moderately adequate	The TBI program has adequate program content.
1.75-2.49	Not quite adequate	The TBI program has adequate program content.
1.00-1.74	Not at all	The TBI program needs to be more adequate.

Activities	4	3	2	1
Technopreneurship 101	[ ]	[ ]	[ ]	[ ]
Incubation program	[ ]	[ ]	[ ]	[ ]
Acceleration program	[ ]	[ ]	[ ]	[ ]
Investment readiness program	[ ]	[ ]	[ ]	[ ]
Others, please specify_____	[ ]	[ ]	[ ]	[ ]

4.3.3. TBI applicability of the TBI program activities

Please rate the applicability of the TBI program activities using the following scale:

Range	Interpretation	Description
3.25-4.00	Highly applicable	The TBI program activities are very applicable.
2.50-3.24	Moderately applicable	High applicability of the TBI program activities.
1.75-2.49	Not quite applicable	Relatively high applicability of the TBI program activities.
1.00-1.74	Not at all	The TBI program activities are not applicable.

Activities	4	3	2	1
Pitching	[ ]	[ ]	[ ]	[ ]
Networking/Business Matching	[ ]	[ ]	[ ]	[ ]
Social Media Engagement	[ ]	[ ]	[ ]	[ ]
Reverse Pitching	[ ]	[ ]	[ ]	[ ]
Community Events	[ ]	[ ]	[ ]	[ ]
Others, please specify_____	[ ]	[ ]	[ ]	[ ]

4.4 Data Gathering Procedure

The researchers requested permission from the DOST PCIEERD, UMWAD, and every TBI established through the HeIRIT program. Upon approval of the request, the questionnaire was sent to the TBI managers and project leaders in hard copy or Google form. The data was gathered using two different methods. The first method is face-to-face, in which the researchers personally hand out and give the survey to the participants who have been identified. The second method uses a Google Form for an online poll. In some circumstances, the staff from the respondents' places of employment were asked to help distribute and administer the surveys. Telephone interviews were conducted with some participants after obtaining their permission, while others completed the instrument via messenger and email; graduate students who visited the university were also used as participants. Despite scheduling and logistical issues, data from 20 TBIs were gathered.

The study has undergone an in-house evaluation as part of the procedures to conduct research under the approved policies of the university's Office of the Vice President for Research and Extension through the Office of the Research Services Division. After receiving permission to carry out the study, the team sent questionnaires using a variety of online platforms, including Google Forms, chat, emails, calls, and text messages to collect data. The majority of respondents replied online. The knowledge gained serves as the foundation for the university's attempts to produce outstanding graduates from its graduate programs.

4.4. Data Analysis

MS Excel and SPSS Version 22 were used to analyse the collected data on a computer. The researchers gave each item a tally scheme for statistical procedures. The researchers utilised frequency count and percentage to analyse the data. The frequency count and percentage determined the participants' occupations and demographic profiles.

4.5. Ethical Considerations

The Code of Ethics has directed the study's conduct under ethical ideals. Prioritising the participants' well-being, the researcher sought their permission for voluntary involvement. They were identified by number coding, anonymity was maintained, and formal correspondence was sent by email. The researcher assured them that the information provided would be used only for that reason. Six months after finishing the final report, the researcher destroyed all hard copies of the material and erased the contents from a password-protected personal computer and backup CD (Crewsell, 2013).

5. Results and Discussion

The text outlines the characteristics of TBI, including incubatees, incubation mode, programs, facilities, length of incubation, percentage of total incubatees, rental fees, royalty, income, incubatee's maximum years, graduation basis, sustainability plan, partnerships, gross income, jobs generated, TBI policies, and other TBI concerns.

5.1. TBI Profile

With 42.90%, Figure 2 demonstrates that a subset of TBIs contained spinoffs and beginnings. However, the majority of them—57.10%—only supported startups.

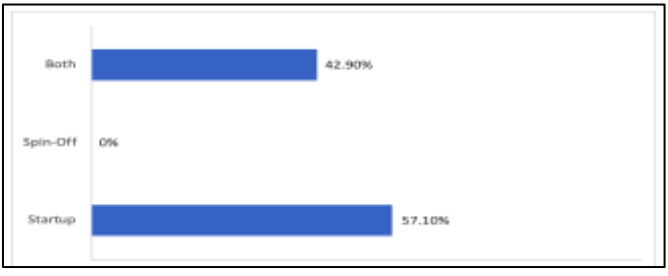

Figure 2. Types of incubatees

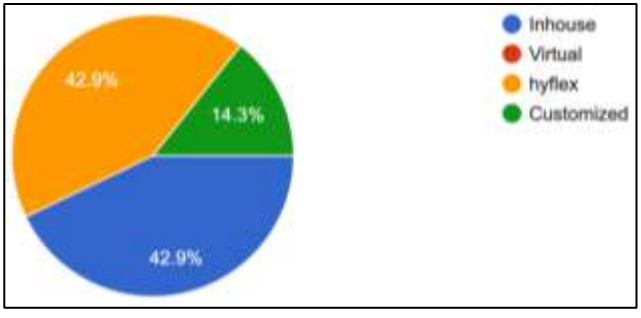

Figure 3. Modes of incubation.

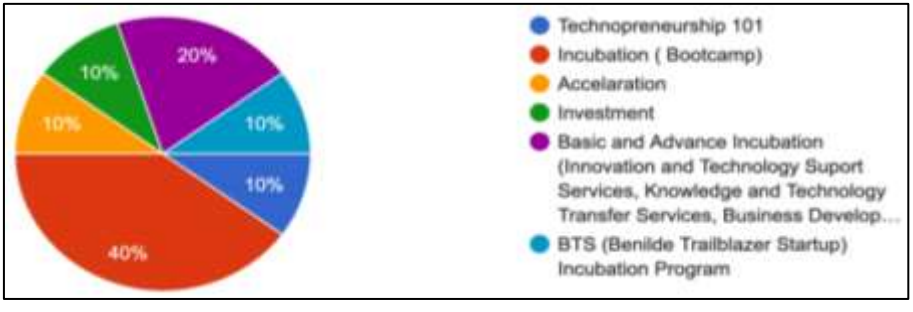

Figure 4. Program services.

Figure 5 shows that common facilities utilised are conference/meeting rooms and office space.

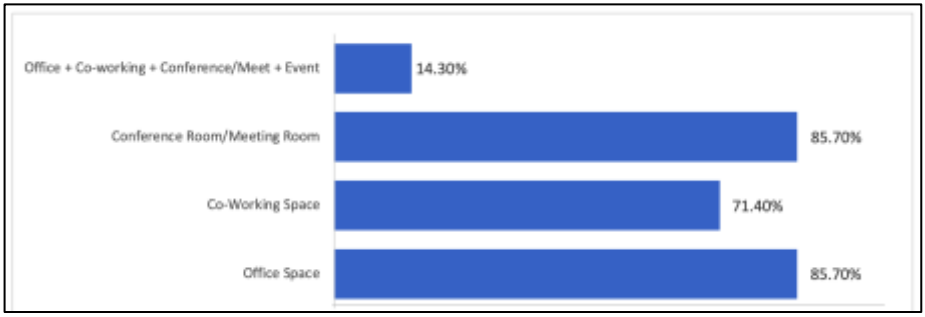

Figure 5. Physical facilities.

Figure 6. Length of incubation.

Figure 4 shows that at least 30% of the TBIs have startups that account for less than 30% of their total incubatees. Thus, most of the incubates were startups.

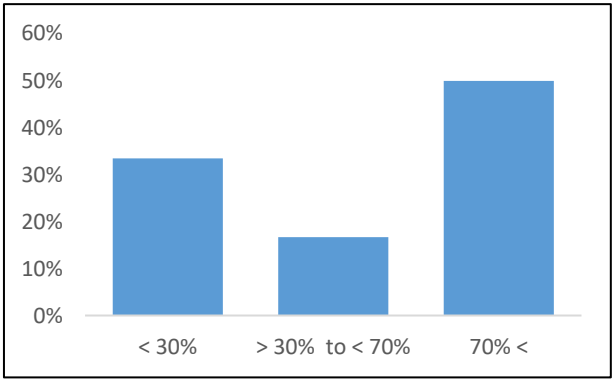

Figure 7. Percentage of total incubatees.

With 85.70% responding, Figure 8 illustrates that most TBI facilities do not offer leasing services but are "required to generate self-sustainability initiatives through the strategic initiative of the alternate sourced." This outcome demonstrates the facility's commitment to meeting demands and attracting potential incubatees to remain there.

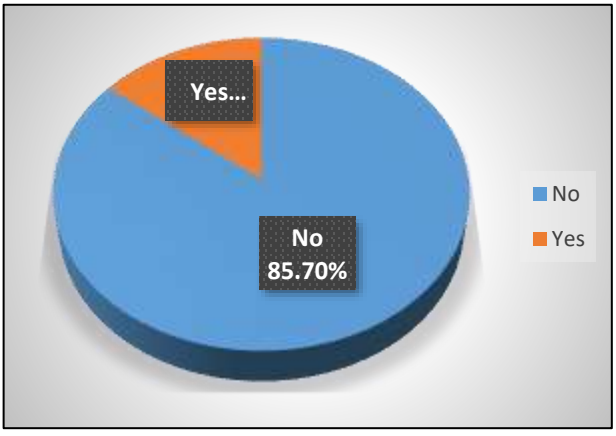

Figure 8. No rental fees.

Figure 9 shows that no royalty has been granted to the facility because most of the funding comes from the DOST, and the facility is only now beginning to operate. However, this "depends on the type of technology."

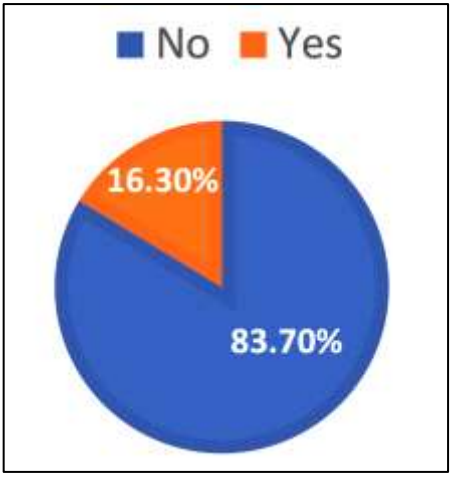

Figure 9. Royalty

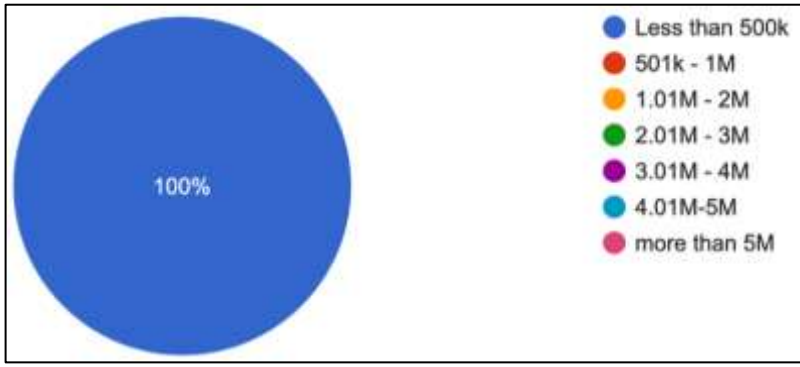

Figure 10. TBI income.

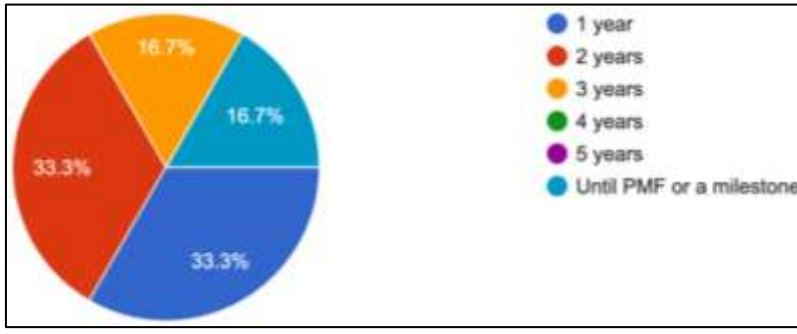

Figure 11. Incubatee's maximum of years in TBI.

5.1.1. Basis for TBI graduation

The basis of graduation outlines a startup's success, highlighting the completion of modules, increased revenue, and a minimum of 1 million revenue per startup. The startup also demonstrates strong product/service quality, production capacity, employee growth, compliance with regulatory requirements, and significant accomplishments. It also highlights the importance of MVP, business milestones, market tracking, and financial sustainability.

5.1.2. TBI Sustainability Plan

To continue to operate and sustain the operation of the TBI, the system offers institutionalisation, DTI grants, space rental, equipment rental, international grants, government funds, university funding, LGU and private sponsorship, paid training, coworking, events, consulting, SAFEs, SAFDs, and convertible notes. Additional plantillas were provided for team members and staff, with the deloading of the core team members leading the TBI.

5.1.3. Number of Partnerships

The results showed that sixty-six (66) successful partnerships were made: 30 from the government, 16 NGOs, 5 NGAs, and 15 from the industry. This data manifests an ecosystem

that opens opportunities to promote economic development to address the country's pressing challenges.

5.1.4. Jobs Generated

The project intends to create jobs for the country. During their two years of operation, the TBIs generated eighty (80) jobs.

5.1.5. Do you have the approved TBI policy/manual?

Twenty TBIs have an approved policy/manual, and some are drafting it for approval. Others are still in the process of making the manual based on each university's needs and requirements.

5.1.6. Other TBI Concerns

The university's entrepreneurial culture is still in its early stages, and few creative industry incubators are available to learn from. HIFI is among the first, alongside MMSU, UP Baguio, BPSU, and PWC. A Creative Industry TBI cluster, similar to a RESEED program, is proposed to focus on the creative industry.

Creative industries, also known as creative and cultural industries, are economic activities that generate and commercialise creativity, ideas, knowledge, and information. They encompass various sectors like design, music, publishing, architecture, film, video, crafts, visual arts, fashion, TV, radio, advertising, literature, computer games, and performing arts. The UK Government defines creative industries as those originating from individual creativity, skill, and talent, with the potential for wealth and job creation through intellectual property generation (www.davidparrish.com, 2024).

5.2. The extent to which services provided to the incubatees in the incubator are used in the current company

Table 1. The TBI Program Extended to the Incubatees Useful in the Current Company

TBI Skills Assessment	Mean	Interpretation	Description
Knowledge/ Technical skills	3.71	To great extent	The TBI has highly extended its services to current startups.
Communication Skills	3.43	To some extent	The TBI has extended its services to current startups.
Human Relation Skills	3.71	To great extent	The TBI has highly extended its services to current startups.
Research Skills Problem-Solving Skills	3.57	To great extent	The TBI has highly extended its services to current startups.
Overall	3.61	To great extent	The TBI has highly extended its services to current startups.

Table 1 shows that the TBI program extended to the incubatees in the current company has an overall mean of 3.61, which is interpreted as "to a great extent." All TBIs unanimously responded that all services have been extended to the current startups. Furthermore, incubatees consider these services beneficial for the company.

5.3. The Adequacy and Applicability of the Incubator

Table 2.1 TBI Adequacy of Program Content

TBI Program Content	Mean	Interpretation	Description
Technopreneurship 101	3.86	Highly adequate	The TBI program has very adequate program content.
Incubation Program	4.00	Highly adequate	The TBI program has very adequate program content.
Acceleration Program	3.14	Moderately adequate	The TBI program has adequate program content.
Overall	3.70	Highly adequate	The TBI program has very adequate program content.

Table 2.1 shows that the overall mean is 3.70 for the adequacy of the program content, which is interpreted as highly adequate. Although the overall rating is highly adequate, the acceleration program content is moderately adequate. This result is because the program requires a lot of money to run the accelerator, including physical and non-physical infrastructure. Moreover, it is a common problem for TBIs, so seeking funding and angel investors is challenging. Challenges are always present, but the country's optimism towards sustainable development is augmented in the report of Teves et al. (2023); the Philippines has 700 active startups, up from 100 in 2015, primarily in fintech, media, entertainment, and e-commerce. Emerging sectors include agritech, edtech, cleantech, and healthtech, which promote human and sustainable development, improve health and education, assist rural populations, and create a cleaner environment.

Table 2.2 TBI Applicability of the TBI Program Activities

TBI Program Activities	Mean	Interpretation	Description
Pitching	3.71	Highly applicable	The TBI program activities are very applicable.
Networking/ Business Matching	3.86	Highly applicable	The TBI program activities are very applicable.
Social Media Engagement	3.71	Highly applicable	The TBI program activities are very applicable.
Reverse Pitching	2.86	Moderately applicable	High applicability of the TBI program activities
Community Events	4.00	Highly applicable	The TBI program activities are very applicable.
Overall	3.63	Highly applicable	The TBI program activities are very applicable.

Table 2.2 reflects the overall mean of 3.63 for the applicability of the TBI program activities, which is interpreted as highly applicable. This result shows that all TBI program activities are highly applicable to the needs of the incubatees, except for reverse pitching. According to managementstudyguide.com (2024), reverse pitching has several disadvantages for corporations and startups. Geographic limitations can be costly and reduce the number of potential startups, reducing innovation chances. Lack of well-published data can also reduce the effectiveness of the exercise. Startups may need clarification about participating due to the high customisation of solutions, which may result in low scalability and valuation. Despite these drawbacks, the popularity of reverse pitching is increasing due to its potential benefits for a specific subset of companies and entrepreneurs.

6. Conclusion and Recommendation

This study sought to provide information to improve our Technology Business Incubator (TBI) operations, particularly the TBIs funded by the Department of Science and Technology-Philippine Council for Industry, Energy and Emerging Technology Research and Development

(DOST-PCIEERD) under the Higher Education Institutions Readiness for Innovation and Technopreneurship (HEIRIT) Program.

However, the government's and the academic community's support for TBIs will bolster their aims and purposes. This support would guarantee that all catering startups receive support in becoming ready to become legitimate business owners. None of these components can succeed without financial opportunities and allocated finances for the operational use of TBIs. As noted in the preceding discussion, most TBIs are also startups, and although 90% of startups fail, many TBIs remain active and operational (Singharam & Prathistha (2017). As a result, some TBIs came up with a project or method for making money where outsiders hired the facilities and space to supplement their income needs.

On the other hand, the implementation process's parameters include promoting TBIs' services and facilities, safeguarding startup products, innovations, and inventions, creating policies and implementing rules and regulations, cascading best practices, aligning TBI's vision, mission, and goals with the institution's focus on research, extension, and innovation, and providing training, mentoring, and coaching.

Furthermore, ongoing coaching, mentoring, and training programs will support the independence of newly established businesses. This result is comparable to situations in which financial opportunities or monies are allocated for the operational use of TBIs for services like coaching and training. As was noted in the preceding discussion, the majority of TBIs are startups as well, and although 90% of startups fail, many TBIs remain active and operating.

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