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PERSPECTIVES ON TECHNOLOGY BUSINESS INCUBATORS (TBIs) FOR PHILIPPINE STARTUPS: A GROUNDED THEORY APPROACH

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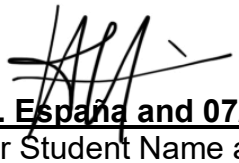

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This thesis of **HEHERSON PARIS B. ESPAÑA** titled: "**PERSPECTIVES ON TECHNOLOGY BUSINESS INCUBATORS (TBIs) FOR PHILIPPINE STARTUPS: A GROUNDED THEORY APPROACH"** is hereby accepted by the Faculty of Management and Development Studies, UP Open University, in partial fulfillment of the requirements for the degree of **Master of Research and Development Management (MR&DM).**

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Biographical Sketch

Heherson Paris B. España is an experienced manager with specialization in fields such as business consulting, business process outsourcing (BPO), and client relationship management. He is currently based in Mandaluyong City, Metro Manila, but has been working remotely since 2019. He has worked in the private sector for over 18 years and has held various positions, from being an account specialist, process trainer, team leader, and operations manager to presently being a client partnership manager for a multinational company that offers delegation support services for CEOs, C-suite executives, venture capitalists, and startup founders all over the world.

Paris was a recipient of the Alfonso T. Yuchengco (AY) Foundation National Discipline Awards program in 2004 during his stay at the Polytechnic University of the Philippines, Manila; however, he completed his bachelor's degree in business administration, major in Management Information Systems from AMA University, Quezon City in 2021. Despite the break in his academic years due to financial reasons, he pursued continuous learning by enrolling in the Master of Research and Development Management (MR&DM) program of the University of the Philippines Open University, which was related to his job scope change, as he became the lead in the ideation and innovation unit of his organization.

His research interests include automation in business processes, artificial intelligence application in the workplace, technology evaluation and commercialization and sustainability in business operations. He uses his experience and foundation in R&D management to transform business operations through innovative research, strategic technology integration, and sustainable practices.

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I would like to thank my research adviser, Dr. Leo Mendel Rosario, for all the help, encouragement, and motivation he had imparted to me during my time at UPOU. His deep knowledge in R&D management, patience for his students and even his personal and professional advice had been incredibly helpful in improving my skills. I deeply appreciate his time and support, even during weekends and wee hours of the night to answer my queries. Moreover, I would also like to thank my other mentors at UPOU for their continued support during my graduate school years as follows:

Dr. Malou Jarabe for helping me understand how important it is for technology and research and development to be diverse, equitable, and inclusive for everyone. Her insights had helped me realize how accepting different points of view may lead to new ideas and further advance progress;

Asst. Professor Regina Mendoza-Armiendo for her thoughtful guidance on public policy and program administration. Our casual conversations during IFSS have inspired me to push forward and continue learning even at this point of my career; and

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Overall, their combined knowledge and constant support had helped meaningfully, and that without their expertise and advocacy, I would not have been able to reach my goals.

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Dedication

I dedicate this paper to my younger sister, Ma. Francia B. España, with whom I was in the Philippine General Hospital for eight months before she succumbed to cancer in 2021. I started taking my master's degree while looking after her in the four corners of our isolation room while having her chemotherapy sessions. I promised her, and my deceased parents, Francisco and Remedios España, that I will continue my academic journey despite having a stable job as the breadwinner of the family. They may not be physically with me as I conduct, write, and defend this research, but I know that all three of them are looking after me every day, making sure that I stay inspired and committed to achieving our shared dreams. This work is not just a fulfillment of a promise but also a tribute to their legacy in my life.

To my life partner, my fur babies, my cousins, my colleagues, and friends who kept me sane and grounded, they have all been my healthy distraction, my go-to for good-vibes. Their encouragement and understanding were a constant source of strength.

Lastly, I likewise dedicate this paper to all my fellow working students, colleagues, *iskolars ng bayan*, and to those who have interrupted their studies due to life's challenges, affirming that the door to education always remains open. I hope that this paper would serve as a reminder to everyone that it is never too late to follow dreams and continue pursuing educational goal; and as a testament to the power of perseverance and the resilience of the human spirit no matter the obstacles or detours along the way are, goals are within reach if one remains committed and passionate. I pray my journey will serve as an inspiration to continue striving, to embrace lifelong learning, and to believe in the ability to overcome any challenge in pursuit of one's aspirations. *Padayon*!

Abstract

This study explored the nature of Technology Business Incubators (TBIs) in the Philippines from the perspective of its key stakeholders: the TBI managers and startup founders. The goal was to understand the operational structures, processes, and outcomes of local TBIs and to develop a grounded theory that reflects the current dynamics of the Philippine startup ecosystem. The central research question is: "*What is the nature of technology business incubators in the Philippine context?"*

A qualitative approach using Constructivist Grounded Theory (CGT) was employed by the researcher by conducting fifteen in-depth, semi-structured interviews with ten TBI managers and five startup founders from various regions of the Philippines. The data was analyzed through a systematic process of open, focused, and axial coding to identify emergent themes and construct a substantive theory grounded in the lived experiences of the participants. The study revealed that Philippine TBIs are undergoing a significant transformation, moving from traditional grant-dependent frameworks to more financially resilient, business-like entities. The research concluded in the grounded theory of *"The Adaptive Resilience of Philippine TBIs," describes* the core capacity of a TBI to withstand disruptions, adapt its processes, and maintain its dual function of supporting startups and developing its ecosystem over the long term. The emergent theory offers a novel approach for understanding how TBIs can evolve to better meet the needs of a dynamic technology startup ecosystem, contributing valuable insights for policymakers, TBI managers, and entrepreneurs.

A key limitation of this study was the exclusion of perspectives from government agency representatives, as none consented to participate in interviews. The developed

theory, while grounded in the data, was qualitative and would have benefited from further quantitative validation to avoid overgeneralization.

Keywords: Technology business incubators; Startup ecosystem; Adaptive resilience; Funding; Revenue generation

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Chapter I

THE RESEARCH PROBLEM

Introduction

In a rapidly changing global economy, the Philippines is committed to becoming a leader in innovation and entrepreneurship. To improve its position in the Global Innovation Index (GII), the country had taken a comprehensive strategy to enhance its innovation ecosystem. There had been a number of national policies and strategies which had been put in place to support these efforts. This includes the National Innovation Agenda and Strategy of 2023 (NIASD, 2023) and the Philippine Innovation Act (PIA), also known as RA No. 11293 of 2019. The PIA mandates the creation of a National Innovation Council (NIC) which is intended to foster collaboration among the government, businesses, and universities by developing long-term plans and funding innovative projects (DICT, 2023). Complementing this is the Republic Act No. 11337, also known as the Innovative Startup Act, which supports new businesses by offering incentives, funds, and simplified compliance procedures. (DOST, 2021). Both acts were created to provide a supportive environment for startups to develop and scale their ideas into technologies which could be commercialized and used for both local and international contexts. Through these legal frameworks, the Philippines aims to enhance support for technology business incubators (TBIs) to startups and stimulate a dynamic and competitive innovation ecosystem.

According to Startup Genome, an international research firm that specializes in helping governments and organizations build world-class startup ecosystems, the Philippines has ranked 61-70 in its 2024 survey with the country having about 1200 registered startups, 65 incubators and accelerators and an estimated valuation worth

$2.4 billion in venture capital funding with potential exit value of $258 million covering the periods of 2020 to 2024 (Startup Genome, 2025). This is an indication that the startup ecosystem of the Philippines is attracting global attention and reflects the potential the local startups have in scaling up to international opportunities. However, as the global tech landscape evolves quickly, there is an urgent need to examine and restructure TBI operations to better support the next generation of Filipino startups. This study is relevant now, given the current shift toward digital transformation and the growing focus on sustainable and inclusive economic growth. By looking at the perspectives of stakeholders involved in business incubators and the technology startup ecosystem of the country, this study seeks to uncover insights that could lead to more effective strategies for fostering innovation and entrepreneurship.

To understand the insights and experiences of TBI stakeholders, this thesis implemented the Constructivist Grounded Theory (CGT) methodology, a qualitative approach that supports the creation of theory coming from systematically gathered and analyzed data gathered from the research participants. The use of CGT for this research is suited to exploring the dynamic and complex nature of TBIs because it allows for the development of a theory from real-world experiences and perceptions of those that are part of the business incubation processes.

This research contributes to the field of research and development management by looking into the intricacies of TBIs as they support startups. The results and recommendations of this study offers a conceptual reference for policy-making and strategic planning in research and development as well as potential case studies related to topics such as support systems, technology evaluation, commercialization, and utilization. This study not only contributes to the existing body

of knowledge but also paves a way for future research in developing strategies and frameworks in business incubation aligned with global best practices.

Background of the Study

Overview of Technology Business Incubators

The idea of business incubation started in the United States in the 1950s and has since spread around the world, changing to fit diverse cultures and economies. TBIs are organizations that help new and innovative businesses grow and develop, particularly those in the tech industry. These incubators provide startups the resources they need to succeed, such initial funding, office spaces or laboratories, shared services, access to specialized equipment, and even help with business strategies until they can fully operate on their own. The main goal of TBIs is to help early-stage companies grow faster by giving them the tools and the environment they need to survive and succeed in a competitive market (Reyes, 2003).

TBIs are important because they help tech startups solve a number of challenges. First, TBIs help startups save on operating costs by giving them access to basic services and facilities, mostly for free or for a lower fee. Startups usually do not have a lot of funding to work with so TBIs provide the startups the ability to access a network of mentors, industry experts, and academics who can help with business strategy, entering new markets, and other income opportunities. This increases the chances of a startup's success by lowering the risks that come with starting a business. TBIs make it easier for startups, researchers, and potential investors to work together

and make collaborations. This ecosystem promotes the sharing of information, latest ideas, and the building of strategic partnerships and linkages, all of which are necessary for the growth of tech-driven businesses. TBIs help bridge the gap between research and the market because they support modern technologies become commercialized, leading to economic growth (Reyes, 1995).

Countries around the world, including the United States, United Kingdom, Germany, China, and Japan, have seen their technology sectors flourish through the help of TBIs. These countries have created healthy ecosystems for incubation that help turn university research into products, stimulate local economies, and create jobs for the community. The Silicon Valley (SV) in the US is a good example of an ecosystem with strong incubators that have helped numerous tech startups succeed. Meanwhile, Singapore is considered as the entry point for institutional knowledge from the West, in terms of bringing the best practices in the ASEAN region (Harris & Menzel, 2023).

The Philippines has acknowledged TBIs as key instruments for helping the country become more innovative and start new businesses. In previous few years, the number of local TBIs has grown, indicating that more people want to see the local tech startup ecosystem grow. The Department of Science and Technology (DOST) has been a leader in promoting TBIs through its councils, such as the Philippine Council for Industry, Energy, and Emerging Technology Research and Development (PCIEERD), the Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development (PCAARRD), and the Philippine Council for Health Research and Development (PCHRD). The Technology Business Incubation Program (DOST, 2014) is only one of many initiatives that want to help Filipino innovators

become better businesspeople by giving them the resources they need to make and commercialize their technology.

The Department of Science and Technology (DOST) oversees the government initiatives related to TBIs. The Technology Business Incubation Program (DOST, 2014) is one of the programs that PCIEERD has run to help business incubators. In 2024, PCIEERD offered about PHP 800 million to 207 research initiatives, including funding for TBIs (PCIEERD, 2024). PCIEERD implemented the Higher Education Institution Readiness for Innovation and Technopreneurship (HEIRIT) program to address the challenge of not having enough incubation support facilities particularly in regions outside the usual technology hubs like Metro Manila, Cebu, and Davao. The HEIRIT program was implemented to enable state universities and colleges (SUCs) and higher education institutions (HEIs) to create localized technology business incubators hat would support faculty, students, and small and medium-sized businesses by teaching them how to be entrepreneurs and start their own firms (PCIEERD, 2017).

The government has also worked with industry experts, non-profits organizations, and individual entrepreneurs in the private sector to build up public-private partnership (PPP) business incubators. The QBO Innovation Hub is the first public-private partnership in the Philippines that helps the startup ecosystem grow, develop, and maximize potential (QBO, 2024). While the government and industry continue to partner to reach its common goal, the success and impact of TBIs in the Philippines have been inconsistent, needing a closer look at their operations.

The State of TBIs in the Philippine Startup Ecosystem

Business consulting organizations in the Philippines have reported the challenges faced by local startups. A baseline survey by PricewaterhouseCoopers (PwC) Philippines in 2020 gathered responses from over 140 startup founders and investors. The report noted that founders remained disadvantaged by lack of funding and skilled personnel despite regulatory problems, such as business registration being relaxed. In this context, the PwC survey positioned business incubators as a vital support system, giving access to mentorship, networks, and resources that are otherwise difficult for startups to obtain.

The report of PwC was supported by a study done by a team of researchers from the Asian Development Bank (ADB). Their research confirmed that despite government support initiatives, the ecosystem continues to face significant difficulties. The ADB's findings pinpointed ongoing issues in funding, program development, and regulatory policies, particularly highlighting the struggles of university-run incubators. Incubators in the provincial areas often operate under severe financial limitations, affecting their success, which also causes a ripple effect on the startups they support (Teves, et al. 2023). A local study focusing on the role of technology business incubation in the country reinforced the findings of ADB. The research involved key informants from higher educational institutions in the Visayas region (Ybañez et al. 2021). Their data highlights the need for stronger policies to improve the region’s TBIs.

The combined analysis of these reports PwC, ADB and Ybañez reveals three recurring and important themes that define the operational struggles of Philippine TBIs such as: unstable funding, human resource constraints, and infrastructure challenges.

Unstable Funding - While TBIs are functionally expected to support startups, they themselves experience issues with securing the steady funding needed for long-

term operational capability. Many incubators only depend on an unstable mix of grants, donations, or short-term corporate sponsorships. This issue directly limits their ability to expand services, invest in modern infrastructure, or support a larger cohort of startups. The 2023 ADB report elaborates on this, acknowledging that while government initiatives like the DOST's Startup Grant Fund are beneficial, the support is often insufficient to build mature, financially resilient incubators. Also, TBIs struggle to attract consistent private investment from venture capitalists, which in turn hinders their capacity to offer the comprehensive, tailored support that startups need to scale up or further develop their product or service.

Human Resource Constraints - The challenge of attracting and retaining high-quality talent proves equally important for the incubators themselves. Effective incubation requires experienced mentors, industry experts, and operational staff. However, a shortage of such talent, particularly individuals and professionals with proven experience in scaling businesses or possessing deep technical knowledge, severely limits the quality of support many incubators can offer. As the ADB report discusses, this shortage of skilled mentors and internal staff often leads to the adoption of a generic, "one-size-fits-all" program structure. This approach fails to cater to the specific needs of diverse startups, especially those that are more advanced and require specialized, high-quality mentorship to progress.

Infrastructure Challenges - The 2020 Philippine Startup Survey initially noted that the physical and digital infrastructure available to incubators was often insufficient. Inadequate facilities and technology further cause operational challenges for TBIs. Expanding on this, the 2023 ADB report details these deficiencies, emphasizing the critical role of digital infrastructure. It highlights a geographical inequality: many TBIs outside Metro Manila experience poor internet connectivity and lack access to modern

co-working spaces or innovation labs. This challenge not only limits their ability to attract startups but also restricts their capacity to provide an environment that is favorable to innovation. Even if the government has initiated efforts to improve national infrastructure, progress remains slow, leaving incubators to bear the impact of these deficiencies.

The findings from PwC and the ADB painted a picture of the current TBI landscape. They established that incubators, while positioned as a solution, were also going through the same financial, human, and infrastructural limitations. While these reports observed the problems from a high level, a central perspective remained underexplored: that of the TBI stakeholders themselves. To come up with effective strategies for improvement, it is therefore essential to move beyond these reports and engage directly with the people running and participating in these programs to understand their lived experiences and day-to-day realities.

Statement of the Problem

Technology business incubators are crucial to the development and success of startups, particularly in the evolving Philippine technology sector. Despite the TBIs' role in the promotion, growth, and resilience of startups, existing studies pointed out challenges and opportunities they face in the country from a high-level standpoint.

This research looked at varying ideas and opinions on how Philippine TBIs could be transformed to more effective support systems for startups from the views and experiences of the actual people engaged in TBI functions and startup operations. This approach helped keep the study open to diverse perspectives and not limited by preconceived notions about the nature of TBIs.

One of the goals of this study was also to look at how TBIs have changed over time in the Philippines by looking at stakeholders' practices and approaches with the changing technology and market conditions, which could help understand what has made them more adaptable and resilient. The research also aimed to learn about the changing processes that shape TBIs and to suggest new, evidence-based frameworks that better meet the needs of local startups. The study tried to combine these points of view to come up with practical suggestions for making TBIs more dynamic and responsive so that they can better meet the needs of Philippine startups which would then increase their chances of success and impact both domestic and global markets.

Research Questions

To address the problem and achieve the objectives of this study, the following research questions (RQ) had been formulated:

Main Research Question (MRQ): *What is the nature of technology business incubators in the Philippine context?*

Sub-research questions (SRQ):

- SRQ1. *What are the research participants' perspectives on TBIs over time?*
- SRQ2. *What are the structures and processes that define the operations of local TBIs over time?*
- SRQ3. *What are the outcomes resulting from the TBI operations over the course of their development?*
- SRQ4. *What are the implications of the nature of TBIs in the Philippines?*

These questions explored the various facets of TBIs, from their structural and functional aspects to the experiences of their stakeholders, ensuring an inclusive understanding that recommended a new framework on TBIs for Philippine startups.

Objectives of the Study

The specific objectives of the study were:

1. To understand the perspectives of various stakeholders in the operations of technology business incubators;
2. To characterize or illustrate the operational structures and processes of local TBIs;
3. To analyze the outcomes resulting from the TBI structures and processes;
4. To infer potential implications of the nature of TBIs in the country; and
5. To develop a grounded theory on technology business incubators that aligns to the demands of startups in the Philippines.

Scope and Limitations of the Study

Scope of the Study

This study applied a qualitative approach to explore the perspectives on TBIs within the Philippine setting. The research focused on understanding the strategies, operational processes, and perceived outcomes of these incubators, with data coming

from in-depth, semi-structured interviews with key stakeholder groups of TBI managers and startup founders who are current or post-incubatees.

The geographical scope was national, covering TBIs across the country. However, the selection was purposively focused on established TBIs and startups registered with the Department of Science and Technology.

Delimitations: This study did not look at the long-term financial success or survival rates of graduated startups on purpose so that the investigation could be targeted. It also did not include the views of government agency representatives, as initially planned, as none accepted the interview invitations. The research also did not include the inputs of venture capitalists or private investors, and it did not compare Philippine TBIs to those in other ASEAN countries. The research was also delimited to data from interviews and volunteered documents shared by the participants, excluding proprietary operational data or confidential internal reports.

Limitations of the Study

While this study hoped to provide valuable insights and practical recommendations, it was still subject to specific limitations based on the chosen research design such as:

1. Geographical constraints – The study intended to cover a nationwide scope, but was still dependent on the acceptance of invites of the research participants. The researcher tried to ensure a good balance of representation from all major regions of the Philippines across Luzon, Visayas and Mindanao through the use of the RESEED portal of DOST;

2. Variability of responses – The quality and depth of responses from the participants varied, which impacted the richness of the data collected. Some participants expressed their thoughts freely and candidly while others strictly kept their answers to the issue, unless asked by a follow-up question;
3. Timing constraints – The findings of the study were only based on the participants' perspectives at the time of the interview. Considering the fast-paced environment of the global and local startup community, the results of the study may not include the long-term trends or future changes in the industry;
4. Availability of data – The research was limited to the data available as extracted from the interviews and other supporting materials as volunteered by the participants. There could have been potentially valuable data that could have supported the study but remained inaccessible because of confidentiality or proprietary restrictions of the business operations of the TBI or startup company; and
5. Generalization of findings – While the study's goal was to propose a grounded theory on TBIs, the specific recommendations and conclusions may not be universally applicable to all types of TBIs, may it be in the local, regional or international setting, without adaptations or contextual changes.

By acknowledging the above-mentioned limitations, the research still aimed to provide a balanced and realistic set of findings and recommendations; despite the given constraints. The research also hoped to significantly contribute to the understanding and improvement of TBIs in the Philippines, supporting our country's innovation and entrepreneurial ecosystem.

Significance of the Study

As the Philippines seeks to enhance its competitive edge in the global technology market, TBIs play an essential role in supporting promising startups by providing resources, mentorship, and networking opportunities. There is a growing realization, however, that the current setup of TBIs may not fully meet the ever-changing needs of local startups. These startups have contextual needs and are rapidly advancing in terms of technology use and market reach. This study aimed to bridge this gap by understanding the perspectives and experiences of its key stakeholders. The findings hoped to offer practical insights and actionable recommendations for refining TBI strategies, ultimately leading to more effective support structures that can steadily push the growth and success of startups in the country. This research not only sought to address the immediate needs of improving TBI operations but also aimed to contribute to the broader goal of economic development by fostering a more vibrant and resilient entrepreneurial ecosystem.

From an academic standpoint, this study is relevant to research and development management because it helps to better understand how TBIs work and change over time. By using a Constructivist Grounded Theory approach, the research hopes to generate new theoretical ideas that can guide future academic research and apply it in practical terms. This is mainly important in a field that thrives on innovation and the effective conversion of research into technologies which could immediately be commercialized.

The outcome of this study hoped to influence policymaking, strategic planning, and management practices, not only within TBIs but also in similar industries, environments in various contexts which could be implemented at the local, regional

and even in the international level. In addition, the research will enrich the academic discourse on how TBIs can be more effectively integrated into different development strategies; in that way, enhancing its impact on technological innovation and the business landscape of the Philippines.

Chapter II

REVIEW OF RELATED LITERATURE

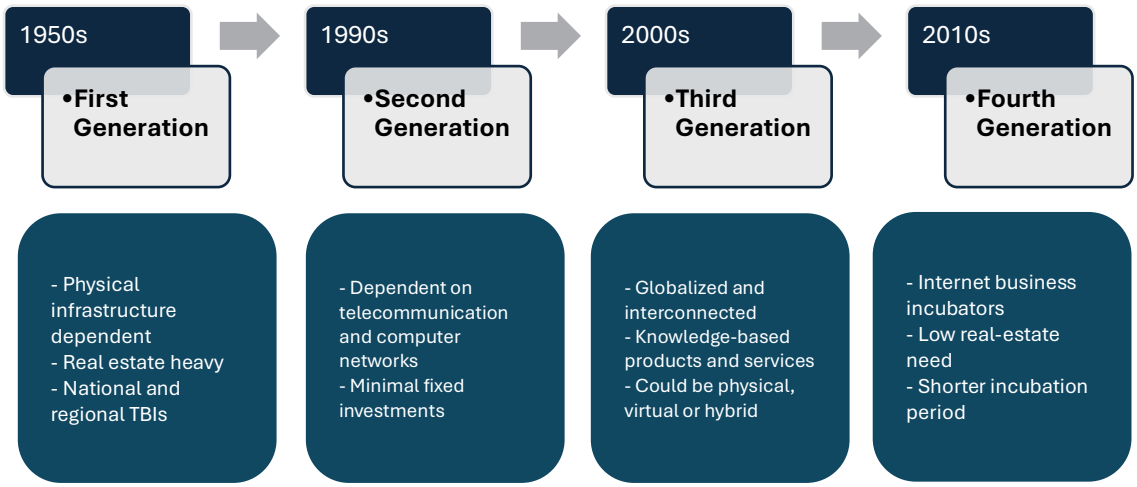
In recent years, business incubators have been considered as important entities for encouraging new ideas and helping startups grow both in the Philippines and around the world. This review of related literature looks into a range of sources to get a better picture of the current TBIs, how they have changed over time, and how they impacted the success of startups. The references noted here cover a wide range of topics and use a number of case studies and frameworks to give a broad view on the nature of TBIs. The goal of this section was to find gaps in current studies and uncover new ways in which the study could help make better TBIs for the benefit of the startups they support. This in-depth review not only puts the current state of TBIs in the Philippines in its proper place, but also adds to the larger conversation about its role in the global innovation environment.

To fully grasp the importance and relevance of TBIs, we need to first look at their history, how they have changed over time, and the various kinds of TBIs that had been used around the world. Business incubation had changed a lot since it started in the US in the 1950s. The study of Indiran, following a typology approach, traced the beginnings of business incubators which were categorized in three phases, namely: (1) economy of scale; (2) knowledge-based service; and (3) access to internal resources, knowledge and legitimacy (Indiran et al., 2021). Meanwhile, Laskar and Waheed described that the business incubators had grown into several types, such as university-based incubators, corporate incubators, and independent private incubators over time. Each of these kinds of TBIs helps the varying needs of businesses and industries (Laskar & Waheed, 2016).

Business Incubator Generational Models

To further align the categorization of business incubators, particularly in developing countries, the World Bank has identified four generations of business incubator models through the study of Scaramuzzi (2002). The report described the evolution of business incubators from basic infrastructure facility to more sophisticated models that include comprehensive support services, networking opportunities, and access to finance.

Figure 2.1. Generations of business incubator models as described by the World Bank (Scaramuzzi, 2002).



First generation incubators (real-estate model) - This type of incubator is typically defined by its strong emphasis on physical infrastructure and its proximity to research institutes or technical university environments. It is commonly established by constructing new facilities, such as science and technology parks, or by repurposing abandoned buildings like industrial complexes.

Second generation incubators (virtual model) - These incubators are non-property-based companies with minimal fixed investments that may serve startups in locations with low critical mass. Critical mass in this context refers to the minimum

amount of investment that is needed to initiate or maintain a project or a business venture. They create linkages for enterprises connected by computer and telecommunications networks. Most virtual incubators focus on technology and commercializing research.

Third generation incubators (international enterprise centers or international business incubators) - For the growth of knowledge-based businesses, these centers offer a wide range of support services. They mostly focus on exports and have very high growth rates and sales records. Some of these incubators are starting to connect with other incubators in the same country or region or that have the same goal. Their strength comes from being able to share resources and information, as well as the ways that research and development can bring people together and work together better, may it be in a physical workspace e.g. laboratory, workshop or in a remote setting.

Fourth generation incubators (dot.com incubators) - Dot.com incubators offer a distinct and defined model with unique characteristics. Dot.com incubators, also known as Internet business accelerators, have emerged as a prominent feature of developed economies, especially in the United States. These entities were established with the rise of the new economy. These entities are distinguished by a heavy focus on venture financing and shorter periods of incubation.

Moreover, the adaptability of TBIs to changing economic conditions and technological advancements has been a key factor in their constant relevance. For example, during crises such as the COVID-19 pandemic, incubators have been instrumental in helping startups pivot their operations and leverage digital tools to survive (Games, 2024). This adaptability underscores the importance of continuous evolution in incubator practices to meet the dynamic needs of the startup ecosystem

(Shepard, 2013). The evolution of business incubators has had a significant impact on the success of startups. By providing a structured environment that combines physical resources, mentorship, and networking opportunities, incubators enhance the likelihood of startup survival and growth. As the business landscape continues to evolve, so too must the strategies and structures of incubators to ensure they remain effective in supporting the next generation of startups and enterprises.

Baseline Studies

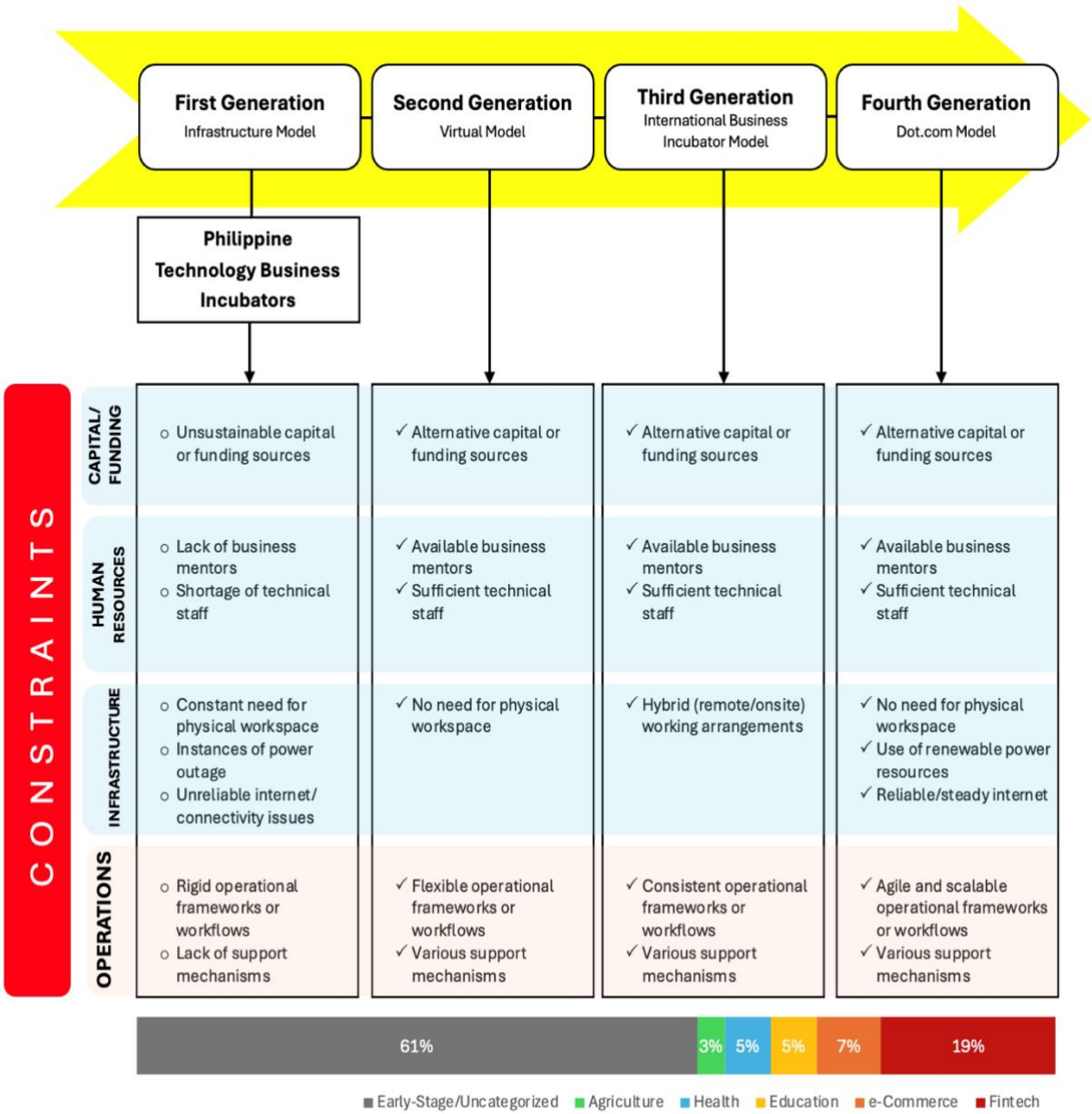
According to the studies of ADB (Teves, et al. 2023) and PwC Philippines (PricewaterhouseCoopers Philippines, 2020), local TBIs experience a number of constraints such as unsteady funding sources, human resource challenges, and infrastructure incapacities.

Operational constraints such as rigid operational frameworks or workflows and the lack of support mechanisms also hinder local TBIs ability to fully assist the startups they nurture. Some of these operational frameworks refer to the structures and procedures that guide how business incubator's function, such as management systems, governance models, and service delivery mechanisms.

On the other hand, support mechanisms are the tools, resources, and networks provided to incubatees which increases their chances of success. Below is a visualization to illustrate the landscape of TBIs with reference to the generational models of Scaramuzzi (2002), the studies of PricewaterhouseCoopers (PwC) Philippines (2020), and of the Asian Development Bank (Teves., et.al, 2023):

Figure 2.2. An illustration of the of the various generational models as described by the World Bank (Scaramuzzi, 2002), incorporating the findings of

PricewaterhouseCoopers Philippines (2020) and Asian Development Bank (Teves, et.al., 2023).

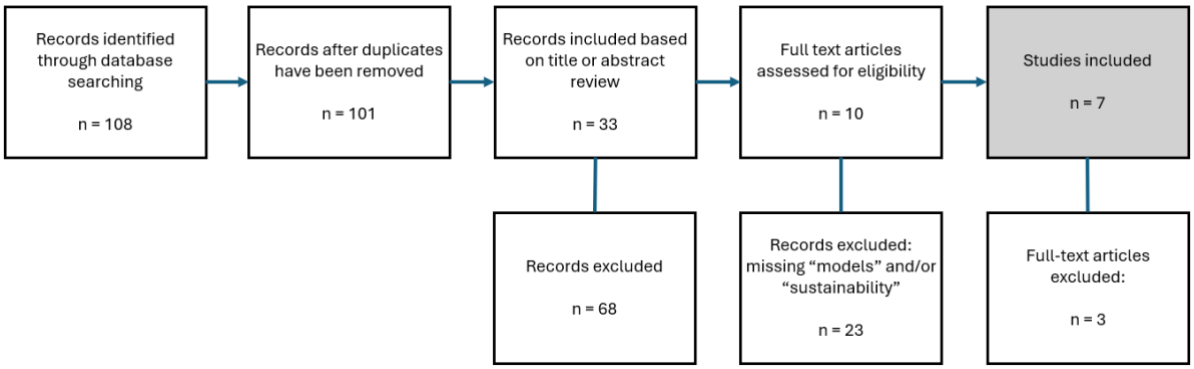


Philippine startups subsector breakdown (Teves, et al., May 2023).

Meanwhile, In a meta-analysis of over 100 papers discussing TBIs and their respective operational resilience, it was found that alternative TBI models, particularly those that follow the virtual or hybrid setup, are more adaptable and are geared

towards long-term success, both for the TBIs themselves and the startups they cater to (España & Rosario, 2024).

Figure 2.3. Meta-analysis of research papers discussing alternative business incubator models.



International Studies on Business Incubators

International studies have shown that joining a business incubator or accelerator can be good for startups. The study of Lukosiute has looked at what makes programs effective and what can make both companies and the entire incubation environment more successful from participants in Denmark and Canada (Lukosiute et al., 2019). Eldering & Hulsink have looked into the design characteristics, components and program packages offered by incubators to organizations based in the European Union to see how they affect the performance of business incubation itself (Eldering & Hulsink, 2023). Job creation, corporate innovation and collaboration between businesses and universities are some of the additional benefits coming from business incubator support located in Indonesia according to the study of Sutama et al. (Sutama et al., 2018). Meanwhile, Vaz and his team has explored the concept of virtual

business incubation by doing a systematic literature review and bibliometric analysis to further understand how virtual TBIs could be more applicable in the needs of startups (Vaz et al., 2022).

There are also specialty kinds of business incubators that are geared towards more socio-political concerns. The study of Harima has investigated business incubators in several settings, including how they may help refugee startups based in Germany. They have found practical ways to help refugee entrepreneurs and integrate them back into the community (Harima et al., 2019). Nonprofit and social business incubators have also been studied by Liu & Walle. According to them, the collaboration of regular business incubators and social incubators has significantly supported both for-profit and nonprofit social companies grow in China (Liu & Walle, 2023). Researchers have also looked on the strategic value and organized governance of high-tech company incubators from the Republic of Serbia in order to create frameworks for improving innovation ecosystems and helping entrepreneurs as described by Djordjevic & Mihic (Djordjevic & Mihic, 2021).

Meanwhile, the concept of networked business incubators, as exemplified by cases like H-Farm in Italy, aligns with the definition provided by the US National Business Incubation Association, which describes incubators as infrastructures designed to expedite the growth and success of entrepreneurial ventures through various support resources and services (Apa et al., 2017).

In terms of mentorship, El-Kebbi highlighted the importance of mentors in helping startup founders improve their social skills from a cohort in Canada. The study also detailed how business incubators are great places for up-and-coming entrepreneurs to get started (El-Kebbi, 2021). The research by Halim et al. (2020),

Tang et al. (2019), and Calza et al. (2014) from Indonesia, show that operational frameworks have a big effect on how well TBIs work.

Hassan added that university business incubators (UBIs) have emerged as a significant tool for accelerating entrepreneurship, with a focus on enhancing commercial aspects and outcomes through theoretical perspectives based on his extensive literature review of global papers discussing the relevance of UBIs (Hassan, 2020). This was supported by the study of Huda & Rejito from a number of university incubators in Indonesia. According to them, the three main stages that make up the university business incubators are pre-incubation, incubation, and graduation. These parts show how to sufficiently support commercial endeavors in a structured way (Huda & Rejito, 2020).

All of the literature presented in this section provides a foundation for understanding business incubators and its role in the development of the startups that they support in a global or international setting. However, what is less clear is how is how these frameworks and strategies could be adapted to support the next wave of Philippine tech startups, which represents a critical area for further inquiry.

Analytical Framework

This research implemented the Constructivist Grounded Theory (CGT) as its foundational methodology for both data collection and analysis following the procedures outlined by Kathy Charmaz. (Charmaz, 2006). The steps taken in adherence to this approach will be further discussed in Chapter III and IV of this paper. Among various qualitative methods, CGT is distinguished by its reliable yet flexible framework, ideal for exploring complex and dynamic phenomena such as TBIs. The

selection of CGT over other qualitative approaches is motivated by its ability to handle the complexities and nuances of TBIs as discussed in the review of related literature. CGT's focus on context and change is more aligned with the study's goals than other methods that might prioritize static, thematic analyses or lack the depth required to theorize effectively about organizational and systemic transformations as observed in similar business research study of Rodriguez-Labajos et al. (2021).

Constructivist Grounded Theory is particularly effective for this study due to a number of reasons:

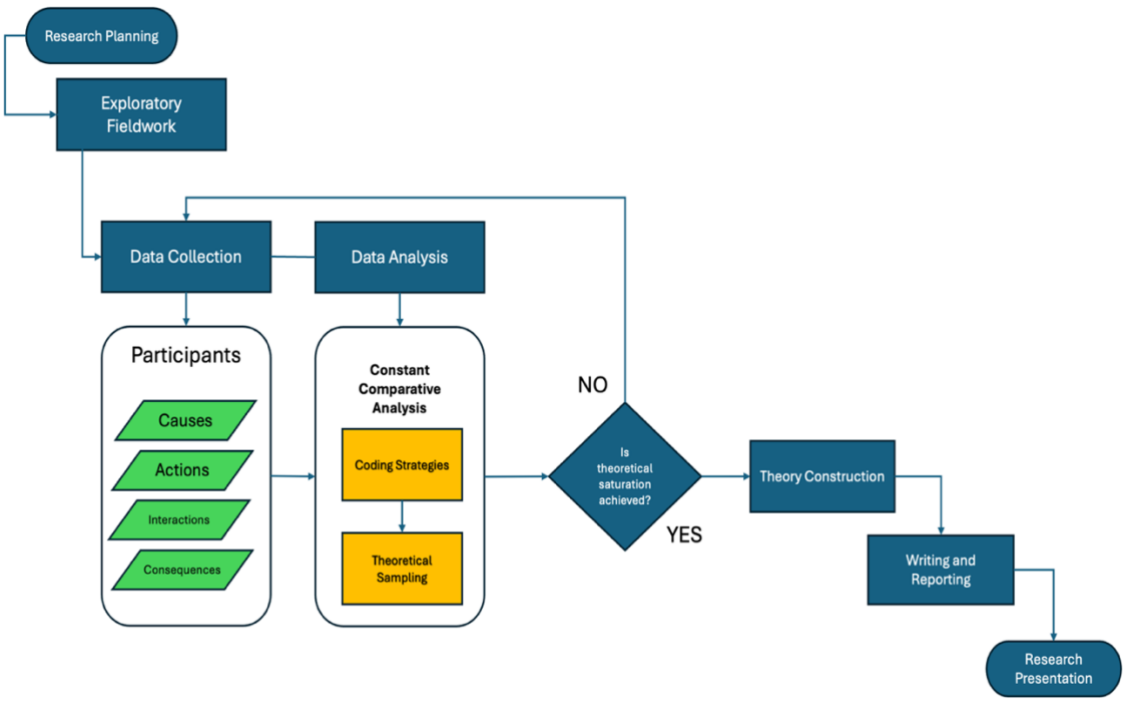
- Emergent Design: Unlike other qualitative methodologies that may require a predefined theoretical framework, CGT allows theories to emerge from the data. This is important for studying TBIs, where new frameworks and strategies are constantly evolving, and pre-existing theories may not capture these dynamic changes (Charmaz, 2016).
- Iterative Process: The repetitive process of data collection and analysis in CGT, where data collection, analysis, and theory development proceed concurrently, ensures that the research can adapt as new insights are gained. This adaptability is essential in a field influenced by fast-paced technological advancements.
- Depth and Detail: CGT's detailed coding and constant comparative analysis facilitate deep exploration into the data, allowing for a comprehensive understanding of complex relationships and underlying processes that simpler descriptive analyses might overlook.

Using CGT for this research hopes to provide supplemental benefits to the study by incorporating the researcher's and participants' perspectives into the theory-

building process, recognizing that knowledge is co-constructed (Gibbs, 2013). This approach is particularly valuable in the context of Philippine TBIs because of the following factors (1) contextual sensitivity: CGT emphasizes understanding phenomena within their real-world contexts, relevant for tailoring TBIs to the unique economic, cultural, and technological environments of the Philippines; (2) application of multiple perspectives: By valuing the diverse viewpoints of TBI administrators and startup founders, CGT promotes a comprehensive exploration of how various stakeholders perceive and interact with TBIs.

Analytical Framework Process

Figure 2.4. Flowchart of analytical framework using the Constructivist Grounded Theory.



1. Initiate with Exploratory Fieldwork - Facilitated interviews with TBI managers and startup founders. This exploratory phase allowed the researcher to identify key themes and issues relevant to TBIs.

2. Iterative Data Collection and Analysis - Continuously analyzed data from interviews to serve as a guide for further data collection. The researcher adjusted the focus based on emerging insights to explore new or overlooked aspects of TBIs.

3. Coding for Processes and Actions - Used coding strategies to break down data into actionable and process-oriented categories. Looked for patterns in how TBIs support startups.

4. Delve into Conditions, Actions, Interactions, and Consequences

• Conditions: Examined the internal and external conditions affecting TBIs.

• Actions: Analyzed the specific actions TBIs and startups take to adapt to or capitalize on these conditions.

• Interactions: Studied the interactions between various stakeholders and how these relationships impact business incubation practices.

• Consequences: Looked at the outcomes of these interactions and actions. Took note of themes that could emerge from the consequences.

5. Theoretical Sampling – Selected participants and TBIs that provided diverse perspectives on incubation. This included successful and budding startups, different types of TBIs (university-based, government-funded, private), and varied geographical locations within the Philippines.

6. Achieve Theoretical Saturation - Continued collecting and analyzing data until no new categories or insights emerged. This ensured that the theory is strong and fully developed.

7. Ground the Theory in Temporal and Contextual Realities - Connected the findings to specific conditions in the Philippines' startup ecosystem.

8. Develop My Grounded Theory - Constructed a theory that accounts for the identified processes, actions, and interactions.

9. Document and Present Findings - Documented the research with detailed accounts of methodological approach, data analysis, and the emergent theory while factoring the implications for policymakers, TBI managers, and entrepreneurs.

Research Gaps

Despite the significant efforts to establish and promote technology business incubators in the Philippines, there remain several areas where current research is insufficient. Identifying these gaps is crucial to understanding the limitations of existing TBIs and exploring potential improvements. By addressing these gaps, this study aims to provide a more comprehensive understanding of how TBIs can be optimized to better support innovation and entrepreneurship in the Philippines.

- ***Research Gap 1: Stakeholder Perspectives on TBIs -*** While existing studies have evaluated TBIs in general terms, there is a significant gap in detailed, qualitative insights from a diverse range of stakeholders within the Philippine context. Understanding the nuanced perspectives of founders and TBI managers in its current TBI operations is crucial. This research would provide a deeper understanding of what stakeholders perceive as essential changes or improvements, directly informing the development of more tailored and effective TBIs.
- ***Research Gap 2: Consistency of Operational Constraints and Challenges Across Local TBIs -*** Existing literature extensively documents various operational constraints and challenges faced by TBIs

globally, yet it remains unclear whether these same issues uniformly affect local TBIs in the Philippines. There is a need for a targeted investigation to determine if the documented challenges such as funding limitations, human resource constraints, and infrastructural deficiencies are collectively applicable to TBIs in the Philippines. This research would help identify unique local challenges and enable the development of tailored strategies and an ideal framework to address them, ensuring that TBIs can more effectively support the startups they aim to nurture.

- ***Research Gap 3: Adaptability of TBIs in the Philippine Context to Technological Advancements -*** While there is extensive literature on the adaptation of TBIs to technological advancements in international contexts, there is a notable lack of focused research on how TBIs in the Philippines have evolved in response to these changes. The unique economic, cultural, and technological landscape of the Philippines necessitates a specific examination of how local TBIs are or are not transforming to better support startups in a digital age. This gap highlights the critical need for an in-depth study into the evolution of TBIs within the Philippine setting, aiming to uncover how these incubators can improve and innovate to meet the growing demands of the tech startup ecosystem.

By addressing these research gaps, this study will contribute to a more nuanced understanding of TBIs from the perspectives of key stakeholders in the Philippines. This will not only fill existing voids in the literature but also provide practical insights and strategic recommendations for policymakers, TBI managers, and other stakeholders in the Philippine innovation ecosystem.

Chapter III

METHODOLOGY

For this study, the researcher purposely chose the Constructivist Grounded Theory (CGT) technique as the framework for data collection and analysis to formulate a nuanced theory that takes into account the perceptions of the participants with regard to the nature of technology business incubators in the Philippines. This section extensively discussed the protocols and procedures that the researcher had taken to adhere to the research design. The selection of CGT was motivated by its methodical yet adaptable framework, which was especially appropriate for investigating complex organizations like TBIs.

Earlier versions of Grounded Theory, such as the classic Glaserian and more structured Straussian grounded theory take a more positivist view, believing that theory is truly "discovered" from data (Glaser & Strauss, 1967). However, CGT takes an interpretivist view, saying that theory is co-constructed from the interactions between the participants' experiences and the researcher's interpretations. This constructivist view was considered to be best for this study because its main goal is to look into the different points of view, personal experiences, and socially created meanings that TBI managers and startup founders give to TBIs. The Philippine TBI ecosystem is not a static, linear process that needs to be found. Instead, it is constantly changing and depending on the situation. This means that CGT's approach, which is flexible and reflective, is better suited. Also, CGT recognizes that the researcher has a part to play in understanding what the data means, so prior information and immersion in the data and experiences of the participants helped with theoretical sensitivity instead of just being seen as a source of bias. Because of this, CGT gives

the philosophical and methodological freedom that is needed to build a complex, situation-rich theory that is based on the participant's real-life experiences.

Research Method

The research employed Constructivist Grounded Theory by Charmaz (2006) as its methodological framework. This approach was chosen for its strength in constructing theories based on qualitative data, emphasizing the subjective experiences and meanings that participants attributed to their realities. Through CGT, this study aimed to deeply explore the perspectives of various stakeholders involved with TBI operations and developed a grounded understanding of TBIs in the Philippine context.

Data was collected through semi-structured interviews which allowed for rich, detailed data gathering. Participants consisted of TBI administrators and startup founders. While the initial research design also planned to include representatives from government agencies, it is important to note that despite multiple attempts, no officials consented to participate in the interviews. This was further addressed as a key limitation of the study in Chapter V.

Sampling proceeded in an iterative manner, guided by the emerging data and theory development. This method, known as theoretical sampling, dictated the selection of subsequent participants based on the needs of the evolving theory. Analysis began concurrently with data collection. Initial coding broke down data into manageable segments, which were then categorized in the focused coding phase. This phase synthesized and explained larger segments of data, identifying thematic

patterns and relationships. The final phase, theoretical coding, specified the possible relationships between categories developed during focused coding.

Throughout this process, constant comparative analysis was employed, whereby data was continuously compared with emerging categories and across different participants to refine and elaborate the categories and their properties. As part of the constructivist approach, reflexivity was a foundation of the research process. The researcher maintained a reflexive journal to document the research process, decisions, and reflections on how their own backgrounds, biases, and assumptions may have influenced the study. This practice enhanced the credibility and trustworthiness of the research by acknowledging the researcher's role in interpreting the data. Theoretical sensitivity was developed through engagement with existing literature and ongoing analysis, enabling the researcher to remain open to various interpretations and nuances in the data. This sensitivity was critical in CGT, as it allowed the researcher to recognize significant data and to integrate personal insights with scholarly research effectively.

Through the application of CGT, this study constructed a theory that not only reflected the realities of the participants but also contributed to the practical development of TBIs in the Philippines. This approach is particularly suitable for the complex and dynamic nature of business incubation in an emerging market, ensuring that the theory is deeply rooted in the contextual realities of the stakeholders involved.

Locale of the Study

This research was conducted within the context of the Philippines. The study focused on TBIs and startups operating across various regions of the country to

capture a diverse range of practices. By examining TBIs in both urban centers and regional areas, the research encompassed the multifaceted nature of the Philippine startup ecosystem.

Participants and their affiliated institutions were drawn from key innovation hubs, ensuring a diverse geographical representation. These locales included Metro Manila, and other key areas in Luzon, Visayas, and Mindanao. Metro Manila, the nation's capital region, served as a primary economic and administrative center. Key cities such as Cebu, Iloilo and Davao were also included, representing major economic hubs in the Visayas and Mindanao regions, respectively.

This comprehensive geographical coverage allowed the study to account for regional differences in infrastructure, resource availability, market access, and policy support. The inclusion of these varied locales was intended to uncover the diverse perspectives and experiences of TBI stakeholders, which could help in creating new frameworks to support and enhance a more inclusive technology ecosystem in the country.

Respondents of the Study

The respondents of this study encompassed two diverse groups of stakeholders who are integral to the TBI landscape of the Philippines. While the initial research design during the research proposal stage included a third group, which were government agency representatives; it is important to note that they were not represented in the final participant pool due to a lack of responses to interview invitations.

The study, therefore, involved the following participants:

- *TBI Administrators and Key Personnel*: TBI administrators and key personnel were central to understanding the internal workings and decision-making processes of TBIs. These individuals were directly involved in the day-to-day management and strategic planning of the incubators. They possessed in-depth knowledge about the operational challenges, strengths, and developmental strategies of their respective TBIs. Their insights were crucial for understanding the current processes of TBIs and for identifying areas that required improvement or innovation. By involving these respondents, the study gained a nuanced understanding of how TBIs operated, what goals they prioritized, and how they perceived their role and effectiveness in supporting startups.
- *Startup Founders and Executives*: As the primary beneficiaries of TBIs, startup founders and executives provided critical perspectives on the utility and impact of the services offered by these incubators. Their experiences and feedback highlighted TBI support mechanisms, including mentoring, funding assistance, networking opportunities, and other resources. These respondents also offered unique insights into the gaps or unmet needs within the current TBI frameworks from the viewpoint of startup founders. This feedback was essential for analyzing TBI strategies to better serve the evolving needs of dynamic startup ventures and for ensuring that the TBI support is aligned with market demands and technological advancements.

Including these two diverse groups of participants enriched the study, ensuring that it captured a comprehensive range of experiences and viewpoints. This approach helped in building a holistic understanding of the current TBI landscape and aided in

developing grounded, actionable strategies to advance TBI functions in supporting Philippine startups.

Sampling Procedure

The research employed a theoretical sampling method, which is an iterative and data-driven process integral to Constructivist Grounded Theory. This approach allowed for the progressive development of the theory through continuous engagement with the data.

- *Initial Sampling*: The study commenced with an initial selection of participants who were anticipated to provide in-depth insights into the operations and strategies of TBIs. Initially, TBI administrators and key personnel were targeted, as they could offer the foundational knowledge necessary for understanding the nature of TBIs. The data gathered from these initial interactions guided subsequent sampling decisions.
- *Subsequent Sampling*: As categories and properties emerged from the early analyses, they informed whom to sample next to ensure that data collection remained aligned with the needs of the developing theory. Based on these insights, subsequent participants, including startup founders, were selected to explore and refine the identified categories and to test the relationships between them. As the theory evolved, specific gaps in the data emerged, which necessitated further focused sampling to develop these areas.
- *Theoretical Saturation*: The iterative process of sampling continued until theoretical saturation was achieved. This was the point at which no new significant information appeared to alter or add to the ongoing theoretical

construction, indicating that the data collection had sufficiently covered the categories necessary for theory development.

Throughout the study, the sample was built to include a diverse array of perspectives from different types of TBIs, encompassing various sizes, sectors, and operational stages. Flexibility in the sampling strategy was maintained, adapting as required by the evolving nature of the data and theory. Detailed documentation of the sampling decisions and their contributions to theory development was maintained to enhance the credibility and auditability of the research methodology.

Data Gathering Procedure

The study applied a detailed and systematic data gathering procedure consistent with the principles of Constructivist Grounded Theory. This procedure was designed to capture the complex interactions and perspectives of the various stakeholders involved with technology business incubators in the Philippines.

- *Initial Contact and Participant Selection*: The process began with the identification of potential participants directly involved in the management and utilization of TBIs. TBI contacts were predominantly sourced from the RESEED portal, a comprehensive database maintained by the Department of Science and Technology – Philippine Council for Industry, Energy and Emerging Technology Research and Development (DOST-PCIEERD). Concurrently, startup participants were identified based on their formal acknowledgment by their respective TBIs as incubated enterprises. Potential participants were then contacted via email, social media platforms, and/or LinkedIn, where the study's purpose was explained and their voluntary participation was requested.

- *Data Collection Methods*: The primary data source was 15 in-depth, semi-structured interviews conducted with ten TBI managers and five startup founders. This format allowed for both consistency across interviews and the flexibility to probe deeper into unique experiences and institutional practices. The richness of the data was further enhanced by supplementary documentation; two participants voluntarily provided their institution's operating manual, which added more context to their insights and enabled triangulation of key themes emerging from the interviews.
- *Theoretical Sampling in Practice*: As data collection and analysis progressed, subsequent participants were chosen based on the principles of theoretical sampling. The selection of new participants was dictated by the need to develop, refine, or fill gaps in the emerging theory. This involved seeking participants who could offer contrasting perspectives or who had experienced unique challenges or successes within the TBI ecosystem, ensuring the data collected was targeted toward the needs of the developing theory. Data collection ceased after 15 interviews, as theoretical saturation was achieved.

Data Analysis Procedure

The data analysis in this study was conducted following the principles of Constructivist Grounded Theory. This approach ensured a systematic and reflective process aimed at developing a comprehensive theoretical understanding of the phenomena under study. The procedure was iterative, integrating the data collection and analysis phases to allow for continuous refinement of the emerging theory.

A Methodological Note on Terminology: From 'Sustainability' to 'Resilience'

In line with the principles of Constructivist Grounded Theory, the initial stages of analysis in this study prioritized staying close to the language used by the participants themselves. During the interviews, the concepts of "sustainability" and being "sustainable" were frequently raised by TBI managers and startup founders. A textual analysis of the transcripts confirms this, with the word "sustain" appearing 11 times, "sustainable" 23 times, and "sustainability" 16 times. Their usage, however, was primarily operational, referring to the long-term financial and organizational endurance of the TBI.

Given the prominence of this in vivo code (terms used by the participants themselves), the initial emergent themes were labeled with the words such as “sustainable” and “sustainability." However, through the crucial process of scholarly review and by analyzing the data through the lens of a formal sustainability framework, it became clear that while the participants' concerns were valid, their use of the term focused almost exclusively on economic and organizational strength. This usage does not fully align with the formal Triple Bottom Line (TBL) framework, coined by John Elkington, which defines true sustainability as an integrated approach addressing three distinct pillars: Economic (Profit), Social (People), and Environmental (Planet) viability (Elkington, 1994).

Therefore, to ensure greater conceptual precision and academic rigor, the decision was made to refine the terminology for the final emergent theory. The term "sustainability" has been replaced with "resilience."

For the purpose of this thesis, ***Adaptive Resilience*** is defined as:

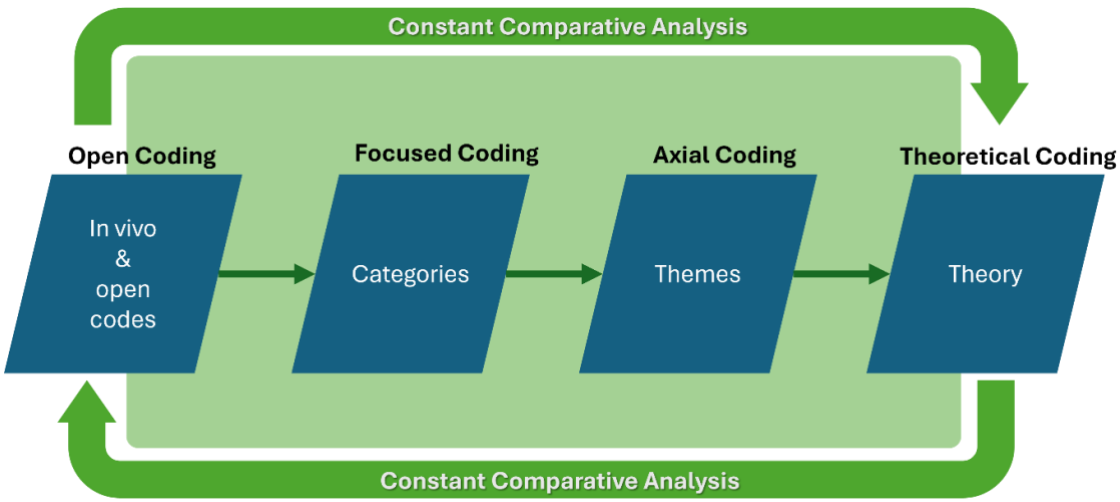
"The core capacity of a Technology Business Incubator to withstand operational and financial disruptions (such as the termination of grant funding), adapt its business processes, and maintain its dual function of supporting startups and developing its ecosystem over the long term."

This refinement does not alter the core finding grounded in the data. Instead, it provides a more precise and defensible label for the central phenomenon uncovered in this study, thereby strengthening the final theory.

The Coding Process

All 15 interviews were manually coded, and the qualitative data analysis (QDA) software ATLAS.ti™ was used to systematically track, organize, and monitor the process. The analysis involved four distinct stages, underpinned by the constant comparative method.

Figure 3. Stages of data analysis performed in Constructivist Grounded Theory.



1. *Open Coding*: The analysis commenced with initial, line-by-line open coding of the transcribed data. Provisional categories were developed without imposing pre-existing theories, and in vivo codes were prioritized to stay close to the data. This process of iteration continued until the analysis of the final set of interviews yielded no new codes or themes. Re-coding the full dataset after all interviews were complete allowed for a systematic comparison that reinforced the salience of key themes. The open coding process resulted in 196 distinct codes (refer to Appendix D for the full list of open codes).
2. *Focused Coding*: Following the initial phase, focused coding was undertaken. The most significant and frequent initial codes were used to sift through the data, categorize findings, and synthesize them into more meaningful, major thematic categories. Mind-mapping software was used to help condense earlier codes into more abstract and conceptual categories, which began to shape the emergent theory.
3. *Axial Coding*: Axial coding was then applied to relate the categories identified during focused coding to their subcategories. This process involved examining the conditions, contexts, and consequences associated with the themes, which helped to reassemble the fractured data and build a more coherent theoretical framework.
4. *Theoretical Coding*: This was the final step in the coding process, where the relationships between categories were refined and integrated into a cohesive grounded theory that explained the phenomena under study. Memo writing was used throughout all stages to capture the conceptual development of the study, elaborate on the properties of categories, and document methodological decisions.

Finally, the emergent theory was continually tested against the data using the constant comparative method to ensure its validity and comprehensiveness. As a result of the connections between the open codes, focus codes, and emergent themes, theoretical coding was produced (see Appendix E matrix). Computer software for mind mapping was utilized by the researcher to facilitate this analysis. Using the mind map (Appendix F), relationships between the focused codes were examined. The researcher connected the codes with an arrow pointing to the main theme if there was a relationship. The start of theoretical coding was produced by the focused codes with the greatest number of relationships. This rigorous and systematic procedure ensured the constructed theory accurately reflected and explained the dynamics of TBIs in the Philippines.

Research Ethics

Ethical Considerations

Conducting research involving human participants necessitates stringent adherence to ethical standards to ensure the protection of participants' rights, privacy, and well-being. This study followed the ethical guidelines established by the Institutional Research Ethics Committee (IREC) of the University of the Philippines Open University (UPOU). The research underwent a thorough review and approval process by the UPOU IREC to ensure that it met all ethical requirements.

Informed Consent

All participants in this study were fully informed about the research objectives, procedures, potential risks, and benefits before their participation. Informed consent was obtained in writing, and participants were assured of their right to withdraw from

the study at any time without any consequences. Clear and transparent communication was maintained throughout the research process.

Confidentiality and Privacy

The confidentiality and privacy of all participants were strictly protected. Data collected during interviews and document analysis was securely stored and only accessible to the researcher. Personal identifiers were removed from all data to ensure anonymity, and findings were reported in a manner that prevented the identification of individual participants.

Data Management

Proper data management practices were followed to ensure the integrity and security of the collected data. Digital data was stored on password-protected devices, and physical documents were kept in a locked, secure location. Data was backed up regularly to prevent loss.

Use of Artificial Intelligence (AI) Tools and Applications

In this research study, the integration of advanced software tools, including AI technologies and grammar-checking software, aided the research process. The researcher declared and properly cited all AI tools used for data analysis to maintain transparency and uphold academic integrity (please see Appendix G). To avoid plagiarism, all content generated with the help of AI tools was carefully reviewed, and original sources were accurately cited. The use of AI in data collection activities was also fully disclosed to all participants. These measures upheld the integrity of the research process and enhanced the accuracy of the findings.

Ethical Review and Approval

Before commencing data collection, the research proposal and all related materials were submitted to the UPOU IREC for ethical review and approval. This was fully documented as shown in Appendix A of this paper. This process ensured that the study adhered to ethical standards and that participants' rights and well-being were prioritized. Approval from the UPOU IREC was obtained before any interaction with participants began, demonstrating a commitment to ethical research practices. Appendix B presented a sample of the Informed Consent Form.

By adhering to these ethical principles and procedures, this study aimed to maintain the highest standards of integrity and respect for all participants, ensuring that the research was conducted responsibly and ethically.

Chapter IV

RESULTS AND DISCUSSION

This chapter presents the findings of the Constructivist Grounded Theory (CGT) methodological study conducted to address the following research questions:

- **Main Research Question (MRQ)***: What is the nature of technology business incubators in the Philippine context?*
    - **Sub-research questions (SRQ)**:
        - **SRQ1.** *What are the research participants' perspectives on TBIs over time?*
        - **SRQ2**. *What are the structures and processes that define the operations of local TBIs over time?*
        - **SRQ3**. *What are the outcomes resulting from the TBI operations over the course of their development?*
        - **SRQ4.** *What are the implications of the nature of TBIs in the Philippines?*

This chapter discusses that the analysis performed complied with the CGT methodology and is aligned with the research topic. This chapter also presents example demographics, utilizing tables to enhance the overview. This chapter provides a detailed description of the procedures employed to evaluate transcripts from the 15 individual interviews, aimed at identifying codes and themes.

Four stages of analysis were implemented: (a) open coding, (b) focused coding, (c) axial coding, and (d) theoretical coding. At every stage, constant comparative analysis was employed to refine the data until patterns surfaced. The chapter also contains tables and graphics that give extensive code and theme data, together with

visuals and quotations from individual interviews to underscore important themes and the resulting theory.

Sampling Results

The participants included in this research were selected through purposeful and theoretical sampling approaches, guided primarily by publicly available resources and institutional affiliations. Specifically, TBI contacts were predominantly sourced from the RESEED portal, a comprehensive database maintained by the Department of Science and Technology - Philippine Council for Industry, Energy and Emerging Technology Research and Development (DOST-PCIEERD, 2025). Concurrently, startup participants were identified based on their formal acknowledgment by respective TBIs as incubated enterprises. This targeted selection process ensured relevance, depth, and contextual validity, facilitating a nuanced exploration of stakeholder perspectives within the Philippine technology startup ecosystem.

A total of 15 participants were interviewed for the study. The total number of participants was determined upon achieving theoretical saturation, where no new information seems to change or contribute to the ongoing theoretical creation. This signified that the data gathering has adequately contained the themes essential for theory construction, as described in Chapter III. Ten TBI managers and five startup founders participated in the research study. However, despite multiple attempts to establish contact, no representatives from the relevant government agencies consented to participate in the interviews. As a result, data collection from this sector was not realized due to the lack of affirmative responses to the extended invitations.

The participants were assigned codes for anonymity, ensuring that personal identification was removed throughout the study. Ten were male while five were

female, all Filipinos. Considering the geographical location of the participants at the time of the study, one was from Metro Manila, four were from Luzon, five were from Visayas, four were from Mindanao, and one was from Dubai City, United Arab Emirates (UAE).

Table 4.1

List of study participants and demographics

No.	Code	Designation	Sex	Participant Location	Institution Type	Institution Location
1	ST-1	Startup founder	Female	Visayas	Commercial	Visayas
2	TBI-1	TBI manager	Male	Luzon	Academic	Luzon
3	ST-2	Startup founder	Female	Dubai, UAE	Commercial	Visayas
4	TBI-2	TBI manager	Male	Visayas	Academic	Visayas
5	TBI-3	TBI manager	Male	Luzon	Academic	Luzon
6	TBI-4	TBI manager	Female	Luzon	Academic	Luzon
7	TBI-5	TBI manager	Female	Visayas	Academic	Visayas
8	ST-3	Startup founder	Male	Mindanao	Commercial	Mindanao
9	TBI-6	TBI manager	Male	Mindanao	Academic	Mindanao
10	TBI-7	TBI manager	Female	Mindanao	Commercial	Mindanao
11	ST-4	Startup founder	Male	Metro Manila	Commercial	Metro Manila
12	TBI-8	TBI manager	Male	Luzon	Commercial	Luzon
13	TBI-9	TBI manager	Male	Visayas	Academic	Visayas
14	ST-5	Startup founder	Male	Mindanao	Commercial	Mindanao
15	TBI-10	TBI manager	Male	Visayas	Academic	Visayas

Table 4.2

Startup type and description

Code	Industry	Type	Description
ST-1	Information Technology	Software as Service (Saas)	The startup offers website development, custom software solutions, mobile applications, and graphic design services for companies
ST-2	Real Estate	Web Application	An extensive, integrated web platform for managing rental properties in the Philippines
ST-3	Business Consulting	Web Application	A software development firm and social change platform that facilitates initiatives using technology and automation
ST-4	Agriculture	Web Application	A platform that links farmers and fishermen to partners and consumers
ST-5	Forestry	Hardware + Software	The startup enables universal access to tree planting by using drones and biotechnology

Figure 4. Geographical distribution of research participants.

The green pins denote the location of the TBIs while the orange icons represent the startups.

The participants were initially categorized into two main classes based on the type of institution or organization they belong to: (a) academic and (b) commercial. Academic refers to those affiliated with higher education institutions such as state universities and colleges (SUCs), private universities, or research institutes, where TBIs are typically embedded within the academic structure and often prioritize research translation, innovation capacity-building, and student- or faculty-led startups. Commercial, on the other hand, included TBIs that operate within or are affiliated with

private sector entities, industry consortia, or independent business enablers and are more inclined toward revenue generation, investor-readiness, and market-driven startup development. This classification allowed the researcher to examine potential differences in institutional goals, support mechanisms, and operational frameworks across varying organizational contexts. Eight participants, representing 53%, are affiliated with academic institutions, whereas seven participants, constituting 47%, are associated with commercial enterprises. All institutions are active and are fully operating in the Philippines. In terms of functional tenure, 60% of the institutions the TBI managers represent have been operational for more than five years, 30% within 3 to 5 years, and 10% have been running for 1 to 3 years. As for the startups, 4 out of the 5 founders shared that their startups have been in service for more than five years while one has been operational within 3 to 5 years.

Table 4.3

Tenure distribution of TBI operations as reported by the TBI managers

Tenure of TBI	Count	Percentage
More than 5 years	6	60%
3 to 5 years	3	30%
1 to 3 years	1	10%
Total	10	100%

Table 4.4

Tenure distribution of the startups as described by its respective founders

Tenure of Startup	Count	Percentage
More than 5 years	4	80%
3 to 5 years	1	20%
1 to 3 years	0	0%
Total	**5**	**100%**

Data Collection Results

The 15 research interviews with TBI managers and startup founders served as the main source of research data. However, two participants volunteered to provide their respective institution's operating manual, which added more context to their insights and enabled triangulation of key themes emerging from the interviews. The semi-structured interview questionnaire (refer to Appendix C) guided the researcher in asking questions that explored various dimensions of TBI operations and experiences of the startups. This format allowed for both consistency across interviews and flexibility to probe deeper into unique experiences and institutional practices. Consequently, the richness of the data was enhanced not only by the candid narratives of the participants but also by the supplementary documentation, which further described the institutional structures and operational nuances that might not have surfaced through interviews alone.

Following every three interviews (called a set), the set was manually coded and examined for emerging themes. The surfacing themes from each set were then compared and contrasted as part of the constant comparative analysis process. By

employing this strategy, the researcher guaranteed the integration of the CGT methodology throughout the data-gathering phase of the research process.

Emergent Themes in Response to the Research Questions

The subsequent section titles segmented the principal themes that surfaced from the data analysis process. The themes were derived through iterative coding, constant comparison, and memo writing, encapsulating the most prominent patterns, ideas, and reoccurring issues expressed by the participants. Each theme signified a crucial element of the TBI, and startup experience as documented in the interviews and functions as a foundation for exploring the broader implications of the findings.

SRQ1. What are the research participants' perspectives on TBIs over time?

Grounded in the participants' narratives, this analysis identified core themes that illuminated how stakeholders' experiences, perceptions, and interpretations have shaped their views of TBI effectiveness and the dynamics that have influenced these views over time. This understanding provided critical insight into the collective meaning-making process underlying the participants' perspectives, ultimately contributing to a more nuanced comprehension of the factors integral to the constant success and evolution of TBIs.

SRQ1.1 TBIs as Vehicles on the Customized Startup Journey. A primary perspective emerging from the data was the call for TBIs to evolve beyond generic, one-size-fits-all programs towards more customized and holistic approaches tailored

to the unique needs of startups. While foundational business training was essential, participants perceived the true value of a contemporary TBI in its ability to provide deeply personalized support.

The demand for "*tailored mentorship*" was a prominent perspective. One startup founder was critical of the superficial, "tick-the-box" nature of some TBI programs that seemed designed primarily to satisfy funder metrics.

> *"They just want to deliver metrics, to whoever funded the TBI, like ilang sessions yung nagawa, ilan yung startup na nakapasok, ilang beses nag-mentorship. It's very surface level. And minsan pinipilit nila na you'd have to attend these sessions kahit those session naman doesn't, work for you anymore. So may mga ganun, yun lang yung frustrating kasi yung ibang TBI, they're just there to tick boxes for their funders, not really caring for ano ba talaga yung kailangan ng startup kasi each startup has different needs, so sana nate-tailor nung ibang incubator."*

This was contrasted with the highly praised, founder-centric framework of a well-regarded private academic institution that focuses on the founder's core motivations rather than just business ideas. This reflected a desire among founders for mentorship that was responsive to their specific entrepreneurial journeys

> *"So, I could give you, I guess, a comparison between different incubators. Some incubators would actually provide you with funding. But to most of the incubator we'd we went into, wala siyang funding, and we choose it that way kasi I guess it was [institution] that that really taught us that kung yung product na*

ginagawa mo is really viable, and people would buy it, you don't need funding, funding would come to you. So, once we prove our MVP, yun yung naging point wherein we proven na yung solution that we've created are actually the solution that's needed in the industry. So, yung support nung TBI is more of how we are gonna refine the process, how are we gonna get our MVP, and how are we gonna validate. Because more than just the idea, we were pushed to make money. Kasi idea is one thing, but implementing is another… It's very different, ibang-iba talaga siya, and doon nakatulong yung incubator, especially, [institution] ang laki ng tulong sa amin, kasi from valuation, how are we gonna close the sale, our branding, ang dami. Because, heto lang, maco-compare ko with difference with [institution] is actually founder-centric, not, not the idea…. But with [institution], they look at the personality of the founder. And I guess yun naman yung kagandahan kay [institution] because yung founder yung dinevelop nila, kasi whatever startup the founder would create, pag may foundation ka, it would really, work. So yung support actually na nakuha namin."

In parallel, participants underscored a critical need for specialized legal and financial support, an area identified as a significant gap in many local TBIs. A startup founder who went through a university TBI specifically highlighted the need for centralized legal retainers and accounting services to help navigate the complexities of SEC registration and tax compliance.

"Retainership for legal and bookkeeping or accounting. I guess maybe that in TBIs here in the Philippines. There are some private TBIs, I think maybe [institution] has that, or part of their service. Based on my assessment of other TBIs here in Mindanao, K-K-B yung ano, kanya-kanyang bayad yung retainership. At saka, retainership sa legal, at saka sa accounting. So iba-iba kami ng bookkeeper at saka lawyers. And I guess it would be much better na TBI should do that in their budget. For each start-up, one centralizes all the legal requirements and SEC investments leading to the client. And then another is the bookkeeping kasi we're not a finance student or business student. Business students cannot do the accounting stuff. So, we're dealing with taxes there. It's actually a vital legal process. So yeah, I guess the TBI also needs to add on their budget for their proposals in requesting bookkeepers for accounting office. I mean, I would, I can accept that I am the chief everything obviously. But hindi talaga everything. I cannot be a lawyer for my own company. I cannot be an accountant. So, third party, yan yung ginagawa namin…"

This demonstrated a crucial need for TBIs to move beyond theoretical guidance and into the practical, often daunting, aspects of business incorporation.

This tailored approach extends to inclusivity in startup support. Participants recognized that broadening the scope of TBI programs enhances their relevance and impact. For instance, one manager from a state university in Luzon described a

deliberate rebranding to include farmer organizations and MSMEs alongside tech ventures.

> *"So, the reason we rebranded is we basically refocused our targets. Because before the initial, when it was launched, the focus is on technology-based incubatees. So, those MSMEs with no technology are not allowed to join. Not necessarily allowed, pero hindi sila yung priority for the program kasi yun yung focus ng program. But when we rebranded in 2023, we tried to include also farmer organizations in the training… So, moreover, what happened when we rebranded is, we introduced a lot more to the program. And without funding. Because initially, it was running with the funding from the funding agency. So, the staff came from there. The mentors also came from the funds. The rebranding became more organic as an organization. So, even without the funding from external agencies, we will be running the program."*

Similarly, a TBI in the Visayas broadened its criteria to accept idea-stage applicants, reflecting the manager's belief that "not everyone has the privilege to take risk," thereby democratizing access to incubation support

> *"Kasi sir, na-realize natin na dito kasi sa Iloilo, medyo at risk-averse pa yung mga tao dito. I mean, para kasi sa akin, I have this personal belief na for years in working in startup, not everyone has the privilege to take risk. So, we want them na parang ako pinupromote ko na you can have your startup while doing parang part-time work muna and focus on your full-time.*

Kasi if we want them to have parang full-time operation na yung startup, most of them cannot do that, cannot risk that. So that's why we're opening idea stage, those who want to just be playful enough, parang ganun lang. We make it, we democratize this support that we have to those people who are really willing talaga but don't have the resources… So, kami ngayon, really focus on finding the right people to support too. Binibigyan namin sila ng sandbox for them to stand, not only with training but also with opportunities, access to funding as well as parang complimentary na yung spaces. So yun yung focus ko ng leadership ko when I became the TBI manager here…"

SRQ1.2 TBIs as Pillars of Funding and Operational Longevity. The participants viewed TBIs as foundations for operational and financial resilience, especially for the startups that they are meant support. Both the TBI managers and startup founders shared a common observation; there was a critical tension between the project-based, grant-funded nature of many TBIs and the need for long-term, self-sufficient strategies. This challenge was mostly experienced by academic-based TBIs, where operational continuity after a grant end is a major concern.

This financial risk directly impacts capacity building and talent retention. Multiple TBI managers noted that skilled staff, often hired on a contractual basis, frequently leave for more stable employment once the grant-funded project concludes, creating a constant cycle of hiring and retraining.

The manager of a university-based TBI in Mindanao described the cycle of hiring and the reasons behind staff departures:

> *"Number one is yung staff. They come and go. After two years, they go. And then we hire again, so on and so forth. Yun yung talagan problema. And then, bakit sila umaalis? Kasi number one, there is no growth kasi, under sweldo…"*

The TBI Manager at a state university in Visayas pointed out that the lack of job security affects everyone, including management, due to the nature of their employment:

> *"Even us here it's more on a contract of service. You need to renew every six months so and that's the reason siguro walang sustainability mayroong mga TBI managers na din o na hindi din nagtagal because of parang hindi na fixed in sustainability and walang fixed budget of course."*

Another TBI manager from a state university in Visayas explained TBI's reliance on temporary staff and the uncertainty tied to funding cycles:

> *"Kasi, we don't have a regular staff for the TBI operation... Although we have contractual staff, at the end of the day baka hindi tayo puntahan na sa susunod na mga years ng funding agency natin."*

To counter this, participants described innovative strategies focused on long-term viability. The manager of an independent TBI in Mindanao explained that they operate by taking equity in startups and running paid capacity-development programs, creating a direct financial incentive for their team to ensure startup success. She

explained the direct financial incentive for their team, which is tied to the success of their startups:

> *"So, there's really, there's more of a reason, a motivation for our staff to do well because if they do well, that's when they get paid."*

This incentive structure was built on two primary revenue streams (1) taking equity in startups and (2) running paid capacity development programs.

> *"We're getting paid in equity…"* and *"We, earn a lot more with capacity development programs than we do our incubation program. Because with Capdev, you know, once you're done with the Capdev, they pay you. You're good..."*

Another founder, who started his own private TBI in the Bicol region, described how commercializing and licensing technologies from student hackathons fund operations without relying on grants. These examples marked a perspective shift from seeing a TBI as a temporary "project" to a long-term "business".

> *"So, kami lang ang privately led, so lahat sila they've received funding from, DOST. Kami lang yung wala kasi, we we wanna prove something that an incubator could be sustainable without money. So yung tinuro samin ni [institution] we operate like a startup, and we did. So yung kinaibahan sa amin, since walang funder, we can actually push for whatever design we want. Ang kagandahan sa kanya, we are sustainable. Hindi kami nag-aantay ng saan tayo kukuha ng grant for us to operate. So, we have a model wherein we could really earn while providing*

free service to the startup...Our approach is different. We do licensing for them, and then we find a capable, startup founder that could run it. Either we do it as venture building, because we are actually doing that, or we're just licensing, the technology for manufacturing. So, napupunta kaagad, naco-commercialize agad yung idea ng mga bata. Ganoon sya kabilis, and it's a win-win for us because meron ng na-commercialize yung school, yun lang naman ang habol ng schools eh. Merong pera na dumadating sa bata kasi they are the license owner and may kita din kami because we're manufacturing the technology. So yun yung one of our models why we're earning and why we're able to give free hackathons and free, incubation. So that's just one avenue. So siguro kung lahat ng TBIs would have models on how they would be earning, ang dali lang ituro sa mga bata kung paano rin kumita. Because at the end of the day, startup is really just a business."

This search for resilience also influenced how success was measured. Several founders and TBI managers were critical of government-mandated KPIs, labels that don't reflect a startup's actual viability or longevity.

The founder of a private consultancy that assisted startups explicitly labeled these KPIs as "vanity metrics" and questioned the depth of the "jobs generated" metric:

"Vanity metric siya in the regards na walang pake lahat just to hit that metric and check off doon sa report nila."

He elaborated on the "jobs generated" KPI by asking:

> *"But even if you've generated jobs, what's the duration of the job generated? Is it just 3 months, 6 months, 1 year?"*

The manager of an independent TBI in Mindanao criticized the focus on quantity over quality, arguing that it sets startups up for failure:

> *"So, I think that that's not, that's a problem with, a lot of the metrics that the DOST requires their TBIs. Right? ...No matter how many... startups you, you incubate, if they are not good quality startups, this is not going to survive. They're, you know, they're being set up for failure."*

In contrast, independent TBIs focused on more direct measures of success, such as their own profitability and a startup's ability to achieve a Minimum Viable Product (MVP)

> *"Well, as a TBI, isa lang yung, one metric that matters for us is, are we profitable? So yun yung metric namin, kasi if we cannot be profitable, parang it doesn't make sense, for us to help startups."*

In measuring the startups, the main metric that the TBI expected from its incubatees was the ability to achieve an MVP:

> *"Pero pagdating naman sa startups, ang pinaka tinitingnan namin dyan is yung MVP. So, our cohort is just very short. It's only six months. Pero at that six months, ang ina-achieve nila is isa*

lang, MVP, minimum viable product. Bakit? Kasi, if you have your minimum viable product, yung next step nila dyan is to create their portfolio wherein they're ready for investment. Kasi, at the end of the day, we need to identify if anong klaseng investment ba yung kakailanganin ng startup. Would they need, huge amount or kaya naman ng small?"

He then summarized their two primary KPIs concisely:

"…So KPI for us, is profitability and then for the start-up, MVP."

SRQ1.3 TBIs Sharing a Common Vision for Regional Integration. Beyond internal operations, participants framed the most effective TBIs as promoters and integrators within their broader regional ecosystems. This perspective emphasized that a TBI's success is intrinsically linked to its ability to align with its local context, foster collaboration, and champion regional innovation.

A key viewpoint was the importance of aligning with regional strengths. Participants noted that TBIs were most effective when they leverage their host institution's expertise and the region's economic landscape. For example, one state university in the Visayas leverages its medical school for a healthcare focus, while another TBI in the same region emphasizes agri-aqua innovations.

"The [institution] TBI focuses on our pillars to create or promote healthier ecosystem for both people and the planet. That is why yung specific pillars namin are biomedical and healthcare, agro-aquine green technologies. We also have herbal and natural products, as well as the ICT and emerging technology. Kasi

[institution] has actually, parang it has strength in the biomedical and medical sciences. And kasi po, meron po kaming hospital. That's the [Institution] Medical Center... So, we want to create, or we want to have an enabling environment for startups related to healthcare"

"…And yung green technologies, ganun din po. I think on that side, I can say and can confidently say na it's because of the geographical location. Because Iloilo or Western Visayas, parang agricultural talaga yung sector dito na mas dominant ba. That's why we have those opportunity to work with the Department of Agriculture to help and create a new environment for our startup. That's why meron din kaming mga hinohone or sinusupportahan na mga green technologies na startups."

This demonstrates a perspective that favors deep local embedding over a generic, placeless approach.

This integration was strengthened through active collaboration and consortium-building. Participants from TBIs in both Luzon and the Visayas highlighted their active involvement in regional consortiums that facilitated resource sharing and co-incubation, viewing other TBIs not as competitors but as partners in elevating the entire ecosystem.

Participants see a vital role for TBIs in promoting success stories and role models to build local confidence. A TBI manager from a state university in Cebu stressed the need for a relatable, student-led success story to inspire others.

"...it seems that our ecosystem, na whether it is Region 7, or the Philippines, we need that one start up na other students

can look up to na 'uy!,' they started as a student and then right now, I mean they're not really millionaires but at least they're doing well so yun yung parang we want to have. The goal is so that other students here will be convinced na 'pwede naman pa lang mag start up no...”

Similarly, a manager from an independent TBI in Mindanao described proactive efforts to position their city on the global startup map, aiming to create a narrative that "there is innovation in the South," thereby reshaping regional perceptions and building confidence. She explained their mission to reshape regional perceptions:

"So I guess if in terms of advocacy, the closest advocacy that I think we have, you know, as a as a team in a narrative that we always keep pushing as [institution] and as [institution] is that there is, there is innovation in the South, and there is value in, looking for, innovation even in places that are not known for it."

She further elaborated on their goal of building a broader regional narrative to inspire confidence:

"But we want to, create a narrative that shows that, these other cities can also do it, that there's also innovation coming from a lot of these cities in the South that a lot of people in The Philippines may not have ever heard of."

Collectively, these three core themes, such as: (1) perceptions of value in prioritizing a customized startup journey; (2) intersecting views on TBI funding and operational longevity; and (3) a shared vision for regional integration underscore a holistic and adaptive perspective on what a TBI should be. This viewpoint calls for

nuanced, flexible, and regionally embedded incubators that address practical support needs, ensure their own long-term success, and actively foster a vibrant innovative culture.

SRQ2: What are the structures and processes that define the operations of local TBIs over time?

This section details the operational frameworks of Philippine TBIs, addressing the second sub-research question SRQ2.The findings are presented under three core guideposts: the startup's lifecycle within the TBI, the TBI's internal protocols for resilience, and its external processes for ecosystem development.

SRQ2.1 TBIs Restructure the Startup Incubation Lifecycle. The operational data from the participants' narratives revealed that the startup incubation lifecycle should be a structured, multi-stage process intended to guide ventures from recruitment to post-graduation. However, to the viewpoint of the stakeholders, this lifecycle should begin with a rigorous screening and selection process. This initial stage is critical, with TBIs moving beyond merely evaluating an idea to assessing the founders themselves. Multiple TBI managers and founders emphasized the importance of screening for founder commitment, teachable attitude, team dynamics, and the resilience to navigate the startup journey. This typically involves formal applications, panel interviews, and needs assessments to ensure that incoming startups are a good fit for the program and have a high potential for success.

The founder of a TBI in the Bicol Region focuses on attitude over existing skills:

> *"Usually, is the character... Influence characters startup. So, and it's something skills can be taught... Attitude, it's very hard."*

The founder of a startup supported a stringent screening process by saying:

> *"So, if I were to design, first is the screening process. But it must be tough... Masasayang kasi yung pera ng TBI."*

The manager of the independent TBI in Mindanao stressed the need to be selective to ensure quality:

> *"...we have to be choosey, or we have to be picky with the people that or the startups that we allow into the cohort. The goal is no longer get as many startups as you can... With a lot of TBIs, they in my opinion still have the idea. Okay. As long as I have... an incubatee. Otherwise, I will not be able to hit my... KPIs..."*

Once selected, startups enter a structured core incubation program. These programs are often tiered, comprising distinct pre-incubation, incubation proper, and post-incubation stages, as detailed by managers from state universities in both Luzon and the Visayas. The programs are not monolithic; they often feature specialized, named cohorts (such as the "*Linangin*" and "*Ugnayin*" programs described by one TBI) that reflect a localized and strategic approach to support.

> *"We have five major programs. Si Lakbayin, si Likhain, si Linangin, si Tuklasin... and lastly si Ugnayin."* He then explained the specific function of these named cohorts. On the "Linangin" and "Ugnayin" programs:
>
> *"Si Linangin yung incubation program namin. So doon tuturuan namin kayo kung paano yung idea nyo is maging isang business or maging isang startup or makommercialize."*

"So si Ugnayin yung mga investors pitch, mga demo day. So, from after nung incubator program, si Ugnayin yung parang graduation nila wherein nag-invite kami ng investors, nag-invite kami ng panel para mapitch nila yung mga natapos nila or nagawa nila dun sa incubation program."

A crucial aspect of this process is its hands-on nature. One startup founder recounted an exemplary experience where his TBI conducted a workshop that guided them through the actual completion of their SEC registration forms, ensuring a tangible and legally sound output rather than just a theoretical lecture.

" But in the [institution] culture, iba kasi sa [institution] kasi they don't hire speakers and then leave us hanging… as far as I remember this, may speaker tapos may output talaga yung activity namin. So, during a one-week intense period, like for example in business registration in DTI, doon kami nag-a-apply kami ng mga, sulat talaga kami na-apply. Like hands-on workshop siya…based sa na-observe ko sa ibang TBI, they just, for compliance, they just get speakers and then tapos. Yung startup wala naman, di nila alam kung anong gagawin. They hire speakers say, this is how the taxes will work. And then thank you, awarding, then leave. In [institution] culture, iba. So, they talk about tax and then mag-workshop kami in one week on how to apply for financial statement... May output talaga like bona fide document. Like for example, we conduct training on how to get incorporated. Hindi lang SEC speaker yung in-invite natin for the TBI and then leave after. So, it can be like a one-week or four-day

training that they really have to open their laptop and apply for SEC with the speaker guiding them."

The lifecycle concluded with strong post-incubation support, a process that extended beyond the formal program. One TBI manager in Mindanao identified this continuous support as their unique strength, illustrating a commitment to monitoring and assisting startups to facilitate continuous growth even after they have officially graduated.

"Kasi after the incubation program, honestly, di naman lahat talaga, siguro isa lang na may product at the end na gumagana. Kasi yung cohort, we run in cohorts. So, meaning, may startup talagang naiwan. So parang may classmate talagang parang hindi talaga sasabay gagraduate. Kasi may mga kulang pa. They haven't yet validated their, even although they have validated their problem, but they didn't validate yet their solution, if this is really the solution that the customer really wants, or they really didn't re-engineer their value proposition, so things like that. So yun lang, yung support namin, yung follow-up lang namin, post, that I think something, and match it with the grit and the consistency of our startup. I think dun nagmamatch. I mean, yun yung nagkakaiba. Dun parang unique ang [institution] compared to other incubators. The post support."

SRQ2.2 TBIs Revisit Internal Protocols for Flexibility and Adaptability. The participants elaborated that alongside managing the startup lifecycle, TBIs employ

internal processes to ensure their own flexibility and adaptability in a resource-constrained environment. As such, these systems must be checked regularly to ensure applicability to their operational needs and situations. Flexibility refers to the minor adjustments or accommodations TBIs must make based on certain circumstances while adaptability implies more significant changes to handle entirely new situations.

The process of securing financial viability has the utmost importance. For state universities, this often involves a transition process where the institution fully absorbs the TBI's operational budget after the initial government grant period expires. One state university in the Visayas developed a unique process by establishing a dedicated trust fund to collect incubation fees, creating an independent financial buffer to keep its operations.

> *"The project leader, [name], made it a point to collect incubation fees as early as the second year… When the project started, they were able to convince I think the [university] and COA to start a trust fund…meaning all income, all revenue of the TBI went into the trust fund but it was not part of the [university]'s income. So, meaning it will not go back to the treasury…The revenues were enough, in such a way that when the project ended after the second year, the TBI had enough money to continue its operations."*

This contrasts with the practices of private TBIs, which inherently operate like businesses, generating revenue through paid projects, service contracts, or by taking equity stakes in the startups they support.

Operational adaptability, primarily through digitalization, is another key process. To overcome geographical barriers and enhance flexibility, several TBIs have formally integrated virtual incubation programs, enabling them to support startups from other regions. Some have fully embraced hybrid arrangements, a process that accommodates founders who are managing full-time professional commitments alongside their startup ventures.

> *"I want to add first, we recently added the virtual incubation program. So that is the reason why we have like from Cebu and the only thing they can acquire right now since wala silang building, right? More on the resources and the network that we have."*

The manager of a TBI in Mindanao explained how they already operate a hybrid setup that incubates founders from outside their home city:

> *"We already do that already... We're not only incubating from Cagayan de Oro but we're also incubating from outside. May mga Manila din kami na pumapunta sa amin. May other regions din pumapunta."*

The manager of an independent TBI in Mindanao described how their flexible, hybrid setup is designed specifically for founders who are also working professionals:

> *"So, a lot of these founders that we have, they have, like a full time, desk job that they have to do. So, our incubation programs are typically longer... So, there's really a lot more*

flexibility for startups. So, we don't put them in one place. We meet them at their own time… Yeah, it's definitely hybrid."

Adapting the TBI's mission through inclusive support processes was seen as critical for broadening impact. One TBI in the Visayas, for example, intentionally redesigned its entry process to accept public, idea-stage startups rather than limiting intake to established, university-affiliated enterprises. This structural change creates a more diverse and accessible funnel for grassroots innovation.

"Dati kasi sir, nagre-require kami na dapat business registered ka and dapat may MVP ka… But dito kasi sa Iloilo, it's really hard to find founders, if ganun yung requirement namin. That's why this year, I think just recently lang, we allowed ideas to start up… We make it, we democratize this support that we have to those people who are really willing talaga but don't have the resources."

SRQ2.3 TBIs Collaborating for Networks, Partnership and Resource Sharing. The participants described that effective TBIs engage in deliberate, external-facing processes to build and strengthen the regional innovation ecosystem. The process of formal collaboration was central to this effort. TBIs actively structure partnerships through regional consortiums, which enhance resource sharing and expertise exchange across institutions. This structure was exemplified by the strong collaborative networks in the Visayas and Bicol regions. This included establishing formal co-incubation agreements, a process where multiple TBIs partner to provide comprehensive support to a single startup that requires diverse expertise.

"Sa amin ang tawag sa amin is [consortium] so ang university lead for the [consortium] is [TBI]. The mindset is no longer about competition, but collaboration...hindi na kami yung parang tipong who's better and who's not. Or kung like we are competing with each other. Hindi na, kasi ang conversation ngayon is towards how we can help the startups?"

The manager from a TBI in Bicol explained how co-incubation worked to maximize resources across institutions:

"...shared facility or pwede nang for example from this university sa aming university na makikigamit nung mga research centers, etc. So magkakaroon ng co-incubation na program or agreement between different TBI."

The project leader from a TBI in the Visayas provided a clear example of how they use co-incubation to fill expertise gaps:

"If we don't have the technologies that our incubator is looking for, we can actually tap our consortium member TBI here in the region if they have available technologies and we can co-incubate with them."

Furthermore, TBIs engage in the process of ecosystem promotion and publicity. This moves beyond simple marketing to actively cultivating a local culture of innovation. For instance, one private consultancy functions like a TBI by partnering with universities to host hackathons and pitching competitions, a process that directly nurtures an entrepreneurial mindset among students.

*“Actually, our partnership because it's part of our memorandum of agreement with schools. Ito yung isang problem. Most schools, alam mo naman ito, walang **tracer study**. So, they really can't track, hindi nila matrack kung ilan talaga yung nagpur-pursue ng entrepreneurship or business. In the past 20 years daw for [institution], according to the data that they currently have, 6% lang daw yung nag-pursue ng entrepreneurship or ventured into business. So very low. So how does that partnership work? So, we provide the mentorships for them, workshops, hackathons. So, we are their third-party provider as a private institution na will do the seminars for them or will train their students, I mean their faculty, to be able to do the seminars in terms of innovation topics, design thinking, pitching, methodologies, business model canvas.”*

In another region, a TBI manager described the process of establishing a technical working group with other local universities, with the explicit goal of promoting the value of internal TBI support systems and fostering a community-wide appreciation for entrepreneurship.

"So what we did is gumawa rin kami ng technical working group sa Camarines Sur lang, kasi ang aim namin is to help out other HEIs, mga higher education institutions… to put up their own TBIs as well, identify their banner program as well, and then kung paano namin mako convince, for example, their administrators to give support din sa mga initiatives nung kanilang mga TBI point people or point persons. So parang ang pinaplano

namin magka conduct kami in partnership for example... to invite yung mga admins ng mga institutions na to make them understand ano yung role nila to actually make the environment sa kanilang institution conducive for a TBI no, to actually have a startup ecosystem internally sa kanila no"

The operational landscape of Philippine TBIs is defined by these evolving processes as perceived by the participants. By restructuring the startup lifecycle, reconfiguring their internal protocols for resilience, and actively partnering with stakeholders within their ecosystems, these TBIs are developing the necessary frameworks to enhance the success of local startups.

SRQ3: What are the outcomes resulting from the TBI operations over the course of their development?

This section of the findings addresses the third sub-research question SRQ3. The analysis revealed that the outcomes of TBI operations were multi-layered, creating a ripple effect that benefits not only the incubated startups but also the TBIs themselves and their entire regional innovation ecosystems.

SRQ3.1 Tangible and Resilient Businesses Resulting from TBI-supported Idea Transformation. According to the participants, the most direct outcome of TBI operations was the enhanced viability, growth, and resilience of the startups they support. The structured support provided by TBIs has proven instrumental in transforming promising ideas into functioning businesses

A compelling case was the founder of a deep-tech startup spun off from a university thesis. He asserted that without the TBI's intervention, his project would

have remained an academic paper "stuck in the library," and he would likely be in a corporate job instead of leading a startup.

> *"Yung story kasi namin is what I've mentioned earlier that we are a spin-off from a thesis. And then, yung dean namin convinced us to like to enroll for TBI sa [institution] that is under [name], who is from… Yeah, yung first TBI niya is here, then he transferred it to us, and now he's in [institution]. So, doon na yun, enrolled kami, and the entire impact is… Yung thesis namin is not just stuck in the library. So, it is actually flying in the real environment… So, if wala si TBI, then I think I'm in a corporate world right now or something like that. So, plant-seeding or kalupaan na hindi ma-access ng mga hand planters. Yan yung impact na binigay ni [TBI] sa amin is to really push us into the limits. Pushing our limits… And it helps us to do much work and really talk to people na malalaki position in big corporations and even the government like neighboring cities. So, yung training kanina sa specific benefits na basically output is we are actually living up right now. And it really helps us like develop our startup growth. We receive millions, and of course, we are in the capitalist economy. So, it helps us develop and grow."*

This narrative underscored the TBI's transformative role in facilitating the very existence of new ventures. Furthermore, accelerated technology commercialization is a critical outcome. The manager of an agri-aqua focused TBI stated that their core mission is to convert university research into market-ready products, a process that

includes structured support for licensing and product development, effectively bridging the gap between research and market.

> *"It actually focuses on technology commercialization. So primarily, the products of research of the university, we are trying to commercialize that by introducing it to the startups or the incubators...that's the main purpose of the university-based incubator, for the research output of the university to be commercialized and used by the community… We promote technology commercialization, wherein our startups or incubators are actually paying for the licensing and the reality fees for the adoption of the technologies… So, we also help in optimizing, enhancing, and developing their existing technology so that it can go to the market and can compete with other products or services in the market."*

TBIs also serve as a crucial conduit for expanding funding opportunities. The manager of a prominent TBI in Mindanao highlighted their success in helping startups prepare grant proposals, resulting in their incubatees securing significant government funding.

> *“Or medyo strict po din si DOST. And I understand that because that's people's money. Baka ginawa lang cash cow ng mga tao yan. I also commend DOST for that. I appreciate their job in really granting those deserved startups. Pero yan lang problema, hindi napupuno kasi wala masyadong qualified startup na gine-generate yung mga TBI. For the last startup grant fund, we contributed 3. So sa 6 dun, 3 galing sa amin [institution]... So,*

I think that's also ano din namin edge. In terms of making our startup grantable, kami yung pinakamarami in numbers sa startup."

The ultimate outcome was the tangible growth of successful startups. The founder of a private consultancy that assists startups shared that with the right support, businesses can scale their revenue exponentially up to millions, exemplifying the level of growth that effective incubation can help unlock.

"So, our main model, sir, is that we modeled this Singapore… So, our model for sales consulting 7 years ago is that if you have a business doing more than 5 million in revenue, tapos Filipino business ka, we can help you scale your business regionally, then nationally through three methodologies. Number one, we develop your sales and marketing process. Or number two, we train your existing sales and marketing team. Or number three, we do everything for you. We sell the product in your behalf…"

SRQ3.2 Greater Operational Capacity and Adaptability Through TBI Interventions. The TBI managers and startup founders shared a common experience, that is TBIs undergoing continuous operational development, leading to outcomes that enhance their own internal capacity and adaptability.

A primary outcome has been the strategic shift toward hybrid and remote incubation. Stakeholders emphasized that the pandemic hastened this transition, which has now become a permanent operational feature.

TBI-3*:"As far as I know, medyo talagang hindi naman totally na tigil pero nag-shift naman online with the incubation program of the incubates… Pero tumuloy-tuloy naman and meron naman din incubation program noong pandemic. At least kahit paano we're still able to support the startups that are part of the program."*

TBI-4*: "Ngayon kasi madalas na din online… hindi lahat ng incubators available face-to-face. They can access the recording. So mahirap na mawala yung online aspect of the mentorship sessions and the incubation program… I think ang pinaka-attainable or realistic for [institution] is yung virtual incubators."*

ST-5: *"This is brought about by the pandemic na, kasi yung culture na Filipinos, if you want to do a business deal, it has to be personal, physical, face-to-face. But they realized that pwede palang online."*

ST-2 *“So, when I started [company] in 2020, as I pitch it with different people, and I created the team…I search any startup groups, and I come across Startup PH. And that time, I would say, thankfully, it's COVID. Because there's a lot of online sessions that were available... So, they have a mentorship program there. That helped me actually have a picture about the real estate industry”*

This evolution allowed them to support geographically dispersed founders, offered greater flexibility to incubatees with full-time jobs, and expanded their reach beyond their immediate locality.

Capacity and talent development within the TBIs emerged as another key outcome. One TBI manager viewed his institution as a vital training ground, producing skilled individuals who, even if they moved on, became valuable assets contributing to the broader innovation ecosystem. He described how staff often leave after gaining experience:

> *"Yeah. Number one is yung staff. They come and go. After two years, they go. And then we hire again, so on and so forth."*

He then explained that these former staff members are valued by their new employers, effectively becoming assets for the larger ecosystem:

> *"They are being hired by DOST, somehow by the other units of the university, because they become an asset of that unit or that organization when they know that they are from [TBI]"*

Conversely, the manager of an independent TBI saw their low staff turnover as a direct positive outcome of their resilient operational strategy, which ensured strong institutional memory and consistent, high-quality support for their incubatees. She contrasted her TBI's situation with others that struggled with retention, highlighting their low turnover as a key strength:

> *"We're one of the TBIs who actually have a very low turnover rate. A lot of the people who are working in [TBI] have been the same people working in it since 2019... and we're still the same team."*

On how this stability ensured institutional memory and consistent support (by describing the problems they avoid):

> *"So, we don't, we don't experience the struggle of, like, a lot of these other TBIs. Now they have a problem with, you know, the turnover of the staff. Oh, because this person left... I don't know where to... what to do with the incubation anymore because they left. They didn't leave me the files. They didn't turn over. So, we don't have that problem…"*

SRQ3.3 Strong Regional Innovation and Economic Ecosystems Driven by TBIs. The participants described the impact of TBI operations extending far beyond individual ventures and serving as promoters for the development of entire regional ecosystems.

Enhanced ecosystem collaboration was a prominent outcome. The establishment of regional consortiums, particularly in the Visayas and Bicol, had shifted the dynamic among TBIs from competition to deep cooperation. This was evidenced by the implementation of formal co-incubation agreements, where multiple TBIs pool their unique resources to support a single startup. The outcome was a more unified and resource-efficient regional support network.

> TBI-1 *"...shared facility or pwede nang for example from this university sa aming university na makikigamit nung mga research centers, etc. So magkakaroon ng co-incubation na program or agreement between different TBI."*

> TBI-10 *"If we don't have the technologies that our incubator is looking for, we can actually tap our consortium*

member TBI here in the region if they have available technologies and we can co-incubate with them."

TBI-4 *"So if we see that there is a more, what you call this, applicable incubator program for our incubatee, we try to contact that TBI. So that uses incubator and then we do a co-incubation."*

TBIs also contributed directly to improved regional economic development. The manager of one TBI in the Visayas described how their team successfully championed and lobbied for local startup ordinances, resulting in tangible incentives like multi-year tax holidays for new businesses. This demonstrated a direct link between TBI advocacy and local economic policy.

"So, we're the one who championed the creation of the startup ordinances both in the city and province of Iloilo. Kasi, we need to do it kasi if hindi kami, I think walang mag-champion to do it... and that's why we need to lobby policy in the local community... So, our city gave incentive for three years for our start-ups, same with the province of Iloilo. So wala silang bayaran na tax for it... For three years and after three years, dun pa sila magbabayad ng mga government required taxes or ano pa yung mga payments sa LGUs."

A crucial outcome was improved visibility and recognition for the region. As described by the manager of an independent TBI, their collective efforts in mentoring startups and promoting their successes directly contributed to their city's significant rise in global startup ecosystem rankings. This enhanced reputation attracts more

talent, investment, and opportunities, creating a virtuous cycle that strengthens the entire regional ecosystem.

> *"So, if you think about it, it's always been Manila, Cebu, and Cagayan De Oro, because these are the top producers of startups in the country. In 2021, we reached top five in the country sa StartupBlink, which is basically an ecosystem mapping platform. So, after that, we rose a hundred, 240 spots, I think, in the global rankings, and we went fourth place… So, I saw it recently in the StartupBlink. And we were the only ecosystem that went up. So, the rest went down. Manila went down. The entire Philippines went down, but we were the only ones who went up.*

These outcomes reflected a comprehensive and dynamic support system where TBIs were instrumental in fostering the growth and resilience of startups while simultaneously catalyzing the development of the broader innovation ecosystem within the Philippines.

SRQ4: "What are the implications of the nature of TBIs in the Philippines?"

This section discusses the fourth and last sub-research question, SRQ4. The analysis revealed that the nature of TBIs in the country was predominantly public, university-based and grant-reliant. This had significant and interconnected implications, not just for the TBIs and the startups that they support but also for the entire Philippine startup ecosystem.

SRQ4.1 TBIs Actively Promoting Long-Term Resilience. The collective insights of the participants revealed that there is an overwhelming reliance of local TBIs on short-term, project-based government grants, which created a cycle of instability that becomes a limiting characteristic for most TBIs. This nature implied that TBIs are typically in "survival mode," unable to plan long-term or build lasting capacity. Their existence is tied not to market success but to the next grant cycle, which directly impacted program quality, staffing, and the ability to provide meaningful, sustained support to startups.

The manager of an academic TBI in the Bicol region described how their operations are tied to a fixed-term government grant:

> *"So ang TBI namin is actually a TBI na na-kickoff because of the DOST PCIEERD HIREIT program... nag start yung aming day one for the two-year operation grant na binigay nila sa amin.*

However, as early as the first cohort, the plan for financial stability was already considered but the uncertainty of the future remains:

> *“Pero what happens after that, kasi pag wala ng grant, diba? So meron naman kaming sustainability plans... kaya lang syempre nandun parin yung fear."*

This financial incapacity was the root cause of many other issues within the ecosystem, including staffing as expressed by another academic TBI in Luzon:

> *"Yung sa challenges namin ay funding... Kasi yung additional staff namin coming siya from the project. So, what*

would happen if the project ends? So, we will be needing to look for other funding sources to fund our staff."

The founder of another TBI in the Bicol region articulated a clear mission to move beyond the grant-based framework:

For Bicol, there is BICORSE, yun yung consortium ng mga TBI, also funded by DOST, so kami lang ang privately led, so lahat sila, they received funding from DOST, kami lang yung wala kasi, yun nga, we wanna prove something that an incubator could be sustainable without money. So, yung tinuro samin ni [institution] we operate like a start-up, and we did… So yung kinaibahan sa amin, since walang funder, we can actually push for whatever design we want. And ang kagandahan sa kanya, we are sustainable, so hindi kami nag aantay ng saan tayo kukuha ng grant for us to operate. So, we have a model wherein we could really earn while providing free service to the startups…"

The manager of a TBI in Mindanao explained that their TBI intentionally moved away from the university and grant-funded structure precisely to achieve long-term viability:

"But [TBI] is no longer working as a DOST funded TBI, so it's now fully independent... for sustainability purposes, we took it out of [academic institution] so that we could be able to basically generate funds, from TBI activities."

A founder of the private consultancy, called for a fundamental change in how state-funded TBIs operate, advocating for a shift from a pure grant framework to an investment-based one to ensure long-term incentives and resilience:

> *"So that's the problem because sa TBI na modeled sa labas, which I know you already know, part of their model is once you're incubated, once you're accelerated, we gain equity from that effort... I think the revision should be that even state universities should be able to invest in the startups, gain equity ownership..."*

The TBI managers and startup founders collectively called for a shift towards long-term strategies that would have reduced their reliance on initial grant funding. This ensured that the TBI itself can operate as a resilient entity, capable of retaining skilled staff, preserving critical institutional knowledge beyond the typical grant cycle and promoting the long-term success of the startups they nurture.

SRQ4.2 TBIs Decentralizing Innovation Beyond the Capital. The participants described that an increase in the number of TBIs in the country and the collaborative nature of regional TBIs have a major implication for the Philippines' economic geography: TBIs were serving as instruments for decentralizing innovation and economic opportunity beyond Metro Manila. By being deeply embedded in their local contexts, TBIs were not just incubating startups; they were cultivating entire regional innovation ecosystems from the ground up.

A TBI manager from Bulacan explained the common practice of startups and skilled individuals using their TBI as a steppingstone before moving to the capital for

what they perceive as greater opportunities. The manager noted how their proximity to the capital facilitates this dynamic:

> *"Siguro yung ano din, so isa din factor yung malapit din kami dun sa Manila, na minsan yung ibang start-ups na kumukuha ng experience sa amin… Siguro yung unang, first idea about start-ups is sa amin ang gagaling. And then eventually, lilipat na sila dun sa Manila kasi siguro mas maraming opportunity dun or yung tech nila is mas madaling i-ano, tingnan yung market dun sa Manila, so that's one… Sa team din namin, medyo kulang kami sa team ngayon. Originally, there were five staff for [TBI] nung funded pa siya. Pero nung na-institutionalize na siya, naging tatlo na lang. Pero ngayon, two years na, na dalawa lang kaming staff dun sa [TB]I. So yun din, parang mas malaking opportunity kapag nasa ibang mas malaking company. Kasi ngayon, NGOs, government, dun sila lumilipat yung mga talents from Bulacan. So kuha experiences sa Bulacan, then lilipat sa Manila pag nakakuha ng maganda-ganda resume...*

The manager identified the need to change this perception by actively building and promoting the opportunities available within their own region, thereby creating a reason for talent to stay. This was framed this as a key opportunity for the TBI to change the local culture and mindset:

> *"Siguro sa culture na din dito sa Bulacan, kasi nga malapit sa Manila. So yung culture is pag nakakuha ka ng experience, lipat ka na. So siguro yun yung kailangan din naming opportunities to change. So yun yung makita nila na 'bat ka pa mag ma-Manila, eh*

pwede din naman dito sa Bulacan. Almost the same lang na may opportunities. So yun yung nakikita kong pwedeng opportunities na magawa namin or mabago namin here in Bulacan.

As one TBI manager from Mindanao explained, a core part of their mission was to create a narrative that shows that there is also innovation coming from a lot of cities in the country that a lot of people may not have ever heard of:

So, kami, sa [TBI]… our, scope isn't just Davao City. It's Davao Region. So, if you're not familiar with what's in Davao Region, that would include Davao Del Sur, De Oro, Occidental, all the Davao. And that would include cities like Tagum, Panago, Digos, all of these, you know, sort of, less well-known cities in the South or at least as well-known from Davao City. Right? So, the emphasis has always been that we don't just want to uplift Davao. It's easier to uplift Davao because it's more well known. It's a center of trade in Mindanao. But we want to, create a narrative that shows that, these other cities can also do it, that there's also innovation coming from a lot of these cities in the South that a lot of people in The Philippines may not have ever heard of. And at least in our experience, a lot of these cities, they want to be able to be a part of that narrative, and it's always been a, a great and they've always been open to being part of the narrative that we're trying to build. So, it's less an advocacy on my end and more so really something that was born out of a need. Now, okay, we need to do this so that we could have, like, a better thriving ecosystem."

This effort in building local pride and visibility has tangible outcomes, from attempting to change the mindset of the citizens to raising a city's profile in global innovation rankings. The implication is that TBIs are critical strategic assets for regional development, with the potential to create high-value jobs and retain local talent that might otherwise migrate to the capital.

SRQ4.3 TBIs Embracing Remote and Hybrid Incubation Programs. The participants expressed that the widespread implementation of virtual and hybrid operational arrangements, accelerated by the pandemic, had strategic implications for the future of incubation in the Philippines. This shift implied that a TBI's reach, and impact were no longer constrained by its physical location. As several TBI managers noted, they were now actively supporting founders from different provinces and regions through online mentorship and virtual programs.

Almost all TBI managers expressed that a purely physical setup was no longer sufficient:

> *TBI-1: "So hindi dapat tayo mag settle sa ganun lang na restricted kasi we have to adopt with what is the demand and kailangan mag adopt nga tayo sa kung ano yung needs nung ating mga incubatees"*
>
> *TBI-4: "Ngayon kasi madalas na din online... So mahirap na mawala yung online aspect of the mentorship sessions and the incubation program"*
>
> *TBI-5: "When we started in first two years of operation of the TBI, we also catered from other parts of the country up to date… So meron from Davao, pero dito pa nag-apply. Siguro kasi graduate*

sila ng [Institution] in Visayas, that's why, pero do not have a TBI based sa Surigao and Davao, but they're engaged in the TBI virtually."

Even the startup founders supported the idea of conducting hybrid, virtual or remote support services. This was further explained by a startup founder of a consultancy company that also collaborates with international partners:

This is brought about by the pandemic na kasi yung culture na Filipinos, if you want to do a business deal, it has to be personal, physical, face-to-face. But they realized that pwede palang online… Their model is based on fieldwork, physical meetings, physical events, but hindi yan scalable. If you always have to be physical… if dependent dyan yung process nyo, hindi kayo maggrow. In fact, start-ups in the outside, you cannot see the people who are behind these start-ups. Kasi sa Philippines lang yun na advantage and disadvantage na dapat personal. So that's the one opportunity na pursue, sales and marketing processes, and technology processes na hindi kayo need to see individually.

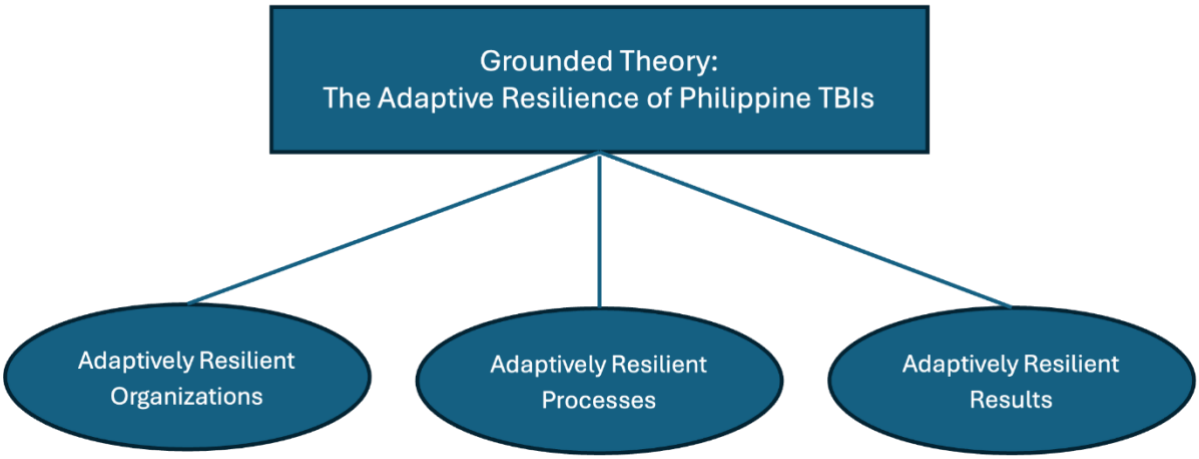
This "borderless" nature of incubation is particularly significant for an archipelago nation like the Philippines, as it overcomes long-standing geographical barriers. The flexibility of hybrid incubation accommodates the reality that many Filipino founders start their ventures while holding full-time jobs.

Based on the views of the participants, the nature of TBIs in the Philippines involves a critical need for policy and funding reforms to foster long-term resilience

beyond the limitations of short-term grants. Simultaneously, these TBIs serve as avenues for decentralizing innovation into new regional hubs and are pioneering the strategic shift towards more flexible, hybrid operational frameworks essential for the nation's future.

Answering the Main Research Question (MRQ): *"What is the nature of technology business incubators in the Philippine context?"*

Figure 5. Grounded Theory: The Adaptive Resilience of Philippine TBIs.



The Grounded Theory: The Adaptive Resilience of Philippine TBIs

Synthesizing the findings from the experiences, observations and insights of the participants, the nature of TBIs in the country was best described by the grounded theory of "*The Adaptive Resilience of Philippine TBIs"*. As defined earlier, adaptive resilience was the core capacity of a TBI to withstand operational and financial disruptions (such as the end of a grant), adjust its processes (to be more customized and flexible), and maintain its dual function of supporting startups and developing its ecosystem over the long term.

Philippine TBIs exist on a spectrum of this resilience. Many are still in the early stages, defined by their grant-dependency and the associated instability. However, the most effective and forward-looking TBIs are those actively building on their ability to be adaptively resilient. They demonstrate that the true nature of successful TBIs in the Philippines is not just to incubate startups, but to become resilient, self-sufficient, and deeply integrated anchors for regional innovation, capable of adapting to the ever-changing needs of the startups and the ecosystem they serve.

The grounded theory of "*The Adaptive Resilience of Philippine TBIs"* can be further deconstructed into three interconnected components. Each component builds on the last, creating a comprehensive framework that explains the nature of effective TBIs in the Philippines. These are as follows: (1) *Adaptively Resilient Organizations*, which describes the TBI's internal structure and mindset; (2) *Adaptively Resilient Processes*, which outlines their operational methods; and (3) *Adaptive Resilience Results*, which captures the tangible impact on startups, the TBI itself, and the broader regional economy.

Adaptively Resilient Organizations

This component refers to the structural and strategic characteristics that enable a TBI to endure and thrive independently. It is about building the TBI as a stable institution, not just a temporary project. The participants described that adaptively resilient organizations have financial autonomy and diversified funding. The most critical characteristic is the thoughtful shift away from sole reliance on short-term government grants. This client-centric approach to funding ensures that the TBI's success is directly tied to the success of the startups it supports, creating a mutually beneficial relationship.

This is achieved through various strategies as explained by the participants. For example, several TBI managers expressed that their respective TBIs aim to operate like a startup by generating revenue through equity stakes in incubatees, service contracts and paid capacity development programs. Meanwhile, for university-based TBIs, this involves securing a permanent budget from the host institution or creating innovative financial mechanisms. The case of the TBI in the Visayas that established a dedicated trust fund to collect incubation fees is a prime example of building a financial buffer independent of the university's general income or external grants. To add, other strategies such as technology commercialization through active licensing of technologies developed within the TBI or through programs, such as hackathons, create a supplemental revenue stream as elaborated by a TBI in the Bicol region.

Financial stability also creates a positive domino effect on other aspects of the organization such as human resources. The participants explained that financial steadiness directly enables the retention of skilled, experienced staff. This stability is not just an internal benefit; it translates directly into a more consistent and reliable support system for the startups, who are the TBI's primary beneficiaries. Unlike grant-reliant TBIs that face a constant cycle of hiring and retraining, resilient organizations boast low staff turnover. This ensures *institutional knowledge*, consistency in program delivery, and a highly motivated team whose incentives are aligned with the TBIs' long-term success.

A resilient organization views itself not as a two-year project, but as a permanent and vital piece of regional infrastructure. This means the organization's structure, goals, and strategies are fundamentally designed around delivering sustained value to its clients, the startups. This long-term perspective informs its

strategic decisions, moving beyond tick-box metrics required by the funders, to focus on the genuine, measurable, and viable growth of the startups and the ecosystem it belongs to.

Adaptively Resilient Processes

This component describes the how, the specific, flexible, and context-aware operational methods are employed by adaptively resilient TBIs. These processes are dynamic and designed to meet the real-world needs of startup founders and the ecosystem. The participants described that TBIs must have processes that are highly customizable, and not a "one-size-fits-all" approach to provide deeply personalized support for the startups. This client-focused process acknowledges that each startup has a unique journey and requires a well-crafted service plan rather than a generic curriculum. This includes tailored mentorship programs that focus on the unique needs of each startup and the personal development of the founder, rather than forcing them into sessions just to satisfy the funders. Several hands-on practical activities were also advocated. Examples include tangible, output-focused workshops that guide founders through complex processes like SEC registration and tax compliance, rather than just theoretical lectures.

In terms of incubation program delivery, almost all participants expressed the need to embrace digitalization to overcome geographical and personal barriers. Mainly influenced by the COVID19 pandemic, hybrid and virtual communication strategies have become part of the new normal by formally integrating remote incubation to support founders from different regions and accommodate those who are managing full-time jobs alongside their ventures. This flexibility in delivery is a core component of modern client service, ensuring that the TBI's support is accessible and convenient

for the startups it serves. This process makes incubation more inclusive and expands the TBI's reach far beyond its physical location. Inclusive entry points have also become part of the adaptive recruitment processes to accept a wider range of applicants, such as idea-stage founders or non-tech MSMEs, thereby democratizing access to business support.

Adaptively resilient processes also include the proactive ecosystem cultivation through engaging in purposeful, external-facing practices to build and strengthen the regional innovation landscape. Almost all TBI managers expressed the importance of having formal collaboration and co-incubation practices within their respective regions. Structuring partnerships through regional consortiums where TBIs share resources and expertise is already a common practice. The process of co-incubation, where multiple TBIs partner to support a single startup, exemplifies a shift from competition to deep collaboration. This leads to ecosystem promotion and advocacy. These external-facing processes are ultimately in service of their clients, as a stronger ecosystem directly translates into more opportunities, resources, and a healthier market for the startups to thrive in. Adaptively resilient TBIs enthusiastically work on building a regional innovation culture by promoting success stories via social media campaigns, hosting competitions and sponsored events, and lobbying for local pro-startup policies, such as the tax holidays as championed by a TBI in Iloilo. All these practices and procedures describe how adaptively resilient processes are in action.

Adaptively Resilient Results

This final component captures the tangible outcomes and multi-layered impact generated by resilient organizations and their processes as elaborated by the participants. The results are not confined to the startups alone but create a positive

feedback loop that strengthens the entire ecosystem. This cycle begins and ends with the ability of the TBI to deliver successful outcomes for its primary clients, the startups.

For TBIs, adaptive resiliency enhances institutional capacity. The TBI itself grows stronger and more effective which could be measured by its (1) operational stability, by operating continuously and predictably, retaining talent and building upon past successes; and (2) expanded reach and reputation through TBIs becoming a recognized leader in the ecosystem, capable of attracting high-potential startups and partners from across the country.

For the startups, the adaptive resilience of the TBIs that nurture them allow them to transform their ideas into viable businesses. The most direct outcome is the conversion of concepts into tangible, fundable, and resilient companies. This successful transformation is the ultimate measure of the TBI's value proposition to its clients. This is evidenced by the stories shared by the startup founders during their incubation journey. Because of the TBIs, it allowed them to experience accelerated growth and succeed in receiving funding from investors and venture capitalists.

For the ecosystem, the adaptive resilience nature of TBIs catalyzed regional development which ripples outward, fostering a more vibrant and self-sufficient regional economy. As described by the participants, the direct impact is decentralized innovation which is influential in the creation of strong innovation hubs outside of Metro Manila, retaining local talent and creating high-value jobs. This improved regional standing creates a more fertile ground for the startups, offering them greater access to talent, capital, and market opportunities. In turn, this helps improve the economic landscape through the successful implementation of startup-friendly local ordinances and a measurable rise in the region's global innovation rankings. As a TBI manager noted, their efforts led to their city being "the only ecosystem that went up" in the

rankings. All these results contribute to the creating a cycle that attracts further investment and opportunity.

Methodological Note on Rigor and Trustworthiness

In accordance with the principles of Constructivist Grounded Theory (CGT), the validity of the findings in this study was established not through a single statistical test, but through a continuous, multi-faceted process aimed at ensuring the credibility, trustworthiness, and auditability of the emergent theory. The following methods were integrated throughout the research process to manage the co-creation of knowledge and to ensure the final analysis remained firmly grounded in the data provided by the participants; to wit:

- *Constant Comparative Method*: The core analytical process involved a constant comparison of data. Data from each interview was compared with data from other interviews, and all data were continuously compared against emerging codes, properties, and categories.
- *Researcher Reflexivity and Auditability*: To transparently manage potential bias, a reflexive journal was maintained to document the researcher's assumptions, decisions, and reflections throughout the research process. This practice, combined with detailed memo-writing during data analysis, creates a clear audit trail that allows the methodological and analytical steps to be understood and scrutinized, thereby enhancing the study's trustworthiness.
- *Participant Validation (Member Checking*): To ensure the accuracy of the collected data, participants were offered a copy of their transcribed interview to

review. This practice of member checking allows participants to correct, clarify, or elaborate on their statements, ensuring their perspectives are represented faithfully.

- *Reciprocity and Dissemination of Findings*: As an ethical commitment and to foster a collaborative spirit with the startup ecosystem, all participants were informed that they would receive a copy of the final, anonymized research findings upon the study's completion. This practice ensures that the knowledge co-created through the research is returned to the community that made it possible.

These integrated techniques ensure that the resulting theory is a credible and trustworthy representation of the participants' perspectives on the nature of TBIs in the Philippines.

Chapter V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This final chapter presents the synthesis and culmination of the research into the perspectives on technology business incubators for Philippine startups using a grounded theory approach. The purpose of this chapter is threefold:

Guided by the principles of Constructivist Grounded Theory, this chapter integrated the answers to the specific research questions explored in the preceding analysis. This synthesis culminated in a final, in-depth discussion of the emergent grounded theory of "*The Adaptive Resilience of Philippine TBIs"* and its implications for enhancing the operational effectiveness and support for the startups in the country.

Summary of the Study

To investigate this problem, the research used a qualitative methodology guided by a Constructivist Grounded Theory (CGT) approach. A total of 15 participants, comprised of ten TBI managers and five startup founders who were selected through purposeful and theoretical sampling, were part of the study. These participants represented academic and commercial institutions located across the Philippines, including Luzon, Visayas, and Mindanao, providing a diverse geographical and institutional context for the research. The total number of participants was determined upon reaching theoretical saturation, the point at which new data no longer contributed to the development of the emergent theory. Data was primarily collected through in-depth, semi-structured interviews. The subsequent analysis was a systematic and iterative process involving four distinct stages: open, focused, axial,

and theoretical coding, all of which were underpinned by the constant comparative method to ensure analytical rigor.

Summary of Key Findings

The data analysis yielded several key findings, which were organized thematically around the study's four sub-research questions (SRQs).

In response to SRQ1 regarding stakeholder perspectives, three core themes emerged. First, participants revealed a clear shift in perspective, specifically on the value of prioritizing a customized startup journey through founder-centric mentorship and practical legal and financial guidance. Second, the intersecting views on TBI funding and operational longevity was a dominant theme, highlighting a critical need for TBIs to move beyond temporary grant-funded projects and adopt self-sufficient strategies. Third, stakeholders shared the view of regional integration. TBIs act as regional catalysts that achieve success through deep ecosystem integration, aligning their services with local economic strengths and fostering collaboration.

In addressing SRQ2 on the structures and processes of local TBIs, the findings identified three operational guideposts. The first was an incubation lifecycle which was structured and hands-on that took startups from a rigorous screening process to post-graduation support. The second guidepost consisted of internal protocols for flexibility and adaptability. These were designed to redesign the TBI operations for resilience and unexpected changes, such as the formal integration of hybrid and virtual incubation setups to enhance inclusivity and reach. The third guidepost involved collaborative networks on partnership and resource sharing. External-facing processes for ecosystem development, such as establishing formal consortiums, co-

incubation agreements, and engaging in local policy advocacy to strengthen the regional innovation culture were some examples described by the participants.

Regarding SRQ3, which explored the outcomes of TBI operations, the findings revealed a multi-layered impact. At the most immediate level, TBIs transformed ideas into tangible and resilient business. TBIs fostered startup viability and growth, directly enabling the commercialization of technology and expanding access to funding. Also, TBIs were responsible for the enhancement of their own operational capacity and adaptability, evidenced by the strategic shift to hybrid arrangements and the development of skilled talent. The broadest outcome was the promotion of the regional innovation and economic ecosystem, achieved through enhanced collaboration, direct contributions to local economic policy, and improved regional visibility on a global scale.

Lastly, SRQ4 inquired on the implications of the TBIs for Philippine startups, which revealed a common call to shift towards long-term resilience from all participants. The shared goal was to ensure that the TBIs will not be on survival mode once grants have stopped or funding was reduced. Another theme that surfaced from the discussions was the need to decentralize innovation beyond the capital. TBIs were essential vehicles for distributing economic opportunity outside the usual hub of Metro Manila and other highly urbanized cities in the country. And lastly, TBI stakeholders recognized that there was an inevitable move to remote and hybrid incubation practices. Realized mainly during the pandemic, the nature of Philippine TBIs had become inherently flexible and geographically unrestrained. The widespread adoption of virtual and hybrid incubation was not just a temporary adjustment but a permanent strategic evolution.

Synthesizing these findings provided the answer to the Main Research Question (MRQ). The research culminated in an emergent grounded theory of "*The Adaptive Resilience of Philippine TBIs"*. This theory can be understood through three core, interrelated components: (1) Adaptively Resilient Organizations, which describes the TBI's internal structure and mindset; (2) Adaptively Resilient Processes, which outlines their operational methods; and (3) Adaptive Resilience Results, which captures the measurable impact on startups, the TBI itself, and the broader regional economy.

Conclusions

The findings of this study offered insights into the operational dynamics of TBIs in the Philippines, moving beyond a simple summary to address the basic question on the nature of TBIs in the country. The conclusions drawn from the analysis were detailed below, focusing on the importance of the emergent theory and its implications for practice, policy, and academia.

Significance of the Grounded Theory of Adaptive Resilience of Philippine TBIs

The grounded theory of "*The Adaptive Resilience of Philippine TBIs"* provides a new, practical framework for strengthening TBIs in the Philippines. It directly informs policy by challenging the current reliance on short-term government grants, advocating instead for funding strategies that foster long-term financial independence. For TBI managers, it offers a clear roadmap to move beyond a "survival mode" and build stable, self-sufficient organizations. This shift redefines success, prioritizing the

TBI's own operational longevity and the genuine growth of its startups over superficial metrics, which is crucial for building a truly effective national innovation strategy.

The theory highlights the vital role of TBIs as instruments for regional development. It demonstrates how adaptively resilient TBIs can decentralize economic opportunity from typical innovation centers by cultivating local innovation ecosystems. This is achieved through practical strategies identified in the research, such as building collaborative consortiums and adopting flexible, hybrid operational setups to overcome geographical barriers. The significance lies in showing that strong, independent TBIs are essential infrastructure for retaining local talent, creating high-value jobs, and fostering more inclusive economic growth throughout the country.

Ultimately, this theory benefits startups by setting a higher standard for the quality and stability of incubation support they can expect to receive. For academia, it contributes a valuable, context-specific framework for understanding innovation in a developing economy, filling a key research gap and providing a solid foundation for future studies. By focusing on building resilient institutions, the theory paves the way for a more dynamic and impactful startup ecosystem that can better support the next generation of Filipino innovators.

Risks and Implications of the Findings

The emergent theory of "*The Adaptive Resilience of Philippine TBIs*" and its underlying themes carry significant implications for the key stakeholders within the Philippine startup ecosystem. The findings suggest a period of necessary evolution, which, while promising, also presents a series of risks and challenges that must be

navigated. The following sections discuss the potential risks and implications for TBI management, national policy, and the academic community.

For TBI Management and Practice

As established in the findings, a key trend is the operational shift of Philippine TBIs towards more financially resilient, business-like strategies, including revenue generation and equity stakes. While this addresses the critical challenge of financial viability, it also introduces significant risks. These include the potential for mission drift, where commercially "safe" startups are prioritized over more innovative ones; increased exclusivity that may sideline founders from disadvantaged backgrounds; a managerial skill gap among staff from traditional academic settings; and the potential for founder exploitation in equity arrangements without clear, fair guidelines. Therefore, the central implication is that the pursuit of financial resilience must be accompanied by the development of a robust ethical and operational governance framework. This implies a pressing need for new standards and specialized entrepreneurial training for TBI managers to ensure that as they become more like businesses, they do not lose sight of their core developmental mission.

For Policy and Governance

The findings indicate that the current TBI ecosystem is heavily shaped by government grant policies and performance metrics, which are often short-term in focus. The evolution towards more diverse and independent TBI frameworks presents several risks for policymakers. These include navigating bureaucratic and regulatory hurdles to allow for more flexible financial models (e.g., state universities taking

equity); facing accountability challenges in moving away from simple "vanity metrics" to more complex, long-term impact measures; and the risk of harming new TBIs if a rapid policy shift away from initial grants leaves them without a pathway to self-sufficiency. The overarching implication is that a more nuanced, flexible, and long-term national policy framework is required. This implies that government strategy should evolve from a primary focus on TBI initiation via grants to a more sophisticated focus on ecosystem maturation, with policies that support TBIs at different stages of their development.

For the Academic Community and R&D Management

This study contributes the theory of "*The Adaptive Resilience of Philippine TBIs*" as a new framework for understanding the nature of TBIs in the country. However, the application of this new theory has its own inherent risks. These include the risk of overgeneralization, where a qualitative theory could be applied too broadly without the necessary quantitative validation; the "knowing-doing" gap, where the framework is understood academically but not implemented practically by TBI managers; and the study's own limitation of scope, as the theory was developed without the direct input of government agency representatives. The key implication for the academic community is that this research should be viewed as the beginning of a new line of inquiry, not a final conclusion. It implies that the grounded theory of "*The Adaptive Resilience of Philippine TBIs*" is a dynamic framework that requires further testing, validation, and engagement with practitioners and policymakers to realize its full potential as a tool for improving the national innovation ecosystem.

Table 5

List of potential risks based on the implications of the study

Findings	Potential Risks	Implications
Operational shift of Philippine TBIs towards more financially resilient, business-like strategies, including revenue generation and equity stakes.	**Mission Drift:** A strong focus on revenue generation could lead TBIs to prioritize commercially "safe" startups over those that are highly innovative or have a social impact focus. **Increased Exclusivity:** As TBIs become more selective, they may inadvertently exclude founders from disadvantaged backgrounds who may need the most support. **Managerial Skill Gap:** Shifting to a business requires skills that may be lacking in traditional academic settings. **Potential for Founder Exploitation:** In an equity-based setup, there is a risk of undervaluing startups and taking disproportionate ownership from inexperienced founders.	**TBI Management and Practice:** Implies a need to develop robust ethical and operational governance framework directed towards of financial resilience of the TBIs themselves Could lead to define new standards and specialized business acumen trainings for TBI managers and administrators

The findings indicate that the current TBI ecosystem is heavily shaped by government grant policies and performance metrics, which are often short-term in focus.	**Bureaucratic and Regulatory Hurdles:** Shifting established government funding mechanisms is a slow process. Allowing state universities to take equity could also create complex legal challenges with auditing bodies. **Accountability Challenges:** Moving away from simple "vanity metrics" to more nuanced, long-term impact metrics makes performance monitoring more complex for government agencies. **Risk of Harming New TBIs:** A rapid policy shift away from initial grants could disadvantage newer TBIs that are not yet ready for self-sufficiency.	**Policy and Governance:** To consider a more nuanced, flexible, and long-term national policy framework for TBIs Government strategy should evolve from a primary focus on TBI initiation via grants to a more sophisticated focus on ecosystem maturation, with policies that support TBIs at different stages of their development.

This study contributes the grounded theory of "*The Adaptive Resilience of Philippine TBIs"* as a new framework for understanding the nature of TBIs in the country.	**Risk of Overgeneralization:** As a qualitative theory, there is a risk that its findings could be applied too broadly without further quantitative validation. **The "Knowing-Doing" Gap:** There may be a gap between the academic acceptance of the framework and its actual implementation by TBI managers on the ground. **Limitation of Scope:** The theory was developed without the direct input of government agencies representatives, which is an acknowledged limitation from the time the data gathering phase of the study.	**Academic Community & R&D Management:** The research should be viewed as the start of a new line of inquiry, not a conclusion. The grounded theory of *"The Adaptive Resilience of Philippine TBIs"* is a dynamic framework that requires further testing, validation, and engagement with practitioners and policymakers to realize its full potential as a tool for improving the national innovation ecosystem.

Limitations of the Study

To ensure academic transparency, it is necessary to acknowledge the limitations of this research which were realized towards the end of the research process versus how it was described during the planning stage. While the study achieved its objectives, the following constraints are recognized:

A key limitation was the inability to include the perspectives of government agency representatives. Despite multiple attempts to establish contact, no officials consented to participate in interviews. The inclusion of their viewpoints could have provided a valuable regulatory and policy-making layer to the data, offering insights into the rationale behind current funding structures and performance metrics.

As with most qualitative research, and particularly studies employing a grounded theory approach, the findings are not intended to be statistically generalizable. The insights are deeply contextualized within the experiences of the 15 participants. While theoretical saturation was achieved for this cohort, the grounded theory represents an abstraction of their realities and not a universal law applicable to all TBIs without adaptation.

Finally, in adherence with the Constructivist Grounded Theory approach, it is acknowledged that the researcher is an active instrument in the research process. The emergent theory is a co-construction of meaning shaped by the interplay between the participants' narratives and the researcher's interpretations and analytical decisions.

Recommendations

Based on the conclusions drawn from this study and the emergent grounded theory on "*The Adaptive Resilience of Philippine TBIs"*, the following recommendations are proposed. These recommendations are directed at TBI managers, national policymakers, and the academic community.

Recommendations for TBI Managers and Practitioners

To operationalize the principles of the grounded theory of "*The Adaptive Resilience of Philippine TBIs*", managers, administrators and involved stakeholders are encouraged to implement the following strategies:

- *Develop Diversified and Resilient Revenue Streams.* Actively pursue and create funding mechanisms that extend beyond initial government grants. This includes developing paid service contracts for specialized training, establishing formal equity or revenue-sharing agreements with incubated startups, and creating independent trust funds from collected incubation fees to ensure long-term operational continuity.
- *Strengthen Practical, Founder-Centric Support.* Move beyond theoretical lectures to provide hands-on, tangible support that addresses the real-world challenges of startups. Prioritize the development of in-house or retainer-based legal and bookkeeping services to assist founders with complex processes like SEC registration and tax compliance.
- *Prioritize Building Strong Regional Consortiums*. Actively initiate and participate in regional TBI networks to share resources, exchange expertise, and formalize co-incubation agreements. This collaborative approach maximizes impact and creates a more resilient support system that benefits the entire ecosystem.

- *Formalize Post-Incubation Support and Alumni Tracking*. Implement structured processes to monitor and assist startups even after they have formally graduated from the incubation program. Establishing a reliable alumni tracking system will not only provide continuous support but also enable the measurement of long-term impact and success.

Recommendations for Policymakers

To foster a more enabling environment for TBIs and startups, government agencies should consider the following policy adjustments:

- *Design Funding for Long-Term Resilience.* Structure government grants and support programs to include clear pathways and incentives for institutionalization. Funding mechanisms should encourage, and not penalize, the development of self-sustaining financial mechanisms that allow TBIs to thrive beyond the initial grant period.
- *Develop Nuanced Key Performance Indicators (KPIs).* Collaborate with TBI managers and startup founders to co-develop more meaningful KPIs. These metrics should move beyond "vanity metrics" like the number of incubatees and instead measure startup resilience, revenue generation, long-term job creation, and the TBI's contribution to its regional ecosystem's health.
- *Incentivize and Fund Regional Collaboration*. Earmark specific funding and create policy incentives to support the formation and operation of regional TBI consortiums. Recognizing these "meta-TBI" structures as critical ecosystem infrastructure will foster greater resource sharing, reduce redundancy, and elevate the capacity of the national innovation network.

Recommendations for Future Research

To build upon the findings of this study and further enrich the understanding of the Philippine TBIs and the overall startup ecosystem, the following avenues for future research are recommended:

- *Quantitative and Longitudinal Studies*. Conduct a quantitative study to measure the impact of different TBI strategies or operating frameworks on startup survival rates and revenue growth. Furthermore, a longitudinal study tracking the long-term economic impact of TBI graduates within a specific region would provide valuable data on their contribution to local development.
- *Comparative Case Studies*. Given the identified limitations of a 'one-size-fits-all' approach, a future comparative case study between university-based and private TBIs, similar in structure to the analyses conducted by Tang, et. al. (2019), could provide deeper insights into the efficacy of different TBI operating frameworks.
- *In-depth Study on Government Perspectives.* Future research should endeavor to include the perspectives of policymakers and government agency representatives to gain a comprehensive understanding of the regulatory landscape, the rationale behind current policies, and opportunities for synergistic collaboration.
- *Tracer Study on Startup Success*. A dedicated tracer study employing a longitudinal approach could follow the trajectory of startups that have gone through different TBI operating frameworks. This would help identify the specific interventions and support mechanisms that correlate most strongly with long-term success and resilience.

Concluding Statement

Ultimately, this research has moved beyond an understanding of the nature of TBIs in the country to propose the grounded theory of "*The Adaptive Resilience of Philippine TBIs"* as the central framework for success in the local context. It revealed TBI managers and startup founders share the same sentiment-- the most effective TBIs are not defined by a single, rigid structure, but by their ability to adapt and endure resilient operations while keeping a dual-focused approach through fostering the internal growth of the startups and active involvement in their external regional ecosystem. The findings of this study argues that the nature of TBIs in the country must be adaptively resilient to be able to maintain its operations and keep its purpose of nurturing startups while developing the regional ecosystem which it belongs to.

The significance of this study extends beyond academic theory; it offers a strategic roadmap for nurturing a more resilient and dynamic national innovation environment. Considering that the current landscape of the Philippine technology ecosystem has resource limitations and regional contexts are diverse, the principles of tailored support, resilient operations, and collaboration are not just best practices, but essential factors for long-term success.

As the Philippines continues to carve out its place in the global innovation landscape, the path forward for its TBIs to master this art of adaptive, ecosystem-focused incubation. By doing so, they can unlock the immense potential of Filipino startups and truly become the cornerstones of the nation's innovative future.

REFERENCES

Apa, R., Grandinetti, R., & Sedita, S. (2017). The social and business dimensions of a networked business incubator: the case of h-farm. Journal of Small Business and Enterprise Development, 24(2), 198-221. https://doi.org/10.1108/jsbed-07-2016-0103.

Barney, J., Ketchen, D., & Wright, M. (2011). The future of resource-based theory. Journal of Management, 37(5), 1299-1315. https://doi.org/10.1177/0149206310391805.

Baskarada, S. (2014). Qualitative Case Study Guidelines. The Qualitative Report, 1-25. Retrieved from https://ssrn.com/abstract=2559424.

Charmaz, K (2006). Constructing Grounded Theory: A practical guide through Qualitative Analysis, Thousand Oaks. CA: Sage retrieved from: http://www.sxf.uevora.pt/wp-content/uploads/2013/03/Charmaz_2006.pdf.

Charmaz, K. (2014). Constructing grounded theory, 2nd Edition, Thousand Oaks, CA: Sage.

Charmaz, K. (2016). The power of constructivist grounded theory for critical inquiry. Qualitative Inquiry, 23(1), 34-45. https://doi.org/10.1177/1077800416657105.

Chen, J., Huang, S., & Xu, Q. (2015). Firm innovation systems: perspectives of researches on state-owned key enterprises. Frontiers of Engineering Management, 2(1), 64. https://doi.org/10.15302/j-fem-2015017.

Cheng, Y., Liu, Y., & Cross, A. (2022). Legitimacy-building role of incubators: a multiple case study of activities and impacts of business incubators in a developing

Chinese city. Chinese Management Studies, 17(4), 829-850. https://doi.org/10.1108/cms-07-2020-0288.

Cirule, I. and Uvarova, I. (2022). Open innovation and determinants of technology-driven sustainable value creation in incubated startups. Journal of Open Innovation Technology Market and Complexity, 8(3), 162. https://doi.org/10.3390/joitmc8030162.

Cornell University. (2024, May 24). https://teaching.cornell.edu/. Retrieved from Bloom's Taxonomy: https://teaching.cornell.edu/resource/blooms-taxonomy.

Creswell, J., & Poth, C. (2017). *Qualitative Inquiry & Research Design.* Sage.

Cuyno, R. and Garcia, P. (2003) Problem Solving and Decision Making in R&D Management, University of the Philippines Open University, Module 5, Decision Analysis, 29-39.

Department of Information and Communications Technology. (2023, June 14). Republic Act No. 11293. Retrieved from Republic Act No. 11293: https://dict.gov.ph/ra-11293/.

Department of Science and Technology. (2021, December 17). Implementing Rules and Regulations of Republic Act No. 11337, otherwise known as the "Innovative Startup Act". Retrieved from Implementing Rules and Regulations of Republic Act No. 11337, otherwise known as the "Innovative Startup Act": https://www.dost.gov.ph/knowledge-resources/2014-04-27-01-59-53/implementing-rules-and-regulations/file/1525-implementing-rules-and-regulations-of-republic-act-no-11337-otherwise-known-as-the-innovative-startup-act.html.

Djordjevic, A. and Mihic, M. (2021). Strategic importance and sustainable governance of high-tech business incubators: evidence from Serbia., 199-221. https://doi.org/10.1007/978-3-030-86009-7_11.

Dong, H., Murong, R., & Li, J. (2023). Research on network capacity, absorptive capacity and service innovation performance of technology business incubators—based on pls-sem and fsqca methods. Frontiers in Environmental Science, 11. https://doi.org/10.3389/fenvs.2023.1154162.

DOST-PCIEERD. (2017, November 27). HIGHER EDUCATION INSTITUTION READINESS FOR INNOVATION & TECHNOPRENEURSHIP (HEIRIT). Retrieved from https://pcieerd.dost.gov.ph/: https://pcieerd.dost.gov.ph/news/latest-news/296-higher-education-institution-readiness-for-innovation-technopreneurship-heirit.

DOST-PCIEERD. (2025). Regional Startup Enablers for Ecosystem Development Program (RESEED) Retrieved from https://reseed-portal.com/index.php.

DOST-PCIEERD. (2024, April 5). DOST-PCIEERD TO FUND 207 PROJECTS FOR 2024. Retrieved from https://pcieerd.dost.gov.ph/news/latest-news/553-dost-pcieerd-to-fund-207-projects-for-2024.

DOST. (2014, March 17). Technology Business Incubator Program. Retrieved from https://pcieerd.dost.gov.ph/: https://pcieerd.dost.gov.ph/2-uncategorised/59-technology-business-incubation-program#tbi-program.

DOST. (2021, November 19). National Academy of Science and Technology. Retrieved from https://nast.dost.gov.ph/: https://nast.dost.gov.ph/index.php/pagtanaw-2050.

El-Kebbi, A. (2021). Role of mentors in developing the social competencies (sc) of their protégée-entrepreneurs (pe) in high-tech incubators (hti).. https://doi.org/10.32920/14664414.

Eldering, C., Ende, J., & Hulsink, W. (2023). Why entrepreneur sourcing matters: the effects of entrepreneur sourcing on alternative types of business incubation performance. R and D Management, 53(3), 481-502. https://doi.org/10.1111/radm.12588.

Elkington, J. (1994) Towards the Sustainable Corporation: Win-Win-Win Business Strategies for Sustainable Development. California Management Review, 36, 90-100. http://dx.doi.org/10.2307/41165746.

España, H. P., & Rosario, L. M. (2024, July 10-12). Meta-analysis of Sustainable Models for Philippine Technology Business Incubators. 2nd International Forum on Sustainability Science (IFSS 2024), "Towards Climate Resilience: Bridging Science, Policy, and Practice", Caraga State University, Butuan City, Philippines. https://ifss.upou.edu.ph/course/view.php?id=43.

Farragher, R., & Coogan, D. (2018). Constructivist grounded theory: Recognizing and raising the voice of young people with experience of care systems. Child Care in Practice, 1-12. https://doi.org/10.1080/13575279.2018.1521377.

Freire, C., Neto, M., Moralles, H., & Antunes, L. (2022). Technology-based business incubators: the impacts on resources of startups in Brazil. International Journal of Emerging Markets, 18(12), 5778-5797. https://doi.org/10.1108/ijoem-08-2020-0900.

Games, D., Sari, D. K., Darlis, V., Hidayat, D., & Albatati, B. (2024). Examining incubated and nonincubated startups from fear of failure and entrepreneurial well-being during crises. Innovation &Amp; Management Review. https://doi.org/10.1108/inmr-02-2023-0029.

Gibbs, G. R (2013). A discussion with Kathy Charmaz on Grounded Theory, BPS Qualitative Methods in Psychology Section Conference, University of Huddersfield, UK, September 4-6, 2013, https://www.youtube.com/watch?v=D5AHmHQS6WQ.

Glaser, B. G., Strauss, A.L. (1967). The Discovery of Grounded Theory. Strategies for Qualitative Research. Aldine Transaction, A division of Transaction Publishers, New Brunswick (U.S.A) and London (U.K.).

Gozali, L., Masrom, M., Zagloel, T.Y.M., Haron, H.N., Garza-Reyes, J.A., Tjahjono, B., Irawan, A.P., Daywin, F.J., Syamas, A.F., Susanto, S., Aliwarga, H.K.K., Marie, I.A., (2020). Performance Factors for Successful Business Incubators in Indonesian Public Universities. International Journal of Technology. Volume 11(1), pp. 155-166 https://doi.org/10.14716/ijtech.v11i1.2464.

Halim, F., Gunawan, & Agustina. (2020). Digital-Based Incubator Framework Modelling for University. International Journal of E-Entrepreneurship and Innovation (IJEEI), 10(1), 14-27. http://doi.org/10.4018/ijeei.2020010102.

Harima, A., Freudenberg, J., & Halberstadt, J. (2019). Functional domains of business incubators for refugee entrepreneurs. Journal of Enterprising Communities People and Places in the Global Economy, 14(5), 687-711. https://doi.org/10.1108/jec-11-2018-0081.

Harris, J. L., & Menzel, M.-P. (2023). The Silicon Valley – Singapore connection: The role of institutional gateways in establishing knowledge pipelines. Geoforum, 144. https://doi.org/10.1016/j.geoforum.2023.103803.

Hassan, N. (2020). University business incubators as a tool for accelerating entrepreneurship: theoretical perspective. Review of Economics and Political Science. https://doi.org/10.1108/reps-10-2019-0142.

Hausberg, J. and Korreck, S. (2018). Business incubators and accelerators: a co-citation analysis-based, systematic literature review. The Journal of Technology Transfer, 45(1), 151-176. https://doi.org/10.1007/s10961-018-9651-y.

Huda, N. and Rejito, C. (2020). Modeling university business incubator for smes digitalisation. Indonesian Journal of Information Systems, 3(1), 23-37. https://doi.org/10.24002/ijis.v3i1.3500.

Hughes, M., Ireland, R., & Morgan, R. (2007). Stimulating dynamic value: social capital and business incubation as a pathway to competitive success. Long Range Planning, 40(2), 154-177. https://doi.org/10.1016/j.lrp.2007.03.008.

Idealab (2024). From Ideas to Successful Companies, https://www.idealab.com/, Retrieved from: https://www.idealab.com/.

Indiran, L., Nallaluthan, K., Baskaran, S., & Dalayga, B. (2021). Business Incubator: The Genesis, Evolution, and Innovation Invigoration. International Journal of Academic Research in Business and Social Sciences, 11(7), 342–354 http://dx.doi.org/10.6007/IJARBSS/v11-i7/9940.

Laskar, S. K. and Waheed, K. (2016). Substantive incubation for growth and its ict impact on msme's. International Journal of Business &Amp; Management, IV(4). https://doi.org/10.20472/bm.2016.4.4.003.

Liu, Z. and Walle, S. (2023). A comparative analysis of resource networks of intermediary support organizations for nonprofit development: evidence from incubators for nonprofit organizations. Nonprofit Management and Leadership, 34(2), 371-391. https://doi.org/10.1002/nml.21569.

Lopes, J., Oliveira, M., Lopes, J., & Zaman, U. (2021). Networks, innovation and knowledge transfer in tourism industry: an empirical study of smes in portugal. Social Sciences, 10(5), 159. https://doi.org/10.3390/socsci10050159.

Lukosiute, K., Jensen, S., & Tanev, S. (2019). Is joining a business incubator or accelerator always a good thing? Technology Innovation Management Review, 7(10), 5-15. https://doi.org/10.22215/timreview/1251.

Maus, A. and Sammut, S. (2018). Business model innovation in incubators: the role played by dynamic capabilities theory. Academy of Management Proceedings, 2018(1), 12441. https://doi.org/10.5465/ambpp.2018.12441abstract.

Meister, A. and Mauer, R. (2019). Understanding refugee entrepreneurship incubation – an embeddedness perspective. International Journal of Entrepreneurial Behaviour & Research, 25(5), 1065-1092. https://doi.org/10.1108/ijebr-02-2018-0108.

Nair, S. and Blomquist, T. (2018). The temporal dimensions of business incubation: a value-creation perspective. The International Journal of Entrepreneurship and Innovation, 21(1), 38-46. https://doi.org/10.1177/1465750318817970.

National Innovation Council Secretariat. (2023, July 20). National Innovation Agenda and Strategy Document (NIASD) 2023-2032 . Retrieved from National Economic and Development Authority: https://neda.gov.ph/niasd-2023-2032/.

Penrose, E. (2009) The Theory of the Growth of the Firm. 4th Edition, Oxford University Press, Oxford. https://ideas.repec.org/b/oxp/obooks/9780199573844.html.

Petrucci, F. (2018). The incubation process of mid-stage startup companies: a business network perspective. Imp Journal, 12(3), 544-566. https://doi.org/10.1108/imp-07-2017-0043.

Pettersen, I., Aarstad, J., Høvig, Ø., & Tobiassen, A. (2015). Business incubation and the network resources of start-ups. Journal of Innovation and Entrepreneurship, 5(1). https://doi.org/10.1186/s13731-016-0038-8.

PricewaterhouseCoopers (PwC) Philippines (2020). Philippine Startups Survey 2020, Charging ahead: Philippine startups break boundaries. Retrieved from: https://www.pwc.com/ph/en/ceo-survey/2020/pwcph-start_up_survey_2020.pdf.

Rand, J. (2013). Action learning and constructivist grounded theory: Powerfully overlapping fields of practice. Action Learning: Research and Practice, 10(3), 230-243..

Rathore, R. and Agrawal, R. (2021). Performance indicators for technology business incubators in indian higher educational institutes. Management Research Review, 44(11), 1499-1520. https://doi.org/10.1108/mrr-12-2019-0515.

Reyes, J. C. (1995). Support System for Research. University of the Philippines, Open University.

Reyes, J. C. (2003). Technology Commercialization and Utilization. University of the Philippines, Open University. Module 6, 100-105. ISBN 971-767-170-2.

Ribeiro, P., Freire, K., Chudoba, K., & Renault, T. (2022). Business incubators in Brazil: realities and challenges. Revista Gestão Da Produção Operações E Sistemas, 17(4), 62. https://doi.org/10.15675/gepros.v17i4.2943.

Rodriguez-Labajos, L., Thomson, C., & O'Brien, G. (2021). Applying constructivist grounded theory in co-production research: a case study exploring its potential and lessons for construction management research. Construction Management and Economics, 39(5), 369-382. https://doi.org/10.1080/01446193.2021.1894654.

Salem, M. I. (2014). The role of business incubators in the economic development of saudi arabia. International Business &Amp; Economics Research Journal (IBER), 13(4), 853. https://doi.org/10.19030/iber.v13i4.8694.

Scaramuzzi, E. (2002). Incubators in Developing Countries: Status and Development Perspectives. Washington, DC: The World Bank. https://documents1.worldbank.org/curated/en/186751468770425799/pdf/266370WP0Scode090incubators0Infodev.pdf.

Sebastian, K. (2019) Distinguishing Between the Types of Grounded Theory: Classical, Interpretive and Constructivist. Journal for Social Thought 3(1) July 2019 https://ojs.lib.uwo.ca/index.php/jst/article/view/4116.

Shepard, J. M. (2013). Small business incubators in the usa: a historical review and preliminary research findings. Journal of Knowledge-Based Innovation in China, 5(3), 213-233. https://doi.org/10.1108/jkic-07-2013-0013.

Somsuk, N., Wonglimpiyarat, J., & Laosirihongthong, T. (2012). Technology business incubators and industrial development: resource-based view. Industrial Management & Data Systems, 112(2), 245-267. https://doi.org/10.1108/02635571211204281.

Startup Western Visayas. (2024). Accelerating Innovation, Fostering Growth Retrieved from: https://www.startupwesternvisayas.com.ph/tbis.

Startup Genome. (2025). Manila, Philippines Emerging Startup Ecosystem. Retrieved from https://startupgenome.com/ecosystems/manila.

Subrahmanya, M. B., Satyanarayana, K., & Chandrashekar, D. (2019). Technology business incubation for start-up generation. International Journal of Entrepreneurial Behavior & Research, 25(7), 1471-1493. https://doi.org/10.1108/ijebr-02-2019-0087.

Sutama, I., Pasek, I., & Mudana, I. (2018). Business incubators support college performance. Soshum Jurnal Sosial Dan Humaniora, 8(1), 33. https://doi.org/10.31940/soshum.v8i1.623.

Tang, M. F., Lee, J., Liu, K., & Lu, Y. (2014). Assessing government-supported technology-based business incubators: Evidence from China. International Journal of Technology Management, 65(1-4), 24-48. https://doi.org/10.1504/IJTM.2014.060956.

Tang, M., Li, C., Baskaran, A., Cheng, Y., & Chandran, V. (2019). Reshaping the business incubator model: the case of the value chain model of innovation works in china. Science Technology and Society, 24(3), 401-422. https://doi.org/10.1177/0971721819873179.

Tang, M., Walsh, G., Li, C., & Baskaran, A. (2019). Exploring technology business incubators and their business incubation models: case studies from China. The Journal of Technology Transfer, 46(1), 90-116. https://doi.org/10.1007/s10961-019-09759-4.

Teves, G., Muralla-Palustre, H., Saulo, C. M., Pajutan, J., III, M. J., & Vandenberg, P. (2023). The Philippines' Ecosystem for Technology Startups. Mandaluyong City, Philippines: Asian Development Bank. doi: https://dx.doi.org/10.22617/TCS230116-2.

Tie, Y., Birks, M., Francis, K. (2019) Grounded theory research: A design framework for novice researchers. SAGE open medicine, 7, 2050312118822927. https://doi.org/10.1177/2050312118822927.

Vaz, R., Carvalho, J., & Teixeira, S. (2022). Towards a unified virtual business incubator model: a systematic literature review and bibliometric analysis. Sustainability, 14(20), 13205. https://doi.org/10.3390/su142013205.

Wan, W., Hoskisson, R., Short, J., & Yiu, D. (2010). Resource-based theory and corporate diversification. Journal of Management, 37(5), 1335-1368. https://doi.org/10.1177/0149206310391804.

Weele, M., Rijnsoever, F., & Nauta, F. (2017). You can't always get what you want: how entrepreneur's perceived resource needs affect the incubator's

assertiveness. Technovation, 59, 18-33. https://doi.org/10.1016/j.technovation.2016.08.004.

World Intellectual Property Organization. (2024). Global Innovation Index. Retrieved from Global Innovation Index: https://www.wipo.int/global_innovation_index/en/.

Ybañez, Adrian P.; Mendoza, Siegfried D.; Caintic, Cristina; and Sabayton, Mae S. (2021) "Perception and Challenges of Select Higher Educational Institutions on its Role in the Technology Business Incubation in the Visayas, Philippines," The South East Asian Journal of Management: Vol. 15: No. 2, Article 1. DOI: https://doi.org/10.21002/seam.v15i2.13111.

Appendices

APPENDIX A

Research Ethics Committee Approval

UP OPEN UNIVERSITY
Faculty of Management and Development Studies
Research Ethics Committee

14 March 2025

HEHERSON PARIS B. ESPAÑA
Graduate Student, Master of Research and Development Management
Faculty of Management and Development Studies
University of the Philippines Open University

RE: Perspectives on Next Generation Technology Business Incubator (TBI) Models for Philippine Startups

FMDS REC No. 2025-001-GS-FMDS

Subject: First and Final Decision Letter

Dear ***Mr. España:***

This is to acknowledge receipt of your request and the following supporting documents dated 03 February 2025.

1. 2025-Espana_ApprovalSheet.pdf
2. 2025-Espana_DiagrammaticWorkflow.pptx
3. 2025-Espana_EndorsementForm.pdf
4. 2025-Espana_FREC Form 1(B) CV.pdf
5. 2025-Espana_FREC Form 4(E2) NonHealthRelatedAssessmentForm.pdf
6. 2025-Espana_FREC Form 6(A) ApplicationForm.pdf
7. 2025-Espana_FREC Form 6(D) StudyProtocolAssessmentForm.pdf
8. 2025-Espana_FREC Form 6(F) InformedConsentFormChecklist.pdf
9. 2025-Espana_FullProtocol.docx
10. 2025-Espana_InformedConsentForm.docx
11. 2025-Espana_LetterRequest.docx
12. 2025-Espana_Questionnaire.docx

The above documents underwent full/expedited review which generated the following feedback:
APPROVED

[1]While the study is in progress, we request you to submit to us the following documents:

1. Progress report using the attached UPOU IREC Form 3(B): Continuing Review Application Form every Quarter of the year (every 14th of May 2025, September 2025, January 2026) of the start of the Ethics Approval which includes the following: (*NOTE: In view of active ethical clearance, this report is mandatory even if the study has not started or is still awaiting release of funds.*)

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[1]

****Note that the research title has changed from the proposal to the final output as discussed during the thesis defense session.*

APPENDIX B

Informed Consent Form

University of the Philippines Open University
Faculty of Management and Development Studies (FMDS) Research Ethics Committee

Informed Consent Form for Technology Business Incubator Stakeholders

Principal Investigator: **Heherson Paris B. España**
Organization: **University of the Philippines Open University**
Sponsor: N/A
Project Name: **Perspectives on Next Generation Technology Business Incubator (TBI) Models for Philippine Startups**
Project Version: 1.0

Part I: Information Sheet

1. You are invited to participate in a research study about the operations and future perspectives of Technology Business Incubator (TBIs) models in the Philippines. Your participation is entirely voluntary, and you may ask questions at any time during the process. Please take your time to decide whether you wish to participate in this study.

2. This study aims to explore various stakeholders' perspectives on the operational and structural models of TBIs in the Philippines. We are interested in understanding how these models support startups and how they can be improved for future needs.

3. As a participant, you will be asked to engage in an interview discussing your experiences and insights related to Technology Business Incubators. You have been selected to participate in this study because of your involvement with or knowledge of Technology Business Incubators within the Philippines.

4. There are no physical treatments or medications involved in this study. As this research involves interviews, there is no random assignment. It is an exploratory study utilizing interviews to gather qualitative data.

5. Your participation will involve a single interview session lasting approximately 30-60 minutes. Approximately 10-20 individuals from various locations across the Philippines are expected to participate in this study. The research is estimated to be completed within 6 months to one year.
   5.1. Location: Interviews will be conducted at a location convenient for you or via an online platform.

5.2. Process: Each interview will last approximately 30-60 minutes. You may choose not to answer any questions you do not feel comfortable with.
5.3. Recording: The interviews will be audio-recorded to ensure accuracy in data collection.

6. There are no direct benefits to you for participating in this study. Your participation may contribute to improved understanding and practices within TBIs in the Philippines.

7. The findings may provide insights that contribute to the enhancement of TBI practices, potentially benefiting the startup ecosystem in the Philippines and contributing to scientific knowledge in business development and innovation management.

8. As this study involves minimal risk and no physical treatments, no compensation or insurance is provided for study-related injuries. No financial compensation is provided for participating in this study.

9. There are no anticipated expenses that you will incur by participating in this study.

10. Your participation in this study is completely voluntary. You can choose to withdraw at any time without any penalty or loss. Whether you decide to participate or not will not affect your current or future relations with the researcher and the University of the Philippines Open University.

11. All information collected during this study will be kept confidential to the extent permitted by law. Identifiable information will not be disclosed in any publications or presentations. Only the researcher will have access to the interview recordings, which will be coded with numbers instead of names to maintain privacy.

12. Artificial Intelligence (AI) tools and applications may be used to record and accurately transcribe the data collected during interviews. This is to ensure the integrity and accuracy of the information provided. All data handled by AI will be subject to the same confidentiality and privacy protections as outlined in this consent form.

13. Data will be stored securely in electronic format and accessible only to the researcher. All electronic data will be stored securely and will be destroyed based on FMDS REC's data retention guidelines.

14. Should any information become available that may influence your decision to continue participating in this study, you will be informed in a timely manner.

15. The results of this study will be used for scholarly purposes and may be published in academic journals or presented at conferences. However, no information that could personally identify you will be used.

16. You will have access to the results of the study once it is completed. The summary of the findings will be made available upon request. You may not have the right to access detailed research records or notes beyond the summary of findings as provided.

17. Your participation may be terminated by the researcher if completing the interview becomes impractical or if you wish to withdraw.

18. All expenses incurred in this study are shouldered by the researcher. There are no external sources of funding.

19. For more information about the study or in the event of a study-related injury, please contact Mr. Heherson Paris B. España at +639178150003 (mobile) or hbespana@up.edu.ph (email).

20. This study has been reviewed and approved by the UPOU Faculty of Management and Development Studies Research Ethics Committee. For questions about your rights as a participant or to report concerns or complaints, you can contact the UP Open University Faculty of Management and Development Studies Research Ethics Committee (FMDS REC) UP Open University, Los Baños, Laguna, Philippines, 403, Monday – Friday: 8:00 AM – 5:00 PM PHT. Email address: fmds-ethics@upou.edu.ph.

Part II: Certificate of Consent

"I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have been asked have been answered to my satisfaction. I consent voluntarily to be a participant in this study."

Print Name of Participant: _____
Signature of Participant: _____
Date: _____

If Illiterate:
A literate witness must sign (if possible, this person should be selected by the participant and should have no connection to the research team). Participants who are illiterate should include their thumb print as well.

Print Name of Witness: _____
Signature of Witness: _____
Date: _____ Thumb Print of Participant: ☐

Statement by the Researcher:

"I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant understands that the following will be done:

1. *An interview will be conducted.*
2. *The interview will be recorded and kept confidential.*
3. *The participant can withdraw at any time.*

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily."

A copy of this Informed Consent Form has been provided to the participant.

Print Name of Researcher: **Heherson Paris B. España**
Signature of Researcher:
Date:

APPENDIX C

Semi-structured Interview Questionnaire

1. Participants: **Technology Business Incubator (TBI) Managers and Administrators**
   1.1. Duration: 45 minutes up to 1 hour
   1.2. Getting to know the TBIs:
      1.2.1. What is the name of the TBI?
      1.2.2. Where is the TBI based?
      1.2.3. When was the TBI established and how long has it been operating?
      1.2.4. Briefly describe the mission, vision, and industry focus of the TBI.
   1.3. Interview Questions:
      1.3.1. Kindly describe the TBI operating model e.g. frameworks, incubation process, etc.
      1.3.2. How do startups join the incubation program?
      1.3.3. In your perspective, what are the TBI's strengths?
      1.3.4. Inversely, what are the TBIs challenges or needs?
      1.3.5. What do you consider the most critical services or support that the TBI offers to startups?
      1.3.6. Briefly describe the TBI's key performance indicators or success factors.
      1.3.7. How do you define the success of the startups the TBI incubates?
      1.3.8. If you are given the opportunity to change, expand or explore different operational models, can you describe how the ideal model would be like?
      1.3.9. How do you think can the TBI evolve or grow as an organization?

2. Participants: **Startup Founders and Executives**
   2.1. Duration: 30 to 45 minutes
   2.2. Getting to know the Startups:
      2.2.1. What is the name of the startup?
      2.2.2. Where is the startup based?
      2.2.3. When was the startup established and how long has it been operating?
      2.2.4. Briefly describe the mission, vision, and industry focus of the startup.

2.3. Interview Questions:

2.3.1. What specific benefits has the startup gained from being part of a TBI program?

2.3.2. In your opinion, what is the most important support the startup has received from the TBI program it enrolled in? Why?

2.3.3. How would you describe the impact of the TBI on the startup's development and growth?

2.3.4. What challenges or limitations have the startup encountered while being part of the TBI?

2.3.5. In your perspective, in what ways could the TBI improve its services or support to better meet the startup's needs?

2.3.6. Can you share an experience where the TBI significantly influenced a major decision or direction for the startup?

2.3.7. If there's an opportunity to enroll again in an incubation program, which TBI model or setup would you think would best benefit the startup? Why?

2.3.8. What types of additional resources or programs do you wish were available through the TBI?

2.3.9. If you had the opportunity to design an ideal support program at a TBI, what features would it include?

3. Participants: **Government Agency Representatives**

3.1. Duration: 20 to 30 minutes

3.2. Getting to know the Agency:

3.2.1. What is the name of the agency or office you represent?

3.2.2. Where is the agency located?

3.2.3. What is the agency's mandate in terms of supporting TBIs?

3.3. Interview Questions:

3.3.1. Can you describe the current role of the government in supporting Technology Business Incubators in the Philippines?

3.3.2. How do you perceive the effectiveness of existing TBIs in promoting innovation and entrepreneurship within the technology sector?

3.3.3. From your perspective, what are the major challenges that TBIs face today?

3.3.4. How does the government plan to address these challenges?

3.3.5. What do you believe are the essential components of an effective TBI model?

3.3.6. Can you discuss any successful case studies or examples of TBIs that the government considers as benchmarks?

3.3.7. What makes these models exemplary?

3.3.8. What are the government's priorities for the future development of TBIs?

3.3.9. In your opinion, how can TBIs better align with the national economic development goals, particularly in the technology sector?

APPENDIX D

Open Coding Results

The following appendix presents the complete list of 196 open codes generated during the initial phase of the Constructivist Grounded Theory analysis. Each code was derived from a line-by-line examination of the 15 interview transcripts and represents a foundational concept, action, or meaning that emerged directly from the participants' narratives.

Notably, this list includes numerous in vivo codes, which are direct quotations from participants. This technique was intentionally used to remain grounded in the data and to preserve the original language and perspectives of the founders and TBI managers. These open codes served as the primary building blocks for the subsequent stages of focused and theoretical coding, ultimately leading to the emergent themes discussed in Chapter IV.

(A)

academe

acceleration incubation phase

access to funding

access to networks

afford to fail

are we profitable?

(B)

bookkeeping or accounting

bootcamp

brand of the university

build a founding team

bureaucracy

business permit

business plan

business registration

(C)

cannot do for-profit activity

case-to-case basis

championed by university leadership

co-incubation

co-working space

collaboration and partnership

commercialization of technologies

committed enough

complimentary skillset

connect them to LGUs

connect them with the industry

connect them with the investors

consortium

continuity of programs

contract of service

contracts

contractual staff

(D)

demo day

designated faculty

DOST funded TBI

drained our savings

(E)

earn while providing free service

entrepreneurial background

equity free

evaluate their performance

every startup is unique

(F)

FabLab (Fabrication Laboratory)

fairness opinion report

financial planning

finding the right people

five major programs

focusing on the why

founder centric

founder commitment

founder's character

free mentors

full time

(G)

generate our own funding

getting paid in equity

graduation

grant writing

(H)

hackathons

hands-on support

helping them find grants

high turnover rate

host institution

hybrid model

(I)

idea stage

income generated

incubation proper

independent TBI

industry experts

industry involvement

institutionalized

international partnerships

investment received

investors pitch

IP protection

it's about the team

(J)

JO lang (Job Order contract)

jobs generated

just for compliance

just to hit their output

(K)

key performance indicators (KPIs)

kulang kami sa team (we lack team members)

(L)

lack of risk capital

legal assistance

legal retainership

legit mentors

leverage the resources of the school

LGU support

licensing the technology

linkages

lobbying for local policies

longevity of the Startup

look at the personality of the founder

low turnover rate

(M)

manpower

married to your co-founders

mentors are not available

mentorship

metrics

modularization of the program

monitoring graduates

MVP (Minimum Viable Product)

(N)

networking

networks with other TBIs

no appropriation from General Appropriation Act

no fixed budget

no growth for staff

not by batch

not competing

not everyone has the privilege to take risk

not fully invested in success

not sustainable that way

not the idea

not their major function

(O)

one-on-one mentoring

online platforms

operate like a startup

operational fund

own money

(P)

part time job

patent

patents filed

payment enrollment fees of the startups

people you can trust

personalized approach

phased approach

plantilla position (permanent government position)

politics

pool of experts

post-graduation support

pre-incubation

prioritize people in their late s

private TBI

private university

procurement process

proposal writing

prototyping

public funding

(Q)

quadruple helix

(R)

rebranding

red tape

refocused our targets

regional ecosystem

regional innovation ecosystem

relationship with our policy makers

rely on external funders

rely on Grant

relying on a small team

renew every six months

retain the talents

revenue

rolling program / rolling admission

royalties that we receive

(S)

screen the founders

screening process must be tough

self-sustain

six months duration

skills can be taught attitude is hard

solo founders don't last

staff come and go

stakeholder management

startup grant fund

state universities

state universities

success factors

success stories of exits

supportive...board of directors

surface level mentorship

survivability

sustainability

sustainability plans

sustainable without money

(T)

tailor fit

take equity

tangible output

tap our alumni network

team commitment

team dynamic

team dynamic

tick boxes

trademark

trust fund

(U)

under sweldo (underpaid)

university president

university priorities

university support

university-based TBI

UP name really helped

(V)

vanity metric

venture capitalists

vetting mentors

vibrant ecosystem

vibrant startup ecosystem

virtual incubation

(W)

weak investor ecosystem

what happens after the grant

what happens if the project ends?

who will run their startups

word-of-mouth

--- end of list ---

APPENDIX E

Thematic Development Matrix

This appendix provides a sample illustration of the thematic development process. It traces the progression from granular open and in vivo codes (as enumerated in Appendix D) to categories, themes and finally to the formation of an emergent core theory as presented in the findings. This serves as a transparent audit trail of the analytical method employed in this grounded theory study.

SRQ1 Categories	SRQ1 Themes	MRQ Theory
• Tailored Mentorship • Financial Viability and Resilience • Emphasis on Regional and Local Context • Hybrid and Virtual Incubation Models • Collaboration and Consortium Building • Capacity Building and Talent Retention • Increased Access to Legal and Financial Support • Robust Tracking and Evaluation Mechanisms • Inclusivity in Startup Support • Promotion of Success Stories and Role Models	• TBIs as Vehicles on the Customized Startup Journey • TBIs as Pillars of Funding and Operational Longevity • TBIs Sharing a Common Vision for Regional Integration	Grounded Theory: "*The Adaptive Resilience of Philippine TBIs"* • Adaptively Resilient Organizations • Adaptively Resilient Processes • Adaptively Resilient Results
SRQ2 Categories	**SRQ2 Themes**	
• Structured Incubation Programs • Tailored Mentorship and Consultation • Detailed Screening and Selection Process • Strong Emphasis on Financial Viability • Active Collaboration and Consortium Building • Digitalization and Virtual Incubation • Inclusive and Diverse Startup Support • Strong Post-incubation Support and Monitoring	• TBIs Restructure the Startup Incubation Lifecycle • TBIs Revisit Internal Protocols for Flexibility and Adaptability • TBIs Collaborating for Networks, Partnership and Resource Sharing	

• Promotion of Regional Startup Success Stories	

SRQ3 Categories	SRQ3 Themes
• Growth in Successful Startups • Strengthened Regional Innovation Ecosystem • Improved Startup Survival Rates • Accelerated Technology Commercialization • Expansion of Funding Opportunities • Enhanced Startup Ecosystem Collaboration • Stronger Capacity and Talent Development • Improved Regional and Local Economic Development • Broadened Inclusivity and Diversity • Improved Visibility and Recognition	• Tangible and Resilient Businesses Resulting from TBI-supported Idea Transformation • Greater Operational Capacity and Adaptability Through TBI Interventions • Strong Regional Innovation and Economic Ecosystems Driven by TBIs

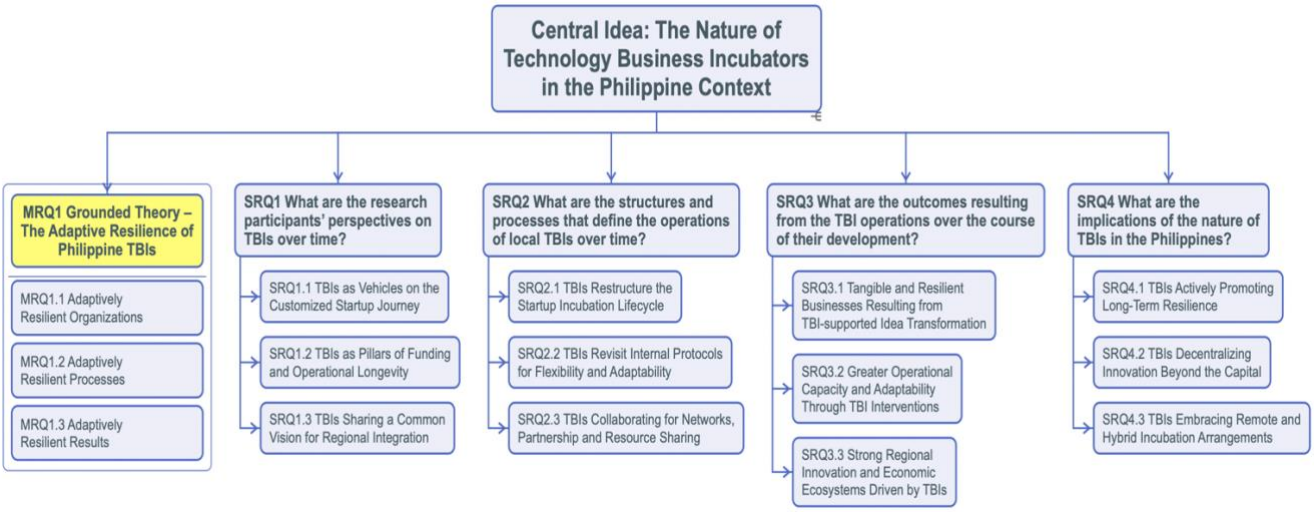
SRQ4 Categories	SRQ4 Themes
• Sole Reliance on Government Funding • Resourcefulness In Financing TBIs • Misaligned Metrics • Need for Policy Review • Policy and Bureaucracy Challenges • Discovering Regional Innovation • Ideation from the University • Virtual and Hybrid Setup • Networked Ecosystem • Promoting Local Pride	• TBIs Actively Promoting Long-Term Resilience • TBIs Decentralizing Innovation Beyond the Capital • TBIs Embracing Remote and Hybrid Incubation Arrangements

APPENDIX F

Mind Maps

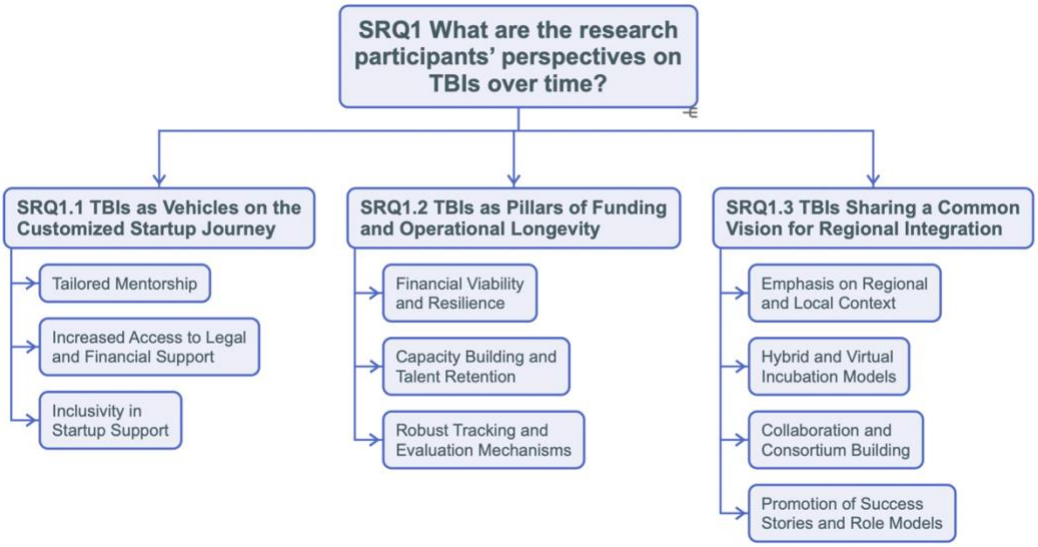
Central Idea:

The Nature of Technology Business Incubators In the Philippine Context



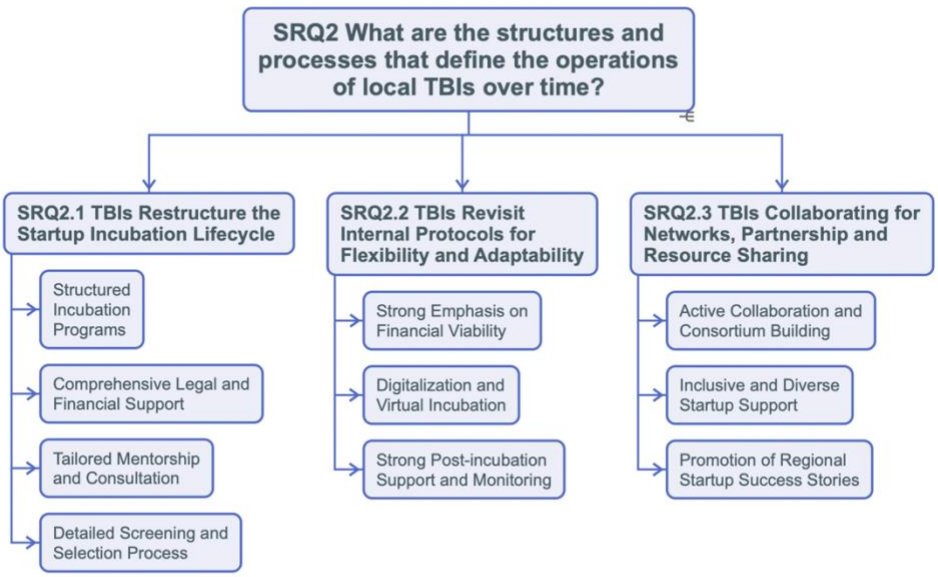
SRQ1 Mind Map:

Central Idea > Themes > Categories



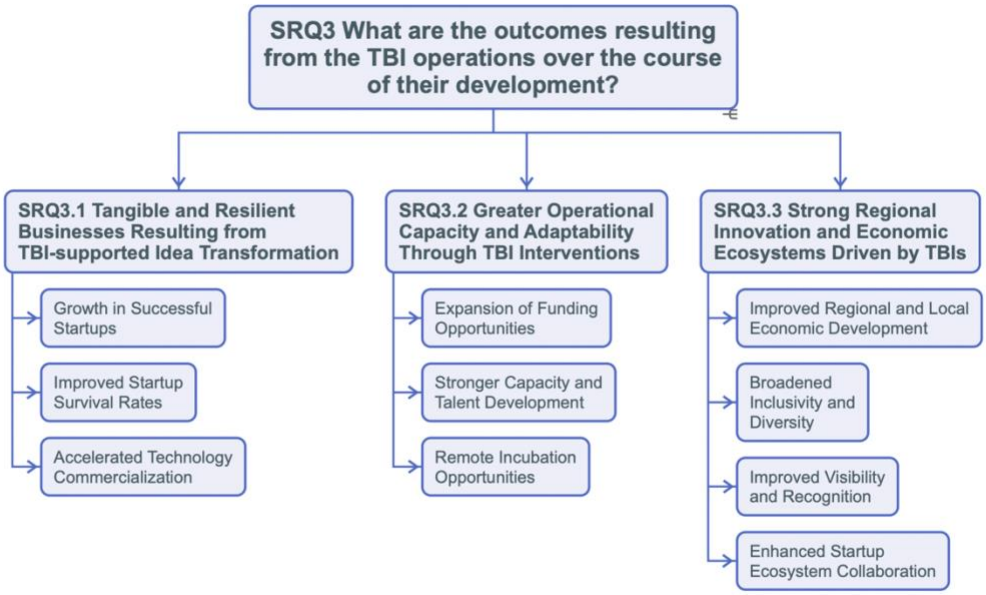
SRQ2 Mind Map:

Central Idea > Themes > Categories



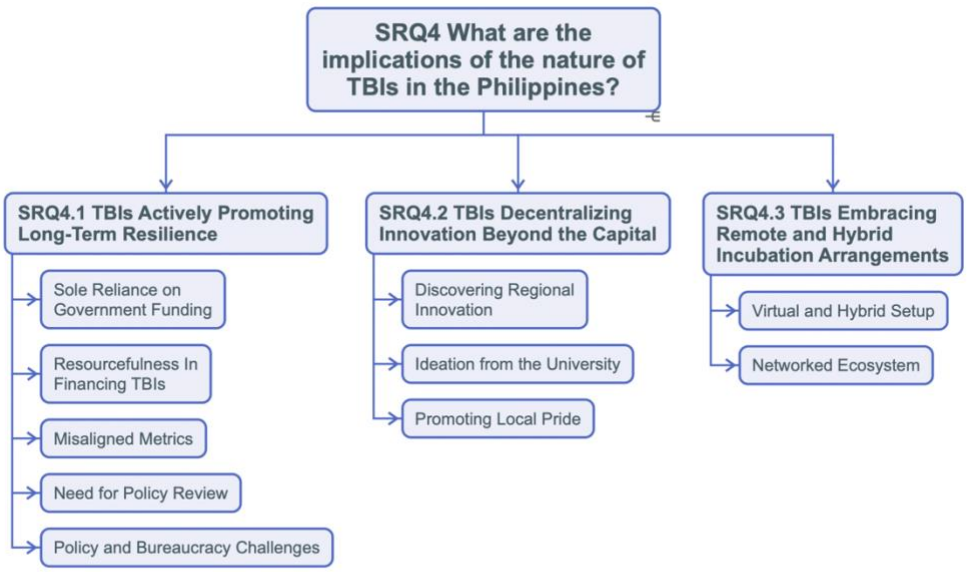
SRQ3 Mind Map:

Central Idea > Themes > Categories



SRQ4 Mind Map:

Central Idea > Themes > Categories



APPENDIX G

Declaration of Tools and Artificial Intelligence (AI) Use in Research

In the interest of complete methodological transparency and adherence to the principles of academic integrity, this appendix discloses the suite of digital tools and applications used to support the completion of this thesis. These tools were employed to augment the research process, from data collection and transcription to analysis and final manuscript preparation. The researcher maintained full intellectual ownership and responsibility for the critical analysis, theoretical development, and final conclusions presented in this study.

A. AI-Powered Applications

This section details the tools that leverage Artificial Intelligence for specific tasks.

1. Meeting and Transcription Service

- **AI Tool:** Zoom Meeting and Transcription Services https://www.zoom.com/
- **Version:** Workplace Pro Premium License 2025
- **Purpose:** To conduct and record the 15 remote semi-structured interviews. The platform's built-in AI transcription feature was utilized to generate initial text documents from the interview audio recordings.
- **Outcome:** The tool provided high-quality audio-visual recordings of all interviews and initial, time-stamped text transcripts that formed the basis of the raw data.
- **Limitations and Researcher's Role:** The AI-powered transcription feature demonstrated limitations in accurately transcribing conversations that mixed English and Tagalog ("Taglish"). Consequently, the researcher performed a thorough manual review, comparison, and correction of all transcripts against the original audio to ensure complete accuracy before analysis.

2. Large Language Models (LLMs)

- **AI Tool:** Gemini 2.5 Pro (Advanced Model by Google) https://gemini.google.com and ChatGPT 4.5 (Model by OpenAI) https://openai.com/index/chatgpt/
- **Version:** Dynamic, web-based services (Accessed June 2025)

- **Purpose:** The LLMs were used as "methodological partners" and writing assistants. ChatGPT 4.5 was used as a comparative tool to provide alternative phrasing and structural suggestions. The primary purposes included:
    - Synthesizing the researcher's initial lists of emergent themes into a more concise set of core themes for each research question.
    - Providing detailed structural outlines for Chapter IV and Chapter V.
    - Refining the researcher's drafted findings for clarity, flow, and academic tone.
- **Outcome:** The LLMs assisted in transforming the researcher's primary analysis into a more polished, well-structured, and coherent academic narrative.
- **Limitations and Researcher's Role:** Strict ethical boundaries were maintained. The LLMs were **not** provided with any raw, confidential interview transcripts. The researcher performed all initial open coding and theme identification. The AIs' role was strictly confined to that of a methodological partner working with the **researcher's pre-analyzed and anonymized findings** (e.g., lists of themes, drafted paragraphs). The researcher retained full intellectual responsibility for all final interpretations and conclusions.

3. Writing and Editing Assistant

- **AI Tool:** Quillbot www.quillbot.com
- **Version:** Premium Version, Individual License, web-based service, 2025
- **Purpose:** To assist with final-stage manuscript preparation. Its functions included paraphrasing sentences to improve flow, conducting advanced grammar and spelling checks, and running a plagiarism check on the final draft to ensure academic originality.
- **Outcome:** The tool helped improve the overall linguistic quality, clarity, and readability of the final thesis manuscript and provided an originality report.
- **Limitations and Researcher's Role:** Quillbot was used as a sophisticated proofreading tool. The researcher reviewed all suggestions, accepting or rejecting them based on whether they maintained the intended meaning and academic tone. It was not used to generate original analytical content.

B. Non-AI Research Management Software

This section details the software used to manually organize and manage the research process.

1. Qualitative Data Analysis Software (QDAS)

- **Tool:** ATLAS.ti (Student License) https://atlasti.com/atlas-ti-web
- **Version:** ATLAS.ti 2025
- **Purpose:** The software was used as a non-AI management tool to facilitate the **manual analysis** of the 15 verified interview transcripts. Its function was to help organize the researcher's analytical work, including the creation and application of codes to text segments, writing memos, and visualizing concept relationships.
- **Outcome:** The tool provided an organized and auditable structure for the researcher's manual coding process, resulting in the 196 open codes that formed the foundation of the analysis.
- **Limitations and Researcher's Role:** The researcher **did not** use the software's automated AI features (e.g., automated coding). All interpretive and analytical work was performed manually by the researcher, in line with the CGT methodology. The software served solely as an organizational aid.

2. Mind Mapping Software

- **Tool:** SimpleMind www.simplemind.eu
- **Version:** Trial version, valid for 30-days
- **Purpose:** Used for conceptual visualization during the data analysis phase. It helped the researcher visually organize the 196 open codes into focused codes and map the relationships between these categories to identify the emergent core themes.
- **Outcome:** Produced visual mind maps that served as a blueprint for the thematic structure presented in Chapter IV, facilitating the synthesis of data into theory.
- **Limitations and Researcher's Role:** SimpleMind is a manual visualization tool. It did not perform any automated analysis; it only provided a canvas to represent the analytical connections and structures created by the researcher.

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