BUILDING-UP POLICY FRAMEWORK FOR BUSINESS INCUBATION ECOSYSTEM IN PAKISTAN

Abdul Wahid and Gulfam Khan Khalid

(CGP #04-062)

3RD RASTA CONFERENCE

Thursday 14th & Friday 15th September 2023

Gun & Country Club, Islamabad

This document is unedited author's version submitted to RASTA.

RESEARCH FOR SOCIAL TRANSFORMATION & ADVANCEMENT

Competitive Grants Programme for Policy-oriented Research

Pakistan Institute of Development Economics

ABSTRACT

The entrepreneurial activity among Pakistani graduates remains remarkably low, standing at less than one percent, which is significantly lower than other countries in Asia, such as China and India, where the rates are 10% and 6.2%, respectively. Surprisingly, access to finance is not a major hurdle for entrepreneurial growth, as revealed by survey results ranking it sixth among determinants affecting startup sustainability. Despite several efforts, no significant breakthroughs have been achieved that would establish any city or university as a prominent entrepreneurial hub. A comprehensive cost-benefit analysis of 26 BICs, three NICs and Plan 9 sponsored PITB is conducted. The research findings indicate that a total of 560 startups were produced by BICs in public sector universities, while an additional 235 startups were established by BICs in the private sector. Furthermore, under Plan 9 sponsored by PITB, 240 startups were generated. The NICs located in Islamabad, Lahore, and Peshawar have reportedly produced 660 startups, but claims of graduated startups are also exaggerated, and many of the startups were pre-existing entities.

However, the study discovered that the reported numbers of graduating startups from these centers were exaggerated by 85-90%. The actual number of startups fell considerably below the projected figures, highlighting a substantial gap between anticipated and actual outcomes. Secondly, concerns have been raised regarding the true nature of NICs as incubation centers, as successful business ideas and innovative products developed by startups are often acquired, with the original owners losing control. These incubation centers seem to be focused on showcasing numbers rather than achieving substantial growth.

Although physical space and facilities are available for startups in all streams, providing these amenities alone does not guarantee success. The allocation of funds towards operational matters depletes a significant portion of the funds provided by HEC and the Ministry, leaving little room for innovation and growth. Moreover, incubation managers lack the necessary experience with startups, and mentors often lack connections to the international startup community, resulting in inadequate support at the initial stages.

Startups require substantial funding for scaling up their operations, but it has seen only three IPOs issued on the Growth Enterprise Market (GEM) board of the Pakistan Stock Exchange (PSX), and no startups from these streams have been listed. In contrast, the UK's Alternative Investment Market (AIM) has witnessed thousands of IPOs issued by startups produced by universities.

PREFACE

In the vast expanse of knowledge and inquiry, amidst the vibrant tapestry of academia, this study emerges as a testament to the ceaseless pursuit of understanding and progress.

Centers, meticulously established by the Higher Education Commission (HEC), the Ministry of Information Technology's Ignite Project, and Information Technology Boards, hold the potential to foster innovation and nurture entrepreneurial aspirations. Yet, the ardent researchers are acutely aware that amidst the promise, challenges and issues invariably arise. It is their noble endeavor to identify these key stumbling blocks, understanding that only by doing so can the path to progress be paved.

With the support and resources generously granted by the esteemed 'Research for Social Transformation and Advancement' (RASTA), this study embodies a grand scale, intertwining economics, public policy, and the desire to bring about societal transformation.

In this pursuit of knowledge, the researchers find solace in the guidance and suggestions of the erudite Dr Nadeem Ul Haque. His wisdom and counsel have been instrumental in shaping the path of research. Moreover, the RASTA advisory board has lent its unwavering support, fostering an environment conducive to intellectual exploration and discovery.

Gratitude is also extended to the mentors who have illuminated the path with their wisdom. Dr Zain ul Abdin and Mr Zaffar Ul Hassan have played an invaluable role in providing invaluable insights and guidance. Their expertise has paved the way for a deeper understanding of the subject matter at hand.

In the quest to comprehend the nuances of startup ecosystems, the researchers have looked beyond borders. Dr Zhang Wei, the esteemed Director of the Confucius Institute, has been instrumental in arranging enlightening online meetings with managers of incubation centers in Beijing and Shanghai. These interactions have proven invaluable in discerning the missing links within our own entrepreneurial landscape and unraveling the factors behind the astounding success of China's startup ecosystem.

Additionally, the study would not have been possible without the unwavering support and cooperation of the dedicated teams at Plan 9, the National Incubation Centers, and Business Incubation Centers. Their provision of information and insight has been a cornerstone in this ambitious undertaking.

TABLE OF CONTENT

List of Figures

List of Tables

List of Abbreviations

Abbreviation	Full Title
NIC	National Incubation Center
BIC	Business Incubation Center
HEC	Higher Education Commission
PITB	Punjab Information Technology Board
NUST	National University of Science and Technology
NUML	National University of Modern Languages
BUITEMS	Baluchistan University of Information Technology, Engineering and Management Sciences
Tech-Startups	Technology Based Startups
GEM Board	Growth Enterprise Market
IPO	Initial Public Offering
LUMS	Lahore University of Management Sciences)

INTRODUCTION

1.1. Background

Startups are often seen as riskier than traditional businesses and can have a higher chance of failure but have the potential to be incredibly successful. In academia especially in Pakistan, the notion of traditional businesses and startups are used simultaneously but both are totally different from each other. An established business is an existing business that has been around for some time, while a startup is a new business that is just in the beginning phase (Nabila, Ambad, Andrew, Haryani, & Awang, 2020; Sutter, Bruton, & Chen, 2019). Established businesses typically have more resources, capital, and experience than startups. Startups usually require more risk, have more potential for growth, and involve a group of entrepreneurs who are looking to create something new, often with the intention of making money.

The story behind the success of start-ups is access to finance, however, the data analyzed by the Social Innovation Lab (SIL) highlights that access to finance comes at number six which in fact is the last one among the top reasons for the success of startups in Pakistan. On the other hand, while exploring the reasons for the failure of startups, Krishna et al. (2016) found that on average 9 out of 10 business startups fail to meet industry standards. They estimated that 20% of startups meet their demise in their inaugural year, while 30% succumb in the second year, and 50% fail between the third and fifth years. Worldwide, the success rate is at its highest, reaching 10%, depending on factors such as industry, product and service nature, and the prevailing business ecosystem in each country (Hurst & Pugsley, 2011).

To foster an entrepreneurial culture in Pakistan, the Higher Education Commission has established business incubation centers in nearly 38 universities. Additionally, the Ministry of Information Technology initiated the Ignite project, establishing National Incubation Centers in four major cities, with plans to expand to other regions. The Information Technology Boards of Punjab, KPK and other private incubations have also set up their own incubation centers. These centers have reported a significant number of graduated startups on their websites, reports, and blogs. However, the actual number of startups on the ground remains quite low, with success rates even surpassing those in Asia and China, standing at 6.2% and 10%, respectively.

In contrast, the Global Entrepreneurship Index (GEI) evaluates the entrepreneurial landscape on a national level. Pakistan's rank of 108 out of 137 countries highlights the presence of a considerable number of graduates interested in starting their own ventures. However, less than 1% actively pursue entrepreneurship. This study aims to assess the performance of these incubation centers by examining the reported and actual numbers of incubated and graduated startups. It also aims to identify the socio-economic challenges faced by these startups and determine the facilities and services necessary for a conducive startup ecosystem. The study will evaluate the availability of these resources in the current incubation centers and identify any missing components.

1.2. Problem Statement

Entrepreneurial activity among Pakistani graduates is significantly lower than in China and India. Access to finance is not only a major hurdle, but no breakthroughs have established prominent entrepreneurial hubs. Reported startup figures are overstated, highlighting a gap between expectations and reality. Physical space alone does not guarantee success. Funds are depleted for operational matters, leaving little room for innovation. Incubation managers lack experience, and mentors lack international connections, resulting in inadequate support. Pakistan's challenging business ecosystem with minimal ease of doing business poses obstacles for startups. Tech startups face fewer hurdles, while general startups struggle with permits, approvals, and established monopolies. This highlights the need to identify and address the startup ecosystem in Pakistan.

1.3. Research Objectives

Our primary aspiration entails the meticulous undertaking of an in-depth exploration into the incubation ecosystem of Pakistan, guided by the following dimensions:

a. To acquire a comprehensive understanding and erudition regarding the current state of the start-ups ecosystem, facilitating a nuanced insight into its inner workings and dynamics.

b. To discern and ascertain the cardinal strengths, significant gaps, and latent potentials that permeate this realm, illuminating the key areas of focus for further development and growth.

c. To proffer astute and tailored policy measures and regulatory incentives that are both germane and apt, serving as catalysts for fostering a conducive environment for innovation and entrepreneurial endeavors within the incubation ecosystem of Pakistan.

These research objectives aim to provide an understanding of the startup landscape in Pakistan, evaluate the accuracy of reported data, compare the entrepreneurial ecosystem with other countries, and assess the effectiveness of incubation centers in providing necessary resources and support to startups.

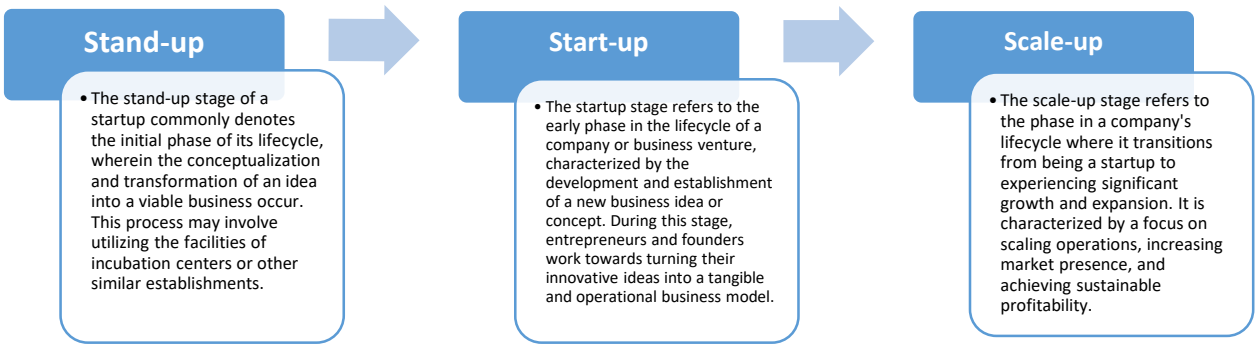
LITERATURE REVIEW

2.1 Startups and Stages

In academia and policy-making institutes, there exists a misconception regarding the understanding of startups and general business. Many consider every idea as a startup, but in reality, a startup is a business initiated with a unique idea, product, and services that address the genuine needs and demands of society with a simple and cost-effective solution. To achieve this, entrepreneurs must conduct a comprehensive assessment of both local and international markets. Examples such as Uber, Careem, Daraz, OLX, and Zameen.com demonstrate the success of startups in shaping industries.

Furthermore, there are three common stages in the entrepreneurial cycle: stand-up, start-up, and scale-up. Unfortunately, these stages are also misunderstood by academia in Pakistan. Moreover, in Pakistan, the establishment of a business incubation center is not merely about providing spaces and training for entrepreneurs. It represents an entire ecosystem that nurtures startups and enables their transition into sustainable businesses. In the following section, we will provide a detailed explanation of the phases of entrepreneurship and the ecosystem involved as shown in Figure (1).

Figure 1: Stages of Entrepreneurial Lifecycle



2.1.1 Standup

The "standup" phase represents a pivotal stage in the entrepreneurial journey, commencing with the conception of an idea and the formulation of a comprehensive business plan. During this phase, the entrepreneur takes a proactive stance in launching a business venture that offers a distinctive array of products and services. This enterprise is built upon a thorough and authentic evaluation of market needs and demands. The incubation center serves as the platform for this stage, wherein individuals such as students, faculty, or other aspiring entrepreneurs register their innovative ideas along with a well-crafted business plan to initiate a new business endeavor. In Pakistan, this phase is referred to as "incubated" denoting the successful registration and acceptance of the idea by an incubation center, which subsequently enrolls it in an upcoming cohort. While this stage may not necessitate a significant allocation of resources or extensive support, it does require comprehensive guidance and mentorship to steer the business in the right direction.

2.1.2 Startup

The startup stage is a pivotal phase in the entrepreneurial journey, where the visionary entrepreneur endeavors to transform their unique product or service idea into a fully-fledged business entity. During this critical stage, entrepreneurs require substantial support in various domains such as product and service launch, marketing, finance, and team-building. It is worth noting that a staggering 90% of ideas fail to materialize into successful businesses at this juncture.

Herein lies the significance of incubation centers, which assume a vital role in the startup ecosystem. Incubation centers offer invaluable assistance to entrepreneurs by providing them with cost-free office spaces, meeting rooms, and other essential infrastructure. Moreover, they facilitate the identification of talented teams and establish crucial connections with both upstream and downstream supply chains. Additionally, incubation centers offer complimentary accounting, auditing, legal, and IT services, thus alleviating financial burdens and administrative complexities for startups.

In Pakistan, there exists a prevalent misconception among incubation centers and academia regarding the definition of startups. Often, these entities associate the term "startup" solely with those ventures that have “graduated” from their incubation programs, regardless of whether they have successfully launched their businesses or not.

2.1.3 Scale-up

The scale-up stage in the life cycle of a startup marks a crucial juncture wherein the venture gains the potential to expand its business operations or diversify its product line. This phase often necessitates securing financial support from banks through loans or opting to issue initial public offerings (IPOs) on the stock market. It is sometimes regarded that a startup has reached the scale-up stage when it meets the necessary criteria to be listed on the GEM (Growth Enterprise Market) board at the Pakistan Stock Exchange (PSX). These criteria include having a minimum post-issuance paid-up capital of PKR 25 million and being registered with the Securities and Exchange Commission of Pakistan (SECP) as a public limited company. Furthermore, the startup must have a functioning website that provides essential business information, and it is imperative for the company to prepare periodic financial statements that are duly audited by a QCR (Quality Control Review) rated chartered accountant.

2.2 Micro Business Ecosystem

A micro business ecosystem is a network of businesses, organizations, and individuals supporting micro-enterprises. These small businesses, often operated by a single person with fewer than five employees, are vital for local economies, creating jobs and driving economic growth. The ecosystem involves suppliers, customers, investors, government agencies, and support organizations like

incubators and chambers of commerce. Each stakeholder contributes to the success and expansion of micro-enterprises. Suppliers provide materials, customers create demand, investors offer capital, and government agencies provide grants or loans. Support organizations provide training, mentorship, and resources. By fostering a supportive environment, communities stimulate economic growth and opportunities. While the macro business ecosystem can impact micro businesses, they maintain some autonomy and can shape the broader environment through innovation and entrepreneurship. Pakistan has a diverse micro business ecosystem comprising small shops, street vendors, manufacturers, and service providers. Business incubation centers, private or public, play a crucial role in supporting this ecosystem. They generate employment, develop small enterprises, and promote innovation. The global conducive startups ecosystem is shown in Figure (2).

Figure 2: Micro Entreprenuerial Ecosystem

2.4.1. Infrastructure Support

Infrastructure support is critical for startups because it can significantly impact their ability to grow and succeed. It is important to note that infrastructure support is essential for startups as it can help them access resources, save costs, improve productivity, enhance credibility, and increase visibility. This support can be the difference between a startup's success and failure (Lalkaka & Abetti, 1999). Infrastructure support provides startups with access to resources such as funding, mentorship, networking opportunities, and shared workspaces. These resources can help startups overcome

common challenges and accelerate their growth (Dubini, 1989). This can also help startups save costs associated with setting up and maintaining their own infrastructure. For example, shared workspaces can provide startups with access to office space, utilities, and other facilities at a fraction of the cost of setting up their own office (Wright et al., 2017). With access to modern infrastructure such as high-speed internet, advanced communication tools, and other technology resources, startups can improve their productivity and work more efficiently (Bergmann & Utikal, 2021). Infrastructure support can help startups enhance their credibility and reputation. For example, being associated with a reputable incubation center or accelerator program can lend legitimacy to a startup and make it more attractive to investors, customers, and potential partners (Prashantham & Kumar, 2019). Infrastructure support can help startups increase their visibility and exposure to potential customers and investors. Incubation centers and accelerator programs often host events and provide opportunities for startups to showcase their products or services to a wider audience (Samaeemofrad et al., 2016).

2.4.2. Services

Services provide a range of non-tangible benefits that can help startups overcome challenges and achieve success. These benefits include access to expertise, mentoring and coaching, networking opportunities, and business development support. The management of a startup can use the services provided by the incubator once it becomes a tenant. The management issues that plague new startups are not helped by shared service providers such as photocopiers, parties and personal computers (Reynolds, 1987). According to one research (Allen & Hendrickson-Smith, 1986) local business-assistance providers work with incubators to gain access to new clients and professional advisors who are in charge of the incubator, where startups are charged lower rates than other non-incubated firms. Such incubated startups need more services to gain sustainability in their business. Office space and resources are just part of the equation. Technology-intensive companies have limited chances of survival because of their lack of business experience and marketing skills. Business incubators play a vital role in supporting the startups in their network by providing the quality services to incubates (Smilor, 1986). It can be inferred from the literature that services play a crucial role in business incubation networks by providing startups with the support and resources they need to succeed. By offering a range of services tailored to the unique needs of startups, business incubation networks can help foster innovation, entrepreneurship, and economic growth (Pettersen et al., 2016).

2.4.3. Business Support

The management skills and experience needed to cope with sudden and rapidly changing environments are often missing from startup businesses. New companies often change their behavior and establish new practices through the process of learning. Procedures and policies are the foundation for the construction and operation of an organization especially the startups. This process becomes speedy when startups are provided business support by incubation centers (Smilor, 1986). Experiential learning is a slow and gradual process for developing daily life and abilities of any business entity. This is only possible when startups are provided a roadmap to pursue their goals in an effective manner through the help of business experts (Dosi et al., 2000). On the other hand, absence of the business support systems can lead startup firms to failure in early stages (Freeman et al., 1983). Imperfect knowledge is a common challenge that startups and entrepreneurs face. This means that they may not have a complete understanding of all the skills, knowledge, and expertise required to build and grow a successful business. As a result, identifying and hiring the relevant expertise can be a difficult task. Active coaching can be a valuable addition to training for founders and entrepreneurs. Coaching can provide personalized guidance, feedback, and support to help founders develop the skills and knowledge they need to succeed. Coaching can also help entrepreneurs identify blind spots or areas where they may need to improve (Clarysse & Bruneel,

2007; Kirwan et al., 2006). The process of trial and error can be avoided with the help of the incubating enterprises. These new enterprises must be able to make better decisions. The strategy adopted by startup will ultimately improve enterprise performance when it is given proper training and guidance to formulate and implement it (Colombo & Delmastro, 2002; Davidsson & Honig, 2003; Eisenhardt, 1989). All in all, providing business support through proper training and mentoring is part and parcel for the growth of business startups when they are incubated in incubation centers.

2.4.4. Networking

Knowledge and legitimacy can be obtained through access to external resources which can be provided by the business incubation centers. Networking opportunities provided by business incubations to startups can be very helpful in gaining access to potential customers, suppliers, technology partners and investors (Scillitoe & Chakrabarti, 2010). There is no doubt that the ability to access external networks simplifies access to resources. Learning opportunities for new companies to establish legitimacy faster can be provided by expertise. New startups can overcome inherent resource shortages, as well as inadequate financial capital, experienced management, and capabilities, if they are provided network connectivity by business incubators. Research shows that firms, especially in their early days, can overcome their resource constraints through networking (Zhao & Aram, 1995). The network is used by startups to get resources beyond their financial capabilities, according to the researcher (Larson, 1992). Establishing networks with early-stage investors, such as business angel networks and venture capital investors, reduces the search costs of tenant companies. In addition to providing funds, venture capital investors have an important significance in the specialization of venture capital. It can make a difference by making investment opportunities more accessible to startup firms (Gorman & Sahlman, 1989). Venture investors usually have a control function that supports the development of their portfolio companies while overseeing company activities to protect their investments. Venture investors contribute to the company's development by meeting their financial needs, as well as specialized organizational structures and management procedures (Hellmann & Puri, 2002). Likewise, it is almost impossible for a new company to engage professional consultants on technology development topics through contacts with academic institutions, strategic consultants, or patent lawyers (Lee & Osteryoung, 2004; Rice, 2002; Schwartz & Hornych, 2010). For example, the economic means to pay high consulting fees may not be enough for companies seeking professional advice on specific areas of intellectual property expertise.

2.4.5. Access to Finance

Business incubators aim to promote the development and success of new businesses through a range of business support services and resources, with the goal of creating financially viable businesses, as they are seen worldwide as tools for economic development (Day & Jones, 2004). In addition to providing basic services and resources for startups, incubators often also serve as an important network connecting talent, technology, and capital to accelerate the development of new businesses (Smilor & Gill, 1986). Hansen et al. (2023) argue that incubators that provide only office space and basic services are different from those that provide priority access to organized or corporate networks. Pakistan lacks the commercial infrastructure, resources, and capabilities needed to promote the development of entrepreneurial companies, like most developing countries that have transitioned from a chain of command to a market system. The problem of developing enterprises in an inappropriate business environment is made worse by the limited financial resources available for new enterprises (Lalkaka, 2003). The structure of financial markets and the availability of capital are important factors in determining the growth of emerging enterprises (Bhide, 2003). Depending on the different sources of funds, the financial services provided by incubators can be divided into external and internal sources. External sources of funds are defined as incubator funds from outside. If an incubator helps a client company get government funding, it is considered an external source of

funding for incubator support. Internal source of funds are funds that originate from the incubator and go towards funding the incubate. Business incubations can provide startups with access to finance through various means such as connecting them with investors, providing training on fundraising and financial management, or offering microloan programs. This support can help early-stage businesses overcome financial barriers and accelerate their growth (Cohen, 2013).

2.5. Macro Incubation Ecosystem

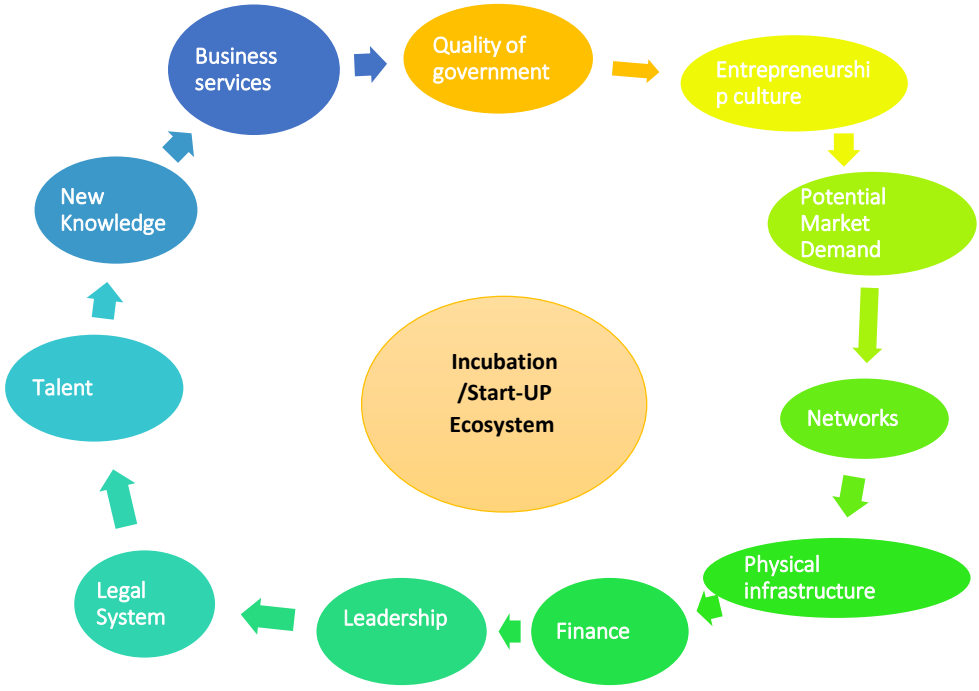
Entrepreneurial ecosystem (EE) can be defined as "the dynamic and institutionally embedded interaction between entrepreneurial attitudes, ability, and aspirations, by individuals, which drives the allocation of resources through the creation and operation of new ventures." It is a growing system based on a holistic approach to examine the variation and contrast of entrepreneurship (Isenberg 2010; Feld 2012; Acs et al. 2014; Malecki 2018). Recently, in a rush to promote entrepreneurship, EE approach which has happened to grab more research attention among the European policy makers than other approaches such as holistic approaches which is things like the entrepreneurial system, entrepreneurial environment, and entrepreneurial infrastructure (Autio et al. 2014; Malecki 2018; Spigel and Harrison 2018). EE approach started getting research and practice attention since the influential frameworks by Isenberg (2010) and Feld (2012) to study an entrepreneurial ecosystem. World Economic Forum (2013) demonstrated a model which pinpoints eight significant backbones of an EE. Mason and Brown (2014) presented an EE taxonomy, which demonstrates the central characters of EE. Stangler and Bell-Masterson (2015) propose that compactness, liquidity, congruence, and heterogeneity are the four main pointers of the exuberance of an EE. Stam (2015) presents the maiden EE framework that elucidates the directives of antecedent on the elements of EE and that of output. He affirms that the systemic (talent, finance, webs, guidance, cognition, and support services) and the circumstances of framework (physical infrastructure, formal institutions, culture, and the demand) make up EE elements. The tendency EE elements is to make the business activities that he names as the product of EE. Moreover, the product of EE results in the aggregated value creation in the form of economy which in-fact is the result of the EE. Elements of Entrepreneurial Ecosystem.

The approach presented by Stam (2015, 2018) gained more attention from individual researchers and international research organizations because of its advantages over other approaches to study EE. Stam identifies the causal paths which one can follow to understand the systemic dynamics of an EE to devise suitable policy measures for promoting entrepreneurship. Based on the Stam's framework to measure an EE, the largest entrepreneurship research forum, Global Entrepreneurship Monitor (GEM) has launched a project in which the EE of the substantial number of cities from all over the world will be studied to check the readiness of the cities for entrepreneurship. The framework presented by Stam is demonstrated in Figure 1. Moreover, World's leading entrepreneurship authors like David B. Audretsch, Zoltan Acs, and Erik Stam seem to agree that city is the best geographic division to identify and study an EE. Overall, Stam's framework has provided a valuable tool for researchers and policymakers to study and promote entrepreneurship at the city level.

Entrepreneurship is a significant operator of the economic change (Schumpeter, 1911), and a developing country like Pakistan needs increasingly of entrepreneurial activity to productively utilize its natural, environmental, digital, and human resources. To do this, Pakistan needs to know its present state entrepreneurial potential and the factors affecting it. Therefore, an in-depth research study is needed to explore the entrepreneurial ecosystem of Pakistani cities. That is why, we propose to study the EE of top 40 Pakistani entrepreneurial cities using the state-of-the-art EE framework presented by Stam (2015) and being utilized by GEM. The proposed research study will not only identify the current state of the entrepreneurial ecosystem but will also shed light on the strengths and weaknesses of the entrepreneurial landscape of each city. This will enable policymakers,

investors, and entrepreneurs to make informed decisions regarding the allocation of resources and the identification of potential areas for development and improvement. Overall, the proposed research study is crucial for Pakistan's economic development, and it will provide valuable insights into the current state of the entrepreneurial ecosystem in the country. By identifying the strengths and weaknesses of the ecosystem and examining the factors affecting it, the study will contribute to the development of effective policies and programs that promote entrepreneurship and drive economic growth.

Figure 3: Macro Entrepreneurial Ecosystem



2.5.1 Regulatory Framework

The regulatory framework in Pakistan related to startups and freelancing is very cumbersome and over cautionary. There are many related laws which require amendments to make a startup-friendly legal system. In cases of legal blockages most of the startups require to hire private law firms having expertise in this specific field, which might be too expensive for the startups. The regulatory regime thus requires an overhaul in order to make things easier for the startups rather than creating hurdles. This will require a major effort including highlighting the relevant laws and an empirical study regarding the effect of the identified laws. Furthermore, a comparative study is also required highlighting the legal regime in countries having a startup friendly legal system. Thereby, this study will identify the gaps in these regulatory laws.

Key Regulatory Authorities related with the issue include, the Securities and Exchange Commission of Pakistan (SECP), Federal Board of Revenue (FBR), Punjab Revenue Authority (PRA), Pakistan Telecommunication Authority (PTA), and State Bank of Pakistan (SBP). In addition to these regulatory authorities, the primary legislation regarding Intellectual Property, Income Tax, Companies Act (including merger and bankruptcy laws) and Competition Laws are truly relevant to the startups and its survival. In addition, IPO Laws Intellectual Property laws are the corner stone of innovation. There is a need to strengthen the laws to protect innovative ideas and discourage brain drain. It requires an effort in collaboration with the Intellectual Property Organization (IPO) to

identify the gaps within the relevant legal framework. Similarly, the bankruptcy Laws are also cumbersome to follow in the cases of these small businesses. The fact that Startups are elevated risk ventures with a high failure rate coupled with the fact that there are no bankruptcy related laws in Pakistan acts like a major deterrent for investors. In context of the H.L.A. Hart's concept of laws, the primary and secondary rules related to startups and freelancing need to be identified for removing the ambiguities within the legal system. The more hidden the laws, the more they tend to fail in providing justice and facilitating the common person. Henceforth, a study is required to identify the rules (both primary and secondary), then collect empirical data to check the viability of the rules and conduct a comparative analysis of countries with enabling legislations and startup policies. The comparative study will be regional to get insight of how different states within the region are coping with the issue.

2.6 Framework to Identify Financial Barriers in Ecosystem

In Pakistan, around 100 million adults don't have access to formal financial services, that represents 5% unbanked population of the world[1]. This situation hinders half of the population of Pakistan from getting and investing via formal and regulated channels. This exclusion at the policy level and institutional framing leads to many serious conundrums such as high lending rates, collateral guarantees, and complexed procedures for getting loans and other services from renowned banks. In Pakistan, among the 3.2 million SMEs/ ecosystems only 188,000 small and medium enterprises loans are outstanding on banks' books, showing a substantial private sector and the formal financial sector[2] does not meet the financial gap. On the other hand, since 2010, only 720 startups have been established (67% still active) with100 successfully raising funding. These SMEs/ Incubations/ startups are facing several serious issues when it comes to determining the risk that an entity has. Since the greater number of the SMEs/ Incubations lay behind the governmental regulation framework, financial institutions seem to have found it hard to study and examine them.

2.6.1. SMEs/ Incubations' Difficulties in Accessing Finance

SMEs/ Incubations are facing a more complicated situation in terms of raising money as compared to large firms. Large enterprises easily get help and support from many banks while SMEs/ Incubations do not have this privilege as the large enterprises have a minor risk of default and they have financial stability; therefore, they have the privilege of getting more support from the banks. However, on the other hand the reality of SMEs/ Incubations is the exact opposite as they are dangerous from the view of lenders and they also do not have vivid information related to accounting (Madanchian et al., 2015; Nabila et al., 2020).

2.6.2. Inadequate Information Infrastructure for Startups

Information is dealt with by the industry of finance. However, there is an unbalanced information issue between suppliers and that of the demanders of funds. Information infrastructure is the demand of the day to fix this problem. plethora of large enterprises enlist their percentage of shares on stock markets and ply securities in bond markets. Therefore, this sharing of information can be of great significance in terms of facilitating a vast range of information mandatory to estimate the creditworthiness of large enterprises (*BR-EPaper | 'SBP Trying to Resolve SMEs' Financial Problems,'* n.d.). Nonetheless, most of the small and medium enterprises (SMEs/ Incubations do not have any sort of relation with capital markets. Financial institutions observe borrowers meticulously, however, it in fact is expensive to do for the small loan borrowers. The dearth of information infrastructure for small and medium enterprises SMEs/ Incubations aggravates the information unbalanced issue. In situations like this, efficient and low credit risk assessment instruments are mandatory for the financing of SME, especially for lending that is transaction-based (Alam Siddik, 2017).

2.6.3. Lack of Credit Guarantee Schemes

Startups usually face some serious difficulties while raising money. The insufficient supply of credit to small and medium enterprises SMEs/ Incubations is due to the unbalanced information, and the risk of default is high. Furthermore, SMEs/ Incubations face more problems in gauging finance as compared to larger enterprises. Institutions such as lending favor to raise the flux of funds to the sector due to the above stated factors which are lower in this group. In order to tackle these risks, there are credit guarantee schemes available worldwide, but there is no such type of scheme in Pakistan.

2.6.4. Lack of Credit Rating Mechanism

Credit ratings are the views expressed in ordinary measures that reflect the ongoing financial creditworthiness of issuers like governments, firms, and financial institutions. Usually, the rating agencies confer these ratings for examples things Moody's, like Fitch Ratings, and Standard and Poor's—and that can be accounted as an in-depth examination of issuer's capability to meet the financial commitment fully and on time. Henceforth, they play a pivotal part by inculcating financial planning in the participants about financial markets. Agencies haunt a wide range of financial and non-financial information to conduct rating assessments of big corporations, including experts' expectations (Nabila et al., 2020). Rating agencies normally share some general guidelines related to their ratings decision-making process; however, they do not offer the detailed elucidation of the criteria of rating and the factors related to the ratings of banks. There does not exist any such kind of mechanism available for SMEs/ Incubations in Pakistan.

2.6.5. Alternative Investment Market

After the emergence of globalization, large scale firms got pivotal role in financial and capital markets, which reduces the financial opportunities and venues for SMEs/ Incubations. In order to synchronize financial synergies of financial and capital markets with SMEs/ Incubations' sector, London stock exchange (LSE) launched a sub-market within its primary market which is called Alternative Investment Market (AIM) for SMEs/ Incubations to provide them venues to raise funds from the capital market (Colombelli, 2010). It is evident that AIM does not only provide blood to SMEs/ Incubations' sector but also performs higher results than the main market in terms of primary market and secondary market. In the time peroid the last two decades, there infact was merely 21.9% newest issues noted on the LSE-main market while 78.1% was listed on AIM (Amini, 2013). Similarly, there are more than 3 million SMEs/ Incubations in Pakistan which make almost 90% of all the business in Pakistan but there are nominal avenues for them to raise funds from capital market as well as financial market. Recently launched GEM board on PSX but still it is not functional and vibrant.

METHODOLOGY

This study examines the current state of the business incubation networks and centers that have strong roots in maintaining the status quo on the least productivity and growth of startups in Pakistan and leads to least empowerment of incubates in term of startups growth and expansions. An extensive literature review and expert's opinion in this domain explored the genesis of least productivity of business incubation centers and identified its symptoms and causes of least output from induction to graduation level. Let us discuss sampling and data collection methods used in our research methodology.

3.1. Sampling

As our research design is based on mixed methods, we choose random sampling to select the representative incubation centers among the given population of incubation centers. Total

population of National Incubation Centers (NICs) was 4 in numbers, and we chose 3 NICs as a representative of NICs. There are 34 Business Incubation Centers (BICs) in Pakistan being registered with Higher Education Commission (HEC). According to our random sampling,19 business incubation centers were chosen as representatives of all 26 BICs affiliated with HEC. Among our selected population of incubation centers in the network of incubators, there was the category of other established incubations. We also selected Plan 9 of Punjab Information Technology Board.

3.2. Data Collection and Statistical Analysis

For our study data was collected through various sources available online or offline. Among major sources of data collection were files available on Higher Education regarding their registered business incubators. Moreover, we also collected the data regarding business incubation centers (BICs) from the reports issued by HEC. On the other hand, data about national incubation centers (NICs) was collected from their websites. Our analysis is based on the data available on the NICs official portals. We utilized same strategy for the collection of other established incubations. Furthermore, we physically visited selected incubation centers in our sample. We gathered data by one-to-one meetings and interactions with the officials. In addition to this, we extracted data by visiting the claimed incubates incubated/graduated from the selected incubators.

However, in our study we collected data from websites or physical visits and interviewed 10x experts/ mentors, and 20 incubates to gather the data for the research. This research is the first of its kind to quantify the value of expert networks and incubators. The major focus of these discussions and interviews was to know about the role of incubators in the coming years, and what kind of opportunities and challenges are anticipated accordingly. Moreover, experts were asked about the primary benefits of incubation for early-stage ventures. The selection criteria for incubates was thoroughly discussed to get the know-how of the incubation model being applied. On the other hand, the process after the selection of incubates was also made the part of the discussion. Incubators were also asked about the challenges being faced in supporting early-stage ventures, and how their challenges are being addressed. Additionally, they were asked about their way of staying up to date on trends and changes in the industry, and how these changes are being incorporated into working with new ventures.

Our study employed a mixed method research design, combining interviews and Focus Group Discussions (FGDs) to gather qualitative data, while quantitative data was subjected to descriptive analysis. The integration of these two methods allowed for a comprehensive understanding of the research topic. Through interviews and FGDs, we delved into the rich narratives and perspectives of participants, capturing nuanced insights and experiences. Additionally, employing descriptive analysis on the quantitative data enabled us to summarize and interpret key statistical findings, providing a holistic view of the phenomenon under investigation. By utilizing this mixed method approach, our study achieved a comprehensive analysis, enriched by both qualitative and quantitative dimensions.

FINDINGS AND ANALYSIS

4.1 Startups Landscape

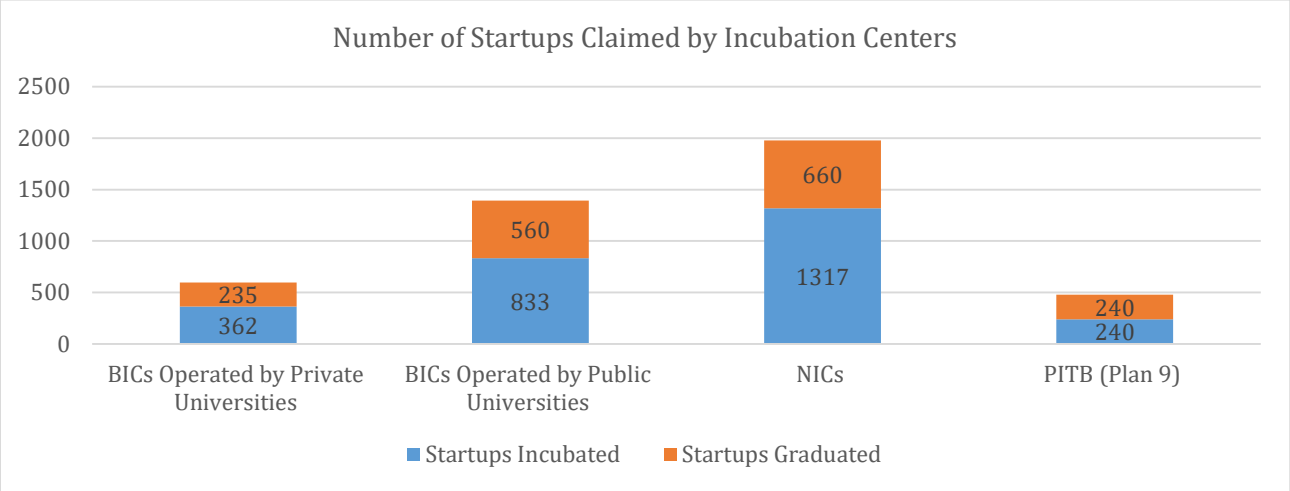
In this study, we conducted a comprehensive analysis of three distinct streams of startup incubation centers in Pakistan, specifically focusing on the Business Incubation Center (BIC) sponsored by the Higher Education Commission (HEC), National Incubation Centers (NICs) sponsored by Ignite, and Plan 9 by Punjab Information Technology Board (PITB). The obtained data from reports, score cards and website indicate that a total of 560 startups were produced by BICs in public sector universities, while an additional 235 startups were established by BICs in the private sector. Furthermore, under

Plan 9 sponsored by PITB, 240 startups were generated. The NICs located in Islamabad, Lahore, and Peshawar have reportedly produced 660 startups, but claims of graduated startups are also exaggerated, and many of the startups were pre-existing entities as shown in Figure (4).

Concerns have been raised regarding the true nature of NICs as incubation centers, as successful business ideas and innovative products developed by startups are often acquired, with the original owners losing control. These incubation centers seem to be focused on showcasing numbers rather than achieving substantial growth. The achievement rate claimed by BICs and NICs exceeds 50%, an exceptional statistic. Furthermore, Plan 9 has attained a perfect 100% success rate, which is exceedingly uncommon.

When considering the global scenario, where success rates are typically below 10%, one must ponder how Pakistan manages to surpass the 50% threshold despite grappling with numerous obstacles. Pakistan faces significant hindrances in the form of a low ease of doing business, cost-push inflation, and a multitude of socio-political challenges. The study discovered that the reported numbers of graduating startups from these centers were exaggerated by 85-90%. The actual number of successful startups fell considerably below the projected figures, highlighting a substantial gap between anticipated and actual outcomes.

Figure 4: Startups Lanscape in Pakistan



Source: (Date collected by author(s) from score cards, websites and reports of BICs, NICs and PITB).

First of all, we want to dispel the misunderstanding about incubated and graduated startups. There exists a prevailing perplexity among the incubation centers regarding the categorization of startups as either "incubated" or "graduated." Within these centers, "incubated startups" denote those who have enlisted their ideas with the incubation center. Nevertheless, according to global standards, this classification corresponds to the preliminary phase of the entrepreneurial journey, commonly known as the "standup stage." The subsequent stage in this expedition is referred to as the "startup" phase, wherein these ideas are metamorphosed into feasible products and services, and the business is initiated. Regrettably, the incubation centers do not accord priority to this stage.

On the contrary, "graduated startups" encompass individuals who have either fulfilled their cohort or session within the incubation center or have acquired a degree from their respective institute. This terminology underscores the completion of a specific program or educational curriculum. In order to tackle this predicament and illuminate the success rates at each stage, this study has computed the accomplishments and advancement of startups within the incubation centers as shown below: -

Our calculations are founded upon a comprehensive process of verification, employing a selected sample from various business incubation centers (BICs), National Incubation Centers (NICs), and Plan 9 PITB. The primary focus of our study lies within the NICs, which primarily cater to individuals who have already established their businesses. Within the NICs, the term "incubated startups" encompasses ventures that have already gained a firm foothold in the market, utilizing the NIC platform to facilitate their official launch.

Conversely, both BICs and the PITB (Plan 9 PITB) are predominantly targeted at the standup stage, with the aim of transforming fledgling startups into successful ventures. However, when considering success rates, BICs demonstrate a significantly lower performance, with a success ratio of less than 5%. In contrast, the PITB showcases a more favorable outcome, boasting a success ratio exceeding 5%. By examining these statistics, it becomes evident that the PITB exhibits a higher level of effectiveness in nurturing startups towards success, while BICs struggle to achieve comparable results.

4.2 Startups Ecosystem in BICs

4.2.1 Induction Process adopted by BICs

BICs do not employ any distinct method that sets it apart; instead, it adheres to the same standards as others. Participation in BICs is limited solely to students and faculty, excluding all others. The induction process adopted by business incubation centers in Pakistan is as follows:

- Interested entrepreneurs submit an application form to the incubation center, usually online. The application includes information about the entrepreneur, the business idea, and the intended use of the incubation facilities.
- After assessing the applications, the incubation center selects the most promising business ideas and entrepreneurs.
- The incubation center provides support to the selected entrepreneurs, such as mentorship, guidance, access to resources, and access to networks.
- Through the incubation process, the entrepreneurs can grow and develop their businesses. Once the businesses are ready to stand on their own, the incubation center helps them to exit from the incubation program and set up independently.

Furthermore, the process and requirement of BICs are the ones established by the higher education commission (HEC) of Pakistan in collaboration with the universities. Qualification of any level (university students) is acceptable. The requirement is that one needs to have a business idea or proposal. According to the criterion of the business incubation center Students, alumni, Faculty, and Staff are eligible and the qualification level can be any level as there is no standard level mentioned by the Incubation center. All these incubation centers have almost the same criterion proposed by HEC guidelines. All of them allow students, faculty, alumni, and staff to get admitted into these incubation centers. The qualification level required for all these incubation centers is not specifically defined. It can be any level of qualification. All these incubation centers required a person to have a business idea or proposal. There is no need of fee and investment. Only a condition of the set criterion is applied.

4.2.2 Socio-economic Corns of BICs

Table (1) illustrates a comparative analysis of Public and private universities' Business incubation centers (BICs). The data has been taken from the HEC submitted by BICs in the form of score card. According to table (1), an average number of startups incubated and graduated in private sector universities is 91 and 59 incubates per BIC, respectively. Furthermore, an average direct and indirect jobs created by startups in the private sector universities are 463 and 452, respectively. In addition, an average cost of BIC is 6 million as an establishment cost which is an average of PKRs 91,349 on each incubate. Similarly, each private sector university spends almost 200k-233k rupees per incubate as operational cost including, salaries, utilities and other expenses. Contrary to the aforementioned statistics discussed in the first part of the table, startups incubated and graduated by public sector universities are reported as 38 and 25, respectively. Direct and indirect jobs created by startups in the public sector universities are140 and 157, respectively. Moreover, the establishment costs (Million) in the private universities startups is 7 million which may be manifested as 224260.724 per incubate. Similarly, universities spend almost 230k-284k rupees annually per incubate as operational cost including, salaries, utilities and other expenses.

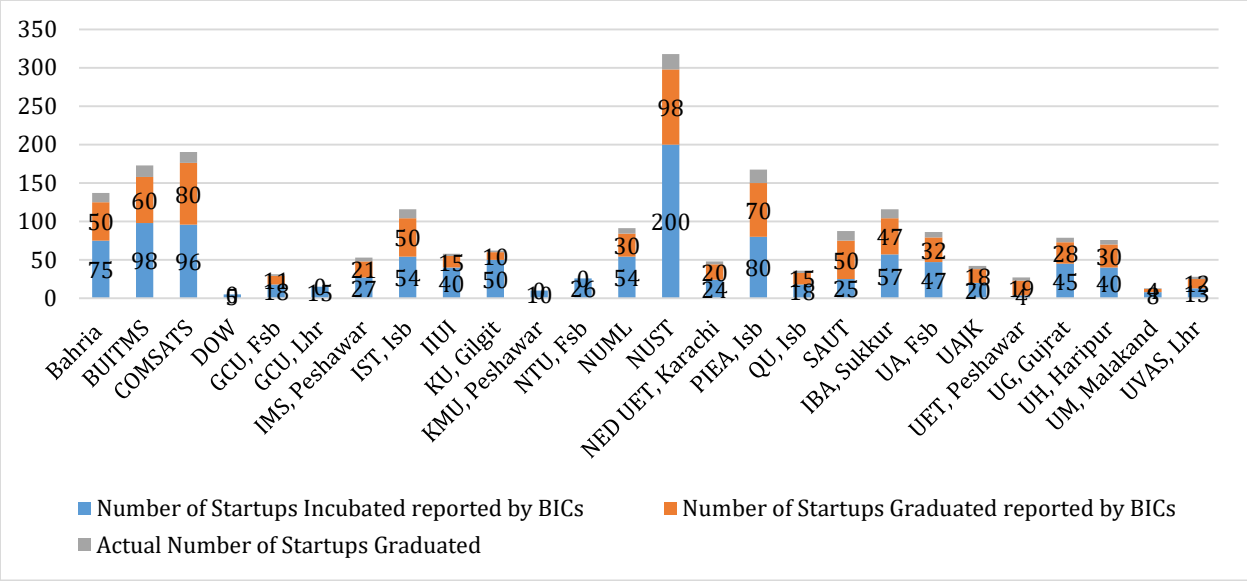
Table 1: Socio-Economic Corns of BICS

BICs	**Elements**	**Performance**
Private Sector University BIC	Number of Startups Incubated	91
	Number of Startups Graduated	59
	Direct Jobs Created by Startups	463
	Indirect Jobs Created by Startups	453
	Establishment Costs (Million)	6
	Annual Operational Cost (Million)	4.7
	Operational Cost Per Incubate Cost	200k-233k
	Establishment Costs/ Incubate Cost	91,349
Public Sector University BIC	Number of Startups Incubated	38
	Number of Startups Graduated	25
	Direct Jobs Created by Startups	140
	Indirect Jobs Created by Startups	158
	Establishment Costs (Million)	7
	Annual Operational Cost (Million)	5.3
	Annual Operational Cost/ Incubate Cost	230k-284k
	Establishment Costs/ Incubate Cost	224,261

Source (Data submitted to HEC by BICs till June 2022 in the form of score cards and reports).

The aforementioned values are taken from the reports submitted by the public sector universities but these values and statistics are far from the reality. Incubation centers, exaggerate or misreport the number of successful startups they have helped to launch. The lack of reliable data and accurate reporting means that it is not possible to know the exact number of incubated startups in Pakistan. However, there is some evidence to suggest that the number of incubated startups is much lower than what the incubation centers in Pakistan are claiming. In order to figure out the real numbers, we conducted an in-depth field survey and analysis of these BICs and we also pointed out facts and figures from published reports. The statistics displayed in the Figure (5) show an exaggeration of incubated, graduated and real number of graduated incubates.

Figure 5: Actual vs Reported Graduated Incubates by BICS



Source (Data submitted to HEC till March 2021 by BICs)

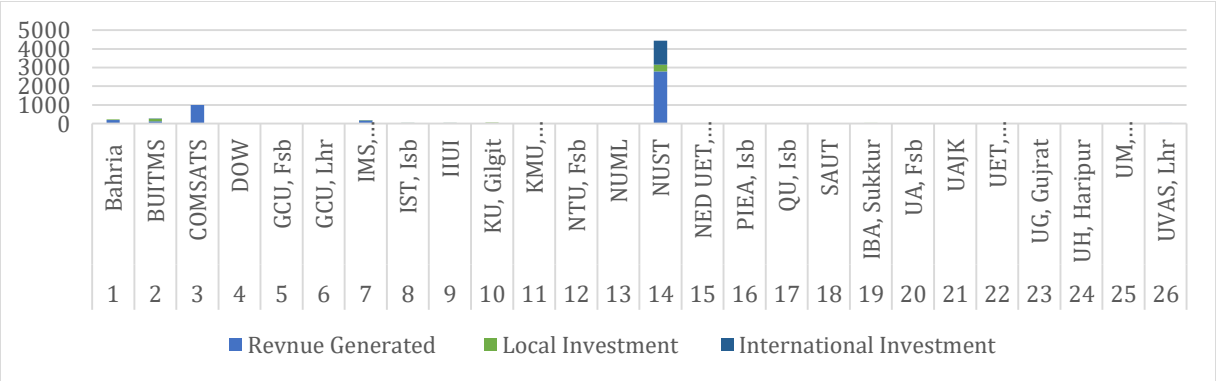
4.2.3 Financial Outcomes of BICs

In the realm of financial outcomes, when we consider the revenue generated by startups within their respective Business Incubation Centers (BICs), it becomes evident that NUST claims the top spot. The startups housed within NUST BICs have collectively produced a remarkable sum of 2800 million rupees, showcasing their commendable potential. Furthermore, these startups have managed to secure substantial investments, with a total of 350 and 1250 million rupees dedicated to their ventures.

Following closely behind is COMSAT, which occupies the second position. The startups nurtured within its incubation facilities have generated an impressive revenue of 1000 million rupees, highlighting their promising prospects. On the other hand, BUITM and Bahria University have also made notable contributions through their incubated startups, amassing revenues of 117 and 200 million rupees, respectively, as illustrated in Figure (6). However, it is essential to exercise caution when interpreting these figures, as our assessment suggests that they may be somewhat inflated. The actual numbers may be significantly lower than what is being reported.

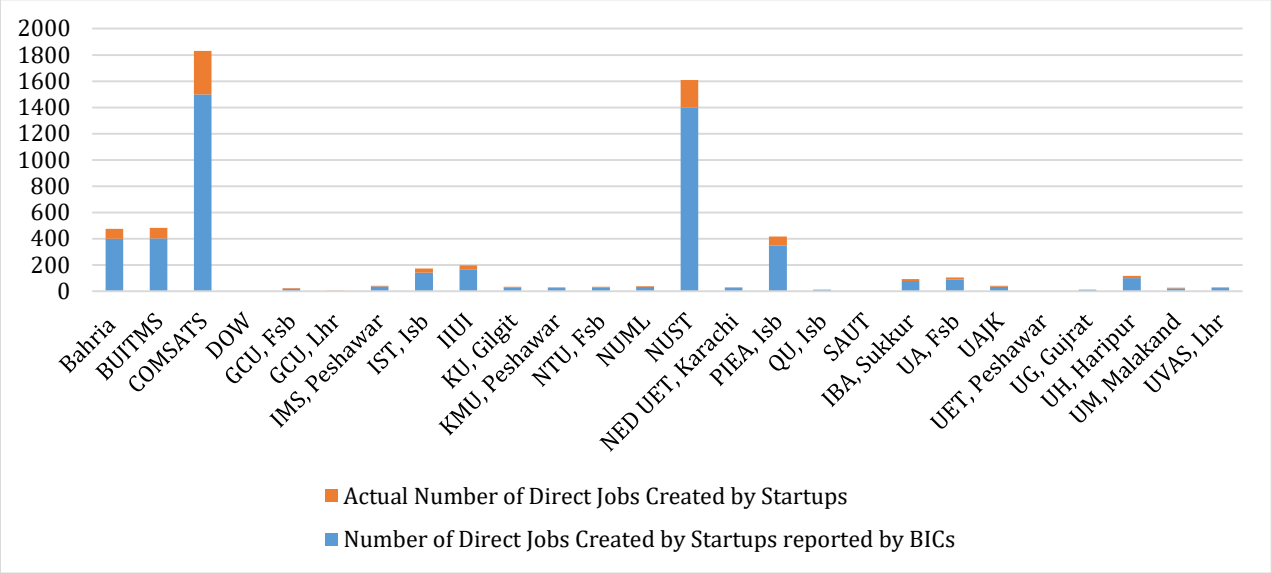
It is worth mentioning that the remaining incubation centers have made only nominal contributions to the overall revenue generation.

Figure 6: Financial Outcomes of BICs



Likewise, the institutions of COMSAT, NUST, BUITS, and Bahria University proudly proclaim that their incubated startups have generated an impressive number of direct jobs. They assert that 1500, 1400, 402, and 400 employment opportunities have been created, respectively as shown in Figure (7).

Figure 7: Actual vs Reported Jobs created by BICs

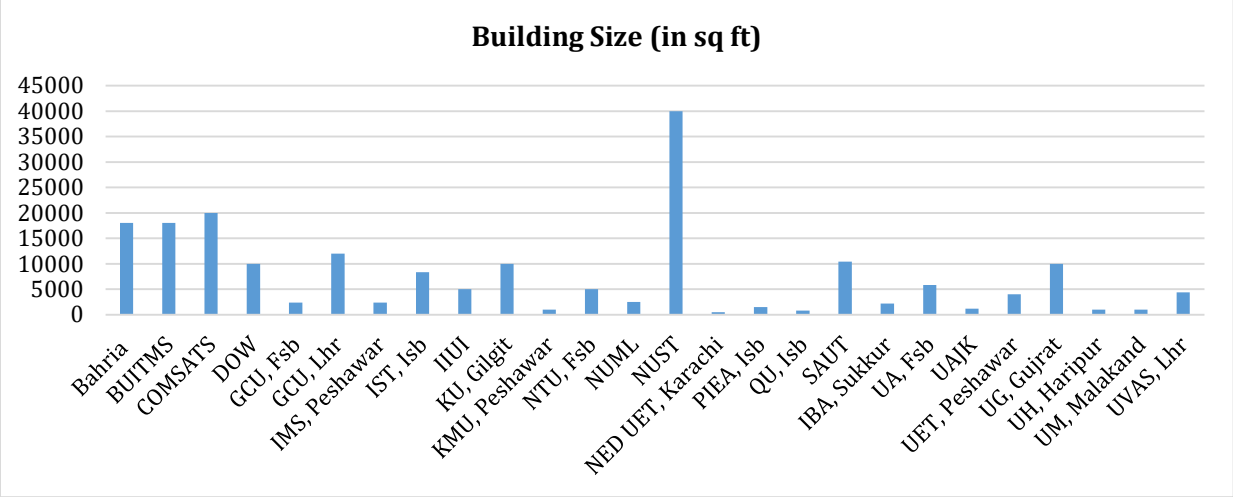


Source (Data submitted to HEC till June 2022 by BICs)

4.2.3 Facilities and Spaces

Business Incubation centers established by the Higher Education Commission (HEC) in various universities of the country have the same infrastructure support and services. They have enough paces for these facilities as shown in Figure (8).

Figure 8: Spaces Available to BICs



All these business Incubation centers have the same infrastructure support and services. They have offices and meeting rooms. Furthermore, the services provided by the business incubation centers established by the Higher Education Commission (HEC) across the different universities of the country are similar in every university but are different from the services provided by the National Incubation centers. The Business Incubation centers established by HEC provide services such as regular training, finical services, IT solutions, counseling/ mentorship, and funds/grants. Nevertheless, their services do not include company formation which is the common point between the National Incubation Centers and Business Incubation centers established by HEC.

4.3 Startups Ecosystem in NICs

4.3.1 Induction Process

The induction criterion of incubation centers includes: criteria, qualification, requirement, investment fee, and condition and so on. According to the criterion of National Incubation center Islamabad, every individual is eligible for it and there is no as such strict criterion for it. Moreover, as for as the qualification is concerned, there is no defined qualification level, a qualification of any level is eligible. However, the requirement is that one needs to have a business proposal or idea and there is no investment and fee for it and it provides all the facilities free of cost if the business proposal is accepted. Furthermore, the National Incubation center Islamabad has certain conditions such as if the business idea or proposal qualifies the said criteria then induction takes place. Moreover, the National Incubation center Lahore and the National incubation center Peshawar have the same criteria. There is no significant difference among the criteria of National Incubation Centers Islamabad, Lahore, and Peshawar.

These centers provide support to startups in terms of seed funding, mentorship, technical advice, and access to networks. The following are some of the National Incubation Centers in Pakistan: The National Incubation Centers are the projects of Ignite (formerly the National Technology Fund). They are the largest and most active incubator in Pakistan and provide startups with seed funding, mentorship, and technical advice. Selection process for the centers could be more rigorous in order to ensure that only the most promising startups are chosen for incubation. Additionally, these centers neither provide more access to international networks and nor have better access to funding sources, in order to help startups in their scale up phase. A visible critique on these startups is developed by analysts that they are selecting already established startups instead of newly established one. The selection criteria for the National Incubation Centers are often vague and difficult to interpret. This makes it difficult for entrepreneurs to understand the criteria and to craft their applications accordingly.

4.3.2 Socio-economic Corns of NICs

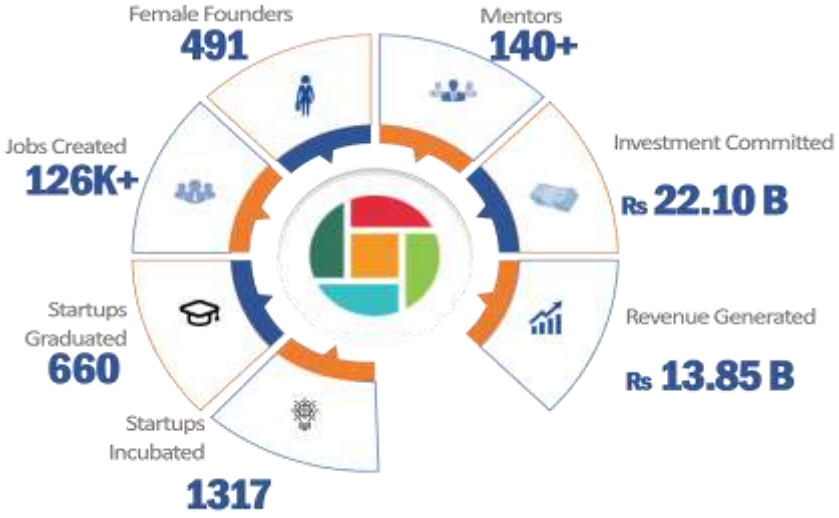
According to the data graciously furnished by Ignite as shown in Figure (a), it appears that the National Incubation Centers (NICs) have played a pivotal role in nurturing a remarkable sum of 1317 startups, out of which 660 have successfully transitioned into the realm of the professional world. This commendable achievement implies a staggering success ratio of nearly 50%. Moreover, the collective efforts of these NICs have resulted in the creation of over 126,000 gainful employment opportunities, presenting a significant boon to the economy.

Furthermore, the NICs have succeeded in attracting an impressive influx of investment, amounting to a remarkable 22.10 rupee dollars, which has been directed toward the support and growth of these startups. In turn, these entrepreneurial endeavors have contributed a handsome revenue of 13.85 rupees, symbolizing their substantial impact on the financial landscape.

While these figures undeniably paint an encouraging picture of the NICs and their accomplishments, it is imperative to acknowledge the existence of a contrasting reality. A closer examination reveals a

somewhat embellished representation of these statistics, with an overstatement of approximately 50-60%. It becomes evident that these numbers have been purposefully exaggerated to project a more fruitful and optimistic outlook for the NICs.

It is crucial to delve beyond the surface and critically analyze the true extent of their productivity and impact, not merely relying on the embellished figures presented. By conducting a thorough and unbiased evaluation, we can arrive at a more accurate understanding of the NICs' performance and gauge their genuine contribution to the entrepreneurial ecosystem.



The data presented in the table (2) reveals that a total of 293, 248, and 170 startups have been incubated thus far in NIC Islamabad, Lahore, and Peshawar, respectively. Conversely, the claims made by these NICs indicate that 173, 136, and 49 startups have successfully graduated from NIC Islamabad, Lahore, and Peshawar, respectively. However, our research and on-site visits to the NICs provided us with contrasting insights. Our study found that nearly 80-90% of the startups reported as graduates were, in fact, pre-existing businesses that did not require incubation by default. These businesses were included in the NICs' lists of incubated startups to inflate the numbers and exaggerate the impact of the incubation model being implemented. To be more precise, it would be more accurate to classify these listed businesses as scale-ups rather than startups.

Additionally, the data provided by NIC Islamabad indicated that the startups incubated under their program had generated a total of 17,189 jobs, comprising 2,900 direct jobs and 14,289 indirect jobs. In contrast, NIC Lahore claimed that their incubated startups had created approximately 1,000 direct jobs with no mention of any indirect job creation. Similarly, NIC Peshawar claimed to have created 10,986 direct jobs and 1,790 indirect jobs through their incubated startups. However, upon closer examination, we discovered that the actual results contradicted these claims. It is evident that if the number of startups is questionable, then the reported number of jobs created by them also becomes a subject of doubt. Our analysis reveals that the actual number of jobs created was lower than the figures reported.

Now we come to the most crucial aspect of incubators, which is the cost of operations. The national incubation centers (NICs) receive annual funding from Ignite - National Technology Fund in the range of Rs. 70-100 million as operational cost per annum. This substantial investment has the potential to generate impressive returns if allocated and utilized effectively. However, the actual returns produced by startups within the NICs, as indicated by the available data, are not as remarkable as

they may appear. This clearly highlights the ambiguity surrounding the utilization and reporting of funds.

Table 2: Socio-economic Effects of NICs

NICs	Elements	Performance
NIC Islamabad	Number of Startups Incubated	293
	Number of Startups Graduated	173
	Direct Jobs Created by Startups	2900
	Indirect Jobs Created by Startups	14289
	Annual Operational Costs (Million)	Almost 80
	Annual Operational Costs/ Incubatee	1.6 million
NIC Lahore	Number of Startups Incubated	248
	Number of Startups Graduated	136
	Direct Jobs Created by Startups	1000
	Indirect Jobs Created by Startups	0
	Annual Operational Costs (Million)	Almost 100
	Annual Operational Costs/ Incubatee	2 million
NIC Peshawar	Number of Startups Incubated	170
	Number of Startups Graduated	49
	Direct Jobs Created by Startups	10,986
	Indirect Jobs Created by Startups	1,790
	Annual Operational Costs (Million)	Almost 70
	Annual Operational Costs/ Incubatee	1.4 million

Source (Data available on NICs websites).

Let us delve into the analysis of the operational cost per incubatee, which is reported as 1 million per incubate in each NIC. In the context of Pakistan's current economic situation, characterized by financial crises and rampant inflation affecting the general price level of goods and services, this cost seems relatively very high as compared to BICs.

4.3.2 Facilities provided by NICs

NICs have the infrastructure support of co-working, and offices, but it does not have meeting rooms, and cafeteria. These are the basic infrastructure support that every incubation center needs to have as these are necessary for the business to operate. They are the physical assets. Without the infrastructure support, an organization cannot be operated. However, the National Incubation center Lahore has all these except for the meeting rooms. It means that the National Incubation center Lahore has the infrastructure support of co-working, offices, and cafeteria. Moreover, the services provided by the National Incubation Centers include: regular training, financial services, and IT solution, Counseling / Mentorship, Funds / Grants, and Company Formation. National Incubation center Islamabad provides the services of regular training, financial services, and Counseling/ Mentorship however, it does not have the services of IT solution, Funds / Grants, and Company Formation. The more the services are the better the results will be. On the other hand, the National Incubation center Lahore only has the services of providing regular training. It does not have the services of IT solution, Funds / Grants, and Company Formation.

4.4 Startups Ecosystem in Plan 9 (PITB)

4.4.1 Induction Process

The process of induction in the Plan is characterized by its inherent simplicity. Teams hailing from various regions across the expanse of Pakistan are summoned to partake in this endeavor. Once chosen, these teams are obliged to relocate themselves to the cultural hub of Lahore, where they will

undergo a transformative experience lasting six months. It is imperative that the aspiring entrepreneur be a citizen of Pakistan, attaining the age of majority, which is set at 18 years. Conversely, the prerequisite of a minimum educational qualification is conspicuously absent, for the focus lies primarily on the possession of a novel and distinctive business idea, complemented by a meticulously devised business plan. Additionally, the formation of a team comprising no less than five members is deemed indispensable to qualify for participation. The facilities of the esteemed Pakistan Information Technology Board (Plan 9) are accessible in key urban centers, including Lahore, Karachi, Faisalabad, Multan, and Islamabad.

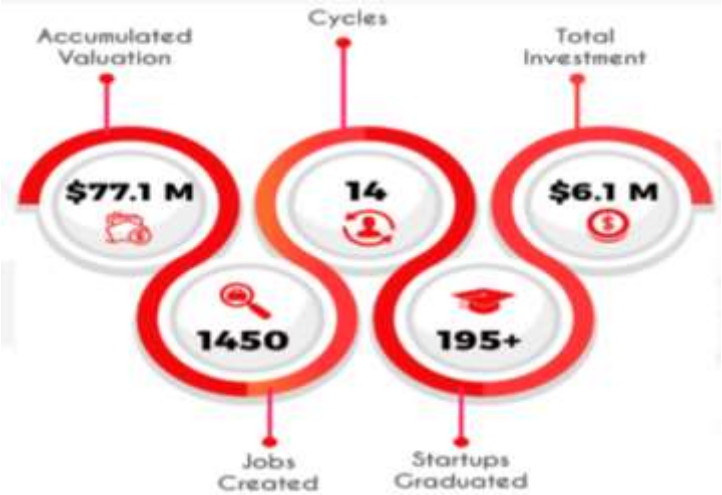
4.4.2 Socio-Economic Corns of Plan 9

Plan9, with its unwavering commitment to fostering the growth of early-stage technology startups, has achieved a commendable feat by successfully launching not one, but fourteen cohorts of budding enterprises. Within this period, an impressive total of nearly two hundred and forty startups (240) have emerged under its auspices. These nascent ventures have collectively garnered a staggering valuation of 77.1 million USD, signaling their potential for transformative impact.

Furthermore, the fruits of Plan9's labor are not confined to mere financial figures; they extend far beyond the realm of monetary gains. These startups have generated over 1450 gainful employments, bolstering local economies and invigorating communities. Moreover, the innovative ideas birthed within this nurturing ecosystem have attracted substantial investments amounting to more than 6.1 million USD from both domestic and international angel investors and benefactors.

It is crucial to recognize that Plan9's success is not merely a result of chance or serendipity, but rather a testament to its well-orchestrated framework. By providing the necessary support and resources, this organization has cultivated an environment conducive to the thriving and sustainable development of business ideas. Through its unwavering commitment, Plan9 has enabled these embryonic concepts to blossom into viable commercial entities, poised to make a tangible impact on the market.

In conclusion, Plan9's resounding achievements, characterized by the launch of fourteen cohorts, the emergence of 240 startups, a cumulative worth of 77.1 million USD, and the creation of over 1450 jobs, are a testament to its pivotal role in fostering the growth of early-stage technology enterprises. By attracting substantial investments and providing an enabling environment, Plan9 has proven its mettle in nurturing and propelling the transformation of innovative ideas into prosperous businesses.



Source: (Plan 9 PITB Data)

4.4.3 Services and Facilities in Plan 9

In terms of facilities and services, Plan 9 offers a commendable package. It presents a unique opportunity by granting complimentary office space at the prestigious Arfa Tower for a duration of six months, complete with essential amenities such as uninterrupted power supply and high-speed internet connectivity. Moreover, Plan9 facilitates targeted networking prospects tailored to specific domains, enabling entrepreneurs to establish valuable connections both nationally and internationally.

To nurture and enhance the capabilities of our startups, the Plan9 team stands readily available for consultation, providing invaluable guidance. Additionally, in collaboration with our extensive network of accomplished alumni and actively engaged board members, we organize pertinent training sessions and workshops. These initiatives aim to equip entrepreneurs with the necessary knowledge and skills essential for success.

Following a thorough evaluation of the startups' potential, the Plan9 team lends comprehensive assistance in devising business strategies that align with their unique propositions. This support encompasses crucial areas such as product development, bookkeeping, sales and marketing, securing investments, and legal counsel.

4.5 Startups Ecosystem and Missing Links

In this section, we endeavor to juxtapose the incubation centers such as BICs, NICs and Plan 9 with the prevailing startup ecosystem in developed economies. Our investigation reveals that the fundamental infrastructure of these incubation centers meets the required standards. They provide well-equipped spaces, offices, meeting rooms, and free internet access, along with other essential amenities. Moreover, they conduct regular training programs. However, the content and quality of these training sessions fail to meet the desired level, thus falling short of sensitizing the incubatees. Furthermore, the trainers lack substantial industry and business experience, with only NICs boasting professional trainers, albeit with unsatisfactory business acumen.

All of these incubation centers suffer from a significant deficiency in indigenous literature and case studies. They lack material pertaining to successful ventures in Pakistan, particularly in the Urdu language. While LUMS possesses case studies focusing on local matters, the majority are centered around job dynamics and the job market. The research conducted by the faculty predominantly assumes a philosophical nature, devoid of relevance to the dynamics of the local entrepreneurial landscape. Surprisingly, even surveys regarding customer needs and market demands are absent. Furthermore, these incubation centers lack specialization in any particular field. Although agriculture universities possess core competencies in the agricultural domain, their startup initiatives and setups fail to concentrate on agri-businesses.

The incubation centers currently face a notable deficiency in establishing robust networks and linkages. This deficiency primarily manifests in the absence of meaningful partnerships with local and international industries. By forging such alliances, these centers could significantly enhance their potential to facilitate transactions for their incubatees, resulting in increased opportunities for growth and success.

Furthermore, the incubation centers are lacking in their efforts to equip their incubatees with essential skills required for obtaining loans from financial institutions or issuing Initial Public Offerings (IPOs) on the Growth Enterprise Market (GEM) Board. This skill gap poses a significant hindrance to the incubatees' ability to access vital financial resources that are pivotal for scaling up their ventures and realizing their full potential.

Addressing these critical weaknesses would demand a strategic focus on cultivating strong partnerships with industry players, both locally and internationally. Such collaborations could yield

valuable resources, mentorship, and market access for the incubatees. Additionally, implementing comprehensive training programs aimed at enhancing financial literacy and entrepreneurial acumen would empower incubatees to navigate the complexities of securing loans and potentially going public through IPOs.

Lastly, crucial business support facilities, such as legal assistance, are absent in BICs, while Plan 9 and NICs offer this service to a certain extent. IT experts and technicians specializing in various fields are unavailable to aid incubatees in developing prototypes for their products, services, and websites. Although NICs and Plan 9 provide accounting and auditing services, BICs lack such provisions.

Table 3: Startups Ecosystem and Missing Links

Elements	Global Ecosystem	NICs	BICs	Plan 9
Basic Infrastructure	Free Office Space	✓	✓	✓
	Free Meeting Rooms	✓	✓	✓
	Ideas Rooms and Discussion Centers	✓	✓	✓
	Free internet	✓	✓	✓
	No Utility Charges	✓	✓	✓
Training and Capacity Building	Ongoing Training Programs	✓	✓	✓
	Mentors from Professional Bodies	✓	✗	✗
	Mentors from Industry and Business	✗	✗	✗
Knowledge Support System	Local case studies & Models (Literature)	✗	✗	✗
	Specialized & Core Competencies in specific field	✗	✗	✗
	Researches & Surveys on Local Market Dynamics	✗	✗	✗
	Ideas contests	✓	✓	✓
Funding and Investment Opportunities	Dedicated Angels Investors and Donors	✗	✗	✗
	Investment Available in Incubation Center	✗	✗	✗
	Linkages with local and International Networks	✗/✓	✗/✓	✗/✓
	Services Available for loan/IPOs and other funds	✗/✓	✗	✗
Business Development Services	Legal Services	✗/✓	✗/✓	✗/✓
	IT experts and technical staff for prototype development	✗	✗	✗
	Accounting & Auditing services	✗/✓	✗	✗/✓
	Backward and Forward Supply Chain Network	✗	✗	✗

Note (✓= available, ✗=not available and ✗/✓= partially available).

4.6 Why Tech-Startups Are More Successful

Pakistan's presence in global IT services exports is small but has seen significant growth, increasing from 0.17 percent in 2017 to 0.30 percent in 2021. Its overall IT export volume surged from 7.2 percent in 2006 to an impressive 37.7 percent in 2022. Ireland holds the top spot with over 28 percent, followed by India with over 11 percent, and China with over 7 percent. Similarly, in 2021, Pakistani startups gained global recognition, attracting investors and raising around $375 million in funding. Most of these startups were focused on technology-driven enterprises, and Pakistan is experiencing a steady rise in the prevalence of such ventures.

Approximately 500 technology-based startups have emerged, effectively establishing their businesses, products, and services. The rise in tech startups can be attributed, in part, to the remarkable growth of the IT sector. By January 2023, Pakistan boasted an impressive 71.70 million

social media users and 191.8 million active cellular mobile connections, which accounted for a significant 80.5 percent of the total population. To understand the journey of entrepreneurs, it's important to know the different stages startups go through. The first stage is called the "standup" phase, where ideas are conceived, business plans are developed, and prototypes are created.

During this phase, they require careful nurturing and mentorship. To address this need, HEC has established 38 business incubation centers, while Ignite (a project of ministry of information technology) has set up 4 National Incubation Centers (NICs), alongside PITB Plan 9 and other incubation center e.g. P@SHA, Enabler, Extreme Commerce etc. Transitioning from this stage to the subsequent phase, the "startup" stage, entrepreneurs launch their businesses, products, and services. While the success rate for general businesses during this transition is a mere 5-7%, tech-startups surpass this figure with success rates exceeding 10%.

The primary cause of this anomaly stems from the rigorous and burdensome business ecosystem prevailing in Pakistan, characterized by minimal ease of doing business. Technological startups experience minimal engagement with the physical market, exemplified by platforms such as Daraz, Bykea, and KASB Securities. Conversely, general startups are obligated to navigate interactions with local authorities and contend with established businesses those have their monopolies. These startups must acquire numerous permits, approvals, and contend with the informal sector, which is supported by influential interest groups.

For instance, if the owners of Bykea desire to initiate physical operations, they must amass substantial funds for bike procurement or outsourcing and then compete against well-established business magnates. These tycoons hold significant sway over both the public and administrative spheres. Consequently, these educated, young graduates find it arduous to sustain themselves within this challenging business environment. Consequently, Pakistan's ranking has remained persistently low, fluctuating between the 85th and 148th positions from 2010 to 2020.

Tech-startups thrive on the foundations of expertise assessment, technological prowess, and effective marketing strategies, often helmed by owners who are already IT virtuosos. Conversely, general startups necessitate robust research and development efforts encompassing market needs assessment, local sourcing of materials, and forging robust connections within the local value chain. Unfortunately, avenues for comprehensive market evaluation remain scant, with a dearth of dedicated newspapers catering to local market dynamics, impeding the identification of issues, market demands, and supply dynamics. Similarly, research on local challenges, viable solutions, products, and services remains lacking.

Pakistan has 207 business school schools, but lacks publications like Harvard Business Review and similar magazines that provide insights into local obstacles. Although the HEC has allocated billion rupees' funds for research on local challenges, the findings are not widely accessible. Technological grants often lead to products with limited commercial success. The absence of local case studies hinders inspiration and guidance for startups. Surprisingly, individuals with limited education excel in real estate ventures, yet universities lack specialized programs in real estate investment and finance, despite it being a thriving market worth 400 billion USD in Pakistan.

Conversely, although tech-startups boast a higher success rate, they struggle to achieve substantial growth within Pakistan. These startups encounter obstacles in scaling-up their business by issuing IPOs on the PSX Main and the GEM Board, as well as attaining prominent positions in the global market. Various factors contribute to this anomaly at third stage i.e. Scale-up, with the prevalent "Seth" culture emerging as the most significant. A majority of angel investors and seed funders are not adhering to an entrepreneurial culture, and even within NICs, successful tech-startup products often result in investors seizing control and appointing the startup owners as mere CEOs, thereby eradicating the entrepreneurial culture altogether.

Scaling-up stems from multiple market-level factors e.g. Pakistan's IT infrastructure is weak, and university graduates lack the necessary skills. Additionally, internet blockages, protests, and strikes pose further obstacles. Moreover, regulatory policies by the State Bank of Pakistan and other governing bodies do not encourage tech industry to get FDI. Secondly, labor and tax laws primarily cater to traditional industries, causing issues for IT sector firms. Furthermore, the foreign policy lacks a strong emphasis on business, despite strong ties with China. Unfortunately, we have been unable to align our IT sector with China and reap its benefits. US and India has decided to establish Joint Task Forces for advanced telecommunications, focusing on Open RAN and 5G/6G tech research and development.

The ICT services industry in Pakistan reached $2.6 billion in 2022, with the potential to reach $10 billion by 2025. Nevertheless, substantial support at the market, and governmental levels is necessary to achieve this potential. The mere establishment of a special investment facilitation council falls short in its ability to augment foreign direct investment. Pakistan must go beyond and create a conducive ecosystem, not only for the tech industry but also for general businesses.

CONCLUSION

The primary purpose of incubation centers in Pakistan is to support the growth and scalability of startups by providing them with resources, mentorship, and access to investors and customers. In conclusion, Pakistan's entrepreneurial activity among graduates remains strikingly low compared to other Asian countries. Access to finance is not only a major hindrance for entrepreneurial growth, but efforts to strengthen the entrepreneurial ecosystem have not resulted in significant breakthroughs. The reported numbers of graduating startups from various centers are exaggerated, indicating a substantial gap between projected and actual outcomes. Concerns have been raised about the true nature of incubation centers, as they seem more focused on showcasing numbers than achieving substantial growth. Furthermore, the allocation of funds and lack of experienced managers and mentors pose challenges for startups. The limited number of IPOs and the absence of market research hinder business growth and innovation. Weak IT infrastructure, regulatory policies, and a dominant "Seth" culture further impede the scaling up of startups. To tap into Pakistan's potential and foster substantial growth, a conducive ecosystem is needed for both tech startups and general businesses. The challenging business environment in Pakistan, characterized by limited ease of doing business, presents significant obstacles, particularly for general startups. Tech startups show higher resilience but face limitations in scaling within the country. Addressing these issues is crucial to enable educated graduates to sustain themselves and drive entrepreneurship in Pakistan.

POLICY RECOMMENDATIONS AND SUGGESTIONS

Based on the findings and analysis of the study, the following recommendations are proposed for each stakeholder:

Sponsored Agencies (HEC, Ministry, Technology Board):

Although data and reports are currently collected from incubation centers, it is essential to supplement them with independent evaluations. Third-party assessments can unveil the true performance and conduct a cost-benefit analysis of these centers.

- Emphasize that financial resources should be directed towards supporting startups rather than solely focusing on the operational and establishment aspects of incubation centers.
- Invest in enhancing the business acumen, marketing expertise, and product development skills of entrepreneurs.
- Organize dedicated news & views/ journals/ case study publications that feature local and international case studies (especially in Urdu) on start-ups accompanied by video documentaries. This platform will provide aspiring entrepreneurs with insights into the opportunities, challenges and issues prevalent in the business world.

Incubation Centers

- Develop on-site IT support facilities exclusively for startups, focusing on prototype and technology-based product and service development.
- Offer complimentary accountancy, auditing, and legal services to reduce initial costs for startups.
- It is recommended that incubation centers concentrate their efforts on a specialized field aligned with their core competencies e.g. NUML should focus on languages solutions, agriculture universities on agri-business and NUST on technology etc. rather than dispersing their focus across multiple dimensions.
- Create a network that fosters collaboration between universities and industries, particularly for backward and forward supply chain purposes. This network will benefit startups by providing access to affordable raw materials and efficient distribution channels.

Government:

Introducing an enticing financial opportunity for startups exhibiting innovative and distinct products or services. Government should extend the offer of zero-interest or nominal interest rate seed funds, ranging from 1.5 to 5 million. This funding initiative is designed to furnish these promising ventures with the crucial initial financial impetus required for their flourishing.

To be eligible for this funding, startups must demonstrate their unique and ground breaking offerings. The allocation of this loan is subject to approval from the incubation center, following their thorough assessment and endorsement of the respective business plans.

The government, in collaboration with HEC and Ignite, should implement a strategic approach to optimize the effectiveness of BICs and PITB Incubation Centers. These centers should primarily focus on incubating early-stage entrepreneurs, providing them with specialized training and support during the stand-up phase of their ventures.

On the other hand, the scope of NICs should be targeted at nurturing start-ups that have progressed beyond the incubation stage and are in the accelerator stage.

To facilitate this segregation, the selection of entrepreneurs for NICs should be conducted through an ideas competition, wherein the most promising candidates from BICs and PITBs will be chosen to join the accelerator program at NICs.

This strategic alignment will enable both streams to operate within their respective areas of expertise and specialization. BICs and PITBs, situated in peripheral as well as mainstream cities, will concentrate on cultivating new startups, while NICs, located in major cities, will foster the growth of more advanced startups. By implementing this approach, the pace of entrepreneurship in Pakistan is expected to accelerate significantly, resulting in more productive and successful outcomes for the entrepreneurial ecosystem.

REFERENCES

Abereijo, I. O., & Fayomi, A. O. (2005). Innovative approach to SME financing in Nigeria: A review of small and medium industries equity investment scheme (SMIEIS). *Journal of Social Sciences*, *11*(3), 219–227.

Allen, D. N., & Hendrickson-Smith, J. (1986). Planning and Implementing Small Business Incubators and Enterprise Support Networks. US Department of Commerce, Economic Development Administration. *Research and Evaluation Division. Washington, DC (November 1986)*, 16–18.

Bergmann, T., & Utikal, H. (2021). How to support start-ups in developing a sustainable business model: The case of an european social impact accelerator. *Sustainability*, *13*(6), 3337.

Bhide, A. (2003). *The origin and evolution of new businesses*. Oxford University Press.

Clarysse, B., & Bruneel, J. (2007). Nurturing and growing innovative start-ups: the role of policy as integrator. *R&d Management*, *37*(2), 139–149.

Cohen, S. (2013). What do accelerators do? Insights from incubators and angels. *Innovations: Technology, Governance, Globalization*, *8*(3), 19–25.

Colombo, M. G., & Delmastro, M. (2002). How effective are technology incubators?: Evidence from Italy. *Research Policy*, *31*(7), 1103–1122.

Davidsson, P., & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing*, *18*(3), 301–331.

Day, M., & Jones, E. M. (2004). The incubation chain. *National Business Incubation Association Conference, Atlanta, Georgia*, 25–28.

Dosi, G., Nelson, R. R., & Winter, S. G. (2000). *The nature and dynamics of organizational capabilities*. Oxford university press.

Dubini, P. (1989). The influence of motivations and environment on business start-ups: Some hints for public policies. *Journal of Business Venturing*, *4*(1), 11–26.

Eisenhardt, K. M. (1989). Making fast strategic decisions in high-velocity environments. *Academy of Management Journal*, *32*(3), 543–576.

Freeman, J., Carroll, G. R., & Hannan, M. T. (1983). The liability of newness: Age dependence in organizational death rates. *American Sociological Review*, 692–710.

Gorman, M., & Sahlman, W. A. (1989). What do venture capitalists do? *Journal of Business Venturing*, *4*(4), 231–248.

Hafeez, S., Ali, Q., & Nawaz, M. A. (2021). Business Incubators in Pakistan: State of the Art and Future Outlook. *Journal of Accounting and Finance in Emerging Economies*, *7*(4), 979–990.

Hansen, M. T., Chesbrough, H. W., Nohria, N., & Sull, D. N. (2023). Networked Incubators: Hothouses of the New Economy. *In Practice*.

Hellmann, T., & Puri, M. (2002). Venture capital and the professionalization of start-up firms: Empirical evidence JOURNAL OF FINANCE (57) 1, 169-197. *Obtenida El*, *24*.

Hurst, E., & Pugsley, B. W. (2011). *What do small businesses do?* National Bureau of Economic Research.

Kirwan, P., Van Der Sijde, P., & Groen, A. (2006). Assessing the needs of new technology based firms (NTBFs): An investigation among spin-off companies from six European Universities. *International Entrepreneurship and Management Journal*, *2*, 173–187.

Koenig, G. (2013). Business ecosystems revisited. *Understanding Business Ecosystems: How Firm Succeed in the New World of Convergence, Brussels, De Boeck*, 69–83.

Krishna, A., Agrawal, A., & Choudhary, A. (2016). Predicting the Outcome of Startups: Less Failure, More Success. *2016 IEEE 16th International Conference on Data Mining Workshops (ICDMW)*, 798–805. https://doi.org/10.1109/ICDMW.2016.0118

Lalkaka, R. (2003). Business incubators in developing countries: characteristics and performance. *International Journal of Entrepreneurship and Innovation Management*, *3*(1–2), 31–55.

Lalkaka, R., & Abetti, P. (1999). Business incubation and enterprise support systems in restructuring countries. *Creativity and Innovation Management*, *8*(3), 197–209.

Larson, A. (1992). Network dyads in entrepreneurial settings: A study of the governance of exchange relationships. *Administrative Science Quarterly*, 76–104.

Lee, S. S., & Osteryoung, J. S. (2004). A comparison of critical success factors for effective operations of university business incubators in the United States and Korea. *Journal of Small Business Management*, *42*(4), 418–426.

Li, C., Ahmed, N., Qalati, S. A., Khan, A., & Naz, S. (2020). Role of business incubators as a tool for entrepreneurship development: the mediating and moderating role of business start-up and government regulations. *Sustainability*, *12*(5), 1822.

Mahmood, N., Jianfeng, C., Jamil, F., Karmat, J., Khan, M., & Cai, Y. (2015). Business incubators: Boon or boondoggle for SMEs and economic development of Pakistan. *International Journal of U-and e-Service, Science and Technology*, *8*(4), 147–158.

Pettersen, I. B., Aarstad, J., Høvig, Ø. S., & Tobiassen, A. E. (2016). Business incubation and the network resources of start-ups. *Journal of Innovation and Entrepreneurship*, *5*(1), 7. https://doi.org/10.1186/s13731-016-0038-8

Prashantham, S., & Kumar, K. (2019). Engaging with startups: MNC perspectives. *IIMB Management Review*, *31*(4), 407–417. https://doi.org/https://doi.org/10.1016/j.iimb.2019.01.003

Reynolds, P. D. (1987). New firms: Societal contribution versus survival potential. *Journal of Business Venturing*, *2*(3), 231–246.

Rice, M. P. (2002). Co-production of business assistance in business incubators: an exploratory study. *Journal of Business Venturing*, *17*(2), 163–187.

Samaeemofrad, N., van den Herik, J., & Verburg, R. (2016). A New Perspective on Business Incubators. *2016 International Conference on Engineering, Technology and Innovation/IEEE Lnternational Technology Management Conference (ICE/ITMC)*, 1–11.

Schwartz, M., & Hornych, C. (2010). Cooperation patterns of incubator firms and the impact of incubator specialization: Empirical evidence from Germany. *Technovation*, *30*(9–10), 485–495.

Scillitoe, J. L., & Chakrabarti, A. K. (2010). The role of incubator interactions in assisting new ventures. *Technovation*, *30*(3), 155–167.

Smilor, R. W. (1986). *New business incubator*. Lexington Books.

Smilor, R. W., & Gill, M. D. (1986). The new business incubator: Linking talent. *Technology, Capital, and Know-How, Massachusetts: Lexington Books*.

Theodoraki, C., & Messeghem, K. (2017). Exploring the entrepreneurial ecosystem in the field of entrepreneurial support: a multi-level approach. *International Journal of Entrepreneurship and Small Business*, *31*(1), 47–66.

Vlados, C., & Chatzinikolaou, D. (2019). Strategy perception and implementation on less developed business ecosystems micro and small enterprises: The service sector of Eastern Macedonia and Thrace. *Business Management and Strategy*, *10*(2), 27–63.

Wachira, K. (2017). *The Role of University based Business Incubators Strategy on Enterprise Growth in Kenya*.

Wright, M., Siegel, D. S., & Mustar, P. (2017). An emerging ecosystem for student start-ups. *The Journal of Technology Transfer*, *42*, 909–922.

Zhao, L., & Aram, J. D. (1995). Networking and growth of young technology-intensive ventures in China. *Journal of Business Venturing*, *10*(5), 349–370.

ANNEX-A: LIST OF BICS

University	Year	BIC Adress
Abdul Wali Khan University, Mardan	2015-16	Abdul wali khan university, mardan
Bahria University, Islamabad	2013-14	Shangrilla road, sector e-8/1, islamabad
Balochistan University of Information Technology, Engineering and Management Sciences, Quetta	2012-13	Takatu campus buitems, baleli, airport road quetta
COMSATS University, Islamabad	2014-15	Cubator-1ne COMSATS University, Islamabad, Islamabad Campus Adjacent to Obsession Marquee, Park Road Tarlai Kalan 45550
DOW University of Health Sciences, Karachi	2017-18	Dow University of Health Sciences, Karachi, Ojha campus, serobiology building 2nd Floor.
Government College University, Faisalabad	2014-15	First floor, student teacher center government college university, faisalabad. (new campus) jhang road.
Government College University, Lahore	2016-17	1st floor institute of insudtrial biotechnology building science block gc university katchery road lahore
Institute of Management Science, Peshawar	2017-18	1-a, sector e-5, phase vii, hayatabad, peshawar-
Institute of Space Technology, Islamabad	2013-14	IST-Business Incubation Center, Instiute of Space Technology, 1, Islamabad Highway, Islamabad 44000
International Islamic University, Islamabad	2016-17	Business Incubation Center opposite female campus Internation Islamic University H-10 islamabad
Karakoram University, Gilgit	2015-16	Near shopping mall, karakoram international university, university road, gilgit
Khyber Medical University, Peshawar	2016-17	Academic Block, third (3rd) floor, KMU, Phase 5, Hayataabad, Peshawar, Khyber Pakhtunkhwa, Pakistan
National Textile University, Faisalabad	2017-18	2nd Floor, NTRC Building, National Textile University, Sheikhupura Road, Faisalabad.
National University of Modern Languages, Islamabad	2016-17	Salam block, secotr h-9, numl islamabad.
National University of Sciences and Technology, Islamabad	2005-06	Technology incubation centre, cie building, innovation drive, nust campus, h-12, islamabad
NED University of Engineering and Technology, Karachi	2014-15	NED University of Engineering and Technology Karachi
Pakistan Institute of Engineering and Applied Sciences, Islamabad	2016-17	Lehtrar road, islamabad, islamabad capital territory
Quaid-i-Azam University, Islamabad	2012-13	ORIC/BIC, BS Natural Sciences Building, Quaid-i-Azam University Islamabad.

Sindh Agriculture University Tandojam	2013-14	Business Incubation Center of Sindh Agriculture University, Tandojam - 70050
Sukkur Institute of Business Administration, Sukkur	2010-11	Center for Entrepreneurial Leadership and Incubation, 2nd Floor Knowledge Center Sukkur IBA University, Airport Road Sukkur
University of Agriculture, Faisalabad	2009-10	Business Incubation Center, Office of Research, Innovation and Commercialization, University of Agriculture, Agriculture University Road, Faisalabad, Pakistan. Zip Code 38000.
University of Azad Jammu & Kashmir	2014-15	University of Azad Jammu & Kashmir
University of Engineering and Technology, Lahore	2014-15	Business Incubation Center, First Floor, BSSC, University of Engineering & Technology Main G.T. Road, Lahore
University of Engineering and Technology, Peshawar	2010-11	Technology / Business Incubation Center, Univesity of Engineering and Technology, Phase-V, Hayatabad Campus, Near SNGPL Regional Office Peshawar
University of Gujrat, Gujrat	2014-15	Business Incubation Center, University of Gujrat , Hafiz Hayat Campus, Jalal Pur Jattan road Gujrat, Gujrat
University of Haripur, Haripur	2015-16	Offic # 217-218 ,administration block university of haripur
University of Malakand, Malakand	2013-14	Business Incubation Center, University of Malakand, Chakdara, Dir (L), KP
University of the Punjab, Lahore	2017-18	University of the Punjab Lahore
University of Veterinary and Animal Sciences, Lahore	2010-11	Business incubation center (bic) university of veterinary & animal sciences, outfall road, lahore
Kinnaird College for Women University, Lahore	2021-22	
Fatima Jinnah Women University, Rawalpindi	2021-22	
Lahore College for Women University, Lahore	2021-22	
Mehran University of Engineering & Technology, Jamshoro	2021-22	
Muhammad Nawaz Shareef University of Agriculture, Multan	2021-22	

ANNEX-B: LIST OF NICS AND OTHER INCUBATION CENTERS

Name	URL	Location
IdeaGist	https://ideagist.com/	Islamabad, Punjab
Aspire Pakistan	https://aspirepk.org/	Islamabad, Punjab
10XC Seed Fund	http://www.10xc.pk	Karachi, Sindh
AMAN Center for Entrepreneurial Development	http://ced.iba.edu.pk/index.php	Karachi, Sindh
Arazi Ventures (Pvt) Ltd.	http://www.arazi.pk	Lahore, Punjab
Arpatech	http://www.arpatech.com	Karachi, Sindh
Central Depository Company of Pakistan	http://cdcpakistan.com	Karachi, Sindh
Cloud9 Startups	https://web.facebook.com/Cloud9Startups/?_rdc=1&_rdr	Islamabad, Punjab
Conrad Labs	http://www.conradlabs.com/	Lahore, Punjab
Copakistan	http://copakistan.co/	Karachi, Sindh
CresVentures	http://www.cresventures.com/	Lahore, Punjab
DotZero	http://www.thedotzero.com	Karachi, Sindh
Fintech Factory	http://www.fintechfactory.pk/	Islamabad, Punjab
Founder Institute	https://fi.co/s/6881/map	Lahore, Punjab
GIK The Incubator	https://www.giki.edu.pk/TheIncubator	Swabi, KPK
Green Business Incubator (GBI)	http://www.gbi.org.pk/	Lahore, Punjab
Gulf Ventures	http://www.gulfventuresltd.com/	Lahore, Punjab
IGI Investment Bank Ltd	http://www.igiinvestmentbank.com.pk	Karachi, Sindh
IJARA CAPITAL PARTNERS LIMITED	http://www.ijara.com.pk	Karachi, Sindh
Invest 2 Innovate (i2i)	http://invest2innovate.com	Islamabad, Punjab
Jazz xlr8	https://jazzxlr8.com.pk/	,
Jumpstart Pakistan	http://www.jumpstartpakistan.com/	Rawalpindi, Punjab
Karachi, Sindh Civic Innovation Lab (KCIL)	http://pif.org.pk/kcil/	Karachi, Sindh
Lakson Investments Limited	http://li.com.pk	Karachi, Sindh
Mini Ventures	http://www.miniventures.co	Karachi, Sindh
My Great Capital	http://www.mygreatcapital.com	Karachi, Sindh
National Incubation Center	https://web.facebook.com/NICPakistan/	Islamabad, Punjab
National Incubation Center Lahore, Punjab (NIC Lahore, Punjab)	https://nicLahore, Punjab.lums.edu.pk/	Lahore, Punjab
National Incubation Center Peshawar	https://www.nicpeshawar.pk/	Peshawar, KPK
Nspire	http://nspire.com.pk	Lahore, Punjab
NSPIRE	http://www.nspire.com.pk/	Lahore, Punjab
NUST Technology Incubation Centre (TIC)	http://www.nust.edu.pk/INSTITUTIONS/Directortes/TIC/Pages/default.aspx	Islamabad, Punjab
Peracha	http://www.peracha.org/	Karachi, Sindh
Peshawar 2.0	http://www.peshawar2.org/revolt/	Peshawar, Khyber Pakhtunkhwa
Plan9	http://plan9.pitb.gov.pk/	Lahore, Punjab

PlanX	http://planx.pitb.gov.pk/	Lahore, Punjab
Punjab Information Technology Board	http://www.pitb.gov.pk/	Lahore, Punjab
Saiban Associates	http://saibanproperties.com	Lahore, Punjab
Seed Ventures	http://seedventures.org	Karachi, Sindh
Shah Pets Centre & Farms	http://www.idealtradingcompany.com/	Karachi, Sindh
Shopistan	http://www.shopistan.pk/	Lahore, Punjab
Social Innovation Lab (SIL)	http://socinnlab.org/	Lahore, Punjab
Teamup	http://teamup.pk/	Islamabad, Punjab
Tech Valley Abbottabad	http://techvalleyabbottabad.pk/incubation	Abbottabad, KPK
TechJuice	http://www.techjuice.pk	Lahore, Punjab
Tecube, Aptech	http://www.tecube.pk/	Karachi, Sindh
Telenor Velocity	https://telenorvelocity.com.pk/	,
The Indus Entrepreneurs (TiE) Islamabad	https://islamabad.tie.org/	Islamabad, Punjab
The Nest i/o	http://thenestio.com/	Karachi, Sindh
TMT Ventures	http://www.directcapital.co.nz/TMT-Ventures.aspx	Karachi, Sindh
VenExel Technologies	http://www.venexel.com/	Lahore, Punjab
Wecreate Pakistan	http://pakistan.wecreatecenter.com/	Islamabad, Punjab
Women Innovation Network	https://win.org.pk/	Lahore, Punjab
WomenX	http://www.womenxpakistan.com/	Islamabad, Punjab
Sarmayacar	https://www.sarmayacar.com/	,
Cambridge Advisors Network	https://www.cambridgeadvisorsnet.com	Karachi, Sindh
Innovation & Entrepreneurship Center, Mehran University of Engineering & Technology	https://iec.muet.edu.pk/	Jamshoro, Sindh
High Output Ventures	https://www.hov.co/	Islamabad, Punjab
National Expansion Plan of NICs	https://nep.pitb.gov.pk/	Islamabad, Punjab
Start Incubation Center	https://thedesk.pk/start-incubation-center.php	Islamabad, Punjab