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REPORT

State of Pakistan's Technology Landscape and Startup Economy

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INTRODUCTION

Pakistan's startups and technology sector witnessed unprecedented growth during the COVID-19 pandemic. 2021 was a record-breaking year, with technology startups raising $350 million, while over $227 million was raised in the first half of 2022; Pakistani startups have raised $322 million in 2022 so far.[1] Additionally, Pakistan's information technology (IT) services sector has emerged as the largest net services exporter in the country, with IT exports more than doubling from $1.19 billion in fiscal year (FY) 2019 to $2.62 billion in FY 2022.[2] Another key component of the country's technology sector is freelance work, where individuals provide technology services to global clients through platforms such as Upwork and Fiverr. This talent pool has experienced a tremendous increase in their earnings during the pandemic. While exact data for cumulative freelance earnings is not available, Pakistan is ranked as one of the largest freelance markets in the world. The national government has set a target of earning over $3 billion from this sector by 2024.[3]

The ongoing growth of Pakistan's technology ecosystem is not entirely unexpected. Pakistan is a young country with a growing middle class. Sixty-four percent of the population is below the age of thirty, an additional 2.5 million middle-income households are expected to be estab-

1 "Startups raise $104mn in Q2 amid VC funding slowdown," *Mettis Global Link*, July 1, 2022. https://mettisglobal.news/startups-raise-104mn-in-q2-amid-vc-funding-slowdown/

2 Exports and Imports data, the State Bank of Pakistan. https://www.google.com/url?q=https://www.sbp.org.pk/ecodata/ExportsImports-Goods-Arch.xls&sa=D&source=docs&ust=1659034360198031&usg=AOvVaw0Nsjkst56zScnassOx6o2s

3 "Govt eyes $3bln from freelancing IT exports by 2024," *The News International*, September 5, 2021. https://www.thenews.com.pk/print/887910-govt-eyes-3bln-from-freelancing-it-exports-by-2024

lished by 2025, and cellular subscribers have increased by four times in the last three years.[4] Moreover, the improving security situation, increased mobile connectivity, and enabling policies implemented by regulators have transformed the technology sector. All of this means that the majority of the country's population is not only digitally native, but also has the technical skills to develop and export technology to the world.

However, a tightening global macro environment coupled with increasing domestic political instability is a cause of concern for the sector, especially the domestic startup economy. To understand the risks and opportunities facing the technology ecosystem, the Atlantic Council's Pakistan Initiative interviewed several experts within and outside Pakistan. The analysis below highlights the current state of the ecosystem and the impact of ongoing economic and political instability in Pakistan. It also outlines recommendations for key stakeholders including policymakers seeking to further globalize Pakistan's technology sector to unlock both export earnings and foreign investment opportunities.

OVERVIEW OF PAKISTAN'S TECHNOLOGY SECTOR

The development of Pakistan's technology sector is not a recent phenomenon. Beyond the increasing access to internet connectivity, there has been a global shift in terms of investors seeking disruptive, technology-first startups as well as increased outsourcing of services to Global South markets. The combination of these factors has led to a dramatic growth in Pakistan's technology sector.

Broadly speaking, there are four sub-sectors that are collectively referred to as the technology sector in this document. These are: startups, which are fast-growing scalable businesses backed by venture capital; information technology services companies, which primarily provide IT services through labor hired in Pakistan; and freelancers, who are individuals that provide services locally and abroad. Their services are provided through digital means but are not necessarily technology services.

The early growth experienced in the technology sector was driven by technology services companies such as Cybernet, a leading internet services provider with over seven hundred employees, and Netsol, a software company founded in 1997 by a Pakistani entrepreneur that is listed on both the NASDAQ and Pakistan Stock Exchange. These companies aim to provide basic internet services to domestic consumers and IT outsourcing services to global markets.

As these companies grew, the technology revolution caught the attention of a new generation of Pakistanis, leading to the emergence of the current technology and startup ecosystem in the country. The startup ecosystem in particular gained tremendous momentum around the beginning of the pandemic.

A key catalyst for this growth in the domestic startup ecosystem was the rise of Careem, a startup that began as a ride-hailing platform in the United Arab Emirates. Cofounded by Mudassir Sheikha, an entrepreneur of Pakistani descent, Careem was acquired by Uber for over $3 billion in January 2020. The company's rapid growth and success created what is known as the "Careem Mafia" in Pakistan, and their success energized and inspired a new generation of entrepreneurs in the country.

This shift in attitudes was a critical driver of growth. In the early- and mid-2010s, startups struggled to raise funding as risk-averse banks routinely rejected loan applications from entrepreneurs.[5] Between 2016 and 2018, Pakistani startups were averaging about $10 million in venture capital (VC) funding, significantly lower than the neighboring Middle East and North Africa (MENA) region which averaged $800 million for startups in the same period.[6] However, during this period strong foundations were built for the ecosystem by a community of investors, entrepreneurs, and technologists who continue to be global evangelists for Pakistan's technology sector.

COVID-19 further changed the landscape, unleashing global interest in the country's startup ecosystem and significantly boosting Pakistan's information technology exports. As a result, startup investments rose from $36m in

4 Abdur-Rahim Syed and Asim Bukhari, "Starting Up: Unlocking Entrepreneurship in Pakistan," *McKinsey and Company*, April 2019, https://www.mckinsey.com/~/media/mckinsey/featured%20insights/middle%20east%20and%20africa/pakistans%20start%20up%20landscape%20three%20ways%20to%20energize%20entrepreneurship/starting-up-unlocking-entrepreneurship-in-pakistan.pdf

5 Faseeh Mangi, "Startup Fever is Gripping the World's Last Big Untapped Nation," *Bloomberg*, November 16, 2021. https://www.bloomberg.com/news/features/2021-11-17/pakistan-startups-draw-record-money-helped-by-covid-and-china-s-tech-crackdown

6 "What's fueling Pakistan's emerging startup ecosystem," *McKinsey and Company*., May 31, 2022. https://www.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/whats-fueling-pakistans-emerging-startup-ecosystem

2019 to $350m in 2021 while export earnings rose from $1.19 billion in FY 2019 to $2.62 billion in 2021.[7]

Due to the global travel ban enforced during the pandemic, entrepreneurs in Pakistan competed on a more equal footing with their peers from other countries. Investors and businesses had historically refrained from traveling to Pakistan to engage with its technology community, but this no longer posed a hindrance. As both developed and developing countries pumped unprecedented stimulus into the global economy, capital began landing at the shores of countries like Pakistan, primarily because investors found themselves priced out of deals in more mature emerging markets like India and Indonesia.

Restricted movement also meant that freelance earnings, often routed to Pakistan through informal and personal networks abroad, were formalized. The growth in earnings captured by the formal sector energized an increasing number of citizens to enter the freelancing market, leading to further growth in remittance inflows generated by the ecosystem.

Policymakers in Pakistan, led by the State Bank of Pakistan (SBP) and the Securities and Exchange Commission of Pakistan (SECP) also played a positive role, engaging with industry stakeholders to proactively resolve issues and create an enabling environment for the sector. Increasing internet access driven by low-cost smartphones—there were 184 million cellphone users at the end of 2021—affordable internet data, and a young, digitally-native population added further momentum.

During this period publicly-traded companies like Netsol and The Resource Group (TRG) also saw a dramatic spike in their share prices. For example, the share price of Netsol increased from about Rs. 66 in December 2019 to a high of Rs. 300 in March 2021. The share price of TRG went from about Rs. 24 in December 2019 to a high of Rs. 176 in September 2021.

The growth of companies like Afiniti, a data and software company developing artificial intelligence-based products for global clients, has showcased that more sophisticated technology products can be developed in Pakistan as well. The success of this model reinforces the view that Pakistan's technology ecosystem will continue to become more competitive and integrated with the world market by providing more cutting-edge products and services to global clients.

UNDERSTANDING THE 2021 TECHNOLOGY SECTOR BOOM IN PAKISTAN

Pakistan's technology sector reached its zenith in the middle of 2021. Companies set out to look for offshore investment centers amid the global shutdown induced by COVID-19. Record liquidity in global financial markets, passage of pro-investment regulations, and a shift in attitudes among the next generation of human capital meant that the largely ignored technology ecosystem in Pakistan began to draw global interest.

As a result, investors began searching for opportunities in Pakistan, mainly because the country offered avenues that had not yet been explored, but which often resulted in better valuations (at a relative level) than other peer economies.[8] The success of similar models in international markets also reduced the risk perceptions around these opportunities. A shift towards remote work allowed both foreign investors and businesses looking for technology services to take a fresh look at Pakistan during this period. While international investors lacked a deep understanding of the market, their connections with Pakistani diaspora in countries like the United States meant that they were quickly able to network with and invest in Pakistani entrepreneurs.

The loosening of the regulatory environment in Pakistan further contributed to the success of Pakistan's technology economy. To an extent, the government, specifically the SBP and SECP can be credited with supporting this momentum of foreign investment. They allowed Pakistani companies to establish holding companies abroad while the operating company remained located in Pakistan, something that was not permitted until February 2021, displaying an interest in addressing the grievances of investors.

This shift in policy was a key moment as most international investors wanted to invest in Pakistan through entities based in jurisdictions like Singapore. Pakistan as a jurisdiction was considered too risky due to a host of issues, including tax policy uncertainty and concerns over the domestic dispute resolution system.

7 Pakistan Startup Ecosystem Report [PSER 2021], invest2innovate. https://www.insightsi2i.com/pser-21

8 Pakistan Startup Ecosystem Report [PSER 2021], invest2innovate. https://www.insightsi2i.com/pser-21

The SBP also changed policies regarding the repatriation of investment, considering the book value of startups usually differs from their valuations, and removed the requirement of obtaining prior approval from SBP before repatriating. Other supportive regulations included SBP's decision to address and regularize the issuance of convertible debt and to create a framework to streamline availing of cross-border digital financial services. The latter allowed businesses to make payments of up to USD $400,000 per entity in a year through an authorized dealer to sixty-two white-listed digital service providers without prior approval of the SBP.[9]

Another forward-looking policy was the Cloud First Policy introduced by the Ministry of Information Technology and Telecommunications in February 2022. The policy required all federal level public service entities to prioritize public cloud for future technology infrastructure. Simply, the policy provides for technical and administrative controls to protect personal data.

Senior government leaders including the President of Pakistan Dr. Arif Alvi, also took a keen interest in this sector, hosting regular meetings with global technologists to hear their concerns and unlock any barriers that they faced. Recognizing the potential of this sector, the government began work on establishing five Special Technology Zones (STZs) that could generate up to $5 billion in revenue in the next few years.[10]

Unsustainable rapid price acceleration due to easy money and investor confidence - referred to as frothiness - in the global market during the pandemic, however, had negative consequences as well. Investors began to ignore best practices when it came to due diligence and understanding the complexities of operating in a market like Pakistan, cutting large checks at inflated valuations to avoid missing out on the next big venture. However, this became a global phenomenon not necessarily unique to Pakistan. With global markets adjusting and the technology sector globally undergoing a much-needed correction, Pakistan's startup ecosystem faces unprecedented headwinds. This change of environment has pushed Pakistani entrepreneurs and technologists backed by venture capital to reevaluate their operating models, be more disciplined in how they utilize growth capital, and be more realistic about the valuations they will be able to demand from both domestic and foreign investors.

THE COLLAPSE OF AIRLIFT AND THE STARTUP WINTER

As international markets opened up and liquidity subsided in 2022, the flurry of investments into Pakistan slowed down. Global funding for startups fell 23 percent in the second quarter of 2022 from the first quarter.[11] Notably, Russia's invasion of Ukraine spiked oil prices across the world, leading to unprecedented fluctuations in exchange rates and spiraling inflation, heightening recession concerns and deterring early-stage startups investment slowdown.[12]

Recent months, however, have led to a recalibration both in Pakistan and around the world. As the global macro environment becomes tighter and recessionary risks increase, frontier markets like Pakistan struggle to continue attracting capital flows. Further complicating the situation, domestic economic and political instability have led to a dramatic decline in the value of the Pakistani rupee, sky-high inflation, and political polarization.

The dramatic collapse of Airlift Technologies is being looked at as another inflection point for the ecosystem. The startup, which began operations as a mobility company in Lahore and Karachi, had transitioned to a quick commerce company during the pandemic, raising $85 million in a Series B funding round, the largest raise in Pakistan's history. A variety of factors, including undisciplined expansion into markets like South Africa, spending exorbitantly on customer acquisition costs to push consumption in a high inflationary environment, and a tightening global financial landscape meant that the company struggled to get access to more growth capital and ultimately ended operations in July 2022.

While such a spectacular rise and fall of a venture may be a first of its kind in Pakistan, it is nothing new in the global startup ecosystem. Experts we spoke to in private conversations highlighted that access to cheap capital had led to several negative developments in the global technology

9 "List of Digital Service Provider Companies," *State Bank Pakistan*, August 13, 2020. https://www.sbp.org.pk/Epd/2020/FEC4-Annex-A.pdf

10 "Work begins on five tech zones," *The Express Tribune*, June 3, 2022. https://tribune.com.pk/story/2359776/work-begins-on-five-tech-zones

11 Aishwarya Dabhade, "Global startup funding fell 23% in Q2," *Economic Times*, July 17, 2022. https://economictimes.indiatimes.com/tech/startups/global-startup-funding-fell-23-in-q2-report/articleshow/92936763.cms

12 "Early-Stage Startups Face Investment Slowdown," *Wall Street Journal*, July 28, 2022.https://www.wsj.com/podcasts/tech-news-briefing/early-stage-startups-face-investment-slowdown/9012347d-c97e-4eff-80db-8fcf59eb1a37

ecosystem and Pakistan had been exposed to the same set of issues. Key among them was the ability of founders to raise money by following a growth-at-all-costs philosophy. As a result, they were not as disciplined as they should have been in a challenging market like Pakistan.

Industry experts remain optimistic, arguing that:

1. Unprecedented liquidity in global markets during the pandemic led to record inflows into Pakistani startups.

2. The pandemic led to a shift in habits around the world, meaning that Pakistani technology firms and talent could more easily compete globally, leading to a dramatic increase in export earnings.

3. The recent spate of bad news, especially the fall of Airlift, is an unfortunate yet natural cycle experienced by all startup economies.

4. The froth in global markets corrects and slows down investment activity, thereby inflicting pain on the broader ecosystem.

5. Ongoing pain is a good thing for the broader technology ecosystem, as it forces entrepreneurs and technologists to be more disciplined and competitive globally.

6. Pakistan's technology sector remains vibrant and dynamic, with immense potential to unlock foreign investment and exports.

7. Forward-looking policies over the last couple of years, which include allowing Pakistani companies to establish holding companies abroad, have developed a strong foundation for the sector.

8. Layers of bureaucracy and the lack of digitization continue to remain major barriers. There is a need for further improvement in policy, particularly as it relates to improving the ease of doing business in the country.

9. The time to further invest in the sector's overall competitiveness is now, especially as it relates to policies that are biased towards innovation, entrepreneurship, and digitization of Pakistan's economy.

It is also important to recognize that Airlift is not reflective of the country's diverse and highly competitive technology sector. Quick commerce is generally a notoriously difficult business to conquer and the cultural context of Pakistan makes it even more challenging to thrive in this sector. Interpersonal relations between consumers and thousands of roadside grocery stores allow for cheaper sales and maintenance of communal relationships in most parts of Pakistan, especially urban regions which Airlift targeted as its core consumer base.

However, investors and founders we spoke with have cautioned against unjustifiable warnings of eventual doom of all startups in the country. They argue that investors now show more discipline in terms of assessing new deals, conducting robust due diligence before investing in Pakistan. The market correction has meant that investors who parachuted into the ecosystem have now left. More determined investors, especially domestic ones who have spent years understanding the unique dynamics of the Pakistani market, continue to invest in high-potential ventures.

In addition, the country's IT services export sector continues to grow rapidly. Market participants focused on hiring Pakistani talent to provide technology services to global markets, especially the United States, are bullish on the broader ecosystem. In fact, they argue that the rapid depreciation of the rupee makes Pakistan even more competitive in terms of technology exports, meaning that they remain focused on reinvesting their profits to grow the ecosystem and Pakistan's exports.

KEY ISSUES FACING THE SECTOR

Global economic conditions, domestic political instability and a lack of diverse domestic funding options have hindered the growth of Pakistan's technology sector. While policymakers have announced new technology parks, loosened restrictions around establishing holding companies abroad, and worked toward creating an enabling environment, deep-rooted issues continue to create headwinds for the sector.

Bureaucratic Red Tape and Inconsistent Policies

Bureaucratic inertia is a challenge faced by all business ventures in Pakistan, including the technology ecosystem. Basic steps such as registering a new business remain cumbersome, meaning that entrepreneurs must expend valuable time complying with archaic regulations instead of focusing on growth.

Local taxation issues and inconsistent policies harm both investor and business confidence, discouraging the growth of the technology ecosystem. For example, startups struggle to get registered because they do not have a physical location. That most technologists simply need a few laptops and an internet connection to start a technology venture has not yet been internalized by some policymakers. Another issue is that sweat equity earned by founders or employees is taxed as income prior to its liquidation, even though the shareholder has not yet derived any income from this equity.

Inconsistency in policy specifically impacts the IT industry. For example, the government recently reversed a tax holiday on IT exports, reintroducing a 2.5 percent tax. However, this tax is not properly levied. For instance, if a small IT company in Pakistan earns a million dollars, out of which $900,000 is in export earnings and the rest is in local earnings, the entirety of their revenue can be treated as local earnings and charged with local sales tax. In some cases, even if the company is solely focused on providing IT exports, it is still liable to pay local taxes despite policies exempting IT exporters from these taxes. The inconsistent and inherently confusing tax structure increases the compliance burden on businesses. This has a regressive impact on smaller enterprises who may not have the expertise necessary to navigate the existing regulatory environment.

Policy volatility also leads to a lack of a broader understanding of IT operations in Pakistan. For example, capacity constraints at the Federal Board of Revenue (FBR), the authority mandated to collect taxes in Pakistan, mean it is often unable to determine which companies should get tax exemptions or differentiate between IT as a service and IT as a product.

Another example of inconsistency of policy is the inherent contradiction between certain initiatives. For instance, the Cloud First policy clashes with the Personal Data Protection Bill. The Personal Data Protection Bill risks substantially undermining the economic benefits of the Cloud First Policy by imposing data localization requirements and vague definitions of categories of restricted data that might scare away investment in the startup ecosystem. Many technology startups rely on cross-border data flow. Vague definitions of restricted types of data coupled with a zealous regulator could deter foreign investment.

Experts pointed out that there are still gaps in policymakers' understanding of the sector, as they are anchored to a more brick-and-mortar approach to economic policymaking. For example, the SECP insists that, under existing laws, the name of the company must reflect its line of business. For emerging businesses within Pakistan, this is a challenge, as they struggle to even kickstart their venture by registering their company, simply because the regulator insists on a name that reflects the work a business is doing.

This old economic approach to policy making also means that policymakers have focused on building technology parks across the country, which have become nothing more than real estate plays for traditional investors. Rather than building such technology parks, especially in expensive jurisdictions like Islamabad and Lahore, policymakers should focus on expanding access to broadband connectivity, imparting technology skills to younger citizens (especially those in smaller cities and towns), and encouraging entrepreneurship and innovation at a societal level.

Lack of Digitization

There are over three million merchants in Pakistan but more than 90 percent are not digitized and depend on cash as a mode of transaction. Lack of financial inclusion means that businesses find it challenging to get access to growth capital as they are unable to develop a reliable transaction and credit history that can be used by banks to assess the creditworthiness of a business.

Complicating this issue further is the fact that traditional banks in Pakistan find it easier, and more profitable, to lend directly to the government. This approach to banking means that the financial services industry in Pakistan has neither invested in improving the user onboarding or customer service experience nor aggressively invested in digital banking and bridging the financial inclusion gap in the country. While the SBP has rolled out Raast, an instant payment gateway that enables digital transactions at no cost, the service has yet to be scaled up to include merchants and retailers. The recent growth of fintech startups in Pakistan is an opportunity to bridge the digital divide, but the experiences of countries like India shows that policymakers need to step in and incentivize this digitization.

Industry experts asserted that without bridging the financial inclusion and digitization divide in Pakistan, the country's technology sector, especially startups focused on the domestic market, will continue to face significant headwinds against growth.

Angel and Later Stage Investing Gap

Pakistan is a unique market in the sense that angel investing, the earliest level of investment in a startup, became more common after VCs funded startups during the pandemic. Robust angel networks did not emerge in Pakistan for a variety of reasons, namely the limited pool of technologists in the country in the early years. Since early technology companies were mostly services-focused, they did not see the need to develop angel syndicates to support new players in the industry.

Additionally, the Pakistani diaspora, which has maintained deep links to Pakistan and its technology sector, bridged the gap by putting small amounts of money in early-stage startups. In addition to an over-reliance on affluent urban populations as the sole consumer base, a lack of a robust angel investing network in cities like Karachi and Lahore is a major barrier, as a lack of pre-seed investments meant that a significant proportion of startups could not survive past the ideation state. By 2021, angels were beginning to take an interest in the startup ecosystem, but the startup boom meant that they increasingly found themselves priced out of deals. As valuations return to more rational levels in the market, industry experts believe that angel investors will begin to fill the gap in the market, enabling entrepreneurs to raise capital and allowing them to execute their ideas.

A lack of knowledge in family offices has also been a major barrier to the ecosystem. These risk-averse family offices have historically supported generational businesses and at times end up taking a significant equity stake in a startup at the onset. This limits the upward growth potential for entrepreneurs, as they have already diluted a significant stake of their holdings, thereby limiting their future access to capital. With market maturation and increased awareness of how to structure more mutually beneficial deals in family offices, entrepreneurs are likely to find it easier to raise capital from family offices.

While startups have raised early-stage capital over the last few years, especially during the frothiness of the pandemic years, there remains a gap around late-stage funding. Given the overall macroeconomic and political instability in the country, bridging the late-stage funding gap may also be a challenge for the startup ecosystem. A key factor at play here, especially with regard to foreign investors, is the volatility in the exchange market for the rupee, which makes it that much more challenging for foreign investors to efficiently assess valuations of startups for late-stage funding. This exchange rate volatility reduces potential revenue that can be earned in dollar terms. In addition, the impact of devaluation on macroeconomic confidence and inflation makes the business case weaker for startups, especially direct-to-consumer enterprises.

Lack of Technical Talent

A limited talent pool, especially mid-level managerial and product development talent, remains a major barrier in the technology ecosystem. While Pakistan has a young population, a lack of investment in technical and critical thinking skills means that the quality of talent is often lacking. Pakistani universities currently produce about 25,000 technology graduates every year and sectoral experts argue that the number needs to be closer to 100,000 a year for the sector to meet its true potential.[13] Complicating this further is the fact that critical thinking skills and more sophisticated product development expertise are poorly imparted to students in the country. Those that do acquire these skills seek more lucrative opportunities abroad, with economic headwinds incentivizing an increasing number of qualified graduates to leave the country.

While services-led technology companies have invested in cultivating talent, they remain focused on outsourcing services, meaning that a gap remains at the higher end of the skills spectrum. In addition, the growth of the ecosystem and the limited talent pool available has increased competition, pushing wages up. While the cooldown in the startup ecosystem is likely to reduce upwards wage pressure, experts argue that more than cost, the low quality of technical talent, especially product developers and managers, is a bigger issue facing the industry.

Investing in developing this talent pool can lead to the emergence of more cutting-edge, product-based technology companies. Both the government and industry organizations have a role to play here, as training and retaining talent in the country is vital to securing the long-term growth of this sector.

Calls for Greater Government Regulation

Pushing cumbersome regulations on private enterprises has been the norm, not the exception in Pakistan. With the growth of the technology ecosystem, government actors have become increasingly interested in this sector. While

13 Barkan Saeed, "Can we train 100,000 IT professionals a year?" *Dawn*, October 18, 2021. https://www.dawn.com/news/1652716/can-we-train-100000-it-professionals-a-year

the SBP and SECP have followed a model approach in terms of listening to industry and removing barriers, there is an emerging risk that the technology sector will also fall victim to over-regulation.

Regulating innovators at a nascent stage can kill creativity. It is important for policymakers to recognize that their role is to provide an enabling environment for entrepreneurs. Reports about fraudulent activities and loss of investment in recent weeks have led to some calls for increased regulation. Industry experts noted that investing in robust governance frameworks and keeping an eye on venture progress is the responsibility of investors. If a handful of investors fail to follow global best practices when it comes to due diligence and compliance, the entire industry should not be made to pay for their mistakes with cumbersome regulations.

Rather than impose new regulations on the sector, government actors should further liberalize policies to increase access to credit facilities, ease registration processes for technology ventures, introduce dispute mediation mechanisms, ensure consistency of policies, and bridge the digital and financial inclusion divide.

Revisiting legislation such as the Prevention of Electronic Crimes Act (PECA) 2016 is also necessary, as certain clauses in the legislation are concerning to international and domestic technology companies. Proactively revising policies that disincentivize entrepreneurship, within and outside the technology sector, should be the priority of the government. Finally, policymakers must engage with other emerging economies and draw lessons from their successes and failures to position Pakistan's technology sector on a sustainable growth path.

RECOMMENDATIONS FOR ENTREPRENEURS

Grow with Discipline

Startup founders display a great deal of potential, but unrealistic and short-sighted valuations can disintegrate companies. Founders must pursue sustainable growth instead of focusing on burning capital simply to showcase exponential growth in a market like Pakistan. Accelerator programs and investors funding early-stage ventures should mentor and guide these emerging entrepreneurs as well.

Founders must also research the demands of the specific market they are catering to, especially through primary research. Industry experts highlighted that it is common to see a mismatch between what the consumer optimizes for and what the startup optimizes for, leading to a flawed product-market fit.

Consider Avenues for International Growth

Collaboration between Pakistani and international entities is key to bolstering the technology ecosystem in the country. The most likely partnerships would be with companies based in the MENA region for their geographic and cultural proximity. The success of Careem is evidence that this is a likely outcome.

Accelerators in the MENA region have a history of collaborating with Pakistani entrepreneurs, technologists, and startups. Although collaboration with Central Asia and East Asia is another avenue for scaling business, this may take longer to reach its potential, since much of this collaboration currently focuses on building networks. Pakistan's collaboration with international ventures and expansion abroad could help generate additional revenue, attract foreign talent, and improve branding.

The export growth experienced by Pakistan's technology sector is evidence that Pakistan's IT services are globally competitive. Entrepreneurs should focus on developing product-focused ventures that have global relevance and can unlock exponential growth that may otherwise not be possible by simply focusing on the domestic market. While competing globally may be more challenging, especially in the non-services side of the technology sector, the global success of publicly traded technology companies in Pakistan proves that the country's sector can and does win globally.

CONCLUSION

Pakistan's technology ecosystem stands on solid foundations and has a committed community of investors, technologists, and entrepreneurs investing time and resources to realize the full potential of this sector. The pandemic, including other aforementioned factors, has placed the country on the global technology map. While recent global and domestic events have cast a shadow on the sector, industry experts remain bullish.

The growth of technology companies in Pakistan has the potential to disrupt the country's status quo economy, making it more innovative, inclusive, and sustainable. The exponential growth in both investments and export earnings is evidence that Pakistani entrepreneurs and technologists can and do win globally. In a market with few exit opportunities, Pakistan has seen some notable ones in 2022, including the acquisition of DigitalOcean by Cloudways for $350 million and TezFinancial by Zoodpay. This proves that Pakistani companies can be strong acquisition targets by global players and global players are interested in entering the Pakistani market. The ongoing headwinds faced by the sector are not unique to Pakistan, and it is imperative that both public and private stakeholders proactively engage to further strengthen this ecosystem.

While the next twelve to eighteen months will be challenging, especially for domestic startups, the growing culture of innovation and entrepreneurship has captured the imagination of younger Pakistanis. As the country becomes more digitized, technology-led enterprises will play an increasing role in generating growth, earning exports, and attracting investments. To achieve this potential, policymakers must focus on providing an enabling environment, bridging the digital and financial inclusion divide, and proactively engaging with industry to remove hurdles as they emerge.

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