

# Expanding Pakistan's IT Footprint



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## Strategic Directions for International Market Access

The Pakistan Business Council (PBC)  
and  
The Consortium for Development  
Policy Research (CDPR)

The Pakistan Business Council and the authors of this study wish to acknowledge the guidance and insights provided by Mr. Asif Peer, CEO, Managing Director, and Member of the Board of Systems Limited

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Report commissioned by The Pakistan Business Council

## Disclaimer

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## Acknowledgements

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We extend our sincere gratitude to Dr. Ijaz Nabi (Country Director, International Growth Centre Pakistan & Executive Director, Consortium for Development Policy Research) for providing strategic guidance and oversight for this study.

Special appreciation goes to all the industry stakeholders who generously contributed their invaluable time, experience and insights for this study.

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## The Pakistan Business Council: An Overview

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The Pakistan Business Council (PBC) is a research-based business advocacy platform established in 2005. It is now supported by over 100 private sector local and multinational businesses with significant investment in, and long-term commitment to sustainable growth of the country. They come from 14 countries, have leading roles in 17 major sectors of the formal economy, generate 40% of annual exports, contribute a third of Pakistan's total tax revenues and employ three million. Their combined sales represent every 6<sup>th</sup> Rupee of Pakistan's GDP.

PBC's major objectives are to advocate policies that lead to creation of jobs, value-added exports and reduction in import reliance through improved competitiveness of manufacturing, services and the agriculture sectors. It also promotes formalization of the economy.

PBC's over-arching theme, **"Make-in-Pakistan"** consists of three pillars: **"Grow More/Grow Better"**, **"Make More/Make Better"** and **"Serve More/Serve Better."** Its evidence-based advocacy is backed by over a hundred studies to date through its full-time research team, supplemented by collaborative research with renowned industry experts and economists. Through its Centre of Excellence in Responsible Business (CERB), PBC works to build capacity and capability of businesses beyond its membership, to adopt high environmental, social and governance standards. PBC holds conferences, seminars and webinars to facilitate the flow of relevant information to all stakeholders in order to help create an informed view on the major issues faced by Pakistan. Through its presence in Islamabad and Karachi, it works closely with relevant government departments, ministries, regulators and institutions, as well as other stakeholders including professional bodies, to develop consensus on major issues impacting the economy.

PBC is a pan-sectoral, not-for-profit, Section 42 entity. It is not a trade body; therefore, it does not advocate for any specific business sector. Rather, its key advocacy thrust is on easing barriers that thwart competitiveness of businesses in Pakistan. Further information on the PBC is available on: [www.pbc.org.pk](http://www.pbc.org.pk)

## The PBC's Founding Objectives

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- To provide for the formation and exchange of views on any question connected with the conduct of business in and from Pakistan.
- To conduct, organize, set up, administer and manage campaigns, surveys, focus groups, workshops, seminars and fieldwork for carrying out research and raising awareness in regard to matters affecting businesses in Pakistan.
- To acquire, collect, compile, analyze, publish and provide statistics, data analysis and other information relating to businesses of any kind, nature or description and on opportunities for such businesses within and outside Pakistan.
- To promote and facilitate the integration of businesses in Pakistan into the World economy and to encourage in the development and growth of Pakistani multinationals.
- To interact with governments in the economic development of Pakistan and to facilitate, foster and further the economic, social and human resource development of Pakistan.

## The PBC'S Member Companies





## The PBC Affiliates

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## List of Abbreviations

Abbreviation	Full Form
ADB	Asian Development Bank
AI	Artificial Intelligence
AML	Anti-Money Laundering
API	Application Programming Interface
APICTA	Asia-Pacific ICT Alliance
AR/VR	Augmented Reality / Virtual Reality
ASEAN	Association of Southeast Asian Nations
AWS	Amazon Web Services
BPO	Business Process Outsourcing
CAGR	Compound Annual Growth Rate
CAREC	Central Asia Regional Economic Cooperation
CDPR	Consortium for Development Policy Research
CFA	Chartered Financial Analyst (Institute)
CoE	Centre of Excellence
CSR	Corporate Social Responsibility
ECAC	Electronic Certification Accreditation Council
ECGC	Export Credit Guarantee Corporation
EDA	Electronic Design Automation
EU	European Union
ETO	Electronic Transactions Ordinance
FBR	Federal Board of Revenue
FDI	Foreign Direct Investment
FPGA	Field-Programmable Gate Array
FTR	Final Tax Regime
FX	Foreign Exchange
GBS	Global Business Services
GCC	Gulf Cooperation Council
GDC	Game Developers Conference
GDG	Google Developer Groups
GDP	Gross Domestic Product
GDPR	General Data Protection Regulation
GERD	Gross Expenditure on Research and Development
GEM	Growth Enterprise Market
GIKI	Ghulam Ishaq Khan Institute of Engineering Sciences and Technology
GNI	Gross National Income
GPU	Graphics Processing Unit
GSMA	Global System for Mobile Communications Association
HEC	Higher Education Commission
HEDR	Higher Education Data Repository

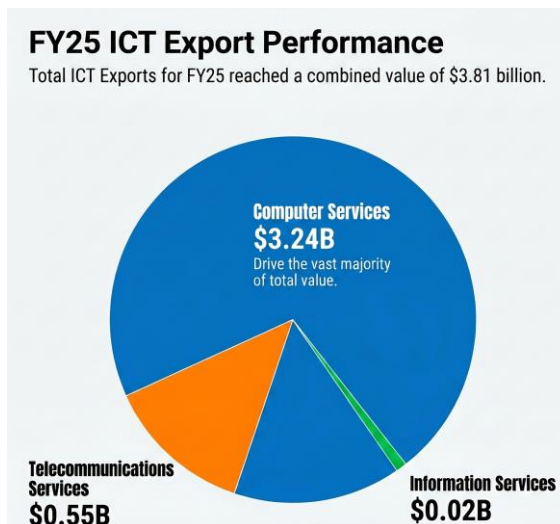
Abbreviation	Full Form
HIRE Act	Halt the Invasion of our Remaining Economy Act
HS	Hyperspectral Satellite
HYSEA	Hyderabad Software Exporters Association
ICAP	Institute of Chartered Accountants of Pakistan
ICT	Information and Communications Technology
IDA	Ireland Development Authority
IGNITE	National Technology Fund (formerly IGNITE)
IoT	Internet of Things
IP	Intellectual Property
ISO	International Organization for Standardization
IT	Information Technology
ITeS	Information Technology-enabled Services
ITU	International Telecommunication Union
IXP	Internet Exchange Point
KPK	Khyber Pakhtunkhwa
LUMS	Lahore University of Management Sciences
MDM	Mobile Device Manufacturing
MoFA	Ministry of Foreign Affairs
MoITT	Ministry of Information Technology and Telecommunication
MOSIP	Modular Open-Source Identity Platform
MOU	Memorandum of Understanding
NADRA	National Database and Registration Authority
NAICA	National AI Compute Authority
NASSCOM	National Association of Software and Service Companies (India)
NED	NED University of Engineering and Technology
NIC	National Incubation Centre
NICL	National Incubation Centre Lahore
NLC	National Logistics Corporation
NOC	No Objection Certificate
NUST	National University of Sciences and Technology
OECD	Organization for Economic Co-operation and Development
P@SHA	Pakistan Software Houses Association
PAFLA	Pakistan Freelancers Association
PBC	Pakistan Business Council
PDPA	Personal Data Protection Act
PIEGS	Pakistan IT Exports Growth Simulator
PITB	Punjab Information Technology Board
PKR	Pakistani Rupee
PNCCF	Pakistan National Cybersecurity Certification Framework
PPRA	Public Procurement Regulatory Authority
PPP	Public-Private Partnership
PRAL	Pakistan Revenue Automation Limited
PRSS	Pakistan Remote Sensing Satellite

Abbreviation	Full Form
PSEB	Pakistan Software Export Board
PTA	Pakistan Telecommunication Authority
PTCL	Pakistan Telecommunication Company Limited
PVARA	Pakistan Virtual Assets Regulatory Authority
PWIC	Pakistan Women in Computing
QoS	Quality of Service
RDA	Roshan Digital Account
SBP	State Bank of Pakistan
SCALE	Skills, Captive, Access, Legal, Ecosystem (strategic framework)
SEACOM	Southern and Eastern Africa Communications (submarine cable)
SECP	Securities and Exchange Commission of Pakistan
SIC	Samsung Innovation Campus
SIFC	Special Investment Facilitation Council
SLA	Service Level Agreement
SME	Small and Medium Enterprise
SOC	Service Organization Control
STEM	Science, Technology, Engineering and Mathematics
STP	Software Technology Park
STZA	Special Technology Zones Authority
SUPARCO	Space and Upper Atmosphere Research Commission
TEVTA	Technical Education and Vocational Training Authority
TWA	Trans World Associates
UET	University of Engineering and Technology
UN	United Nations
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UPI	Unified Payments Interface
USD	United States Dollar
VC	Venture Capital
VPN	Virtual Private Network
WIPO	World Intellectual Property Organization
GII	Global Innovation Index
WTO	World Trade Organization

## Executive Summary

Pakistan's IT and ITeS sector has seen unprecedented growth over the last few years. The sector has sustained double-digit export growth despite macroeconomic crisis, hyperinflation and the onset of AI-driven disruption to the global IT services industry. The **export of computer services grew from USD 1.67 billion in FY2021 to USD 3.24 billion in FY2025** (a 94 percent increase) while **the broader ICT sector reached USD 3.81 billion**. The sector constituted 45 percent of Pakistan's total services exports, generating a trade surplus of USD 2.4 billion (the highest of any services category) making the policy case for treating it as a strategic national priority unequivocally.

<p><b>USD 3.24B</b> Computer Services exports FY2025 SBP formal bank-channel up from USD 1.67B in FY2021</p>	<p><b>USD 3.81B</b> Total ICT exports FY2025 Computer + Telecom + Information Services</p>	<p><b>USD 2.4B</b> IT trade surplus FY2025 Highest of any services category</p>	<p><b>45%</b> ICT share of total services exports 11.8% ICT share of total exports Fastest-growing export category</p>
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However, this favorable trend is vulnerable to a structural fragility that this study has documented in detail. The growth is concentrated in the two service categories most sensitive to AI displacement. This is illustrated by the 41 percent drop in the median per-transaction value of freelance earnings between FY2021 and FY2025 (from USD 106 to USD 63) despite 114.6 percent growth in total freelance exports. The sector has an overwhelmingly micro-scale corporate base, with only 12 publicly listed IT companies out of 33,172 registered with SECP as of 31 December 2025 (0.04 percent). Out of an annual cohort size of approximately 43,000 IT graduates in Pakistan, only 10 to 12 percent are considered immediately employable without significant remediation, particularly to develop their soft skills. The regulatory, financial and infrastructural

environment that would allow the sector to transition from price-arbitrage services to higher-value, AI-resilient capability centers is either absent or not functional in practice. This study identifies and discusses the constraints and suggests remedial action.

This study draws on: transaction-level SBP Balance of Payments data for FY2021–FY2025, the SECP database of registered IT companies; IGNITE programme data; HEC enrolment and graduate statistics, a structured survey of senior executives, stakeholder interviews and focus group discussions with freelancers, startups and captive office operators. The study identifies seven structural challenges and provides a set of policy responses, under the SCALE framework, designed to address them.

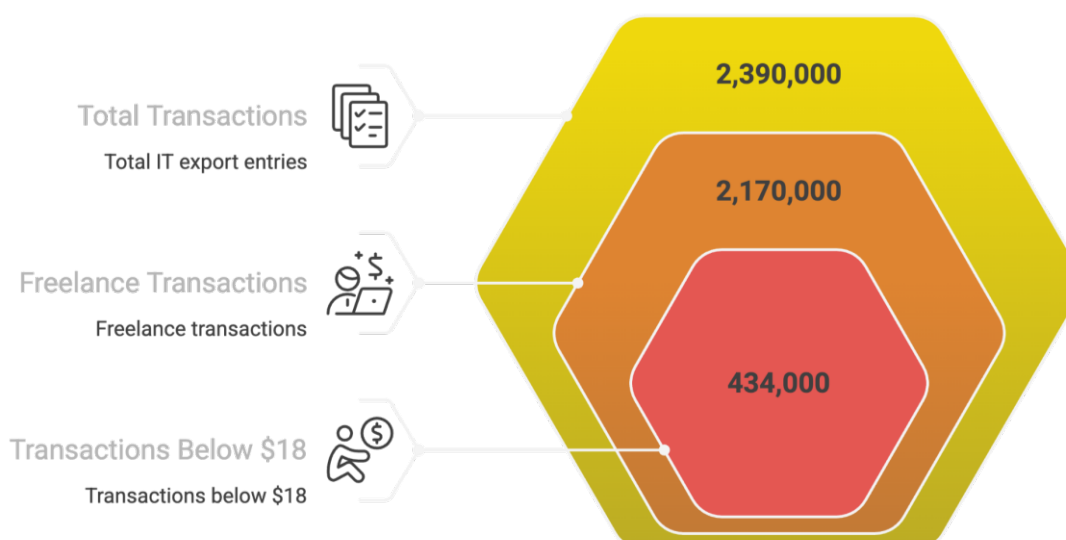
## Sector Size, Structure and the Measurement Gap

Pakistan is a sizable global exporter of ICT services and the fastest-growing component of its own services export portfolio. The sector's true size, however, is materially larger than official figures capture.

The SBP figure of USD 3.24 billion cannot be treated as a comprehensive measure but rather a base figure. Findings from this study indicate that actual IT-related earnings (including flows classified under personal remittance codes and revenues from foreign-registered Pakistani-founded firms) may be closer to USD 5 billion or more. The gap is not indicative of a coverage gap in total foreign exchange inflows but rather it suggests a classification issue within the Balance of Payments. This insight is extremely important for policy because currently, incentive programmes, PSEB registration benefits and sector-specific support are calibrated against the IT export classification rather than aggregate inflows.

**A critical analytical finding of this study is the structural composition of these exports.** Freelance transactions constitute 90.8 percent of all recorded IT export entries (2.17 million of 2.39 million in FY2025) yet generate only 24.1 percent of total value<sup>1</sup>.

### Freelance Transactions in FY2025

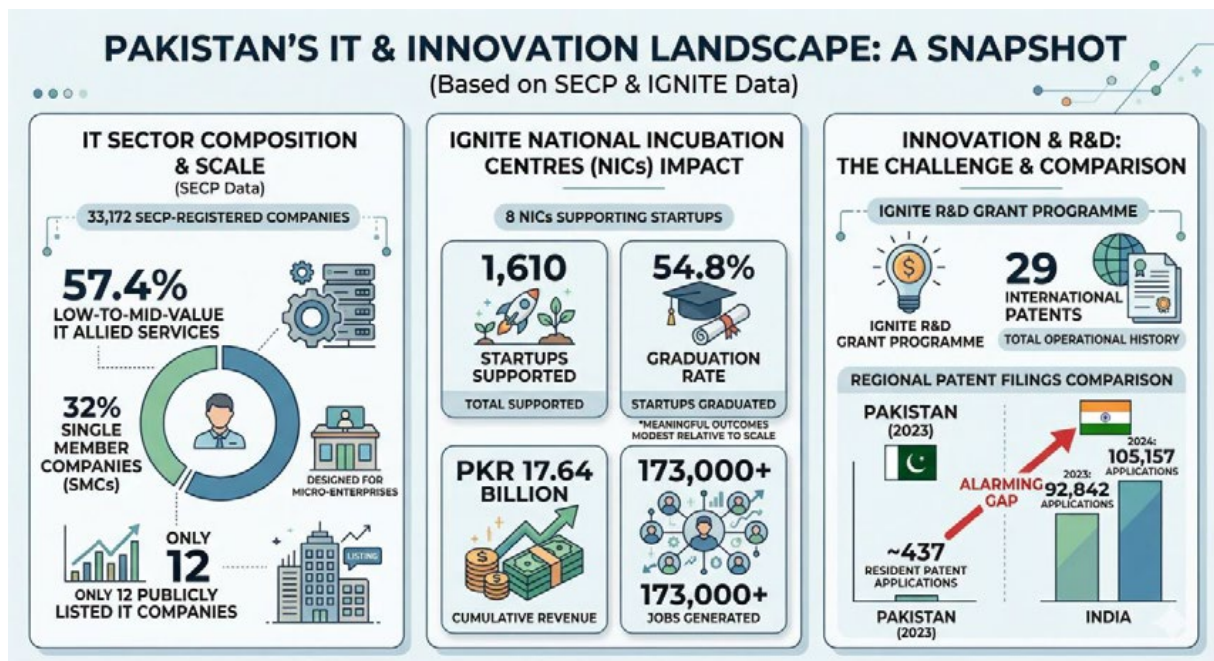


<sup>1</sup> This number represents bank remittance-receipts rather than distinct individuals, consistent with the official SBP methodological position. The 2.17 million counts therefore sets an upper bound, not a headcount of freelancers.

The average software consultancy transaction is worth USD 12,618 while the average freelance transaction is worth USD 359 a ratio of approximately 35 to 1 by consultancy value, and 88 to 1 when compared against the average software export transaction of USD 31,699. The freelance distribution reveals an alarming dichotomy: 434,000 transactions (20 percent of the total) were below USD 18 each in FY2025, while the maximum recorded single transaction was USD 5.57 million. The average earnings floor for entry-level freelancers has shrunk significantly due to the proliferation of AI tools, while a small upper cohort of high-value practitioners captures disproportionate gains. The sector is stratifying and the distance between the two tiers is widening.



The formal corporate base reflects similar fragmentation. Of 33,172 SECP-registered IT companies, 57.4 percent are in low-to-mid-value IT allied services, 32 percent are Single Member Companies (a legal form designed for micro-enterprises), and only 12 are publicly listed. IGNITE's eight National Incubation Centers have supported 1,610 startups with a graduation rate of 54.8 percent, generating PKR 17.64 billion in cumulative revenue and over 173,000 jobs, while meaningful outcomes remain modest relative to the sector's scale. IGNITE's research and development grant programme has produced 29 international patents across its entire operational history. This is particularly alarming when compared to regional competitors: in 2023, Pakistan filed approximately 437 resident patent applications while India filed 92,842. By 2024, India's filings had grown to 105,157.



## Seven Structural Constraints: Diagnosis

This study identifies seven interconnected challenges. These challenges do not exist in isolation and resolving anyone without addressing foundational prerequisites has limited impact. This study draws upon cross-country experiences, leveraging success stories to inform remedial measures for Pakistan.

- Human Capital: Quality, Leadership and the Talent Drain:** Only 10 to 12 percent of Pakistan's 43,000 annual IT graduates are immediately employable. The binding deficit is not technical capability but soft skills like professional conduct, client communication and commitment reliability. These issues are most acute in tier-2 and tier-3 cities where no professional development infrastructure exists. Beyond entry level, the sector lacks executives capable of scaling companies internationally and cross-disciplinary profiles that combine technology background with domain expertise in finance, healthcare and legal services. Currently no programme produces these types of profiles in the country. Women's participation stands at 21 percent in Software Technology Parks and only 38,000 of 2.32 million registered freelancers with bank accounts are women which is a growth capacity failure and not only an equity one.
- Tax Architecture and Regulatory Design:** The tax and banking architecture functions as a structural disincentive to formal-sector growth. The income tax gap between formal employment and remote-worker status creates the talent drain described above. The absence of a freelancer definition (whereby no statutory distinction exists between a gig worker and a remote employee) enables revenue shrinkage and creates documentation risk for formal salaried employees. FBR audit behavior treats legally exempt IT export income as contestable, creating business continuity risk independent of the nominal tax rate. Internet services carry a 34 percent effective tax. Import duties on laptops and cloud infrastructure taxes raise input costs on an export sector whose outputs are nominally incentivized.
- Banking and Payments:** The banking framework makes offshore retention the rational decision. There is no mechanism to hold dollar balances or accept card-based international client payments through Pakistani banks. Processing delays, idiosyncratic documentation requirements, and lack of appropriate appeal mechanisms impose cash-flow costs without legal basis. IT firms with stable USD revenues are unable to access working capital because banks require physical collateral and do not accept software assets. FDI approval timelines exceed twelve months. Regulatory restrictions that

slow the inward flow of foreign capital to Pakistan-based companies at the pace required by growth-stage firms have resulted in the collapse of startup funding.

- 4. Ecosystem Gaps – Infrastructure and Data:** Pakistan faces weaknesses in both its hard and soft IT infrastructure. It has only one to two Internet Exchange Points, meaning fixed broadband costs USD 0.53 per Mbps, 6.6 times higher than India and 53 times higher than Romania. Pakistan's ICT access index ranks 128th of 139 economies globally (WIPO GII, 2025). It also lacks a single-window regulatory environment. The Special Technology Zones Authority framework, identified by board-level participants as the most prominent policy implementation failure in the sector's recent history, has inhibited delivery of this need. These infrastructure gaps are compounded by data fragmentation across the five primary data sources: SBP, SECP, PSEB, HEC, and FBR. SECP reports 33,172 registered IT companies while PSEB reports 5,560 exporters; SBP reports freelancer exports worth USD 779 million while government estimates indicate actual earnings exceeding USD 2 billion.
- 5. Products, Services, and Export Diversification:** Pakistan's export base is almost entirely cost-arbitrage services with almost no meaningful domestic product base. India's Aadhaar, UPI and MOSIP created domestic reference deployments that were then commercialized globally. Pakistan has no equivalent and no procurement preference for domestically developed software. Government-owned IT entities develop software for government departments outside competitive procurement, displacing private firms from the contracts that historically serve as the capability-building and reference-deployment pathway to international markets. No capital is available for product transition; IP protection is inadequate and IGNITE's entire R&D history has produced only 29 international patents. ITes verticals receive insufficient policy attention. In the Mobile app sector, there is great potential with Pakistan ranked 17th globally with 1.42 billion downloads in 2024 however they are a blind spot in the industry and policy making. Space-tech, 5G-enabled services, and semiconductor chip design remain unrecognized as export frontiers in current policy.
- 6. Country Brand and Market Access:** Pakistan does not appear in Everest Group, Hackett Group etc. IT delivery location assessments. It is not evaluated and found inadequate but rather not even in the consideration set. Pakistan has very few captive ICT operations against India's 1,700+, which generate USD 64.6 billion annually. Country-of-origin risk filters in multinational procurement screen Pakistan out on political stability, cybersecurity posture and data protection grounds regardless of technical capability; some markets impose mandatory additional approval layers for Pakistan-based resources not applied elsewhere. Since, exports are primarily concentrated in the US and UK, it makes the sector vulnerable to their policies. Pakistan has signed IT MOUs worth billions in the past year alone with no mechanism to track conversion to actual investment.
- 7. AI Transition – Displacement, Pricing Disruption, and Governance Vacuum:** Pakistan faces two distinct AI challenges. The first is workforce disruption: the sector is concentrated in staff augmentation and BPO, the categories most directly displaced by AI tools. The 41 percent fall in median freelance transaction value between FY2021 and FY2025 is consistent with commoditization already underway. AI shifts pricing from time-and-materials to deliverable-based models where competitive advantage rests on domain knowledge, methodology maturity and brand credibility, precisely the dimensions where Pakistan has structural deficits. The second is an AI development failure: Pakistan has not built the compute infrastructure, data governance framework or regulatory environment required to produce AI products. Pakistan generates valuable data through NADRA, FBR and SBP but none of it is structured or accessible for AI model training. The National AI Policy 2025 exists on paper, but limited awareness of its content was found among those it is intended to govern. R&D expenditure stands at 0.16 percent of GDP, ranked 92nd globally (WIPO GII, 2025). Failing on the first means losing the export base Pakistan has built and failing on the second means being permanently positioned as a consumer of AI rather than its producer.

## What Needs to Be Done:

This study identifies 45 recommendations across seven challenge clusters, organized under the SCALE framework: Skills and Talent Pipeline Transformation, Captive and Corporate Attraction Strategy, Access to Markets and Finances, Legal, Regulatory and Digital Governance Reform and Ecosystem and Startup Infrastructure.

## Summary of Recommendations<sup>2</sup>

The table below lists the recommendations segregated by key sector segments. It also indicates the timeline for implementation of proposed recommendations.

Freelancers			
Recommendation	Immediate Foundations	Structural Reforms (Medium-Term)	Transformation Investments (Long-Term)
Gazette a statutory 'freelancer' definition, ends bank holds, tax disputes, misclassification	✓		
SBP-mandated multi-currency receiving (USD/GBP/EUR/AED + card payments, no forced conversion)	✓		
48-hour remittance processing standard; advance tax on exempt income fully refundable same year	✓		
PVARA licensed stablecoin remittance track for IT export receipts with auto SBP reporting	✓		
Narrow 20pt income tax differential: senior employee rate to 25%; remote worker FTR to 5–7%	✓		
Weekend AI bootcamps for AI-displaced practitioners; 10K trainees year one, 50K by year three	✓		
TEVTA-delivered soft-skills and English communication infrastructure in tier-2 and tier-3 cities	✓		
Reclassify app/game store revenues (~USD 500M) under IT export SBP codes; 0.25% withholding	✓		
PSEB women freelancer mentorship network; childcare co-working in STPs; 10% PPRA set-aside		✓	
Subsidized device loans for PSEB-registered freelancers (smartphone = 45% of GNI per capita)		✓	
Virtual Technology Zone: extend STP tax and FX benefits to all PSEB-registered exporters nationwide		✓	

2 Note: Immediate Foundations 0–18 months | Structural Reforms 1–4 years | Transformation Investments 5–10 years

Startups			
Recommendation	Immediate Foundations	Structural Reforms	Transformation Investments
Pakistan Startup Fund: 30-day decision SLA; fix IGNITE 6–12-month delays via pre-funded escrow	✓		
60-day FDI fast-track single-window channel with rate-lock; fully digitize SECP registration	✓		
Gaming studio scaling co-investment fund (USD 500K/studio); PSEB pathway; remove GPU duties	✓		
Software patents fast-track processing from 5+ years to under 18 months; align with US/EU standards		✓	
SBP framework accepting IP/contracts/export revenues as loan collateral with 60–70% risk guarantee		✓	
Multi-sector AI regulatory sandboxes (healthcare, IoT, cross-border data) for 24-month product trials		✓	
Founder leadership programme: enterprise sales, fundraising, board governance, international entry		✓	
Space-Tech Software Park (zero-rated tax); open satellite imagery API; PKR 2B IGNITE challenge fund		✓	
Yozma-style matched VC fund: USD 1 govt per USD 2 private, up to USD 200M; GEM Board reform			✓
National AI Strategy with NAICA: sovereign compute, zero duty on AI hardware, data center to USD 2B			✓
Chip design labs at NUST/GIKI/UET/NED with EDA tooling; 10-year hardware export roadmap			✓

IT Firms			
Recommendation	Immediate Foundations	Structural Reforms	Transformation Investments
IT Export Dollar Accounts: retain USD, outward payments, card receipts, no per-transaction approval	✓		
Statutory FBR safe harbor: no audit on exempt IT export income absent fraud; 30-day withdrawal binding	✓		
5-year cross-party IT sector policy stability compact formalized in legislation with quarterly monitoring	✓		
Harmonies provincial IT service tax; reduce internet effective rate from ~34% to ≤10%; exempt cloud inputs		✓	
PPRA reform: IT procurement stream; 25% SME quota; bid security 1% for contracts below PKR 50M		✓	
20% domestic price preference for govt IT procurement where qualifying Pakistani product exists		✓	
Phase PRAL/NADRA Technologies/PITB out of commercial contracting; unlock PKR 50–100B in tenders		✓	
National digitization mandate: domestic IT firms as prime contractors; USD 500M/yr procurement target		✓	
Pakistan Stack: open digital identity layer, payment rail, and public API framework for domestic products		✓	
University curriculum reform: 30% industry co-design, mandatory 6-month practicum, soft skills module		✓	
Per-hire grants: 15% salary reimbursement + 3% training grant per net new hire; 50,000 jobs over 5 years		✓	
Enact PDPA; tiered cybersecurity certification (PNCCF) with 50–70% govt subsidy for SMEs			✓

IT Firms			
Recommendation	Immediate Foundations	Structural Reforms	Transformation Investments
Bilateral IT trade agreements with GCC, EU, ASEAN, Central Asia, Africa to reduce US/UK concentration			
6 IXPs nationwide; open-access fiber backbone; Digital Infrastructure Reliability Act			

Captive ICT Operations			
Recommendation	Immediate Foundations	Structural Reforms	Transformation Investments
Dedicated captive attraction function: engage Everest/Hackett/Gartner; publish Pakistan GBS business case	✓		
Annual Pakistan Technology Delegation: host intl procurement decision-makers for structured showcases	✓		
MoFA dedicated business visa channel for senior IT executives attending verified client engagements	✓		
Digital Trade Officers (P@SHA/PSEB-seconded) at 20 priority missions with IT export KPIs	✓		
PKR 2–3B annual tech events fund: 4–6 intl events per year with mandatory MOU-to-deal tracking	✓		
MoITT Global Tech Education Partnerships Unit: Samsung SIC/Google/AWS/Microsoft; 50/50 co-funding	✓		
Global Tech Landing Pad: 15% corp tax, 10-yr lock-in, 100% liberal FX, 30-day establishment guarantee		✓	
Enact PDPA and initiate EU adequacy pathway, hard requirement for regulated-sector captive procurement		✓	

## Introduction and Context

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### 1.1 Global IT and ITeS Landscape

The global trade patterns reveal a structural shift towards service-led growth. In 2024, global services trade experienced 9% year-on-year growth which is four times more than the 2% growth recorded in goods trade in the same time period (WTO, 2025). In the category of services, digitally delivered exports have been the fastest-growing segment of global trade for almost two decades, increasing at an average of 8% per year since 2005 and quadrupling in value to reach USD 4.25 trillion in 2023 (WTO, 2024). Computer services alone increased 13% globally in the first three quarters of 2024 (WTO, 2025). This structural shift from physical goods to digitally delivered services as the leading edge of global trade reflects a fundamental reorganization of how value is created and exchanged globally. Functions once treated as peripheral back-office costs like software development, data processing and IT consulting have become core inputs of production embedded in every sector ranging from finance and healthcare to manufacturing and public administration. Hence, the question for developing economies like Pakistan is whether they are positioned to capture a meaningful share of this growth.

The initial phase of global IT and ITeS expansion was largely attributed to the outsourcing model grounded in the idea of cost arbitrage. The developing countries competed by providing standardized services like basic software development, call center operations, data entry, and back-office processing. The competition was straightforward and based on wage differences between high income client countries and low-income supplier countries, thus issues like infrastructure inefficiency or policy uncertainty did not hold much significance. Pakistan entered this phase as a viable participant establishing itself as a cost competitive supplier of these skills to clients in North America, United Kingdom or the Middle East.

However, now the competitive model has changed drastically. The demand has moved to knowledge intensive, judgment dependent services like enterprise software solutions, cloud architecture, cybersecurity, advanced data analytics and integrated digital platforms. This requires advanced technical skills, domain expertise and the overall capacity to adhere to international regulatory and security standards and not just low labour costs. The countries that have consolidated strong positions in these higher value segments like European economies have done so through a combination of long-term policy coherence, consistent investment in human capital and digital infrastructure and targeted institutional support for the upgradation of the sector.

The introduction of artificial intelligence (AI) acts as one of the most significant structural disruptions to the IT sector. AI tools are reducing the need for human labour for services that formed the basis of the global IT outsourcing economy. Thus, for countries like Pakistan that are positioned in this category, AI represents a disruption that requires transition to higher value, AI augmented service delivery or intellectual property (IP) ownership and product development.

## 1.2 Pakistan's IT and ITeS Sector: Strategic Context

Within this global landscape, Pakistan's IT and ITeS sector holds a significant strategic importance to the country's economy. ICT services account for 5.9% of Pakistan's total trade, ranking 18th globally (WIPO, 2025). Data shows that IT and ITeS exports have increased steadily over the past decade and established itself as one of the fastest growing components of Pakistan's services export profile. According to MoITT (2026), in the first 8 months of FY 2025 - 2026 Pakistan's ICT export remittances reached US\$ 2.97 billion showing its growth trajectory.

The sector overall has shown strong resilience and has generated foreign exchange earnings even during Pakistan's recent period of extreme macro-economic stress as currency depreciation and contraction of domestic demand hindered growth in other sectors of the economy. More importantly, in contrast to traditional exports like textile or agriculture, IT and ITeS services are not restricted by physical logistics, energy intensive inputs or commodity price cycles which makes it a low import intensity sector. **Thus, this reinforces the policy case for prioritizing IT and ITeS as a central pillar of Pakistan's export diversification and external sector stabilization strategy.**

However, research on the sector cautions against conflating the recent growth with structural strengths. In absolute terms, Pakistan's ICT export volumes remain modest compared to global competitors which reflects a narrow overall export base and persistent constraints in scaling, market access and high-value service delivery (UNCTAD, 2026)). The current performance is grounded in favorable global demand conditions and flexible and cost competitive labour supply instead of a deeply embedded or resilient ecosystem (ADB, 2025). The sector overall remains restricted within low to mid value services segments with limited growth into high value sectors.

## 1.3 Size, Structure and Segmentation of the IT Ecosystem

Pakistan's IT and ITeS sector can be understood across four broad segments: freelancers, startups, firms and captives.

The firms build the core of the recorded exports for Pakistan. They operate in software development, IT outsourcing and enterprise solutions and are majorly concentrated in the urban cities of the countries. These firms have developed long term relationships with international clients and have adopted delivery models that are in line with global standards. However, reports show that most of these firms are focused on low to mid value service segments with limited mobility into proprietary products or advanced solutions. This constrains their productivity growth and diversification of exports (ADB, 2025).

Startups represent a distinct and increasingly visible segment of the sector. Assessments show there has been an emergence of product-oriented startups in fields like fintech, ecommerce or logistics (IGNITE, 2023 and Invest2Innovate, 2024). In contrast to traditional IT firms these startups rely on external financing and thus are more vulnerable to regulatory and market risks. Their direct contribution to exports is hard to quantify but literature emphasizes their importance for long term upgrading, innovation and intellectual property creation.

Pakistan is consistently ranked in the leading global suppliers of online freelance labour in services like software development, design and digital marketing (Payoneer, 2025). This segment primarily consists of individual workers and small teams who provide services to international clients through digital platforms (like Upwork, Fiverr), typically on a project-based or short-term contract basis. This model has enabled Pakistan to integrate into global services markets with relatively low entry barriers thus supporting foreign exchange inflows and employment generation, particularly in youth. However, a substantial portion of freelancing activity is informal and operates outside formal regulatory and reporting frameworks. As a

result, export revenues from this segment are partially captured in official statistics which complicates accurate measurement of sector performance and limits the effectiveness of policy design and monitoring.

Captives (a.k.a. Global Business Services/Shared Services Organization) make up a smaller but strategically important segment of the country's IT landscape. These are offshore units established by large multinational companies to deliver services like back-office operations, technical support etc. Captives in Pakistan are concentrated in urban cities and beneficial to the host country because of stable demand, integration into global value chains and strict adherence to international standards. Literature suggests that they contribute to skills development, managerial capacity transfer and quality benchmarking within the domestic ecosystem (Banerjee et al., 2025). However, their footprint in Pakistan is limited compared to other competing economies like Philippines and India because of issues like policy and regulatory uncertainty, weak data governance frameworks and overall business environment. Captives particularly represent an underexploited segment for Pakistan to attract investment and make way into higher value service exports.

## 1.4 Scope of the study

This study undertakes a comprehensive assessment of Pakistan's IT and IT-enabled Services (ITeS) sector to establish a clear and credible understanding of its size, structure and export performance by consolidating data from official sources. Where data gaps exist, the study documents inconsistencies and proposes standardized reporting templates and a governance framework for regular public data updates in Annexure D.

Building on this diagnostic, the study deep dives into challenges and constraints that impact IT and ITeS export capacity. Stakeholder consultations with exporters, freelancers, startups, industry associations and relevant public agencies complement the desk review to identify regulatory, infrastructure, and market access constraints affecting sector growth.

Finally, the study examines how structural shifts in the global digital economy, particularly the introduction and adoption of artificial intelligence, are likely to reshape demand patterns, skill requirements, and competitiveness of Pakistan's IT sector. The study assesses potential risks to lower-value service segments and identifies areas where upgrading skills, curricula, and training systems can support movement toward higher-value, knowledge-intensive services. It provides a segmented strategic framework with clear pathways for the growth of the sector, keeping in mind Pakistan's international market positioning and long-term digital export readiness.

## 1.5 Methodology

This study used a mixed methods approach by integrating data, surveys, stakeholder discussions and a comprehensive desk review. The research is structured around three key areas: mapping and segmentation of Pakistan IT and ITeS sector using reliable primary data, identifying barriers to export growth and advancement in the sector and developing recommendations based on empirical evidence, industry expertise and international benchmarks which are practical in nature and consider political economic context of the country.

The quantitative analysis of the study relied on administrative data from multiple sources. The Securities and Exchange Commission of Pakistan (SECP) supplied company registration details including size, age, structure and location. The export data from the State Bank of Pakistan (SBP)<sup>3</sup> facilitated analysis of foreign exchange inflows from IT and ITeS services and allowed comparison of official export figures with potential

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3 State Bank of Pakistan, Exchange Policy Department. IT Exports Data FY21-FY25, including the total (without 9186) series. Issued April 2026 following methodological correspondence with CDPR.

underreporting through offshore or informal channels. IGNITE (National Technology Fund) provided data on startup incubation, research grants and digital skills programs. The Higher Education Commission (HEC) provided statistics on ICT enrollment, graduates and higher education capacity. These datasets were cross-referenced to construct a comprehensive sector profile and to identify discrepancies.

A structured survey was circulated amongst senior leaders in IT and ITeS firms which targeted key decision-makers like CEOs, COOs, managing directors and industry stalwarts. This ensured that responses reflected organizational strategy and export decision-making processes. The survey also collected data on company characteristics, export markets, business models, skills gaps and experiences with policy and regulatory frameworks. The respondents also ranked the challenges to sector growth and provided perspectives on AI disruption and firm adaptation strategies.

Stakeholder discussions contributed qualitative insights through interviews, focus groups and a workshop involving representatives from government, regulatory bodies, industry associations, exporters, startups and freelancers. The primary objective was to ensure the analysis accurately reflected Pakistan's political and regulatory context. These discussions also helped validate survey and administrative data findings.

A review of national and international literature established the policy context and supported comparative analysis. The secondary sources included government reports, regulatory documents, sector studies, industry association publications and independent research. The study further examined cases from other countries including India, the Philippines, Vietnam and GCC economies to contextualize Pakistan's sector development and identify relevant policy lessons.

These four methodological streams were integrated into a unified analytical framework: administrative data established the sector's structural baseline, survey findings provided firm-level strategic insights, stakeholder consultations contextualized results within institutional realities and desk research situated the findings within global sector development patterns.

## Section II:

## Quantitative Analysis: Size, Structure and Export Performance

This section presents a consolidated, evidence-based assessment of the size, structure and export performance of Pakistan's IT and ITeS sector, drawing on administrative data from the State Bank of Pakistan (SBP), the Securities and Exchange Commission of Pakistan (SECP), IGNITE National Technology Fund, and the Higher Education Commission (HEC). Each data source presents a different aspect of the sector's profile: SBP data provides formal bank-channel export flows and their distribution; SECP data documents the formal corporate base and its growth trajectory; IGNITE data maps the startup and innovation pipeline; and HEC data represents the talent supply pipeline. The analysis triangulates across these sources to develop a coherent picture while expressly identifying the measurement gaps that limit precision.<sup>4</sup>

Where data requests were declined or went unanswered, findings are noted as limitations throughout. A full log of data requests, dates, and outcomes is provided in the Annexure C.

### 2.1 IT Export Performance: SBP Balance of Payments Data (FY2021–FY2025)

The primary quantitative evidence base for Pakistan's IT export performance is the State Bank of Pakistan's Balance of Payments data on trade in services, specifically Category 9: Telecommunications, Computer, and Information Services. This section analyses the export trends under this category, with particular focus on the Computer Services sub-category (9.2) which constitutes the core of the IT and ITeS sector's contribution to external earnings.

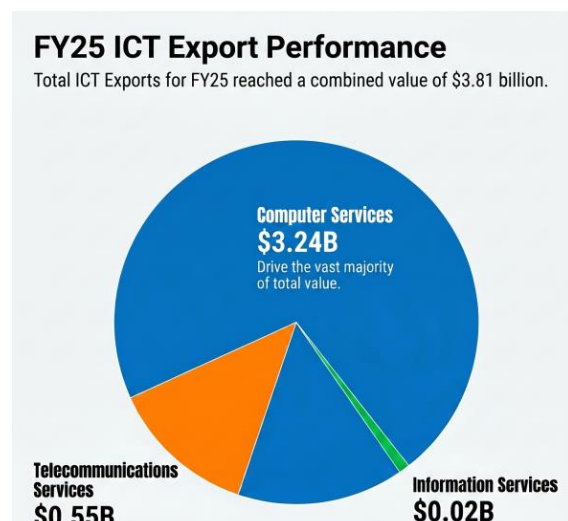
#### 2.1.1 Key Export Figures

TABLE 1:

<b>\$3.24B</b> Computer Services Exports FY2025 (SBP Category 9.2)	<b>+94%</b> Growth FY2021 to FY2025 From \$1.67B to \$3.24B	<b>\$3.81B</b> Total ICT Sector Exports FY2025 (9.1 + 9.2 + 9.3)	<b>\$900M</b> FY2026 Q1 Run Rate Jul–Sep 2025 (provisional)
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Source: SBP Trade in Services Archive (TradeInServicesArch.xls). Computer Services (9.2); Total ICT = 9.1 + 9.2 + 9.3. FY2025 figures revised; FY2026 Q1 provisional.

4 A Note on Data Reliability: All SBP figures reflect transactions formally reported by commercial banks to the central bank and are denominated in USD. Banks may consolidate multiple client transactions into single entries, which can understate the number of individual exporters and introduce distributional inconsistencies. SBP source files clearly acknowledge these limitations. The study presents the range and explains the most likely sources of discrepancy where inconsistencies emerge in figures from different sources.  
Source: SBP Trade in Services Archive (BPM6/EBOPS 2010), metadata notes.



Pakistan's formal bank-channel IT exports have more than doubled over the FY2021–FY2025 period, rising from USD 1.67 billion to USD 3.24 billion in the Computer Services category alone. **When Telecommunications Services (9.1) and Information Services (9.3) were added, total ICT sector exports reached approximately USD 3.81 billion in FY2025.** This upwards trend illustrates one of the strongest sustained growth performances of any sector in Pakistan's export portfolio over this period, achieved despite significant macroeconomic stress, foreign exchange volatility, and domestic demand contraction.

However, this growth was not uniform across the period. The sector experienced a stall in FY2023, when Computer Services exports saw a nominal decline of 0.57 percent from USD 2.11 billion in FY2022 to USD 2.10 billion. Industry and government stakeholders attributed this underperformance to persistent tax and banking system barriers, policy inconsistency and the failure to implement agreed incentive packages. This dip in the sector's performance for FY2023 is an important diagnostic: it demonstrates that the sector's growth is sensitive to domestic policy conditions and not purely driven by external demand. The recovery in FY2024 (+26.4 percent) and continued growth in FY2025 (+22.2 percent) brought the sector back onto an upwards trajectory, supported by macroeconomic stabilization, SBP's relaxation of the foreign currency retention limit for IT exporters (raised to 50%), eighteen consecutive months of year-on-year export growth from October 2023, and partial re-formalization of freelance payment flows. Policy signals during this period, including FBR's clarification on tax credits for IT exporters, may also have contributed, however, the available data does not allow for the causal inference.

### 2.1.2 Export Performance by Sub-Category

The SBP's Computer Services category (9.2) is disaggregated into six sub-categories, each corresponding to a distinct segment of IT export activity. The table below presents the full sub-category breakdown for FY2021 through FY2025, providing the most granular publicly available picture of Pakistan's IT export composition.

TABLE 2:<sup>5</sup>

Service Category (SBP Code)	FY2021	FY2022	FY2023	FY2024	FY2025 (R)	FY21–25 Growth
Computer Services Total (9.2)	\$1,666M	\$2,109M	\$2,097M	\$2,651M	\$3,240M	+94.5%
Software Consultancy (9.2.2)	\$555M	\$795M	\$760M	\$871M	\$1,108M	+99.6%
Freelance – Comp. & Info Svcs (9.2.5)	\$363M	\$265M	\$215M	\$408M	\$779M	+114.6%
Export / Import of Computer Software (9.2.4)	\$417M	\$566M	\$598M	\$632M	\$589M	+41.2%
Other Computer Services (9.2.6)	\$335M	\$478M	\$517M	\$732M	\$755M	+125.4%
Hardware Consultancy (9.2.1)	\$0.6M	\$2.9M	\$5.5M	\$6.8M	\$7.5M	+1,150%
Maintenance and Repair (9.2.3)	\$0.7M	\$1.4M	\$2.9M	\$1.6M	\$1.3M	+86%

Source: SBP TradeInServicesArch.xls, Category 9.2 annual credit column. (R) = Revised. FY2023 total computed from quarterly credits (Jul–Sep + Oct–Dec + Jan–Mar + Apr–Jun). Figures in USD millions.

<sup>5</sup> Full definitions and EBOPS 2010 descriptions for each SBP sub-category are provided in the Annexure A.

This sub-category breakdown reveals several structural patterns. Software Consultancy (9.2.2) is the largest single contributor, accounting for USD 1.11 billion, approximately 34 percent, of total Computer Services exports in FY2025. It has grown consistently across the period, recording a compound growth of approximately 100 percent over four years. This indicates the predominance of outsourced software development and IT consulting in Pakistan's export mix, confirming the sector's continued concentration in service delivery rather than product or IP-based exports.

Freelance<sup>6</sup> Computer and Information Services (9.2.5) emerged as the most dynamic sub-category over the period which grew 114.6 percent from FY2021 to FY2025 and recorded its highest ever value of USD 779 million in FY2025. This growth, however, saw a steep decline of 40.8 percent, when freelance receipts fell from USD 363 million in FY2021 to USD 215 million in FY2023, before recovering strongly. The decline corresponds with Pakistan's period of acute foreign exchange crisis, which created significant hurdles for international payment processing and presumably led many freelancers to divert earnings through informal or remittance channels rather than formal banking. The recovery does not necessarily indicate an expansion of underlying activity rather could reflect a partial re-formalization of these flows.

Export/Import of Computer Software (9.2.4) is the only sub-category that recorded a nominal decline of 6.8 percent in FY2025 from USD 632 million to USD 589 million despite a 53 percent growth in transaction count over the period. This divergence indicates falling per-transaction values. Transaction counts grew from 12,143 in FY2021 to 18,587 in FY2025, ruling out segment exits as the explanation. The median transaction value in this category declined by 33.3 percent from USD 7,613 in FY2021 to USD 5,076 in FY2025. This per-transaction value decline is consistent with either increased participation by smaller exporters (a compositional shift) or pricing pressure in standard software export contracts that may indicate competitiveness or quality challenges; however, the data cannot distinguish between these explanations.

### 2.1.3 Transaction Structure: Volume vs. Value

One of the most analytically significant features of Pakistan's IT export data is the structural variance between transaction volume and export value across sub-categories. This divergence reveals the deeply segmented nature of the exporter population and has direct implications for policy design.

TABLE 3:

Sub-Category	FY2025 Entries	% of Entries	FY2025 Value	% of Value	Avg. per Transaction
Software Consultancy (9.2.2)	87,803	3.7%	\$1,108M	34.2%	\$12,618
Other Computer Services (9.2.6)	114,050	4.8%	\$755M	23.3%	\$6,619
Export / Import of Software (9.2.4)	18,587	0.8%	\$589M	18.2%	\$31,699
Freelance (9.2.5)	2,172,535	90.8%	\$779M	24.1%	\$359
Hardware Consultancy (9.2.1)	382	<0.1%	\$7.5M	0.2%	\$19,649
Maintenance and Repair (9.2.3)	154	<0.1%	\$1.3M	<0.1%	\$8,464
TOTAL	2,393,511	100%	\$3,240M	100%	\$1,354

Source: State Bank of Pakistan, IT Export Data FY21–FY25. Entries represent bank-reported remittance-receipts. A single remittance-receipt may consolidate multiple underlying transactions or individuals on whose behalf the reporting bank has submitted the entry. Accordingly, the entry count provides an upper bound on the underlying exporter population and may overstate the number of distinct exporting entities by a factor that cannot be determined from the available data. Averages are computed as aggregate value divided by entries.

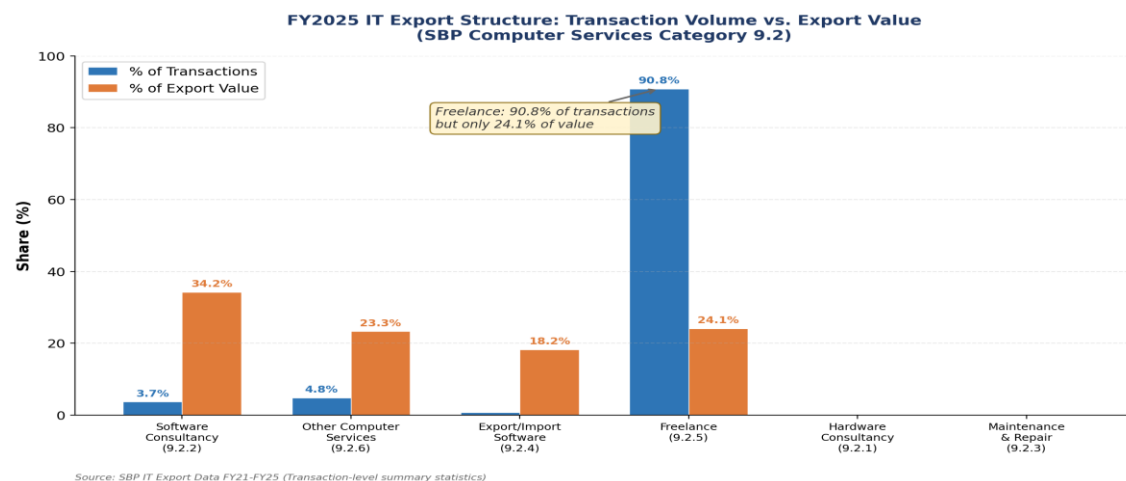
<sup>6</sup> The State Bank of Pakistan defines Freelancers as all individuals, resident in Pakistan, engaged in provision of any digital/online services, including IT and IT related services, against which payments are received from outside Pakistan.

Fiscal Year	Value (USD)	Entries	Mean (USD)	Median (USD)	Std. Dev. (USD)
FY2025	2,460,780,676	220,976	11,136	2,493	60,497
FY2024	2,242,618,899	191,514	11,710	2,722	76,561
FY2023	1,883,260,394	190,434	9,889	2,375	52,977
FY2022	1,843,879,604	156,824	11,758	2,805	66,144
FY2021	1,308,448,026	132,963	9,841	2,097	48,553

The State Bank of Pakistan has issued a separate aggregate series for IT exports excluding the Freelance of Computer and Information Services category (sub-code 9.2.5, purpose code 9186). Under this series, total IT exports for FY2025 stand at USD 2.46 billion generated across 220,976 entries, with a mean transaction value of USD 11,136 and a median of USD 2,493. The corresponding figures for the full aggregate, which includes the Freelance segment, are USD 3.24 billion across 2,393,511 entries with a mean of USD 1,354 and a median of USD 78. The divergence between the two series establishes that the corporate IT export base and the freelance segment are statistically distinct populations. The policy implication is that they warrant differentiated treatment in export facilitation design, tax architecture, and data reporting frameworks. References in this report to the corporate IT export base, where that distinction is material, should be read against the Total Excluding Freelance series.

The transaction structure table above reveals a fundamental segmentation within Pakistan's IT export base. Freelance transactions constitute 90.8 percent of all recorded IT export entries in FY2025 (2.17 million out of 2.39 million total) yet generate only 24.1 percent of total export value. Conversely, Software Consultancy represents 3.7 percent of transactions but accounts for 34.2 percent of value. The average Software Export transaction (9.2.4) is worth USD 31,699 while the average freelance transaction is worth USD 359, a staggering ratio of approximately 88 to 1.

FIGURE 1:



This structural divergence reflects two fundamentally different populations operating under the same reporting category: a large, scattered base of individual freelancers making small, frequent, project-based payments, and a much smaller number of firms making large, formal, contract-based receipts. These two populations require differentiated policy treatment which addresses their specific constraints and business operational models. The current reporting framework aggregates them under broad SBP code for 'Computer Services' and treats freelancers as a subsection of this broader category rather than a separate category entirely; this obscures this heterogeneity and constrains accuracy of both analysis and policy design.

### 2.1.4 Earnings Concentration and Distribution

Within each sub-category, the distribution of transaction values is highly skewed, with a small number of high-value transactions pulling the average well above the median. The mean-to-median ratio provides a simple measure of this skew: a ratio of 1.0 indicates a symmetric distribution; ratios significantly above 1.0 indicate right-skew driven by outlier transactions.

**TABLE 4:**

Sub-Category (FY2025)	Mean (USD)	Median (USD)	Mean / Median	20th pct (USD)	80th pct (USD)	80th / 20th Ratio
Export / Import of Software (9.2.4)	\$31,699	\$5,076	6.2x	\$618	\$24,980	40.4x
Freelance (9.2.5)	\$359	\$63	5.7x	\$18	\$195	10.7x
Other Computer Services (9.2.6)	\$6,619	\$1,666	4.0x	\$368	\$6,314	17.2x
Software Consultancy (9.2.2)	\$12,618	\$3,500	3.6x	\$1,034	\$11,979	11.6x

Note: Source: SBP IT Export Data FY21–FY25, rows 'Average', 'Median', '1st Quintile', and '4th Quintile', FY2025. Hardware Consultancy (9.2.1) and Maintenance & Repair (9.2.3) excluded due to small sample sizes (382 and 154 entries respectively).

The widest internal earnings inequality is observed in the Software Export category (9.2.4) which exhibits an 80th percentile transaction value (USD 24,980) that is 40 times the 20th percentile value (USD 618). This range is congruous with the heterogeneity created by the single classification code containing both small-scale exporters and large firms executing multi-million-dollar software contracts.

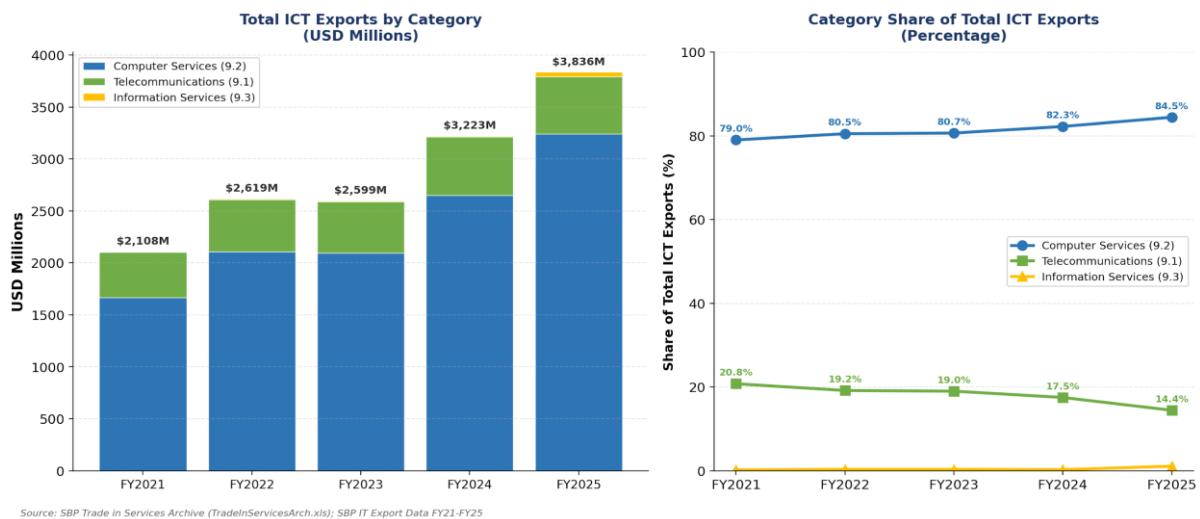
The freelance distribution is even more revealing. In FY2025, approximately 20 percent of the total 2.17 million freelance transactions were below USD 18 each. The maximum recorded single freelance transaction was USD 5.57 million (Source: SBP IT Export Data FY21–FY25, Freelance (9.2.5), FY2025 maximum value) against a median of USD 63. A coefficient of variation of 31.19 for FY2025 (rising from 4.93 in FY2021; source: SBP IT Export Data FY21–FY25, statistical summary) means the standard deviation is over 31 times the mean, indicating an increasingly bifurcated distribution: a massive base of micro-transactions alongside a growing tail of very high-value ones. This pattern is consistent with a segment that contains both casual, low-value assignment-based individuals and a small but growing cohort of high-earning digital professionals who use freelance platforms for formal contract work rather than micro-task execution.

**Data Limitation: Freelancer Under Reporting:** The SBP-reported freelancer figure of USD 779 million in FY2025 is an underestimate. A senior MoIT official has publicly stated that actual freelancer earnings may exceed USD 2 billion, with the gap attributable to payments received through personal bank accounts classified under purpose code 9471 (home remittances) rather than IT export codes. This is a structural data problem documented by P@SHA and confirmed in practitioner consultations. The true freelance contribution to Pakistan's IT export earnings is therefore likely to be two to three times the reported figure but cannot be verifiably quantified from available public data. While aggregate foreign exchange inflow is captured, misclassification affects how IT sector contribution is measured and how policy is calibrated. IT export incentives, PSEB registration benefits, and sector-specific support are tied to the IT export classification.

## 2.2 Sectoral Composition and Structural Trends

Beyond the Computer Services category, Pakistan's broader IT and ITeS export base includes Telecommunications Services (9.1) and Information Services (9.3). The relative composition of these three categories over the FY2021–FY2025 period reveals an important structural shift in the sector's export base.

FIGURE 3: 7



The share of Computer Services contribution to total ICT exports has increased from approximately 79 percent in FY2021 to 85 percent in FY2025, indicating a structural deepening of Pakistan's IT export base toward software and digital service delivery. On the other hand, Telecommunications Services including call centers and cross-border connectivity have seen a decline in its relative share from approximately 21 percent to 15 percent, despite a modest growth in absolute terms from USD 438 million to USD 554 million. The contribution of Information Services (9.3) remains negligible at less than 1 percent of total ICT exports, though its growth accelerated in FY2025.

The increasing dominance of Computer Services is consistent with global trends that indicate a rising demand for knowledge-intensive digital services over conventional telecommunications and BPO activities. Within Computer Services, however, the concentration in Software Consultancy and Freelance activities, both of which operate largely through effort-based and time-and-materials models, indicates that Pakistan's export base, while growing, has not yet diversified significantly into higher-value product or IP-oriented activities. Regardless of whether this concentration reflects supply-side constraints (including graduate readiness and depth of specialist skills) or demand-side factors (international clients outsourcing lower-value work to Pakistan); it warrants policy attention.

### 2.3 The Formal Corporate Base: SECP Registration Data

The Securities and Exchange Commission of Pakistan (SECP) database of IT and ITes registered companies presents a favorable picture of the sector's formal corporate base. As of 31 December 2025, SECP records show 33,172 registered companies with an IT or ITes principal line of business. This number is substantially larger than the PSEB-registered count of 5,560 IT companies (2024), demonstrating the fact that SECP registration is a legal requirement for all incorporated entities while PSEB registration is voluntary and incentive-based. The gap between these figures indicates that a large share of Pakistan's formal IT corporate base is not registered with PSEB and is excluded from the principal export facilitation and incentive framework. The size of this gap also raises the question of operational activity: a significant portion of SECP-registered entities may not be actively engaged in IT exports. SECP acknowledged that 992 IT companies have been struck off by the Register of Companies but does not provide any further details.

7 Telecommunications and Information Services from SBP archive annual credits. FY2023 sub-sector totals computed from quarterly credits. Shares indicative due to rounding.

### 2.3.1 Year-wise Incorporation Trends

TABLE 5:

Year of Incorporation	Number of Companies	% of Total	Cumulative % (from 2016)
2025 (to date)	6,283	18.9%	18.9%
2024	4,655	14.0%	32.9%
2023	4,151	12.5%	45.4%
2022	4,011	12.1%	57.5%
2021	3,424	10.3%	67.8%
2020	2,424	7.3%	75.1%
2019	1,844	5.6%	80.7%
2018	1,482	4.5%	85.2%
2017	1,040	3.1%	88.3%
2016	605	1.8%	90.1%
2015 and below	3,253	9.8%	100%
<b>Grand Total</b>	<b>33,172</b>	<b>100.0%</b>	<b>–</b>

Source: SECP Company Registration Database, IT and ITeS sector companies, as of 31 December 2025.

Nearly 68 percent of all registered IT companies were incorporated between 2021 and 2025, indicating a phase of structural expansion in the post-2020 period. 19 percent of the total companies' base were registered in 2025 alone accounting for approximately 19 percent of the total companies was registered in 2025 alone suggesting an acceleration of the entrepreneurial formation momentum of the sector rather than a plateauing. The doubling of annual incorporations between 2019 (1,844) and 2021 (3,424) reflects the convergence of several factors: the normalization of remote work following COVID-19, the expansion of global outsourcing demand, and the decreasing barriers to incorporating a digital service company.

This formation rate is a positive structural signal, but it must be interpreted cautiously. While high formation rates can reflect genuine market entry and export readiness, they can equally reflect formalization of previously informal freelancers and remote workers into corporate structures for tax or banking purposes. The SECP data does not distinguish between these motivations, and the survival rate of recently incorporated firms, particularly the large cohort incorporated in 2024 and 2025, cannot yet be assessed. Moreover, SECP does not document the reasons for why 992 registered companies were struck off. International evidence on IT sector development suggests that high formation rates without corresponding scaling typically produce a fragmented base of micro-enterprises unable to compete for larger international contracts.

### 2.3.2 Business Segment Distribution

TABLE 6:<sup>8</sup>

Principal Line of Business	Number of Companies	% of Total	Policy Implication
IT Allied / Other	19,045	57.4%	High concentration in low-to-mid value services
Software Development	9,453	28.5%	Strategic core; AI-disruption risk
Call Centers / BPO	2,408	7.3%	High displacement risk from AI automation
Information Technology (Core)	1,885	5.7%	Product/platform-oriented segment; typically provides higher value addition due to product scalability
Hardware	381	1.1%	Negligible; Pakistan is services-dominated
<b>Grand Total</b>	<b>33,172</b>	<b>100%</b>	<b>–</b>

Source: SECP Company Registration Database.

<sup>8</sup> 'IT Allied' includes IT consulting, digital services, IT support, and outsourced back-office services. 'Core IT' captures product and platform-oriented firms.

The business segment distribution indicates the overwhelmingly services-oriented and predominantly lower-to mid-value nature of the sector. The broad 'IT Allied' categorization that encompasses IT consulting, digital services, and back-office outsourcing accounts for more than half of all registered companies at 57.4 percent. However, this concentration is also the segment most directly in the path of AI-driven productivity disruption. Software Development accounts for 28.5 percent and is the segment with the highest potential for higher-value export activity and represents the sector's strategic core.

Call centers and BPO operations account for 7.3 percent of registered companies, but this segment is most vulnerable to displacement risk from AI automation. Agentic AI (AI-powered workflow automation systems) and large language model-powered workflow tools are already capable of performing most tasks that constitute Pakistan's BPO exports, and the economic case for client-side automation is compelling regardless of Pakistan's labour cost advantage. The sector's core structural vulnerability lies in its current composition whereby 64.7 percent of registered companies belong to the large call center and IT-allied base and only a limited number of companies are involved in high-value, judgment-intensive, or IP-based activities.

### 2.3.3 Legal Structure and Capital Market Integration

TABLE 7:<sup>9</sup>

Company Type	Number	% of Total	Structural Implication
Private Company	21,840	65.8%	Closely held; limited external capital access
Single Member Company (SMC)	10,517	31.7%	Micro / founder-driven; high fragmentation
Limited Liability Partnership (LLP)	732	2.2%	Growing alternative structure
Public Unlisted Company	64	0.2%	Pre-market scaling stage
Public Listed Company	12	0.04%	Negligible capital market participation
Other (Sec. 42, 45, Trade Org.)	7	0.02%	Regulatory / associational entities
<b>Grand Total</b>	<b>33,172</b>	<b>100%</b>	–

Source: SECP Company Registration Database.

A critically important dimension of the sector's structural fragmentation is revealed by the legal structure data. Nearly 32 percent of all registered IT companies are Single Member Companies that are very small, founder-led enterprises with a single shareholder. Combined with Private Companies, over 97 percent of the sector consists of closely held entities with no public capital market participation. The public listing penetration rate is miniscule, only 0.04 percent, with only 12 IT companies being publicly listed on Pakistan's stock exchanges, out of a registered base of 33,172.

This structural characteristic has significant consequences. The absence of capital market participation limits access to institutional equity capital needed for scale-up investments in product development, international business development, and technology infrastructure. It reduces market visibility with international partners and investors, who increasingly rely on publicly verifiable financial performance as a due diligence input. It also creates a pipeline problem: Pakistan's IT sector has a large base of micro and small enterprises and a very thin layer of companies at the scale required to compete for large international contracts or attract foreign direct investment. The scale-up journey, from Single Member Company to publicly listed firm that has the potential to generate the most employment, the highest-value exports, and the greatest productivity spillovers is currently not being navigated in any significant volume. This structural gap likely reflects a combination of constrained entrepreneurial scaling capacity and graduate quality gaps relative to competing markets such as India, where a substantially larger cohort of firms has reached the scale required for large international contracts.

<sup>9</sup> Single Member Companies are incorporated with a single shareholder and are most common among micro and early-stage enterprises.

### Proposed segmentation

SECP's company registry contains thousands of firms classified under IT-related categories. However, a significant proportion are shell companies, dormant entities, or single-person consultancies with minimal authorized capital. To identify the actual addressable population of IT firms capable of scaling exports, understanding the distribution of authorized and paid-up capital is essential. The SBP Special Section data confirms this: more than 80 percent of IT exporting firms export less than USD 0.1M annually, and more than 90 percent export less than USD 0.5M. Hence, the following segmentation is proposed that will allow differentiated and targeted policy addressal.

### Proposed Segmentation Framework:

**TABLE 8:**

Segment	Authorized Capital (PKR)	Paid-Up Capital (PKR)	Est. % of IT Firms	Policy Relevance
Micro	< 1M	< 500K	~60-70%	Likely dormant/freelancer shells
Small	1M – 10M	500K – 5M	~15-20%	Active SMEs, export-capable
Medium	10M – 100M	5M – 50M	~8-12%	Growth-stage, scaling exports
Large	100M – 1B	50M – 500M	~3-5%	Established exporters
Enterprise	> 1B	> 500M	< 1%	Captives, MNC subsidiaries

## 2.4 The Startup and Innovation Pipeline: IGNITE Data

IGNITE National Technology Fund provides the primary institutional infrastructure for Pakistan's startup and early-stage innovation ecosystem. Its data reveals the segment of the IT sector that SBP and SECP data do not capture well: technology-driven startups pursuing product-oriented, externally funded growth models rather than services-based revenue. As of 2024, IGNITE's cumulative programme portfolio represents the most significant public investment in IT sector innovation capacity in Pakistan's history.

### 2.4.1 National Incubation Centers: Portfolio Outcomes

**TABLE 9:**

<b>1,610</b> Startups Incubated Across 8 NICs, 69 cohorts	<b>54.8%</b> Graduation Rate 882 startups graduated	<b>173,000+</b> Jobs Created By NIC-supported startups	<b>PKR 23.7B</b> Investment Committed By graduating portfolio
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Source: IGNITE Business Plan 2024–28, p.15. Cumulative figures as of 2024.

IGNITE's eight National Incubation Centers have collectively supported 1,610 startups across 69 cohorts, with 882 graduating, a graduation rate of 54.8 percent. Graduated startups generated PKR 17.64 billion in cumulative revenue and attracted PKR 23.70 billion in investment. Notable portfolio examples include Electrocare (AI/IoT tool reducing distribution line losses in KPK), Byonyks (Pakistan's first bloodless peritoneal dialysis machine), WonderTree (AR therapeutic tool for children with special needs), and Bakhbar Kissan (agricultural knowledge platform with over two million registered farmers). However, systematic longitudinal tracking of post-graduation survival rates is currently not available. The NIC-supported portfolio has committed PKR 23.70 billion in investment, generated PKR 17.64 billion in revenue, and created over 173,000 jobs. While these outcomes are meaningful at the programme level, they must be contextualised against the broader scale of the sector. The 1610 startups incubated since the NIC programme's inception represents a small fraction of the 33,172 IT companies registered with SECP, and the investment and revenue figures, while substantial at the individual programme level, are modest relative to the overall export base.

The geographic distribution of NIC-generated employment reflects Pakistan's broader IT sector geography: Karachi leads with approximately 22,979 jobs, followed by Islamabad (15,909) and Rawalpindi (13,790). Earlier-stage ecosystems in Peshawar (1,904), Quetta (1,847), Hyderabad (1,681), and Faisalabad (823) reflect both the more recent NIC presence in these cities and the structural dependency of the startup ecosystem on dense urban clusters of talent, infrastructure, and capital.

The dropout rate of 32.9<sup>10</sup> percent is significant and warrants analytical attention. The available data does not allow to determine what proportion of dropouts represent genuine business failure versus exits to informal operation or to offshore incorporation, the latter being a common outcome in Pakistan's regulatory environment. Understanding the destination of dropout startups is essential for evaluating whether the programme is genuinely developing the ecosystem or primarily providing a credential that companies then use to access capital before restructuring offshore.

### 2.4.2 R&D and Innovation Grants

TABLE 10: <sup>11</sup>

Programme Metric	Cumulative Figure	Source
Total R&D proposals approved	154 proposals	IGNITE Business Plan 2024–28, p.19
Total approved funding value	PKR 2,636 million	IGNITE Business Plan 2024–28, p.19
Investment raised by funded projects	PKR 1.136 billion	IGNITE Business Plan 2024–28, p.19
Revenue generated by funded projects	PKR 346 million	IGNITE Business Plan 2024–28, p.19
International patents filed	29 patents	IGNITE Business Plan 2024–28, p.19

The R&D grant programme has approved 154 proposals with PKR 2.64 billion in approved funding, generating PKR 346 million in revenue and 29 international patent filings. The fundamental structural challenge identified throughout this study is that Pakistan's IT sector is building service delivery capability rather than generating intellectual property. This is reflected in the ratio of patent filings to total investment is low, approximately one patent per PKR 91 million of grant funding. The 29 international patents from what is the country's primary publicly funded innovation programme is a direct indicator of the depth of the IP deficit.

10 The dropout rate of 32.9 percent refers to startups that formally exited the programme before graduation. A further 12.3 percent of incubated startups were still active in their cohorts at the time of reporting (2024), which accounts for the difference between the dropout figure and the implied non-graduation rate of 45.2 percent.

11 Note: Cumulative figures as of 2024. The low number of international patents (29 over the program's full history) is a notable indicator of limited IP generation relative to total programme investment.

### 2.4.3 Digital Skills Programme: DigiSkills

TABLE 11:<sup>12</sup>

DigiSkills Programme Metric	Figure	Source
Total enrolments (since inception)	4.26 million+	Business Plan 2024–28, p.16
Training batches completed	18 batches	Business Plan 2024–28, p.16
Course completion rate	31%	Business Plan 2024–28, p.16
Female enrolment share	28%	Business Plan 2024–28, p.16
Cumulative freelancer earnings (est.)	USD 827 million	Business Plan 2024–28, p.16
Punjab share of enrolments	~2.5 million (59%)	Business Plan 2024–28, p.16
Balochistan share of enrolments	~97,759 (2.3%)	Business Plan 2024–28, p.16

Source: IGNITE Business Plan 2024–28.

The DigiSkills programme has achieved significant reach, with over 4.26 million enrolments, the largest mass digital skills initiative in Pakistan's history. However, several aspects of the programme's performance data warrant critical scrutiny. A course completion rate of 31 percent means that nearly 70 percent of enrolled participants do not complete the programme. While completion rates in open online learning are generally lower than in formal education, a 31 percent rate across 18 batches indicates either a significant curriculum-engagement mismatch or substantial enrollment by individuals who cannot sustain participation due to connectivity, time, or economic constraints. While interventions including Urdu-language content and individual coaching were implemented to improve retention, no dedicated survey of non-completers was identified in available IGNITE documentation. A structured study of non-completer barriers is recommended.

The geographic distribution of enrolments reflects the structural digital divide: Punjab accounts for approximately 59 percent of total enrolments and the Federal Capital for a further 5 percent, while Sindh accounted for approximately 25,617 participants, and Balochistan, AJ&K, and Gilgit-Baltistan together account for less than 5 percent. Provinces with the weakest connectivity, lowest per-capita incomes, and greatest developmental need are the ones that the programme is reaching least effectively, not because of programme design failure, but because the underlying infrastructure constraints limit participation, regardless of programme reach.

## 2.5 The Talent Pipeline: HEC Higher Education Data

The Higher Education Commission's Higher Education Data Repository (HEDR) provides the primary evidence base for Pakistan's IT talent supply pipeline. The most recently verified HEDR data covers FY2020–21, with FY2022–23 data still pending from several institutions at the time of this study. No FY2023–24 or FY2024–25 published datasets are publicly available. The analysis below is therefore based on FY2020–21 figures, supplemented by programme-level data from subsequent years where available.

<sup>12</sup> Cumulative freelancer earnings are an estimated total attributed to programme trainees; methodology for this estimate is not specified in the source document

### 2.5.1 ICT and Engineering Enrolment

TABLE 12:

Discipline Category (ISCED-F)	Enrolment FY2020–21	Male Share	% of Total Enrolment
Information and Communication Technologies (ICTs)	276,659	73%	9.1%
Engineering, Manufacturing and Construction	166,457	81%	5.5%
Natural Sciences, Mathematics and Statistics	415,008	54%	13.7%
Health and Welfare	178,260	54%	5.9%
<b>Total All Disciplines</b>	<b>3,036,000</b>	<b>–</b>	<b>100%</b>

Source: HEC HEDR Annual Report 2022–23 (HEDP Component 4 Annex 3), citing HEC data released February 2023. ICT + Engineering combined enrolment: 443,116 students, representing approximately 14.6% of total enrolment.

Pakistan had 276,659 students enrolled in ICT disciplines and a further 166,457 in Engineering, Manufacturing and Construction in FY2020–21, for a combined total of 443,116 students in technology-relevant disciplines. ICT is the second-largest discipline group after Natural Sciences and Mathematics, accounting for approximately 9.1 percent of total university enrolment. The 73 percent male share in ICT enrolment is consistent with the sector-level gender gap documented across employment data and reflects broader structural barriers to women's participation in technical education and careers in Pakistan.

### 2.5.2 Graduate Output

TABLE 13:<sup>13</sup>

Discipline	Graduates FY2020–21	Source
Information Technology (all sub-disciplines)	~43,000	HEC HEDR 2022–23 Report
Total STEM graduates	157,102	HEC HEDR 2022–23 Report
IT as % of STEM graduates	~27.4%	Derived

Pakistan produced approximately 43,000 IT graduates in FY2020–21, approximately 27 percent of a total of 157,102 STEM graduates. This is a substantial annual output in absolute terms, and it represents the primary supply mechanism for the sector's talent pipeline. However, the quantitative scale of this output must be assessed alongside qualitative evidence from industry consultations, which consistently and strongly identify graduate quality as the issue rather than graduate quantity. Employers report that graduates routinely arrive technically literate in deprecated technologies, lack applied project experience, are unable to effectively communicate in professional English, and require substantial employer-funded remediation before achieving constructive participation. This quality-quantity mismatch is the defining characteristic of Pakistan's IT talent supply challenge, and it is not addressed by policies that increase enrolment or graduate numbers without concurrent curricular and pedagogical reform.

Critical data gap: HEC sub-discipline and annular series data: HEC's HEDR system collects more granular data than it currently publishes. Enrolment by sub-discipline (CS vs IT vs Software Engineering vs Computer Engineering vs Electrical Engineering), enrolment by degree level (BS vs MS vs PhD), annual graduate counts by sub-discipline and degree level, and dropout/attrition rates are all collected but not publicly released in indexed form. The absence of this data prevents precise workforce planning, limits the ability to match

13 Note: The IT graduate figure of approximately 43,000 is the only sub-discipline-specific count publicly released by HEC. No disaggregation by CS, SE, Computer Engineering, or EE sub-discipline is available in public HEDR outputs. Sub-discipline breakdowns exist within the HEDR system but require a formal data request.

supply to demand at the sub-discipline level, and makes it impossible to track the impact of curriculum reforms over time.

## 2.6 Cross-Source Triangulation and the Export Measurement Gap

A recurring challenge in quantifying Pakistan's IT sector is the variation between figures reported by different official sources. This is not simply a technical data quality issue; it highlights genuine structural measurement problems that have direct consequences for policy design and evaluation.

The divergence between figures reported by SBP and other sources reflects three distinct structural measurement problems.

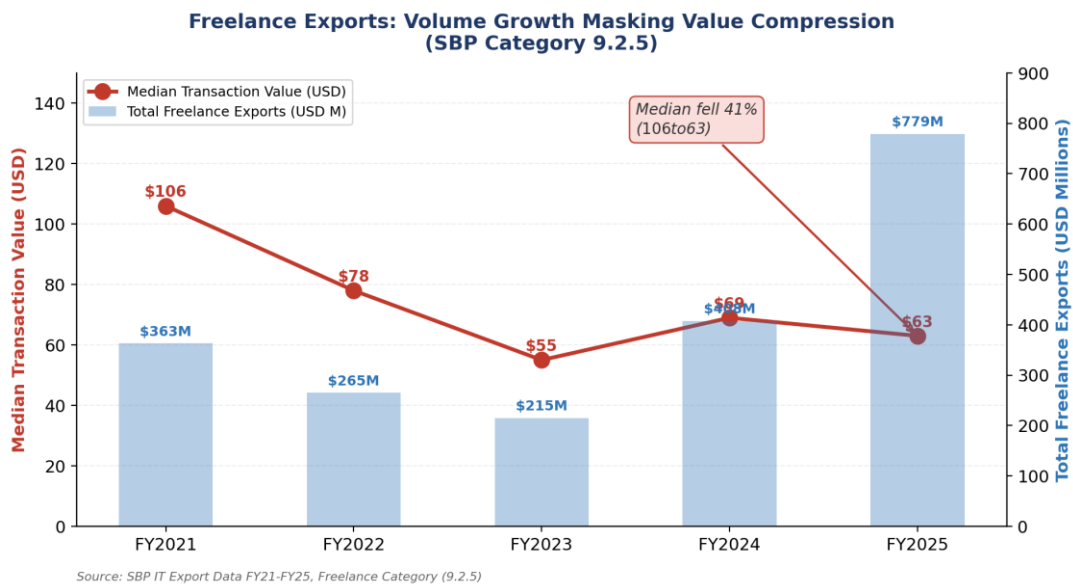
- The first is channel diversion: freelancers and some small exporters route earnings through personal bank accounts under home remittance purpose codes rather than IT export codes, keeping them outside the SBP IT export reporting framework entirely.
- The second is offshore structuring: companies incorporated in the UAE, UK, or US, often by Pakistani founders, generate export revenue that appears in those countries' statistics, not Pakistan's.
- The third is SBP reporting lag and revision: the FY2025 figures used in this analysis are designated 'revised' but provisional figures are subject to further adjustment as banks update their submissions.

The implication is that Pakistan's IT sector is consistently under-reported within its official sector reporting framework. It is important to note that this under-reporting in IT export figures is offset by over-reporting in personal remittance codes, however this does not affect the aggregate Balance of Payments position since total foreign exchange inflows are captured in the BoP regardless of classification. The true scale of IT-related economic activity generated by Pakistani talent is significantly larger than what official figures suggest. This misclassification has critical policy implications: IT export incentives, PSEB benefits, and sector-specific support are calibrated against the IT export classification rather than aggregate BoP flows. Programmes are sized against a measured export base that understates actual activity, incentive designs are calibrated to address a problem that is smaller than it appears, and Pakistan's case for inclusion in global benchmarking studies is weakened by official figures that are known to be floor estimates rather than comprehensive measures. Addressing this measurement gap, through purpose code harmonization, SBP-PSEB data reconciliation, and offshore entity tracking, is a prerequisite for effective IT sector policy rather than a peripheral data management exercise.

## 2.7 Summary: Key Quantitative Findings

1. **Strong Export growth but concentrated and structurally vulnerable:** Computer Services exports grew 94 percent from FY2021 to FY2025, reaching USD 3.24 billion in formal bank-channel receipts. The sector's growth has been real and sustained. However, 57 percent of registered companies operate in low- to mid-value 'IT Allied' services, and the dominant export model remains effort-based service delivery, the segment most vulnerable to AI-driven commoditization.
2. **A structurally fragmented corporate base:** 33,172 IT companies are registered with SECP, of which 32 percent are Single Member Companies and only 12 are publicly listed. The vast majority are closely held micro-enterprises with limited access to capital markets, constrained scaling capacity, and high survival risk. The sector has a strong formation rate but a thin scale-up pipeline.
3. **Freelancer – Volume growth masking value compression:** Freelance transactions grew 75 percent in volume from FY2021 to FY2025, but the median per-transaction value fell 41 percent, from USD 106 to USD 63. The formal bank-channel figure of USD 779 million is likely a significant undercount, with government estimates suggesting actual freelancer earnings may exceed USD 2 billion when informal routing is included.

FIGURE 4:



- Talent supply – Adequate in Quantity, Deficient in Quality and Coverage:** Pakistan produces approximately 43,000 IT graduates annually. The quantitative pipeline is not the binding constraint. Industry evidence consistently identifies qualitative gaps; soft skills, applied project experience, commercial capability, as the primary talent challenge. DigiSkills programme has reached 4.26 million enrollees but with a 31 percent completion rate and uneven geographic reach. IGNITE's business plan also acknowledges the need for curriculum - market alignment.

## Section III:

## Constraints on Pakistan's IT Sector Growth

This section draws on the industry survey, stakeholder interviews and focus group discussions conducted for this study to explain the structural constraints, which segments they affect the most and what the appropriate policy responses are to resolve them. Seven challenge clusters are identified through this analysis. These challenges are not independent; rather several share common root causes and resolving anyone without its foundational prerequisites will produce limited results.

The study's recommendations are organized under the SCALE framework, a five-pillar strategic architecture derived from the cross-country comparative analysis of high-performing IT export economies including Ireland, Estonia, India, Vietnam, the Philippines, Romania, Morocco and Egypt. The SCALE framework is the analytical structure through which this study's recommendations are developed and tailored to Pakistan's specific institutional and economic context.

<b>SCALE</b>	<p>S: Skills and Talent Pipeline Transformation</p> <p>C: Captive and Corporate Attraction Strategy</p> <p>A: Access to Markets and Financial Rails</p> <p>L: Legal, Regulatory and Digital Governance Reform</p> <p>E: Ecosystem and Startup Infrastructure</p>
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### 3.1 Human Capital

#### The Academia - Industry Disconnect and lack of soft skills

Evidence across consultations with stakeholders from large IT exporters to individual freelancers consistently identifies the quality of graduates entering the workforce as one of the most binding constraints for the IT sector. Only approximately 10 to 12 percent of IT graduates are considered immediately employable (P@SHA, 2022, cited in SBP, 2023) without six to twelve months of employer-funded remediation.

University curricula in computer science and IT are not consistently updated to reflect the latest tools, frameworks and methodologies of industry. Similarly, teaching methodology is predominantly lecture-based and theory-oriented rather than project-based or outcome-oriented in most universities. Graduates enter the market without exposure to professional practices such as client communication, deadline management, code review processes and cross-functional collaboration. These skills that are neither taught nor practiced during degree programmes.

Stakeholders also identify soft skills as the most critical and most neglected dimension of talent development. This includes professional conduct, client communication, punctuality, written English, presentation skills and the ability to represent oneself and one's company credibly to international clients. This gap has direct commercial consequences. Competitors such as the Philippines have built a strong position in BPO and

operational roles due to internationally recognized communication standards and professional conduct. While Pakistani technical talent is often considered equivalent or stronger on hard skills, the soft skills gap creates a clear disadvantage in client-facing and business development roles.

This shortfall is most acute in tier-2 and tier-3 cities, where access to informal learning networks and mentorship is limited, and where the gap between education quality and industry needs is widest. The DigiSkills programme, the government's primary mass digital skills initiative with over 4.26 million enrolments, focuses largely on technical skills with enrolments heavily concentrated in Punjab. As a result, the practitioners most in need of professional development support are the least likely to receive it through existing programmes (IGNITE Business Plan 2024–28).

### **Lack of Cross-Disciplinary and Leadership Talent**

When asked to identify the single biggest constraint specific to their company size and type, the most frequently cited response among mid-size exporters was not technical talent but the inability to hire or afford international business development professionals. Hiring and maintaining a business development or sales team outside Pakistan was identified as a barrier disproportionately affecting companies in the USD 500,000 to USD 5 million revenue range, where the cost is prohibitive, but the need is acute.

More broadly, the talent deficit is not among junior developers but among executives capable of building and managing companies with significant international revenues. Startup founders are frequently technically capable but lack experience in enterprise sales, fundraising, financial management and organizational leadership. The IT sector broadly lacks experienced CEOs and COOs with a demonstrated track record of scaling technology businesses, and leadership development at the C-suite level is not the focus of any existing policy, education or industry programme.

Today's highest-value export categories demand cross-disciplinary profiles combining technology with domain expertise in financial services analytics, healthcare IT, legal technology and actuarial computing. These profiles cannot be hired because no programme produces them. Firms must develop them internally at a cost that only large companies can absorb, leaving mid-size exporters structurally unable to move up the value chain.

### **Structural Underutilization of Women**

Women's participation in Pakistan's IT sector is 21 percent in Software Technology Parks (Ministry of Finance, 2025) and only 38,000 out of 2.32 million freelancers with freelancer specific bank accounts are women (PAFLA, ADB 2024). The pipeline problem begins before employment. Of 276,659 students enrolled in ICT disciplines at Pakistani universities, 73 percent are male which means that women enter the graduate pipeline at a lower rate to begin with (HEC, 2023). The government's primary skills intervention does not close this gap. Female enrollment in DigiSkills stands at only 28 percent of 4.26 million total participants.

The barriers keeping women can be resolved which makes their lack of participation a policy failure. Consultations identified three structural constraints that recur consistently: the absence of mentorship networks accessible to women, significantly lower awareness of high-value skill categories among women freelancers compared to their male counterparts and the absence of childcare infrastructure in Software Technology Parks. These constraints are more severe in tier-2 and tier-3 cities where no professional development infrastructure of any kind exists and where women face connectivity constraints, social mobility restrictions, and the complete absence of PSEB facilitation simultaneously.

Women make up half of the country's population, the forgone export contribution from women's structural exclusion runs into hundreds of millions of dollars annually. Thus, this is not a social equity argument alone, rather it is a growth capacity argument.

## Recommendations

### 1. Reform university ICT curricula through mandatory industry co-design, practicum requirements, and a national pedagogy programme

The Higher Education Commission should mandate that a minimum of 30 percent of IT and computer science programme courses are co-designed with verified industry partners through formal annual employer panels, updated to reflect current tools and methodologies in active use. A mandatory six-month industry practicum should be required for graduation from all ICT degree programmes, with government payroll tax credits provided to companies that participate in curriculum co-design and practicum supervision. Soft skills, professional communication and business ethics should be embedded as a compulsory module delivered by active practitioners.

A national IT pedagogy programme should mandate annual two-to-four-week industry immersion programmes for all STEM faculty at public universities, funded through HEC with industry hosting provided by P@SHA member companies and should include Technology Faculty Sabbaticals that allow university faculty to spend six to twelve months embedded in IT companies with salary continuation and formal research credit. At least 20 percent of IT and CS programme courses at HEC-recognized institutions should be taught or co-taught by active industry practitioners by 2028.

### 2. Build an accessible soft-skills and professional development infrastructure outside major urban centers

The government, in partnership with captive offices and large IT exporters, should fund a network of professionally delivered English communication, client management and business ethics programmes that are accessible to practitioners in tier-2 and tier-3 cities. The programme design should leverage TEVTA's existing physical infrastructure for delivery and draw on industry-designed curriculum to ensure relevance. Completion should be linked to a nationally recognized professional certificate that constitutes a PSEB registration benefit, creating a tangible and practical incentive for enrolment. The government and large IT firms should jointly fund this programme at no cost to incoming talent.

### 3. Establish a Global Tech Education Partnerships Unit and leverage international corporate upskilling programmes at scale

A dedicated Global Tech Education Partnerships Unit should be established under MoITT and PSEB to proactively engage global technology companies for large-scale upskilling deployments in Pakistan. With 60 percent of Pakistan's population under 30, the country is an attractive platform for every major technology company's CSR-driven education initiative with programmes like Samsung's Innovation Campus (SIC), Google Certificate Programmes and Microsoft AI for Good etc. The government should offer co-funding (50 percent government, 50 percent corporate partner) to scale these programmes from hundreds to thousands of annual participants. Successful graduates should be integrated into a Pakistan Certified Tech Talent Registry that PSEB markets to international clients as a verified talent pool.

### 4. Build an executive leadership development programme for IT sector founders and senior executives

A structured leadership development programme that is delivered in partnership with leading Pakistani universities and draws on the expertise of the country's most successful IT executives should be established to serve IT founders and senior executives navigating the transition from technical execution to organizational management and international scale. The programme should focus on the capabilities identified as most scarce across all consultation modes including enterprise sales methodology, financial

management, board governance, international market entry strategy and managing organizations through growth transitions.

### 5. Develop a national cross-disciplinary talent programme combining technology with domain professional qualifications

A structured national programme is needed to develop technology professionals with domain expertise in high-value sectors such as financial services, healthcare, legal services and enterprise analytics (areas where global demand is strong and talent is scarce.) This should be complemented by two parallel pathways. First, by enabling technology professionals to pursue recognized domain qualifications through employer co-funding and accelerated frameworks in partnership with bodies such as the Institute of Chartered Accountants of Pakistan (ICAP), ACCA and the CFA Institute. Second, by supporting domain professionals like accountants, actuaries and lawyers to build structured technology competencies. For both tracks, industry-led curriculum design and formal placement partnerships should be mandatory to ensure market relevance. Pakistan's internationally recognized professional qualifications ecosystem in accountancy, finance and law remains a significantly underutilized asset and can be more effectively leveraged as a pipeline for high-quality, domain-integrated technology talent.

### 6. Establish a Women in Tech Exports dedicated track — infrastructure, procurement, and mentorship

Gender-disaggregated targets should be embedded in all government IT training programmes. Women-specific scholarship quotas should be established within Coursera and Google partnership programmes. Dedicated co-working spaces in Software Technology Parks with childcare facilities should be built into the next STP expansion cycle. A women freelancer mentorship network should be formally established and funded through PSEB. Tax incentives should be available to IT firms exceeding 30 percent female employment. A 10 percent dedicated procurement set-aside for women-led IT businesses should be embedded in the reformed PPRA framework across all federal and provincial IT procurement. This requires no new legislation and is a specification within the Public Procurement Regulatory Authority (PPRA) reform instrument and should be thus included in the same measure.

## 3.2 Tax Architecture and Regulatory Design

Pakistan's tax framework offers a distinctive and compelling incentive for the IT sector. Freelancers registered with PSEB are required to pay only 0.25 percent (PSEB) withholding tax on verified export receipts which is one of the lowest effective rates available for any commercial activity in the country.

The challenge that emerges is not absence of incentive, rather the operational framework surrounding it that creates room for exploitation and compromises formal employment structures. Four distinct but complementary failure mechanisms operate within the tax and regulatory architecture, the costs of which are significantly higher than what can be offset by the incentive.

### The Income Tax Rate Differential and Internal Talent Drain

The PSEB tax incentive for freelancers creates significant disparity between the different segments in the IT sector. In contrast to the 0.25 percent applicable to freelancers, salaried employees of IT and ITeS companies face progressive income tax rates reaching 30 to 35 percent at senior levels (P@SHA, 2024). This differential coupled with the relative ease with which salaried employees can reconfigure their employment status to remote-worker or freelancer arrangements creates a lucrative incentive for senior employees to forgo formal employment. Findings from consultations consistently reinforce the following mechanism across multiple industry segments. Companies invest in training junior employees but are unable to retain these workers as they develop skills and advance in their productive capacity, because workers prefer to adopt remote

workers or freelancer status to enjoy drastically lower effective tax rates. Hence a vicious cycle emerges; corporate employers bear training costs; individuals capture the income gains; and the formal employment base continues to weaken, impeding realization of the sector's true export potential.

The net income difference after restructuring has been estimated by operating firms to average more than 20 percentage points of salary gap substantial enough to outweigh the appeal of what are generally coveted fringe benefits including provident fund, insurance, and employer social security contributions.

Formal employers are burdened by high costs of compliance, payroll taxes and social security, progressive income tax, and audit behavior on statutory exemptions. This creates a total cost of formal employment that is considerably higher than comparable markets rendering them uncompetitive. Captive offices, in particular, are bound by their inability to restructure employment relationships, unlike domestic firms, and face the full payroll burden.

### **The Freelancer Definition Void**

There is no single consolidated statutory definition of 'freelancer' in Pakistani tax, labour or commercial law. Consequently, there is disparity and ambiguity in classification across federal tax administration, the state bank, and commercial banks. The treatment of remote-workers who receive regular fixed-schedule payments from a single overseas employer is undifferentiated from the treatment of platform-based gig economy workers with multiple rotating clients and variable transaction sizes.

This conflation presents two unique challenges. The first is continuous revenue leakage: the corporate income tax base shrinks as a result of individuals claiming freelancer tax status when claiming foreign remittances regardless of actual employment status. The second challenge is intense scrutiny by banks that either hold or reject incoming payments that match employment patterns as opposed to gig patterns, which is compounded by tax authorities that flag and question such practitioners.

Additionally, the processing time for banks to release payments averages several days and requires tedious documentation which causes cash-flow disruptions for practitioners dependent on regular platform payments. Practitioners in Tier-2 and Tier-3 cities are disproportionately vulnerable to classification uncertainty as they lack the PSEB registration support infrastructure available in major urban centers. Moreover, there is no institutional protection or grievance mechanism in place for freelancers to be able to resolve bank-side classification disputes.

Findings indicate the absence of a statutory definition of freelancer is the most prominent regulatory shortcoming in the sector. Despite this being a well understood challenge with a clearly identifiable and technically straightforward solution, it is yet to be addressed across multiple policy cycles. This persistence may be attributed to institutional failure: resolving the definition entails that tax authorities accept a framework which limits their discretionary audit capabilities which they may not be willing to accept.

### **Provincial Tax Fragmentation**

Variable provincial service tax rates and policies make it challenging for IT services companies to operate across provinces. Each provincial revenue authority determines what IT services it will tax and at what rate, which makes companies with cross-provincial operations susceptible to double taxation and increases their compliance overhead.

Findings indicate that mid-size exporters in the 50 to 500 employees are particularly vulnerable to the effects of provincial fragmentation as they are large enough to be exposed but lack the compliance infrastructure of large firms to absorb it.

Provincial sales taxes are applicable on cloud infrastructure payments to international providers, increasing the cost of inputs for local companies relative to competitor delivery locations that pay zero tax on the purchase of such services. Moreover, the recent increase in the import duties on laptop computers has raised the cost of core inputs of the IT sector, by treating these inputs as taxed capital goods rather than exempt inputs for an export sector.

The combined effective rate on internet services, a combination of advance income tax and provincial service tax levies, is approximately 34 percent (P@SHA, 2025). This is a significantly higher tax burden than what is the norm for regional competitor markets rendering the sector uncompetitive.

### **Tax Audit Behavior and the Safe Harbor Gap**

Registered IT exporters can claim statutory income tax exemptions; however, the audit behavior of federal tax authorities treats those exemptions as contestable rather than resolved. Findings indicate that despite their income being legally exempt, many IT sector players are routinely subject to audit notices and investigations. This creates unease and presents a business continuity risk that is independent of the nominal tax rate. It also creates a systematic disincentive for large-scale formal operations registered in Pakistan. In response to such audit risks, companies are forced into making the rational choice of maintaining offshore accounts and routing revenue through non-IT channels to bypass tedious document enforcement patterns. Large exporters are most vulnerable to tax audit risks because their revenues make them worth auditing, negatively impacting export growth due to a paradoxical scaling relationship between export success and regulatory exposure.

The operational hurdles that result from the counter-intuitive relationship between the tax exemption framework and the enforcement behavior of administrative institutions act as major deterrents for companies to register and operate in Pakistan.

### **The NOC Regime and Innovation Hardware Friction**

Technology innovation is significantly hampered by Pakistan's No Objection Certificate (NOC) regime. The acquisition of, and at times the right to operate, 3D printers, commercial drones, IoT sensors, and development boards require NOC approvals from multiple regulatory bodies, often including intelligence agencies, which are obtained through long drawn-out and tedious processes that can take six to twelve months (PIDE, 2024).

On the contrary, countries, like Estonia and Singapore, where the IT sector is flourishing treat the same hardware as standard commercial equipment with no special licensing requirements. There are lessons to be learnt from India's liberalized drone policy of 2021 which catalyzed a multi-billion-dollar drone services industry within three years (OMI, 2021). Easing regulatory hurdles and supporting prototype development and hardware-adjacent IT work, can help position Pakistan as an attractive and lucrative delivery location for innovation inputs for both domestic players and international clients.

### **Policy Instability: The Finance Bill Reversal Pattern**

Policy discontinuity was identified as the one of the most crucial and crippling challenges for Pakistan's IT sector. Clouded by uncertainty, companies are unable to make long-term commitments or multi-year investments, knowing that the next change of administration or finance bill can completely alter the regulatory landscape within which they operate.

A prime example of this discontinuity is the finance bill 2025; several proposals which were intended as tax reliefs or zero-tax commitments, were revised or withdrawn within the months from its announcement.

Consequently, the private sector remains weary of policy announcements and systematically discounts them. This is particularly concerning for growth of the sector because lessons from Pakistan's key competitor countries, India, the Philippines, Eastern Europe, have illustrated how the sustained growth of their IT sectors hinged on policy frameworks that survived government transitions.

## Recommendations

### 1. Define 'freelancer' in statute and establish a separate remote employee tax category

The Federal Board of Revenue and the Ministry of IT should jointly develop and gazette a statutory definition of freelancer status potentially based on the following metrics: number of clients, variable transaction size and frequency, platform intermediation. Further clarity can be added by stipulating a minimum number of distinct clients per tax year; the absence of a fixed-hours obligation; and the absence of exclusive engagement clauses. This will distinguish them from remote workers that receive regular fixed payments from a single foreign employer.

A separate remote employee tax category should be created for individuals meeting employment-like criteria with a flat rate set between 5 and 10 percent shrinking the differential with corporate income tax but not eliminating it entirely. Moreover, to ensure continuity, the definition must be embedded in primary legislation to prevent reversal without due legislative process. A foundational definition for freelancers will make any consequent recommendation targeted towards the segment easier to implement.

### 2. Narrow the income tax gap between formal IT employment and the remote worker flat rate

The maximum income tax rate applicable to senior level employees of PSEB-registered IT exporters should be reduced from the current rate of 30 to 35 percent to 25 percent. Simultaneously, companies that cross specific verified export revenue thresholds can be offered revenue-linked incentives allowing them to apply reduced income tax rates on their employees' compensation, to be capped at 5 percent per tier.

Once the distinction between freelancers and remote workers definitions has been operationalized, the remote worker FTR should be increased from 1 percent to a minimum of 5 to 7 percent. Jointly the two recommendations above would reduce the after-tax income differential between corporate employment and remote workers from over 20 percentage points to 10 to 15 percentage points, sufficient to make formal employment and its fringe benefits attractive to the talent pool.

### 3. Establish a statutory FBR safe harbor on IT export exemptions

To remove the business continuity risk that FBR audit behavior currently creates despite legally clear tax positions, a published legally binding FBR safe harbor should be created. The objective of the safe harbor would be to ensure that IT companies with PSEB registration and verified export revenues are not subject to income tax audit on their statutory IT export exemptions barring evidence of fraud.

Statutory instruments should be used to implement the safe harbor rather than administrative guidance, which has been issued in the past before but to no effect. An independent dispute resolution process, supervised by the Federal Tax Ombudsman should allow registered IT exporters to refer audit notices that violate the safe harbor, with binding directions requiring FBR to withdraw non-compliant audit notices within 30 days.

#### 4. Harmonize provincial IT service tax and eliminate double taxation on internet and cloud inputs

The definition of IT and ITeS services should be standardized across all four provinces and the tax on IT services should be harmonized across federal and provincial governments to overcome definitional inconsistencies that lead to double taxation. Additionally, the cumulative effect of advance income tax and provincial sales tax on internet services, currently 34 percent, should be reduced to a maximum of 10 percent total.

The same harmonization framework should extend to cloud infrastructure payments to international providers (AWS, Azure, Google Cloud), ensuring that they are exempt from provincial service taxes. This lowers the cost of the sector's primary infrastructure input allowing the sector to keep pace with competing delivery locations where such inputs carry zero tax burden.

The National Tariff Policy 2025 stipulates that regulatory duties on technology components are set to be phased out in the next 5 years (Ministry of Commerce, 2025). This indicates a major shift in Pakistan trade strategy towards export-led growth, focusing on digitizing the economy. While this is a promising step, it will only be meaningful if full rollout of the policy is ensured.

#### 5. Technology Import Fast-Track for pre-approved innovation hardware categories

The import of and commercial use of specific innovation hardware categories should be made exempt from NOC requirements for registered IT and ITeS companies by the Ministry of Commerce and Ministry of IT. A proposed initial positive list of categories should include 3D printers; commercially available drones under 25 kilograms; standard IoT sensor arrays; Field-Programmable Gate Array (FPGA) development boards; and laboratory-grade robotics kits.

The current default-to-restriction model should be replaced by a negative-list approach whereby only explicitly restricted items require clearance. A standing technical committee with private sector representation should be delegated to periodically review and expand the positive list of categories.

#### 6. IT sector policy stability compact with cross-party endorsement and legislative protection

A medium-term IT sector strategy covering tax architecture, banking regulations, a virtual technology zone framework, and skills investment should be developed by the Ministry of IT. The strategy should be informed by structured consultations with industry stakeholders, endorsed by major political parties, and formalized through legislation. Most importantly, the strategy should include explicit commitments to policy continuity for a minimum of five years regardless of changes in administration. An independent oversight body should be constituted and tasked with monitoring implementation of the strategy against specific milestones in quarterly public reports.

### 3.3 Banking, Payments, and Access to Capital

Pakistan's IT export sector earns in dollars and is regulated in rupees. This is not a singular challenge; all export sectors manage this tension. What is unique to Pakistan is the extent of administrative control over the institutional framework that governs the flow of foreign currency earnings between international clients and the Pakistani service providers that fails to prioritize commercial functionality.

This results in a rational sector-wide response to a regulatory architecture that makes offshore retention the commercially viable decision. A series of structural gaps, in payment receiving mechanisms, processing standards, account functionality, and in access to capital, individually impose costs and collectively make the formal financial system structurally inferior to the offshore alternatives the sector has developed in response.

### **The Repatriation Disincentive**

Banking regulations require that foreign exchange earnings received through formal banking channels be converted to Pakistani rupees on receipt, with limited mechanisms for retaining balances in foreign currency. This incentivizes the IT sector's most productive exporters, large firms with stable dollar revenue streams to maintain offshore accounts to circumvent this conversion requirement as they have both the strongest financial incentive and the greatest practical capacity to do so.

The absence of a functional mechanism for retaining and deploying dollar revenues through Pakistan's banking system results in companies routinely retaining a large majority of their export earnings offshore rather than repatriating it through formal channels. Findings indicate significant losses for the exchequer as an adverse impact of offshore retention: a conservative estimate, corroborated by multiple industry sources, suggests that the earnings held offshore by Pakistan's largest IT exporters may be comparable, if not larger, in magnitude to total officially recorded IT exports.

The regulatory framework makes this offshore retention rational and deprives the country's balance of payments of its most productive export earners. This reflects a structural rather than a behavioral problem.

### **Payment Infrastructure Gaps**

Freelancers and small IT service providers face a distinct set of barriers. Domestic banking systems do not allow receipt of card-based international payments into Pakistani bank accounts, which is a preferred mode of payment in small business-to-business and consumer-facing digital service engagements. This reduces the pool of prospective international clients for IT service providers.

Platform-based payment intermediaries operate in Pakistan with documented limitations: account suspensions triggered by internet protocols changes from VPN usage or internet disruptions create recurring revenue disruptions; dollar spending limits the ability to use received funds for business expenses; and transaction costs on non-dollar currencies add overheads for European and other international clients.

Banks' handling of incoming IT export payments compounds the friction. Processing delays are standard, with idiosyncratic documentation requirements varying by institution, branch, and relationship manager. There is no standardized documentation framework, no published maximum processing timeline, and no appeal mechanism for practitioners whose payments are held without justification. This discretionary, institution-level implementation of the regulatory framework imposes costs that have no basis in law.

Payment processing delays create cash-flow disruptions that are especially severe for lower-income practitioners who lack the financial buffers required to absorb a three-to-four-day lag in receipt of payment in the way that larger firms can.

### **The Intangible-Asset Collateral Gap**

Commercial banks in Pakistan require physical collateral when issuing loans, and do not accept software platforms, client contracts, intellectual property, and verified export revenue streams as collateral. This obstructs IT firms' ability to access working capital through conventional banking systems despite having stable multi-year foreign currency revenues. This impediment is particularly profound for startups and growth-stage firms that do not possess such assets. This requirement is based on the State Bank of Pakistan's regulations, making this a structural rather than merely commercial-policy constraint.

This indicates a market failure: the banking system's collateral framework was designed for an outdated industrial era. The absence of an intangible-asset lending framework means firms with strong services-

based export revenue cannot leverage their primary assets for expansion financing while startups are left entirely reliant on equity and founder capital for working capital.

### **FDI Approval Timelines and the Offshore Incorporation Trap**

Foreign direct investment faces a separate but related constraint: approval timelines routinely exceeding twelve months mean that exchange rate movements during the approval process can materially erode the value of the investment being processed. In a sector where growth opportunities are time-sensitive, a twelve-month approval window is operationally equivalent to a capital barrier.

Findings confirm that Pakistan-based founders routinely park capital in offshore accounts in the UAE, UK, or United States not by preference but because Pakistan's banking and capital market infrastructure makes domestic capital formation impractical. The workforce cost base is in Pakistan; the economic returns are not.

Findings also indicate SECP's digital company registration system is unreliable and tedious, requiring disproportionate management bandwidth at the stage when founders should be building products.

### **The Absent Venture Capital Ecosystem**

Pakistan has no functional venture capital ecosystem at meaningful scale. Startup funding saw an 88 percent decline from USD 355 million in FY2022 to USD 41.5 million in FY2024 (Virani, 2025). Pakistan lags behind competitors with an approximate per capita venture funding of USD 1 (SBP), compared to India's USD 6, Nigeria's USD 4, and Brazil's USD 50 (SBP & Khan, 2023). Startup founders consistently prefer offshore incorporation specifically because domestic capital is unavailable at the scale and speed that growth-stage companies require.

Only two Series C rounds occurred between 2015 and 2022. Angel rounds are sparse and late-stage funding is virtually non-existent. Resultantly, Pakistan's most successful technology entrepreneurs are raising capital into UAE and UK entities and building their companies from there. The country captures the talent cost base and loses the IP value and exit returns. At the policy level, Pakistan has failed to tap into a capital and network base of an estimated 500,000<sup>14</sup> or more tech professionals in its diaspora across the United States, United Kingdom, UAE, Canada, and Europe.

### **The Electronic Transactions Ordinance (ETO) and Legal Plumbing**

Pakistan was the first South Asian country to adopt e-transaction legislation with its Electronic Transactions Ordinance 2002 (Khan, 2025). However, that ordinance is now outdated and lacks tiered signature classification, excludes key instruments, and has no cross-border mutual recognition provisions.

As Pakistani IT firms grow into higher-value export categories, fintech, legal tech, health tech, the absence of a modern electronic trust services framework creates legal uncertainty for contract enforceability in international transactions and represents a credibility gap relative to competing jurisdictions with contemporary digital commerce legislation (Khan, 2025).

### **Web3 and Stablecoin Rails as a Formalization Opportunity**

The passage of the Virtual Assets Act 2026 by Pakistan's Parliament represents a significant development for the IT export sector's payment infrastructure challenge (PVARA, 2026). PVARA now has permanent

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14 While this number has not been officially published anywhere, it has been estimated in various PSEB reports and in this study's consultations with industry players.

statutory status; a regulatory sandbox was launched in February 2026; NOCs have been issued to Binance and HTX; and Pakistan has been allocated 2,000 MW for mining and AI data centers.

The Zar stablecoin venture, founded by the SadaPay team and backed by USD 12.9 million in seed funding led by Andreessen Horowitz with participation from Coinbase Ventures and VanEck, represents a credible private sector signal of what stablecoin infrastructure for the Pakistani market could look like (Bloomberg, 2026). Pakistan's estimated 30 to 40 million cryptocurrency users are predominantly young, Gen Z and digitally native demographics comfortable with Web3 financial tools. Leveraging this infrastructure for IT export payments could formalize a substantial share of currently unrecorded earnings.

## Recommendations

### 1. Establish functional foreign currency accounts with outward payment capability for verified IT exporters

SBP should create a designated IT Export Dollar Account category for companies with verified annual export revenues above a minimum threshold (suggested: USD 100,000), allowing these accounts to hold dollar balances, make outward payments to international vendors and subsidiaries, and receive card-based client payments, subject to Anti Money Laundering (AML) compliance but without requiring transaction-by-transaction approval.

The framework should be extended to permit international banks licensed in Pakistan to offer equivalent account functionality, creating competitive pressure on domestic banks to improve service standards. SBP should simultaneously establish a tiered RDA-IT framework, extending the Roshan Digital Account architecture into Freelancer, SME, and Enterprise tiers and providing formalized, SBP-supervised channels for IT export receipts. The RDA platform has already processed over USD 8 billion in inflows from overseas Pakistanis, demonstrating the capacity to handle significant cross-border financial flows at scale (Ministry of Finance, 2026).

### 2. Establish a domestic multi-currency payment receiving mechanism for registered IT practitioners

A domestic multi-currency receiving service for registered IT practitioners should be mandated by the SBP, or facilitated through a licensed fintech partnership, that allows receipt of client payments in USD, GBP, EUR, and AED without mandatory conversion at receipt. The mechanism should enable receipt of card-based international payments, currently unavailable through any Pakistani bank account, and should reduce the financial incentive to route earnings through offshore payment entities.

Findings identified Payoneer-type functionality (platforms that are designed to bridge the gap between traditional banking and the needs of borderless, digital commerce) as the single most impactful near-term payment infrastructure change as it requires only regulatory decision rather than development of new infrastructure. Comparable mechanisms operate in India, the Philippines, and across Eastern Europe.

### 3. Standardize bank payment processing for IT export remittances and make advance tax fully refundable

Commercial banks should be required to publish and adhere to standardized documentation requirements for releasing IT export payments: a maximum 48-hour processing timeline; no discretionary documentation demands beyond centrally prescribed requirements; and a published template for service contracts that constitutes sufficient documentation for all purposes. Banks imposing delays or documentation demands beyond the published standard should be subject to a formal complaints mechanism administered by the State Bank.

To remedy the current situation where practitioners pay tax in advance on income that is legally exempt, advance income tax deducted at source on freelance remittance receipts should be made fully refundable against zero or near-zero liability within the same tax year through a simplified digital filing process.

The State Bank of Pakistan is in the process of introducing reforms which aim to streamline and simplify export realization procedures, standardize documentation requirements, set strict payment processing timelines and strengthen complaint resolution mechanisms which indicate a cognizance of the importance of reducing red tape and procedural inefficiencies to allow IT professionals to redirect time typically spent on tedious paperwork to service delivery (State Bank of Pakistan, 2026).

#### **4. Permit international banks to offer IT-sector foreign currency accounts in Pakistan**

International banks licensed to operate in Pakistan should be allowed to offer verified IT exporters the same dollar account functionality, outward payment capability, and international card acceptance that these institutions provide to the same client categories in other jurisdictions. Currently, SBP regulations require international banks to conform to domestic account and payment restrictions that remove the functionality their international clients require. This would also create competitive pressure on the domestic banking sector to improve service standards for IT exporters.

#### **5. PVARA IT Exports Remittance Track within the Virtual Assets Act 2026 licensing framework**

PVARA should establish a dedicated licensing sub-category for IT Exports Remittance service providers, allowing registered IT firms and verified freelancers to receive international payments via licensed stablecoin rails with automatic conversion and SBP reporting. A pilot programme with two to three licensed providers should be launched targeting freelancer activations in the first year, with integration into the SBP's existing IT export proceeds reporting infrastructure built from inception (SBP, 2025)

The regulatory framework provided in the Virtual Assets Act 2026 and operationalized by the IT Exports Remittance Track should be leveraged to support the IT sector's use of virtual assets including cryptocurrency. The Zar stablecoin venture demonstrates that both private sector supply and user-side demand exist.

#### **6. Intangible-asset lending framework with SBP risk guarantee for IT companies**

SBP should develop and gazette a framework recognizing intangible assets as eligible collateral categories for commercial lending to IT companies. A State Bank risk guarantee facility should be established, which covers up to 60 to 70 percent of the loan value, to enable commercial banks to lend against these assets without carrying the full credit risk on their books.

A dedicated IT Export Credit Insurance facility should be developed, the purpose of which should be to offer IT Services Export Insurance covering 85 percent of foreign buyer default losses; working capital guarantees providing 80 percent risk coverage to banks extending pre-delivery finance against confirmed IT contracts; and Performance Bond Guarantees allowing small firms to bid on larger international contracts. Such instruments are already being operationalized globally; India's Export Credit Guarantee Corporation uses dedicated instruments covering 80 to 90 percent of losses from buyer non-payment (Export Experts Global); the UK's Export Finance model provides partial government guarantees covering up to 80 percent of credit risk (UK Government).

#### **7. Fast-track FDI approval (60-day channel) and fix SECP digital registration**

A dedicated fast-track FDI approval channel, established jointly by the Ministry of Finance and SBP, for technology sector investments with a published maximum processing time of 60 days and a single-window interface should replace the current multi-agency process.

A rate-lock mechanism for approved technology sector FDI can be put in place to minimize exchange rate risk during the approval period. SECP portal failures are a signal to every founder considering Pakistan-domiciled incorporation that the institutional infrastructure does not yet meet the standard the sector requires. SECP's company registration process should be fully digitized to minimize the time required to complete the registration.

#### 8. Develop a domestic venture capital ecosystem through co-investment and regulatory reform

A government-backed co-investment facility and structured as a matching fund that invests alongside private venture capital on pre-agreed terms, should anchor Pakistan's domestic VC ecosystem. The regulatory framework for angel investment, fund structure, and exit mechanisms (including secondary sales, buyouts, and IPOs on a reformed technology-sector listed market) should be modernized to remove the structural barriers that currently make Pakistan-domiciled VC funds operationally complex. The goal is a self-sustaining private VC ecosystem within ten years, not a permanent government programme.

#### 9. Replace the ETO 2002 with a modern Electronic Trust Services Act

The Electronic Transactions Ordinance 2002 should be repealed and replaced with a modern Electronic Trust Services Act establishing eIDAS-equivalent three-tier signature classification, expanding Electronic Certification Accreditation Council's (ECAC) mandate, and pursuing bilateral e-signature mutual recognition starting with UAE and UK. The reform should build on NADRA's biometric infrastructure to create a robust digital identity layer for authenticated e-signatures.

### 3.4 Ecosystem Gaps: Infrastructure, Data, and Institutional Connectivity

Reliable connectivity, accessible data infrastructure, and effective coordination between government institutions are pivotal to IT export growth. Pakistan's ecosystem gaps in each dimension are documented and recurring. While they do not individually prevent export growth, their cumulative effect creates an operating environment that is materially more costly and unpredictable than comparable delivery locations.

These gaps are not symptoms of sector underperformance; they are causes of it. Each represents a condition that Pakistan's competitors have resolved and that Pakistan has not. The STZA framework's failure is the most prominent single policy implementation failure in the sector's recent history and is a striking illustration of what happens when ecosystem policy is designed or executed without structural and in-depth understanding of how Pakistan's IT sector operates.

#### Infrastructure concerns

Pakistan's weak internet infrastructure negatively impacts export potential; the country has only one to two Internet Exchange Points and has fixed broadband costs USD 0.53 per Mbps, 6.6 times more expensive than India at USD 0.08 and 53 times more expensive than Romania at USD 0.01 (Venditti, 2025). Wholesale bottlenecks persist due to reliance on only two submarine cable landing parties (PTCL and TWA) with no mandated open-access fiber regulation. Moreover, Pakistan's internet speed averages 18.27 Mbps in 2026 (World Population Review, 2026) versus the global average of approximately 56 Mbps as of 2024 (Best Broadband Deals, 2024). The country's Cloud Ecosystem Index ranks 73rd out of 76 countries (SBP, 2023).

Electricity and bandwidth reliability problems in smaller cities create delivery reliability risk that reduces platform ratings and client retention for freelancers and small firms operating outside the major urban centers.

### **The Data Fragmentation Problem**

Pakistan's IT sector policy operates on a fragmented and inconsistent information base. Multiple agencies each measure aspects of the sector using different definitional frameworks, different reporting frequencies, and different public disclosure standards. The consequence, documented directly in this study's data collection process, is that the sector cannot accurately measure itself, and policymakers cannot calibrate interventions against a coherent baseline.

This study's quantitative analysis identified a ratio of approximately six to one between total registered IT companies and verified IT exporters. SECP records 33,172 IT-registered companies while PSEB lists 5,560 registered exporters, a gap that cannot be explained without access to company-level data that no agency publishes.

The freelancer population carries sufficient uncertainty that the State Bank's formally recorded figure and government estimate of actual earnings differ by more than a factor of two: SBP records USD 779 million in freelance IT exports for FY2025 against government estimates that may exceed USD 2 billion. Data fragmentation means there is no accurate count of active freelancers, no baseline for measuring programme impact, and no mechanism for freelancers to prove income history for credit or insurance purposes. Consequently, programmes cannot be calibrated against a baseline that does not exist.

### **Public-Private Coordination Failure and the STZA Collapse**

Pakistan's coordination failure is not between government and industry, it is within government: ministries with different mandates and different fiscal interests are unable to agree on a definitional framework, let alone a policy framework, for the sector they collectively claim to support. Resultantly, the institutional architecture governing Pakistan's IT sector produces fragmented, sometimes contradictory signals to the private sector.

The country's current institutional approach does not cater to the digital economy's requirements, producing inefficiency and preventing the long-term planning that investment decisions require.

Findings identify the STZA framework, tied to physical zone locations, requiring capital investment in physical infrastructure, and incompatible with the distributed, hybrid work model of Pakistan's IT sector, as the most prominent policy implementation failure in the sector's recent history. Its failure impeded the delivery of the single-window regulatory environment which is the most pressing need of the sector.

Lack of implementation and coordination have resulted in the failure of otherwise well-designed policies. Startups navigating multiple regulatory bodies receive inconsistent guidance and face disproportionate compliance overhead relative to their size. The consequences of this failure compound over time as each undelivered commitment reduces the credibility of the next.

### **IGNITE Payment Delays and Ecosystem Trust Deficit**

IGNITE's eight National Incubation Centers have supported 1,610 startups, of which 882 have graduated, representing a graduation rate of 54.78 percent which is a significant institutional achievement. However, findings indicate systemic payment delays by IGNITE (National Technology Fund) extending six to twelve months beyond agreed timelines, creating cascading failures across the startup ecosystem.

This payment reliability failure undermines the expected benefit of certainty that makes institutional support meaningful. A programme that commits funds and then delays payment by six to twelve months is not providing the support it is contracted to provide (IGNITE, 2023).

## Recommendations

### 1. Unified IT sector data dashboard and common definitional framework across SBP, SECP, PSEB, HEC, and FBR

The Ministry of IT should convene a national IT sector data working group, with mandatory participation from SBP, SECP, PSEB, HEC, and FBR, the objective of which would be to develop and adopt a common definitional framework for IT sector classifications, a shared data publication schedule, and a public-facing dashboard providing quarterly data on exports by sub-category, company registrations, graduate output, and tax receipts.

The working group should publish its definitional framework as a formal instrument so that all agencies' reporting conforms to the same taxonomy. The SECP-PSEB registration gap (33,172 vs 5,560), the SBP-government estimate export gap (USD 3.24 billion vs USD 5 billion or more), and HEC's non-publication of sub-discipline graduate data are not data quality problems in isolation, they represent a policy design constraint. Programmes cannot be calibrated against a baseline that does not exist. Moreover, the Ministry of Commerce (MoC) should champion the addressing of data and definitional inconsistencies as the gains from better program calibration directly impact macroeconomic performance. Better coordination between relevant ministries can help achieve this objective.

### 2. Replace the physical Special Technology Zones model with a Virtual Technology Zone framework

STZA's current framework should be replaced or substantially reformed through legislation amendments. On the contrary, a Virtual Technology Zone framework should be introduced that provides the same consolidated tax and regulatory benefits, functional foreign currency accounts, exemption from provincial service taxes on IT inputs, and simplified labour law compliance, to all registered IT companies operating from any location in Pakistan, subject to minimum verified export revenue thresholds. The virtual model removes the geographic and infrastructure constraints that made the current framework inaccessible to the vast majority of the sector. It has direct precedent in competitor countries and does not require physical construction or land acquisition to implement.

### 3. National IXP expansion, open-access fiber backbone, and Digital Infrastructure Reliability Act

To achieve the goal to halve Pakistan's broadband costs within three to five years, at least six IXPs should be deployed in Karachi, Lahore, Islamabad, Faisalabad, Peshawar, and Quetta, with PTA mandating local peering. A government-funded open-access national fiber backbone should be built, modelled on New Zealand's Crown Fiber Holdings (Deloitte, 2024). Submarine cable landing party licensing should be opened to break the PTCL-TWA duopoly.

A World Bank study found IXPs could reduce international bandwidth spending by one-third. Kenya's deployment of SEACOM and multiple IXPs drove an 80 to 90 percent drop in wholesale bandwidth costs (Barton, 2010). South Korea's government invested USD 900 million in backbone networks, triggering USD 32.6 billion in private investment (World Bank, 2021).

A Digital Infrastructure Reliability Act should be promulgated which legally guarantees internet connectivity in designated IT export zones. An independent Internet Reliability Commission should be established to publish monthly uptime statistics. A LUMS MHRC study documents that 2024 was marked by repeated disruptions that caused SLA breaches, account suspensions, and reputational damage for IT export firms (Khan & Umar, 2025)

PTA has recently announced that international data gateways will be banned and has mandated that all local internet traffic must be routed domestically in a move to build a sovereign, cost-efficient and secure internet ecosystem. This regulation includes robust enforcement provisions, empowering PTA to conduct inspection and take legal action in the case of non-compliance (Pakistan Telecommunications Authority, 2026).

#### 4. Fix IGNITE payment delays: escrow mechanism, ombudsman, and performance accountability

IGNITE should be required to publish quarterly disbursement reports with planned versus actual payment timelines. A pre-funded escrow mechanism for approved programmes should be established so that contracted commitments are protected from cash-flow variations in IGNITE's own operations. An independent ombudsman for startup ecosystem grievances should be established. Startup community representatives with voting rights should be included on IGNITE's board.

IGNITE should be mandated to channel at least 40 percent of its incubation funding through existing successful private-sector-led incubators rather than creating new government-run programmes, channeling resources toward the models that demonstrably work rather than building parallel government alternatives.

#### 5. Independently audit PTA Quality of Service surveys and link results to licensing decisions

PTA currently conducts nationwide QoS surveys across 83 cities performing approximately 400,000 tests annually, but is simultaneously the regulator, the enforcer, and the entity conducting the quality assessment. To address this structural conflict of interest, an independent, internationally accredited third-party entity, potentially a consortium led by umlaut (part of Accenture), ITU, GSMA, OOKLA, OpenSignal, MedUX, or Rohde and Schwarz, should be commissioned to conduct a comprehensive parallel QoS audit of Pakistan's telecom infrastructure annually.

The results should directly feed into PTA's licensing renewal decisions. Separating measurement from enforcement is the prerequisite for establishing credibility for international clients evaluating Pakistan's infrastructure credibility.

### 3.5 Products, Services and Export Diversification

A recurring theme across stakeholder consultations is that Pakistan's strategic positioning should shift from competing as a low-cost outsourcing location towards establishing itself as a capability hub in specific domains. A capability hub sells specialist expertise that clients cannot source elsewhere, generates IP, produces long term client relationships and is substantially less vulnerable to AI displacement. The transition requires domestic market development, cross-disciplinary talent formation, an effective IP framework and diversification into verticals and new export categories that the current policy framework does not recognize.

#### The Absence of Domestic Market

Competing economies built their international IT credibility on a foundation of domestic digitization of financial services, government, and enterprise sectors. India's IT sector exports are the product of domestic initiatives like Aadhaar (a biometric digital identity system), UPI (Unified Payments Interface, a real-time payment rail) and MOSIP (the Modular Open-Source Identity Platform). These initiatives created reference deployments and commercial models that India then took globally. On the other hand, Pakistan has no equivalent domestic IT consumption base, no centralized record of government spending on international software and no procurement preference for domestically developed alternatives.

### **Capital for Product Transition and the IP Framework Gap**

Transitioning from services to products requires front-loaded capital for development, marketing and sales infrastructure but Pakistan's domestic capital market provides no mechanism for this. Startup funding has collapsed post 2022 (Invest2Innovate, 2024) and bank lending requires physical collateral that IT product companies do not possess. The consequence is structural: innovations conceived and executed by Pakistani engineers are owned by entities domiciled elsewhere, generating returns for other jurisdictions.

Pakistan filed approximately 437 resident patent applications in 2023, ranking 91st globally at just 1.9 applications per million population, compared to India's 92,842 resident filings in the same year (WIPO, 2024). By 2024, India's patent filings had grown further to 105,157 (WIPO, 2025). IGNITE's entire R&D grant programme history produced only 29 international patents (IGNITE Business Plan 2024-28) which reflects not a lack of innovation but rather a lack of confidence in and infrastructure for domestic IP protection. Firms that cannot protect IP domestically incorporate the IP-owning entity abroad, permanently removing IP value from Pakistan's economy.

### **Government-Owned IT Entities Displacing Private Sector Development**

A structural feature of Pakistan's IT ecosystem that warrants policy attention is the presence of IT entities owned by or affiliated with government organizations like Pakistan Revenue Automation Private Limited (PRAL), NADRA Technologies (established by the National Database and Registration Authority) and PITB (the Punjab Information Technology Board). These entities have supported internal government digitization efforts; however, they also operate as market participants thus taking on IT development and service delivery work that could otherwise be contracted to private sector firms through competitive procurement.

The policy concern is straightforward: government-owned entities develop software for other government departments outside standard competitive procurement processes, bypassing bid security, performance guarantees and open evaluation which limits the availability of public sector IT contracts to private firms. Government contracts have historically served as a critical entry point for domestic IT companies to build capability, scale and acquire references they need to compete internationally. This dynamic acts as a discouraging policy environment because of the government's role as market participant and not market enabler.

### **ITeS Verticals are underdeveloped**

Pakistan's IT exports are dominated by generic software services and freelancing. ITeS verticals like fintech, health tech, edtech etc. represent multi-billion-dollar global opportunities but receive insufficient dedicated policy attention in the country. 71% percent of startup funding between 2015 and 2022 was concentrated in fintech and e-commerce alone; edtech, health tech, agritech, and food tech collectively attracted only 9.4 percent (Invest2Innovate, Pakistan Startup Ecosystem Report 2024). The Virtual Assets Act 2026 and the establishment of PVARA (Pakistan Virtual Assets Regulatory Authority - the statutory body responsible for licensing and overseeing virtual asset service providers) represent genuine fintech momentum, providing for the first time a legal and regulatory framework for cryptocurrency and digital asset services in Pakistan. This momentum has however not yet been extended to other ITeS verticals.

### **The Game Development and eSports Policy Blind Spot**

Pakistan holds strong global capability in mobile app development, ranking 17th worldwide with 1.42 billion downloads in 2024 (WIPO, 2025). This shows the ability of local developers to build and scale digital products for international markets. Overall, Pakistan's mobile gaming and apps ecosystem already generates approximately USD 500 million in revenue (ADB, 2025) and the global mobile gaming market

reached approximately USD 100 billion in 2024 and is projected to grow to USD 120 billion by 2027 (Newzoo, 2025), which shows a window of investment in the sector. Together, these indicators point to a credible foundation for expanding a globally competitive digital product ecosystem.

However, the sector represents one of the most prominent policy blind spots in Pakistan's IT export strategy.

The recent launch of Center of Excellence in Gaming and Animation (CEGA) by IGNITE (Sep 2025) is more tactical than strategic and policy intervention. App store and game revenue is classified under non-IT SBP codes, rendering it invisible in official export data. Pakistani studios have no PSEB support pathway, minimal access to export incentives, and almost no representation in trade events.

The following case illustrates precisely what this policy gap costs in practice:

### **Space-Tech, 5G, and Semiconductor Chip Design: Three Unrecognized Export Frontiers**

Three emerging categories represent export opportunities that Pakistan's policy framework does not yet recognize. The first is space-tech software services. Pakistan launched EO-1 (January 2025), PRSC-S1/PRSS-2 (July 2025), and HS-1 (October 2025), followed by EO-2 in February 2026 (SUPARCO, 2024–2026). The global space economy is projected to exceed USD 8 billion in Earth observation alone by 2033 (Novaspace, 2024). The hardware asset base exists; the software services commercialization layer does not.

The second is 5G-enabled export services. Pakistan completed its landmark spectrum auction in March 2026, raising USD 510 million (PTA, 2026). Even limited urban 5G deployment creates new export verticals like IoT platform development for Industry 4.0, edge computing, AR/VR enterprise solutions, smart city solutions exportable to developing-world cities and telemedicine platforms.

The third is semiconductor chip design, not fabrication, but design services, which increasingly separates from fabrication in global supply chains. Pakistan has the engineering talent base but what is missing is the curriculum, tooling and industry partnership infrastructure.

## **Recommendations**

### **1. Map and publish a government software procurement register as a baseline for domestic substitution**

The Ministry of IT, in partnership with the Ministry of Finance, should conduct and publish an audit of all international software currently procured by federal and provincial government departments by category, annual license cost, functional purpose and contracting entity. This would provide, for the first time, a documented picture of the domestic substitution opportunity and the specific use cases where Pakistani companies can build products that are currently served by foreign software. The register should be updated annually and made accessible to registered IT companies as a market intelligence resource.

### **2. 'Buy Pakistani IT' preference policy for government procurement**

The government should adopt a domestic preference policy for IT procurement: for any software or digital service category where a qualifying Pakistani product or service exists, procurement should favor the domestic option up to a price premium of approximately 20 percent over the cheapest international alternative. Qualification criteria should cover functional adequacy, security standards, vendor viability and support capability and should be published and independently assessed.

South Korea's G-PASS programme designated 832 export-ready domestic SMEs that achieved USD 800

million in export sales in a single year (PPS Korea, cited in Procurement Magazine, 2021). India's Preference to Make in India order mandates minimum 50 percent local content for government IT purchases with a 20 percent price margin for domestic firms (DPIIT, 2017, revised 2020). Pakistan's strongest e-governance platforms like NADRA's identity systems, FBR's tax infrastructure, SBP's payment rails should be designated as Digital Public Goods export candidates.

### **3. Reform Public Procurement Regulatory Authority (PPRA) procurement rules to accommodate IT services and digital products**

Public procurement frameworks at federal and provincial level should be reformed to serve the IT sector's specific structure. A dedicated IT procurement stream should place greater weight on technical capability, past performance and innovation rather than lowest-cost selection. A mandatory allocation of at least 25 percent of IT procurement should be reserved for SMEs and startups with a 10 percent set-aside for women-led IT businesses. The bid security requirements should be reduced to 1 percent for contracts below PKR 50 million and micro-procurement thresholds for IT services should be raised to PKR 10 million.

### **4. Phase out public sector IT companies from commercial contracting**

A binding federal policy directive should require all government organizations to outsource IT development and services to private sector firms through competitive procurement within 24 months, with existing government-owned or government-affiliated IT entities transitioning to specification-setting and quality assurance roles rather than development and delivery. Entities such as PRAL, NADRA Technologies and PITB should be progressively wound down from commercial contracting over a defined three-year transition period, with their personnel and domain expertise transferred to private sector firms through structured absorption programmes. PITB should set standards and monitor compliance and let private IT firms deliver the services.

### **5. National digitization to create a sustained domestic demand**

A phased national digitization programme should mandate the digital transformation of government service delivery, financial services, healthcare records and logistics over a defined five-year schedule. Each phase should explicitly require domestic IT company participation as prime contractors rather than subcontractors to international firms. This will create the reference deployment base that Pakistan's product sector currently lacks.

### **6. Build an open national digital infrastructure - the Pakistan Stack**

Pakistan should invest in building open, standards-compliant national digital infrastructure like a digital identity layer, an open payment rail and a public data Application Programming Interface (API) framework that the Pakistani software companies can build products on. The Digital Nation Pakistan Act 2025 already establishes a legal framework for such a Pakistan Stack. The implementation should include open API access for the private sector as an explicit design requirement and standards should be compatible with international interoperability requirements so products built on domestic infrastructure can be sold in international markets.

### **7. Update the IP protection and enforcement framework for software and algorithms**

The Intellectual Property Organization of Pakistan, in coordination with MoITT and the Ministry of Law, should develop and enact an updated IP framework providing clear protection for software and algorithm patents, a fast-track IP registration process for technology companies and alignment of Pakistan's IP enforcement standards with those of primary export markets like the US, UK and EU including civil remedies that make litigation economically viable for SMEs.

Patent processing time should be reduced from five or more years to under 18 months and reduced fees for SMEs and first-time filers should be introduced. These reforms are required to create enabling conditions for overall transition to product development. It is important to note that without enforceable domestic IP protection, every other incentive to develop products rather than sell services is weakened.

## 8. Development of Gaming Sector

Pakistan's gaming segment remains largely unmeasured despite growing studio activity and increasing participation in global distribution platforms. A first step is to improve visibility of exports by reclassifying game and app store revenues under IT export SBP codes and conduct a baseline census of active studios. Registered studios should be brought under the 0.25 percent export withholding regime, with platform store revenue statements accepted in place of bank remittance certificates to reflect how earnings are actually realized in this segment. Moreover, as hardware-related barriers continue to raise costs thus import duties on GPUs, console development kits and professional audio-visual equipment should be removed for registered studios.

A dedicated PSEB pathway for game development and digital entertainment firms is required which includes simplified registration, access to multi-currency receiving mechanisms and inclusion in international trade events such as GDC and Gamescom. This should be complemented by a dedicated liaison function within PSEB, designed in consultation with active studios to ensure that support aligns with industry needs.

## 9. National semiconductor and chip design programme at three to five engineering universities

Chip design laboratories should be established at 3-5 leading engineering universities like NUST, GIKI, UET with preferential access to Electronic Design Automation (EDA) tooling negotiated through industry partnerships. A dedicated chip design talent track within engineering curricula should be created. A co-investment fund for chip design startups structured with international semiconductor companies as co-investors should be established.

The global semiconductor industry is undergoing a structural shift where chip design is increasingly separated from fabrication, creating an internationally distributed design services market. India has already established a significant chip design sector. Taiwan and Ireland have built major design export industries without domestic fabrication. Building on this, a ten-year hardware export strategy should identify compatible categories like chip design services, embedded systems programming, FPGA design, PCB design services and AI inference hardware customization.

Robotics should be included as a convergence category, and a Pakistan National Robotics Initiative should establish at least 50 regional robotics hubs, Robotics and Automation Centers of Excellence at leading universities. FIRST Global Challenge is an international robotics competition bringing together over 190 nations, empowering youth (ages 14-18) to solve global problems via STEM and robotics, its membership should be formalized as a priority national programme.

## 10. The Space Tech Software Services Opportunity

A focused push on space-tech can be anchored by establishing a Space Applications Software Park within an existing STZA, co-located with SUPARCO facilities, with a 10-year zero-rated tax regime to attract satellite data analytics firms. This should be complemented by an open-access satellite imagery API drawing on PRSS-1, PRSS-2, HS-1 and EO-2, enabling startups to build commercial applications, similar to India's Bhuvan platform. To stimulate early-stage activity, a PKR 2 billion "Space-Tech Challenge Fund" can be launched through Ignite to support around 50 startups over three years. At the same time, SUPARCO's ground control and testing infrastructure should be opened to private firms under a revenue-sharing PPP model to lower entry barriers. Finally, space-tech software should be explicitly included in the IT export

tax exemption regime, alongside the introduction of a dedicated SBP purpose code for space technology services exports to better track and facilitate sector growth.

## 11. 5G Launch: Opportunity for Export's Growth

To better position Pakistan's IT sector for next-generation services, 5G application development should be designated as a priority vertical within PSEB's export promotion strategy, supported by targeted training boot camps to build relevant technical capacity. In parallel, STZA zones across major cities should receive priority 5G coverage through operator license conditions, even where broader commercial rollout is delayed. Additionally, a targeted "5G-for-Exports" program should subsidize high-quality connectivity for IT parks and registered exporters, ensuring that Pakistani firms can meet the performance standards expected by international clients.

## 3.6 Market Access and Brand Perception

### **Benchmarking Invisibility: Not Evaluated, Not Considered**

Pakistan does not appear in the research publications and global market intelligence reports that enterprise technology teams use to make offshoring and investment decisions. The Everest Group, Hackett Group, Kearney and Gartner all publish IT delivery location assessments that form the shortlists from which major procurement and investment decisions are made. Pakistan's absence is not the consequence of being evaluated and found inadequate, rather Pakistan never presents itself as a potential location and is therefore not on their radar. Thus, without appearing in the consideration set, Pakistan cannot compete for global business services contracts and captive offices, which represent one of the highest-value IT investment opportunities.

Pakistan currently has fewer than ten captive operations owned by multinational corporations compared to India's 1,700+ Global Capability Centers (GCCs) that employ over 1.9 million professionals and generate USD 64.6 billion in annual revenues (NASSCOM / Zinnov, 2024). Hyderabad's broader IT sector ranging from IT services firms, startups and GBS centers generates over USD 30 billion in annual exports (HYSEA, Scale@Hyderabad, 2025).

A BCG Growth-Share Matrix analysis of Pakistan's IT export portfolio by service vertical and geographic market, mapping which categories to invest in, harvest, or exit, is presented in the Annexure B.

### **The Enterprise Procurement Barrier**

Pakistani firms competing for large enterprise contracts, particularly in North America and Western Europe, face a specific and commercially damaging obstacle of country-of-origin risk screening. When multinational corporations evaluate offshore IT vendors, their procurement and vendor risk teams apply country-level filters that assess political stability, cybersecurity posture, data protection legislation and geopolitical risk. Pakistan's poor standing on these screens reflects its geopolitical situation and the absence of enacted data protection law, not the technical capability of its IT sector. Some markets, including Australia and segments of the UK and US government procurement, impose mandatory additional approval layers for employees based in Pakistan that do not apply to resources from other countries.

### **Single-Market Dependency as a Structural Market Access Risk**

Pakistan's IT exports are primarily concentrated in the United States and United Kingdom which causes dependency on these particular markets. When the exports of a sector are concentrated in a single market, it becomes highly vulnerable to their changing regulatory and political environments. The proposed US HIRE Act depicts this risk; if this act is enacted, it can impose a 25 percent federal tax on overseas service

payments (RSM, 2025). This will impose a direct and potentially unabsorbable cost increase on the sector's primary revenue source. Over-reliance on a single market creates systemic exposure that no improvement in service quality or pricing can work against. Pakistan needs to expand the market of its exports to GCC, EU, ASEAN, Central Asia and Africa.

### **Trade Diplomacy Deficit and MOU Proliferation Without Accountability**

The majority of Pakistan's diplomatic missions are equipped to represent traditional goods exports but IT services receive negligible attention in trade promotion. This contrasts sharply with India, where NASSCOM (the National Association of Software and Service Companies) works alongside trade missions to actively promote India's IT sector to international buyers.

In the past year alone, Pakistan has signed IT and technology sector bilateral MOUs and investment agreements worth billions (report's own aggregation) covering areas such as digital infrastructure, cloud services, AI development and software export promotion. However, there is no systematic process to track whether these IT-specific MOUs convert into binding agreements or actual investment disbursements. Each ineffective MOU further reinforces the private sector's perception that government commitments are not dependable which affects the credibility and deters long-term investment.

### **Data Protection Legislation: A 21-Year Institutional Failure**

Pakistan remains one of the only major IT-exporting countries without an enacted data protection law. The Personal Data Protection Bill has circulated in draft form since 2005, twenty-one years, without passage.<sup>15</sup> A significant proportion of North American and European firms avoid offshore contracts in jurisdictions lacking adequate data protection and without an enacted PDPA placing this portion of Pakistan's market access at risk in the absence of adequate data protection legislation.

## **Recommendations**

### **1. Structured captive office attraction programme with global benchmarking body engagement**

Pakistan should establish a dedicated captive office attraction function that can be housed within PSEB or a new Special Purpose Entity reporting to the Prime Minister's Office to engage the Everest Group, Hackett Group and Gartner to secure Pakistan's inclusion in global IT delivery location benchmarking studies. Develop and publish a Pakistan Global Business Services business case with verified cost, talent, and infrastructure data and execute an annual global roadshow presenting Pakistan consistently to multinational procurement decision-makers.

A Global Tech Landing Pad - a purpose-built regulatory and fiscal package designed to reduce the friction and cost of establishing a technology delivery center in Pakistan, modelled on similar programmes in Ireland (IDA Ireland) and Singapore (Economic Development Board), should be offered under SIFC and PSEB. The package can potentially include a specialized 15 percent corporate tax rate for captive ICT operations with a ten-year lock-in guarantee, a capped payroll tax of 15 percent for ICT sector employees, and single-window regulatory clearance with a 30-day establishment guarantee.

Moreover, dedicated Centre of Excellence (CoE) incentive grants should be given to companies establishing specialized technology hubs focused on a specific capability, such as AI or cybersecurity of USD 1 to 2 million per center and committing to 200 or more local hires within three years. The target should be 25 to 50 new captive ICT centers within five years.

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<sup>15</sup> The Digital Nation Pakistan Act (DNPA) was enacted in January 2025, which mandates certain data protection standards. However, this is a digital governance framework, not a comprehensive personal data protection law equivalent to GDPR.

## 2. Pakistan Technology Delegation Week

PSEB should develop an annual Pakistan Technology Delegation programme in which major Pakistani IT exporters collectively host international enterprise clients, C-suite visitors and procurement decision-makers for a focused multi-day programme combining technology showcases, developer interaction and cultural exposure. Government facilitation should include VIP entry protocols, security coordination and logistical support. Primary evidence from firms that have run such programmes is consistent that visiting clients arrive with narratives shaped by international media and they leave with a drastically different assessment of Pakistan's talent quality and operational environment.

## 3. Global Tech Events Hosting Strategy

Pakistan should bid to host the APICTA (Asia-Pacific ICT Alliance) Awards or similar reputable events on a regular rotating basis, building on the successful 2022 precedent. A dedicated Tech Event Hosting Fund of PKR 2 to 3 billion annually should be established to subsidize venue costs, international delegate travel and event logistics. A formal calendar of four to six internationally recognized tech events annually, covering AI, fintech, esports, startup demo days, and women in tech should be formalized.

The impact of this strategy is threefold. Firstly, it places Pakistan in the physical field of vision of multinational technology buyers, investors and procurement decision-makers who would not otherwise visit. Secondly, it creates concentrated networking opportunities that have historically translated into vendor relationships, captive office evaluations and investment decisions. Thirdly, it builds a durable narrative of Pakistan as a technology destination across successive events. Countries such as the UAE with GITEX, Saudi Arabia with LEAP, Singapore with Tech Week and South Korea with G-Star have used exactly this model to build technology destination narratives that attract real investment commitments not merely MOUs.

## 4. Trade Attaché reforms

MoFA, in coordination with MoITT and PSEB, should conduct mandatory five-day intensive awareness sessions for all trade attachés covering Pakistan's IT services capabilities. Sessions should cover topics like how to pitch IT services to foreign buyers, GBS and captive center value propositions, visa facilitation for tech delegations and procurement cycle navigation in destination markets. Digital Trade Officers with IT industry background or P@SHA and PSEB secondment experience should be designated at the 20 highest-potential missions like US, UK, UAE, Saudi Arabia etc. IT export promotion KPIs like buyer meetings facilitated, captive center inquiries generated, IT-specific trade leads submitted should be embedded in trade attaché performance evaluations.

## 5. Enact the Personal Data Protection Act

The Personal Data Protection Act should be enacted with an independent Data Protection Authority, with international norms and minimal data localization requirements. A formal EU adequacy dialogue should be initiated to secure free and safe data flows between EU and Pakistan, targeting a decision by 2031 to 2032. A tiered national cybersecurity certification framework should be established under three tiers: a guided self-assessment tier at USD 1,000 to 3,000, a third-party audit tier aligned with full IT Export Security Certification mapped to SOC 2, ISO 27001 and GDPR compliance. The government should subsidize 50 to 70 percent of certification costs for firms below a revenue threshold. Pakistani IT SMEs currently face USD 30,000 to USD 60,000 per audit cycle for ISO 27001 costs which are prohibitive relative to their revenue base (Security Compliance Guide, 2025)

## 6. Structured market access strategy to reduce single-market dependency

Pakistan's single-market concentration in the US and UK is a structural market access vulnerability that requires active remediation rather than passive correction. Bilateral IT services trade agreements should

be actively pursued with priority markets: GCC (Saudi Arabia, UAE, Qatar) leveraging Saudi Vision 2030; the EU (Germany, Netherlands, Nordics) targeting GDPR-compliant data processing as a gateway; ASEAN (Malaysia, Singapore, Indonesia) as cost-competitive alternatives to India; Central Asia (Kazakhstan, Uzbekistan) through the CAREC digital corridor; and Africa (Nigeria, Kenya, Egypt) targeting fintech and mobile services. Each market should have defined negotiation timelines and measurable milestones.

The Government of Pakistan has recently announced that it will start issuing 'Super Passports' especially designed for the business community with the goal to provide easier access to the UK, Europe, and China (MG Link News, 2026). The new passport includes advanced security features and faster visa processing for traders and investors to significantly reduce travel restrictions. The goal is to boost trade and economic ties with key global partners.

### 3.7 Artificial Intelligence and Disruption Risk

Pakistan's IT sector faces two distinct challenges related to AI that are often conflated but require separate policy responses. The first is a workforce challenge: the practitioners and firms that currently generate Pakistan's exports will need to adapt to a world where AI tools are diminishing the value of basic digital work and altering how services are priced. The second is a development challenge: Pakistan has not built the infrastructure, regulatory environment, capital conditions or data governance framework that is necessary to participate in the creation of AI products. This is the layer of the AI economy that will generate long term value. Thus, failing on the first means losing ground in the export base Pakistan has built and failing on the second means being permanently positioned as a consumer of AI instead of its producer.

#### AI as a Workforce Disruption

Pakistan's IT export economy is structurally concentrated in the two categories that AI is most directly disrupting: effort-based, time-and-materials service delivery (of which staff augmentation is the largest sub-category) and business process outsourcing. These both compete primarily on cost rather than capability and generate no proprietary intellectual property. AI-assisted development tools increase individual engineer productivity, which means fewer engineers are required to deliver an equal volume of output. Since client demand for headcount is the foundation of Pakistan's dominant delivery model, it will decrease even if global software spending rises.

The roles most vulnerable to displacement are precisely the roles through which Pakistan's workforce acquires its most valuable income and experience like basic coding, content writing, data annotation, graphic design, and customer service. The 41 percent fall in the median freelance transaction value between FY2021 and FY2025, from USD 106 to USD 63, is consistent with the commoditization pressure AI tools are already exerting on entry-level digital work.<sup>16</sup> The study's survey found unanimous consensus among senior executives that staff augmentation, BPO, manual QA and basic web development will shrink or become commoditized. All respondents anticipated a shift away from time-and-materials pricing toward value-based or deliverable-based models within one to three years. Moreover, a 25 percent productivity improvement from AI tools was cited as a near-term operational benchmark, with clients already demanding that the efficiency gain be passed through in lower prices rather than retained as margin.

Pakistan's current core competitive advantage is based on a time-based model where lower wages translate directly into lower per-hour costs. In a deliverable-based market, the competitive advantage shifts to firms with deep domain knowledge, validated methodologies, brand credibility and proprietary tooling. These are the precise dimensions in which Pakistan's IT sector has structural deficits, and which cannot be acquired quickly.

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<sup>16</sup> It is important to note that the exact contribution of AI relative to other demand-side factors cannot be isolated from available data.

Moreover, Pakistani firms are entirely dependent on foreign cloud providers for the compute required to develop, fine-tune and serve AI models, at a cost that is proportionally much higher for a Pakistani SME than for a competitor firm in India or Eastern Europe with access to subsidized national compute.

### **AI Governance, Infrastructure, and Data Vacuum**

The National AI Policy 2025 represents genuine institutional progress; however, its commitments remain aspirational because of the absence of enabling infrastructure, enacted data protection legislation and a sovereign national computer layer. There is no implementation roadmap at the level of specificity required to guide private investment decisions. The study found minimal awareness of the policy's content among the industry stakeholders it is designed to address.

The governance gap is not a single problem. It is four distinct regulatory failures that require distinct solutions:

**The first is client-side compliance uncertainty:** Firms building AI-powered products for international clients, particularly in financial services, healthcare and insurance are required to show explicit AI usage policies, data handling procedures and model governance frameworks as a procurement condition. Pakistan has no national framework providing this.

**The second is data residency for domestic sensitive data:** Pakistan's electronic data protection framework prohibits sensitive data from leaving the country. Financial services data, health records, identity data and government transaction data are all subject to data residency requirements. Any Pakistani firm or government department seeking to use AI tools on this data cannot legally route it through foreign cloud providers. The result is a regulatory mandate for domestic AI infrastructure that exists alongside a near-total absence of that infrastructure.

**The third is AI-specific product governance:** Firms building AI products for regulated sectors like healthcare diagnostics, credit scoring, legal document analysis, face requirements for model explainability, bias auditing and accountability frameworks that are distinct from general data protection. No Pakistani regulatory framework currently addresses these. In the EU, the AI Act creates a tiered risk classification for AI products that Pakistani exporters serving EU clients must comply with. In the US, financial services regulators are moving toward model risk management requirements that apply to AI systems. Pakistan has no equivalent domestic framework, which means Pakistani AI product firms must navigate foreign regulatory requirements without domestic regulatory guidance, and cannot demonstrate to international clients that their products meet a recognized national standard. This requires a dedicated AI regulation instrument which is separate from PDPA that establishes risk-tiered requirements for AI products developed in Pakistan.

**The data governance gap is the fourth and least discussed failure:** AI models require large, labelled, domain-specific datasets to be useful. Pakistan is generating valuable data like mobile money transactions, health data, identity verification events through NADRA, tax transaction histories through FBR. None of this data is structured, accessible or usable for AI model training in any systematic way. India's Aadhaar and UPI created datasets that are now the training foundation for Indian fintech and govtech AI. Pakistan has equivalent transaction volumes, NADRA has registered over 130 million citizens, FBR processes tens of millions of tax transactions annually, SBP supervises billions of dollars in digital payments but no equivalent data infrastructure for productive use. In the absence of a national data governance framework defining what data can be used, by whom, under what conditions, and on what infrastructure, Pakistan cannot build AI products.

## Recommendations

### 1. National AI Strategy with NAICA, Sovereign Compute, and Data Residency Infrastructure

Pakistan should develop a comprehensive National AI Strategy within twelve months through MoITT in consultation with SBP, FBR, HEC, NADRA and the private sector. The strategy must address four layers simultaneously: compute infrastructure, data governance, skills transition and regulatory clarity.

A National AI Compute Authority (NAICA) should be established to procure, operate and provide subsidized access to national AI compute infrastructure which is accessible to companies, researchers, and government departments. Zero customs duty should apply to AI-grade computing equipment. A ten-year corporate tax holiday should be established for data center investments exceeding USD 50 million, targeting growth of Pakistan's data center market from USD 0.79 billion to USD 2 billion by 2030. A mandate should require public-sector AI deployments to operate on domestic infrastructure by 2028, providing both a demand anchor for domestic data center investment and compliance with existing data residency requirements. NAICA's first operational priority should be a government-grade sovereign AI compute environment capable of processing financial, health, identity and tax data under full data residency compliance. Without this, Pakistan's regulatory requirement and its AI adoption ambitions are in direct contradiction.

A National Data Governance Framework should be enacted alongside NAICA, defining categories of data eligible for AI training use, the conditions under which anonymized or aggregated public datasets can be accessed by registered IT firms, and the infrastructure requirements for compliant data processing. NADRA's identity dataset, SBP's payments data, FBR's tax transaction records and SUPARCO's satellite imagery are all assets that could anchor AI model development in Pakistan, and none are currently accessible in any structured way.

### 2. Mid-Career AI Bootcamps for Practitioners in Displaced Categories

Weekend-format bootcamps of two to three months should be established for IT professionals in the categories most at risk from AI displacement like basic coding, content writing, data annotation, graphic design etc. Teaching professionals to use AI tools in their current category will be insufficient. There should be effort on repositioning them into adjacent categories. A data annotator should be trained toward AI prompt engineering and model evaluation. A basic web developer should be trained toward cloud infrastructure and platform engineering services. A content writer should be trained toward AI-assisted content strategy and editorial oversight. The programme should be co-financed 70/30 through the existing funds in the Export Development Fund, targeting 10,000 trainees in year one and 50,000 annually by year three.

## Segment – Wise Mapping of Risks

This matrix maps the structural challenge dimensions identified in this study against the four segments of Pakistan's IT sector: freelancers, startups, IT firms and captive ICT operations:

Risk/Challenge	Freelancers	Startups	Firms	Captive ICT operations
<b>Graduate Quality &amp; Soft Skills Gap</b>	HIGH Biggest individual deficit; competes directly on soft skills	MED Early hires need 6–12 months remediation	HIGH Remediation cost per hire; clients notice the gap	HIGH Senior roles filled internationally at high cost
<b>Cross-Disciplinary &amp; Leadership Talent Gap</b>	MED Limits access to high-value service categories	HIGH Founders lack enterprise sales, fundraising, leadership skills	HIGH Cannot hire fintech/health tech/legal tech profiles	MED Imported from parent; expensive to retain locally
<b>Structural Underutilization of Women</b>	HIGH 1.6% of bank-account freelancers; near-total exclusion	MED Limits talent pool for product and BD roles	HIGH 21% STP participation; constrains workforce scale	MED Parent cos import talent; less directly constrained
<b>Freelancer Definition Void</b>	HIGH Bank holds, tax scrutiny, cash-flow disruption	MED Affects remote team structuring and contractor risk	MED Audit risk from misclassified contractors	LOW Mostly use formal employment structures
<b>Provincial Tax Fragmentation</b>	MED Cloud and internet costs raised; platform costs up	MED Cross-provincial operations hit double taxation	HIGH 34% effective internet tax; taxed on cloud inputs	LOW Operate under STP/STZA exemptions typically
<b>FBR Audit Behavior &amp; Safe Harbor Gap</b>	MED Small scale mostly below audit threshold	MED Growth-stage revenues attract FBR scrutiny	HIGH Large exporters most audited; offshore structuring incentive	HIGH Full formal payroll; cannot restructure to avoid
<b>NOC Regime &amp; Innovation Hardware Friction</b>	MED Affects drone/IoT tools used in freelance and gig work	HIGH 6–12-month delays block hardware-adjacent product development	HIGH Prevents prototyping for IoT, robotics, 5G product categories	MED Parent cos import hardware; less directly constrained
<b>Policy Instability &amp; Finance Bill Revisions</b>	HIGH Tax exemptions revised mid-year without warning	HIGH Investment decisions impossible under uncertainty	HIGH Multi-year contracts priced against reversed terms	HIGH 10-year lock-in irrelevant if annual bills override

Risk/Challenge	Freelancers	Startups	Firms	Captive ICT operations
<b>Banking: Repatriation &amp; FX Conversion</b>	HIGH Forced conversion reduces real earnings; informal routing rational	HIGH No dollar accounts: capital trapped onshore	HIGH Rational to retain offshore; Bop losses for country	MED Parent manages FX centrally; less constrained
<b>Payment Infrastructure Gaps</b>	HIGH Card payments blocked; VPN suspensions; processing delays	MED Affects client onboarding and small payments	MED Processing delays; no standardized documentation	LOW Wire transfers via parent; less directly affected
<b>Intangible-Asset Collateral Gap</b>	LOW Rarely seek formal bank loans	HIGH Primary capital access barrier for product companies	HIGH Cannot leverage IP or contracts for working capital	LOW Funded by parent; not reliant on local banks
<b>Absent Venture Capital Ecosystem</b>	LOW Not equity-funded model	HIGH 88% funding collapse FY22–24; only 2 Series C rounds 2015–22	MED Limits scale-up capital for growth-stage firms	—
<b>Internet Infrastructure &amp; Broadband Cost</b>	HIGH USD 0.53/Mbps; SLA breaches reduce platform ratings	MED Product development manageable; deployment affected	HIGH Delivery reliability risk; client SLA breach exposure	HIGH 99.9% uptime required; Pakistan cannot guarantee it
<b>Data Fragmentation &amp; Measurement Gap</b>	HIGH No income history for credit or insurance access	MED No baseline to size market or measure programme impact	MED Policy calibrated against understated export base	MED Benchmarking data gap understates Pakistan's scale
<b>STZA/Coordination Failure</b>	HIGH Physical zone model excludes all distributed workers	HIGH Single-window environment never delivered	HIGH Most firms outside zones; incentives inaccessible	MED Failure limits formal options; prefer STZA zones
<b>IGNITE Payment Delays</b>	—	HIGH 6–12-month delays break operating plans and trust	LOW Not typically IGNITE-funded	—
<b>Absence of Domestic Market</b>	LOW Minimal direct effect on freelance work	HIGH No domestic proof-of-concept base for products	HIGH No reference deployments; cannot win enterprise bids	MED Limited local govt contracts to anchor presence
<b>Capital &amp; IP Framework Gap</b>	LOW Not capital-intensive; freelancers largely unaffected	HIGH Primary constraint on product transition	MED Limits scale; IP offshoring removes returns to Pakistan	LOW Parent cos fund centrally; less exposed
<b>Govt IT Entities Displacing Private Sector</b>	—	MED Reduces early govt contracts startups need to build refs	HIGH Direct competition outside fair procurement; PKR 50–100B	LOW Operate independently of domestic procurement
<b>Country Brand &amp; Benchmarking Invisibility</b>	LOW Individual brand matters more than country brand	MED Fundraising harder from international VCs	HIGH Lost enterprise contracts; excluded from RFPs	HIGH Primary barrier to new captive office openings

Risk/Challenge	Freelancers	Startups	Firms	Captive ICT operations
<b>Enterprise Procurement Barrier (Country Risk)</b>	LOW Rarely in direct large enterprise sales	MED Affects Series B+ fundraising and partnerships	HIGH Country-level risk filter blocks large contracts	HIGH Procurement approval layers add 6–12 months
<b>US/UK Revenue Concentration &amp; proposed HIRE Act Risk</b>	HIGH 90%+ of platform work from US/UK clients	MED Most international funding also US-sourced	HIGH 60–80% revenue at risk from single proposed legislation	HIGH Parent cos can reroute; subsidiary operations exposed
<b>Data Protection: 21-Year Institutional Failure</b>	LOW Country-level gap; individual freelancers less directly exposed	MED Blocks regulated-sector client contracts and Series B+ deals	HIGH 38% of N. American/EU firms won't offshore without enacted PDPA	HIGH Primary prerequisite for regulated-sector captive procurement
<b>AI Transition &amp; Displacement Risk</b>	HIGH Entry roles eliminated; 41% median value fall FY2021–25	HIGH Headcount moat gone; capital gap blocks AI product pivot	HIGH Effort-based delivery model under existential pressure	MED Parent cos absorb disruption; still face compliance gaps
<b>AI Governance &amp; Data Infrastructure Vacuum</b>	MED Cannot legally use AI on sensitive data; residency gap	HIGH No sovereign compute; no data governance framework	HIGH Cannot demonstrate AI compliance to international clients	HIGH Data residency requirements unenforceable without NAICA

## Annexure

### 1. Annexure A: Definitions of SBP Categories:

Code	Category	Description
9.2	Computer Services Total	Other Computer Services
9.2.1	Hardware Consultancy	Advisory services related to computer hardware setup and configuration
9.2.2	Software Consultancy	Custom software development, IT consulting, programming services
9.2.3	Maintenance & Repair of Computer	Servicing and repairing computer hardware/software systems
9.2.4	Export/Import of Computer Software	Licensing and cross-border trade of packaged or downloadable software products
9.2.5	Freelance – Computer & Info Svcs	Earnings of individual freelancers providing IT/digital services cross-border (Pakistan-specific addition; shown as credit/export only)
9.2.6	Other Computer Services	Data processing, hosting, web services, and other IT services not elsewhere classified

Source: Trade in Services - BPM6-Extended Balance of Payments Services Classification (EBOPS 2010)

## 2. Annexure B: BCG Matrix for Pakistan's IT Export Growth Strategy

### Framework Application

Applying the Boston Consulting Group's Growth-Share Matrix to Pakistan's IT export portfolio enables strategic resource allocation across service verticals and geographic markets. The two axes are: Market Growth Rate (global demand growth for the service/market) and Pakistan's Relative Market Share (competitiveness and current penetration).

Quadrant	IT Service Verticals	Geographic Markets	Strategic Action
STARS (High Growth, High Share)	AI/ML Services, Cybersecurity, Cloud Migration, SaaS Development, Fintech Solutions	GCC (Saudi Vision 2030 demand), Southeast Asia (emerging digital economies)	INVEST AGGRESSIVELY: Increase capacity, talent pipeline, market presence. Target 3x growth in 5 years.
CASH COWS (Low Growth, High Share)	Traditional BPO/Call Centers, Web Development, Staff Augmentation, QA Testing	USA (55%+ of current exports), UK, UAE	HARVEST & REINVEST: Maximize margins, use cash flow to fund Stars. Transition workforce to higher-value services.
QUESTION MARKS (High Growth, Low Share)	Space-Tech Services, Gaming/Esports, HealthTech, EdTech, Web3/Blockchain, Robotics/IoT	Africa (untapped), Central Asia, Latin America, Eastern Europe	SELECTIVE INVESTMENT: Pilot programs, dedicated funds, PPP models. Move to Star or divest within 3 years.
DOGS (Low Growth, Low Share)	Hardware Assembly/Export, Low-end Data Entry, Basic Transcription	Markets with zero current presence and high entry barriers (e.g. Japan, South Korea domestic)	DIVEST/PIVOT: Redirect resources. Do not allocate new public funds. Let market forces determine survival.

1. Adopt the BCG Matrix as a strategic planning tool within the proposed National Digital Economy Council to prioritize public investment, training programs, and trade promotion budgets across IT service verticals.
2. Conduct annual BCG reassessment as verticals migrate between quadrants (e.g., cybersecurity may move from Question Mark to Star as Pakistan builds certifications and compliance frameworks).

### 3. Annexure C: Data Refusal Log

Institution	Data Requested	Time frame of Request	Outcome
State Bank of Pakistan (SBP) - Statistics Department	Transaction-level microdata for IT export purpose codes (9.2.x) including sender country and bank channel, Company-level aggregate export figures	December 2025	Partial - aggregate category data provided via published BoP tables, Transaction-level statistical data for sub-categories 9.2.1–9.2.6 provided for FY2021–FY2025, including value totals, entry counts, mean, median, quintiles, max, min, and standard deviation. Transaction-level and company/entity-level data declined on confidentiality grounds
Securities and Exchange Commission of Pakistan (SECP)	Full IT company registry with incorporation date, registered capital, director information, and annual filing status, Company status (active, dormant, closed) Net revenue figures by IT company, Nature of business of struck-off IT companies	First Contact: December 2025 Response received: received 5th Jan 2025 Follow up emails: 9th, 22nd 28th Jan 2025 and 9th Feb 2026	Partial - Year-wise registrations, company-kind distribution, and principal line of business breakdown provided. Net revenue figures and details struck-off company details not provided.
Ministry of IT and Telecommunication (MoITT)/IGNITE	NIC startup portfolio disaggregated by sector and geography, DigiSkills gender-disaggregated completion rates and employment outcomes, IGNITE payment disbursement timelines (planned vs actual), Longitudinal post-graduation survival data	8th Jan and 12th Jan 2026	No response to data request received - publicly available reports were used for analysis.
Higher Education Commission (HEC)	Graduate output by sub-discipline: CS, IT, Software Engineering, Computer Engineering, Electrical Engineering, separately, not as aggregate ICT, Enrolment by degree level (BS, MS, PhD), Faculty qualification data by sub-discipline, Dropout and attrition rates by programme	14th and 20th Jan	No response to data request received - Publicly available HEC HEDR Annual Report 2022–23 and latest statistics used for analysis.
Pakistan Software Export Board (PSEB)	Disaggregated export data by company size, service category, and destination market, Complete list of registered companies with annual export declarations, Employment numbers by skill category, Data on firms availing tax incentives and certifications	8th, 12th and 28th Jan 2025	No response to data request received - publicly available reports were used for analysis.

#### 4. Annexure D: Data Gaps

Institution	What is currently missing	Monthly	Quarterly	Annually	One-time baseline
<b>SECP Securities and Exchange Commission of Pakistan</b>	<ul style="list-style-type: none"> <li>• Net formation rate (incorporations minus dissolutions)</li> <li>• IT-sector-specific strike-off data</li> <li>• Capital structure distribution</li> <li>• Active vs dormant breakdown</li> <li>• Geographic distribution of registered IT companies</li> </ul>	<ul style="list-style-type: none"> <li>• New IT company incorporations count by business category</li> </ul>	<ul style="list-style-type: none"> <li>• Strike-offs and dissolutions by sector; net formation rate</li> <li>• Paid-up capital distribution by segment tier</li> </ul>	<ul style="list-style-type: none"> <li>• Full IT sector registry snapshot: incorporation year, business segment, legal structure, capital, geography, active/dormant status</li> <li>• Survival rate cohort analysis: 1-, 3-, and 5-years post-incorporation</li> <li>• Gender of directors for IT companies</li> <li>• Cross-reference with PSEB registration status</li> </ul>	<ul style="list-style-type: none"> <li>• Capital structure distribution across micro, small, medium, large, and enterprise tiers</li> <li>• Company-level export revenue matched against PSEB records</li> </ul>
<b>HEC Higher Education Commission</b>	<ul style="list-style-type: none"> <li>• Graduate output by sub-discipline (CS, SE, IT, Computer Engineering, EE aggregated into one ICT figure)</li> <li>• No annual series beyond FY2020–21</li> <li>• No degree-level breakdown (BS/MS/PhD)</li> <li>• No attrition or dropout rates</li> <li>• No faculty qualification data</li> <li>• No institution-level geographic breakdown</li> <li>• No employability tracking post-graduation</li> </ul>	—	—	<ul style="list-style-type: none"> <li>• Graduate output by sub-discipline, degree level, institution, and province; gender disaggregated</li> <li>• Dropout and attrition rates by programme</li> <li>• Faculty-to-student ratio by sub-discipline; % with industry experience</li> <li>• Graduate employability survey (every 2 years): employment status 12 months post-graduation, sector, salary, time to first job</li> <li>• Curriculum review compliance: % of IT programmes updated within last 2 years</li> </ul>	<ul style="list-style-type: none"> <li>• Sub-discipline graduate counts retroactively for FY2018–19 through FY2024–25</li> <li>• Institution-level geographic mapping of IT enrolment and graduate output by tier-1/2/3 city</li> <li>• Faculty qualification census</li> </ul>
<b>SBP State Bank of Pakistan</b>	<ul style="list-style-type: none"> <li>• No destination country breakdown for IT exports</li> <li>• No company-level export data</li> <li>• No channel breakdown (bank/payment intermediary)</li> <li>• No purpose code reconciliation between IT codes and home remittance code 9471</li> <li>• No freelancer-vs-firm disaggregation within sub-categories</li> <li>• No data on offshore-structured Pakistani IT revenues</li> </ul>	<ul style="list-style-type: none"> <li>• IT export receipts by sub-category (9.2.1–9.2.6): transaction count and value</li> <li>• Freelance receipts under 9.2.5 separately flagged</li> <li>• Comparison of IT export codes vs purpose code 9471 receipts from IT-likely sources</li> </ul>	<ul style="list-style-type: none"> <li>• Transaction distribution statistics: mean, median, 20th and 80th percentile per sub-category</li> <li>• Destination country breakdown for IT export receipts (top 10 markets)</li> <li>• Channel breakdown by bank</li> <li>• Current quarter vs same quarter prior year comparison</li> </ul>	<ul style="list-style-type: none"> <li>• Full statistical summary: coefficient of variation, max and min transaction, full percentile distribution by sub-category</li> <li>• Reconciliation note explaining difference between SBP figure and PSEB/government estimates</li> <li>• Offshore structuring estimate methodology and range</li> <li>• RDA-IT framework uptake data once established</li> </ul>	<ul style="list-style-type: none"> <li>• Historical purpose code 9471 data disaggregated by likely IT vs genuine personal remittances</li> <li>• Transaction-level aggregate (not individual) data shared with PSEB for registration cross-referencing</li> </ul>

Institution	What is currently missing	Monthly	Quarterly	Annually	One-time baseline
<b>PSEB Pakistan Software Export Board</b>	<ul style="list-style-type: none"> <li>• No disaggregated export data by company size, service category, or destination market</li> <li>• No data on export revenue per registered firm</li> <li>• No annual update to registered exporter count with methodology explanation</li> <li>• No data on why firms deregister or become inactive</li> <li>• No tracking of programme outcomes (trade events converting to contracts)</li> </ul>	<ul style="list-style-type: none"> <li>• New PSEB registrations count</li> <li>• De-registrations and reasons</li> <li>• Trade event participation and leads generated</li> </ul>	<ul style="list-style-type: none"> <li>• Export performance of PSEB-registered firms aggregated by size tier</li> <li>• Active vs inactive exporter ratio</li> <li>• Destination market distribution for registered exporters</li> </ul>	<ul style="list-style-type: none"> <li>• Full PSEB exporter census: revenue band, service category, geography, years of operation, employment size, export market distribution</li> <li>• Programme impact report: DigiSkills employment outcomes, trade event ROI, training completion and employment rates</li> <li>• Cross-reference with SECP to identify gaps in both directions</li> <li>• Women-owned and women-led firm statistics reported separately</li> </ul>	<ul style="list-style-type: none"> <li>• Retrospective export revenue data for all currently registered firms to establish a baseline</li> <li>• Methodology document explaining how PSEB export figures are derived and why they differ from SBP</li> </ul>
<b>IGNITE National Technology Fund</b>	<ul style="list-style-type: none"> <li>• No longitudinal tracking of NIC graduates post-exit</li> <li>• No dropout destination data</li> <li>• No methodology for the USD 827 million DigiSkills earnings estimate</li> <li>• No payment timeline data (promised vs actual disbursement)</li> <li>• No geographic breakdown of R&amp;D grant recipients</li> <li>• No outcome data on startups that exited the programme</li> </ul>	<ul style="list-style-type: none"> <li>• Disbursement report: all approved commitments, planned vs actual payment date, and variance</li> <li>• Escrow balance for pre-funded programmes</li> </ul>	<ul style="list-style-type: none"> <li>• NIC cohort progress: enrolments, graduations, dropouts, and dropout destination</li> <li>• DigiSkills enrolment, completion, and employment outcomes by province</li> <li>• R&amp;D grant pipeline: applications received, approved, under review, disbursed</li> </ul>	<ul style="list-style-type: none"> <li>• Full NIC portfolio report: post-graduation survival rate at 12 and 24 months; revenue and employment of graduated startups</li> <li>• IP generation: patents filed, granted, and commercialized</li> <li>• DigiSkills outcomes: % of completers who earned income within 12 months, average income, and methodology for cumulative earnings figure</li> <li>• R&amp;D grant ROI: revenue per PKR of grant funding; patents per PKR of grant funding</li> <li>• Geographic equity report: NIC and DigiSkills reach by province with connectivity and participation rate analysis</li> <li>• Payment performance audit: % of commitments paid on time, average delay, corrective actions taken</li> </ul>	<ul style="list-style-type: none"> <li>• Retrospective dropout destination survey for all NIC cohorts since inception</li> <li>• Methodology document for USD 827 million DigiSkills earnings estimate with assumptions and confidence interval</li> <li>• Longitudinal outcome data for all 882 graduated startups: current status, revenue, employment, Pakistan vs offshore domicile</li> </ul>

Institution	What is currently missing	Monthly	Quarterly	Annually	One-time baseline
<b>Cross-Institutional Requirements for all six institutions</b>	<ul style="list-style-type: none"> <li>• Common IT sector taxonomy, all six institutions should adopt identical definitions for: IT company, IT exporter, active vs registered, IT employee, IT graduate, and freelancer. The MoITT data working group should publish this taxonomy as a gazette notification within six months.</li> <li>• Quarterly inter-agency reconciliation note, SBP, SECP, and PSEB should jointly publish a one-page reconciliation quarterly explaining the gap between their figures and which part of the gap is definitional, measurement, or channel.</li> <li>• Open data portal, all datasets should be machine-readable and downloadable in CSV or JSON format from a single MoITT portal, updated on the schedules above. PDFs and Excel files on individual agency websites make cross-source analysis unnecessarily difficult and reduce Pakistan's credibility in international benchmarking exercises where data accessibility is itself assessed.</li> </ul>				

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