

## UNLEASHING THE POTENTIAL OF PAKISTAN'S IT INDUSTRY: BUILDING FOR MASSIVE SOFTWARE EXPORT GROWTH

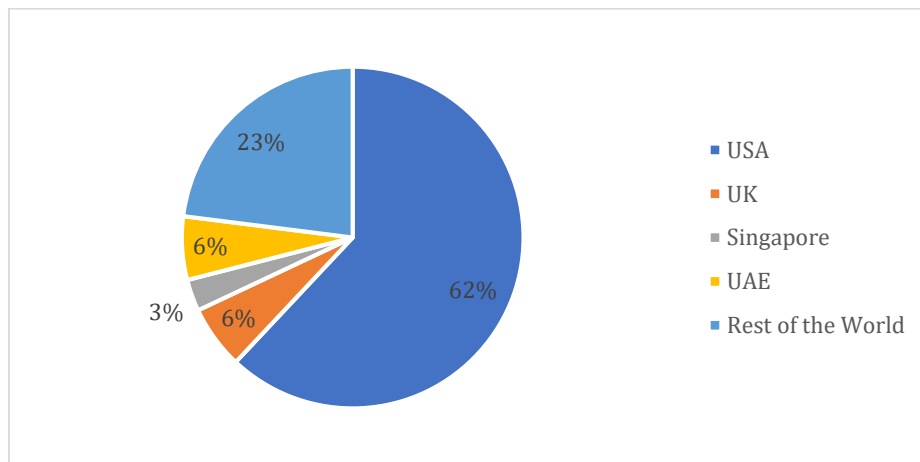
*Naveed Arshad, Waqar Ahmad, Kashif Manzoor*  
(CGP # 05-157)

*(This document is unedited author's version submitted to RASTA)*

### INTRODUCTION

In the current industrial revolution, IT exports are the backbone of any country's economy. The IT sector is the second-largest sector in Pakistan's economy after trading. However, the industry faces challenges that are common to emerging IT markets. In 2022, Pakistan exported \$2.6 billion worth of software services and products. However, when compared to similar economies such as Argentina (\$9 billion), Egypt (\$5 billion), Vietnam (\$9 billion), and the Philippines (\$26.9 billion), Pakistan's software exports appear less remarkable. The overall export of IT in terms of percentage around the world is shown in Figure 1. From a global trade standpoint, Pakistan's contribution to global exports of Computer Services remains modest, but it has shown growth, rising from 0.17% in 2017 to 0.3% by 2021. However, assessments of Pakistan's export markets and individual firm exports indicate significant potential for enhancement.

*Figure 1 Pakistan software's services export (country-wise)*



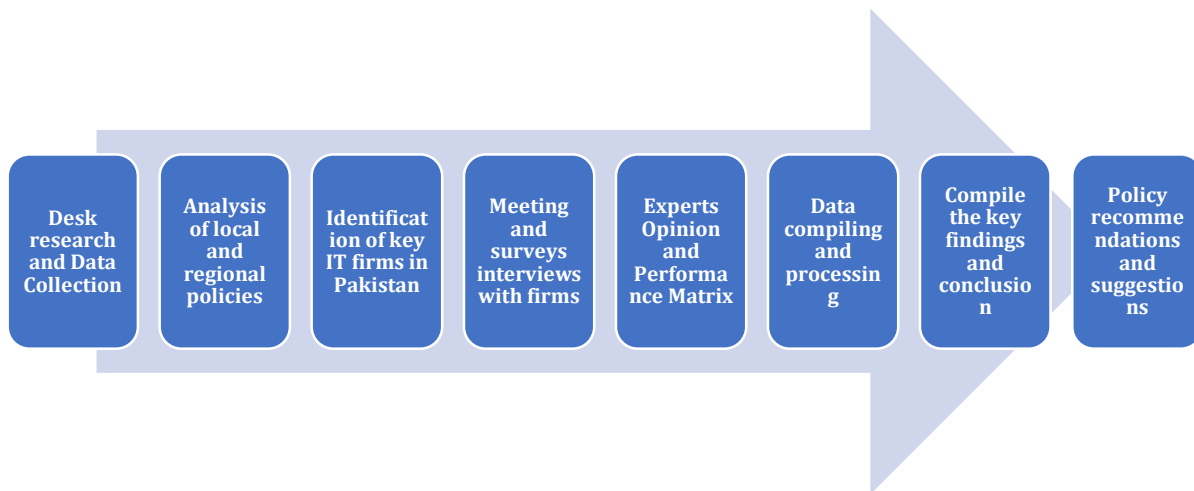
*Source: SBP (State Bank of Pakistan). (2023). State Bank of Pakistan half year report 2022-23. Karachi: SBP.*

This study seeks to examine the factors influencing the growth and competitiveness of Pakistan's software export industry and outlines strategies for enhancing its global market position in anticipation of the upcoming fifth industrial revolution. The research endeavors to offer policy recommendations that can guide policies and practices aimed at fortifying Pakistan's software export industry, fostering economic growth in the context of the fifth industrial revolution.

## METHODOLOGY

The methodology for the project is divided into various milestones, as illustrated in Figure 2. The study started with comprehensive desk research into published materials on the software industry in Pakistan and globally. This was followed by an analysis of local and regional policies, particularly those impacting the IT sector in South Asia. Key IT-related industries in Pakistan were identified and analyzed to gather relevant data. Subsequently, formal meetings and expert opinions were conducted to administer surveys involving representatives from various reputed companies in Pakistan, including Confiz Limited, Systems Limited, NetSol Technologies, and others. A performance matrix was developed to analyze Pakistan's current standings with respect to other countries based on 10 key variables. The collected data underwent thorough processing and validation. Based on the findings from this analysis and comparative performance matrix, key challenges were identified, and detailed policy recommendations were formulated for both the government and industry to provide a comprehensive understanding for developing a roadmap to enhance IT exports.

*Figure 2 Description of the project and proposed methodology*



## FINDINGS AND CONCLUSION

A comprehensive analysis indicates a strong demand for enhanced education and training programs to bridge the skill gap in Pakistan's IT sector. There is a clear call for academia-industry collaboration to align educational outcomes with market needs, alongside the necessity for government support in providing financial incentives and fostering a conducive environment for startups and emerging technology sectors.

Based on performance matrix, despite many challenges, Pakistan holds immense potential, leveraging a low cost of living, though it must address various challenges. Addressing these

challenges necessitates a multifaceted approach. Infrastructure challenges, such as poor internet connectivity and high operational costs, coupled with a significant skills gap in technical and professional areas, are noted barriers. Financial constraints, such as funding issues and increased operational costs, are common concerns among surveyed companies. The primary issue is the insufficient supply of human resources, making it a supply-constrained industry. Companies often secure contracts and sales but struggle to find the necessary human resources in the local market, leading to inefficiencies in the supply chain. Various taxes on human capital reduce costs, ultimately decreasing sales and making the industry less competitive. Brain drain further depletes the existing human capital, reducing the competency of the local IT industry compared to other countries. Government efforts to incentivize the freelance market while disincentivizing major IT companies discourage large companies from establishing a presence in Pakistan, resulting in a lack of significant partnerships with major companies. IT-related SMEs are becoming holding companies in other countries to offer tax-free salaries to their employees, keeping the complete profit abroad while only the costs are borne by Pakistan. Collaborative efforts of policymakers at the government level, industry leaders, and educational institutions are essential in building a robust and competitive IT ecosystem.

## POLICY RECOMMENDATIONS

### *Policy Recommendations for Government*

**Curriculum Alignment:** The curriculum should be focused on and aligned with both international standards and local industry requirements. Fundamental knowledge is essential, but the Higher Education Commission (HEC) must also streamline its curriculum revision process to allow universities to promptly update their course offerings. Ensuring highly qualified instructors for core courses at all institutions is challenging, so a hybrid model using online courses from reputable platforms like LUMSx could be beneficial. Industry-specific knowledge is becoming more important than purely technical coding skills. Closer collaboration with industry experts can help develop relevant courses. Assessment methods should evolve to include comprehensive mechanisms, such as the testing protocols used by Confiz Limited, to accurately measure graduate preparedness and align them with suitable career paths. This approach will establish a benchmark for assessing the proficiency of graduates from various universities.

**Taxation on Human Capital:** Various taxes on human capital reduce local cost competitiveness, decreasing sales and making the industry less competitive globally. Brain drain depletes existing human capital, further diminishing the local IT industry's competency. High salary taxes often lead local companies to establish entities abroad or use illicit financial channels, exacerbating brain drain. For instance, a 40% tax on salaries of 800k PKR is excessive compared to Scandinavian standards. To bolster the IT industry, the government should protect its workforce with a more lenient taxation policy and view IT services as part of the international market to enhance competitiveness.

**Government Procurement:** In many government procurement cases, Pakistani companies receive no significant advantages. Often, conditions are imposed that exclude Pakistani companies from competing in the local tenders. Currently, Pakistani government procurement policies appear biased

against local companies. It is crucial for the government to prioritize local companies, which would not only support their growth but also enable them to compete internationally.

**Gap between Low-skilled and High-skilled Workers:** The integration of AI has significantly impacted and reduced entry-level jobs. High-skilled workers can enhance their productivity by up to tenfold through the effective use of AI, whereas low-skilled workers may not achieve comparable gains. There should be an increased emphasis on cross-functional education to prepare graduates for diverse challenges. To mitigate brain drain and enhance the quality of local talent, there is a need for a scalable autonomous digital platform that can provide affordable university education to a broader audience of young learners. This scalability would reduce the cost of education and improve accessibility across the board.

**Encourage International Companies to Open Offices in Pakistan:** The government should encourage international companies to establish offices in Pakistan through regulatory reforms, tax incentives, and fostering relationships with global tech giants. Incentives are key. Political and economic instability is not the main hindrance, as companies like Microsoft operate in countries with similar challenges. The government should favor companies investing in Pakistan and address freelancer and SME challenges abroad by implementing balanced tax policies that encourage local operations while ensuring fair contributions.

**Encourage the Companies to List Themselves in the Stock Exchange:** The government should encourage companies to list themselves on the stock exchange and open up opportunities for investment. To achieve this, rules and regulations should be streamlined and made more accommodating. Moreover, listing on the stock exchange enhances accountability and cultivates a culture of financial discipline among companies.

**Define the IT Sector as a Niche:** Pakistan should identify and prioritize the IT industry as a strategic niche for national development. By concentrating on this industry, the country may take advantage of its expanding tech skill pool and establish a strong digital economy. To be more specific, the government should choose an important segment of the IT industry—like finance, cybersecurity, or software development—and direct resources toward its expansion.

**Promote Local Development of Systems:** Pakistan should stop depending on costly imports from international businesses and instead invest in building local capacity to produce computer systems and related technologies. Through the development of a domestic manufacturing sector, the country could reduce costs, generate employment, and boost GDP. The initiative would improve Pakistan's technological independence while also making technology more accessible and cheaper for local companies and consumers. A good niche in manufacturing is IoT sector which has heavy duties and taxation on its required components like ICs, capacitors, resistors etc. It is strongly recommended to define IoT industry as part of the IT industry with the same set of incentives as IT industry.

### ***Strategic Recommendations for Industry***

**Workforce Training:** IT companies should conduct their own training programs, with private industry investing in talent development to balance demand and supply. However, this requires significant financial commitment, feasible only for a few large organizations. The government could

incentivize companies by offering free land, space, or other incentives. Designating existing technology zones for companies that establish skill development centers alongside their operations would encourage private sector participation in skill enhancement.

**Leverage Emerging Technologies:** The field of developing technologies like AI is currently propelling important developments in automation and analytics. Along with AI, blockchain technology is the way of the future. It provides decentralized security and transparency that goes beyond banking and can be used in industries like supply chain management and healthcare. Companies should vary their efforts to incorporate blockchain and AI in order to handle this transformation successfully.

**Focus on Product Development in Addition to Servicing:** Companies should broaden their scope to incorporate both service and product development; successful companies like NetSol, which have persevered during difficult economic times, should serve as models. Companies can create new revenue streams, strengthen their market resilience, and become less dependent on external economic variables by investing in the development of innovative products.

**Reevaluation of Operations and Strategies in the Context of Generative AI:** Companies should reevaluate their operations and strategies in the context of developments in Generative AI. They can unleash new creative possibilities, optimize workflows, and greatly increase productivity by incorporating this state-of-the-art technology. Adopting generative AI can boost decision-making skills, provide competitive advantages, and result in the development of more individualized and effective services.

**Assist in Enabling Startups Culture in Universities:** Companies should aggressively encourage and assist university startups. Companies may give aspiring entrepreneurs access to invaluable resources like funding, market knowledge, and mentoring by collaborating with academic institutions. Additionally, encouraging a startup culture at the university level can help close the knowledge gap between industry and academics.