Netherlands

SDPI
Sustainable Development Policy Institute

UNFPA

DATA FOR DEVELOPMENT (D4D)

IT NEEDS ASSESSMENT

of

Bureaus of Statistics and Population Research Centers

ASSESSMENT REPORT

Foreword

United Nations Population Fund (UNFPA) initiated the Data for Development (D4D) initiative in collaboration with the Sustainable Development Policy Institute (SDPI) to improve the sharing and use of data as evidence for development. D4D includes innovative technical initiatives, research studies, and engagement activities to grow the demand for, supply of, and use of data. D4D works to strengthen a functional, inclusive, and locally led data ecosystem in Pakistan to ensure that more and better data is available, accessible, and usable by a range of government, civil society, and private sector actors to inform decision-making, implementation, and monitoring of development efforts at the national and sub-national level.

The role of robust data systems in shaping effective policy, fostering accountability, and driving inclusive development cannot be overstated. Statistical bureaus and Population Research Centers (PRCs) are vital to this process, serving as providers of credible, timely, and disaggregated information that guides decision-making, resource allocation, and progress monitoring.

I am pleased to introduce the "IT Needs Assessment Report," as a preliminary step to assess the IT capacities including systems and equipment available to serve data production of statistics. This report is a defining step in a journey to fortify Pakistan's national and provincial statistical systems. This assessment provides an in-depth analysis of the current state of technical capacities, and infrastructure across the Bureaus of Statistics and PRCs in Punjab, Khyber Pakhtunkhwa, and Balochistan, as well as the Pakistan Bureau of Statistics at the federal level. It underscores the urgent need for investment in modern IT equipment, advanced technical training, and human resource development. By aligning these improvements with global best practices, the report ensures that these institutions can meet the challenges of a dynamic, data-driven world.

I extend my gratitude to SDPI for their valuable collaboration in the development of this assessment. Their contributions have been an important part of this initiative, complementing our shared efforts. I would also like to acknowledge my dedicated Population Change and Data team at UNFPA, whose technical guidance and oversight have been crucial in ensuring the successful completion of this significant report.

I hope the findings and recommendations outlined in this report will inspire action and catalyze transformative change. By strengthening the foundation of Pakistan’s statistical systems, we can pave the way for a more informed, equitable, and sustainable future for all.

Dr. Luay Shabaneh

UNFPA Representative

AKNOWLEDGEMENTS

We would like to express our sincere gratitude to UNFPA for their invaluable support under the Data for Development Initiative. Our heartfelt thanks also go to Dr. Ali Hasanain, the expert on the IT Needs Assessment, for his insightful contributions. We are equally appreciative of the time and cooperation extended by all the provincial Bureaus of Statistics and Population Research Centers, whose collaboration was instrumental to our work.

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1.1 Introduction

Data and research are key tools for development, lying at the cornerstone of evidence-based policymaking. Data collection and dissemination, that enable research and evidence-based coherent policy, typically fall under the domain of the national statistical system. Statistical bureaus play a pivotal role in gathering, analyzing, and disseminating data that inform policies and strategies at various levels of governance. The work of these organizations supports a wide array of sectors including economic development, healthcare, education, poverty, environment, and climate change, providing the base for effective policymaking.

In Pakistan, the national statistical system consists of Bureaus of Statistics (BoSs) at the federal and provincial levels, which are mandated to collect and publish primary data on various micro and macro-economic indicators, through tools including, but not limited to, census and surveys. The success of these bureaus largely depends on the availability of resources that are required to conduct each organization's mandated tasks.

As the role of provinces in data collection, research, and policymaking is paramount, especially after decentralization under the 18th Amendment, provincial BoSs must have resources in order to support the research and policy-making process. This IT Needs report assesses the current availability of resources and future requirements over a 4-to-8-year time horizon. A functional review is conducted at 8 BoSs in three provinces, Punjab, KP, and Balochistan, along with the federal capital (ICT).

Additionally, this report also includes the IT Needs assessment of Five Population Research Centers (PRCs) established by UNFPA to promote research on population dynamics. These centers are established in universities that include i) National University of Science and Technology (NUST), Islamabad, ii) Foreman's Christian (FC) College, Lahore, iii) University of Peshawar, Peshawar and v) Balochistan University of Information Technology, Engineering and Management Sciences (BUITEMS), Quetta.

1.2 Objectives

The objective of this IT Needs Assessment (ITNA) is to identify the IT Needs , supporting IT infrastructure and software, skills set such as the ability to use IT equipment, software licenses, and capacity to undertake mandate tasks including but not limited to data collection, analysis, and dissemination, report writing, policy brief writing. The specific objectives of this ITNA are centered around three main points:

i. Documenting the existing availability of resources across BoSs and PRCs.

ii. Assessing the additional needs and demands of BoSs and PRCs.

iii. Providing recommendations to bridge the resource IT Needs.

1.3 Scope

The capacity assessment primarily focuses on the **IT needs** of BoSs and PRCs, while also considering various other needs that may be required in the medium to long run, around 8-10 years. Four broader areas of the ITNA include:

a) **IT needs:** Equipment and staff required for data collection, data dissemination, and communication (such as equipment required for virtual or online meetings)

b) **Technical Capacity Needs**: Technical resources and equipment required for research, dissemination, and online policy dialogues.
c) **Staffing needs:** Currently available staff, approved and vacant positions, and any additional personnel that may be required by the respective organization.
d) **Training needs**, especially those related to operating software and undertaking data analysis, visualization, and policy writing.

An initial meeting was conducted with the UNFPA to establish the scope and framework for the ITNA, which was then conducted across two levels of government, federal and provincial. Three provincial BOSs and three PRCs are analyzed in Punjab, KP, and Balochistan each, along with the Pakistan Bureau of Statistics (PBS) and NUST PRC in ICT.

1.4 Methodology

The focus of this report revolves around a 360-degree assessment of the IT needs of the respective organizations. The IT needs, however, are not limited solely to equipment, rather, they further require various other supporting infrastructure. This includes relevant software and its licenses, training needed by staff to operate these systems, or onboarding of additional specialized staff. Similarly, with a growing staff, organizations' HR needs must also be brought into consideration. Hence this report expands to incorporate various dimensions that may be associated as part of broader IT needs, with an organization-wise assessment of each BoC and PRC.

The findings of this study are developed as follows: first, a semi-structured interview was conducted with heads of BOS in Balochistan, Sindh, KP, and Punjab while for PRCs these interviews were conducted with staff at all four PRCs discussed in this report. The interview sought to establish details about the type of staff, their strength, and relevant management and institutional details. We also inquired about the existing work being done, and gaps in personnel, skill sets, and technology in the delivery of current and planned future work.

For PRCs in Quetta, Peshawar, and Islamabad, the survey was conducted in person. Due to repeated scheduling conflicts in Lahore, the survey with Punjab's PRC was done over the phone. Respondents were asked to rank potential trainings in relative terms and provide justifications for their rankings, and propose equipment demands with justifications. Given the shortage of time available to us, we were not able to pilot the questionnaire, nor have we been able to conduct follow-up interviews to fill gaps between the different reports. We recommend this as a next step to improve confidence in our findings further. We then compared respective PRC plans against our assessment of best practices in data collection, storage, analysis, and dissemination. Finally, we laid out a proposed plan for training and equipment procurement.

A semi-structured survey tool was used where respondents were asked to rank potential trainings in relative terms and provide justifications for their rankings, and propose equipment demands with justifications. Consultation and focus group discussions were also conducted with the departments of respective BOS to get departmental level gaps and needs. The survey instrument, an Excel-based need assessment, was shared beforehand and respondents were asked to fill in this before in-depth interviews.

The recommendations of the ITNA are, therefore, based on i) the mandate of the respondent organization ii) information collected through, and iv) expert observation from the lead consultant of the ITNA, an IT and data expert, during visits to these organizations. Available resources were compared with the future plans of each respective organization to draw final consolidated IT and other needs. The ITNA has two layers of proposals to fill the IT Needs: a minimal proposal that would remove only the biggest bottlenecks to improvements, and a moderately more ambitious - but still realistic - proposal with a higher chance of delivering improvements in a short space of time. A brief description of the major building blocks of methodology for the ITNA is provided below.

a) Desk Review

To understand the vision, scope of work, and tasks of BoSs and PRCs, **an initial review of websites and publicly available documents was conducted.** Organizational websites and publications are critical components of this review as they provide insights into the structure, functioning, and outputs of the BoSs and PRCs.

The purpose of the desk review is multifaceted. Firstly, it aimed to gather preliminary information on the strategic vision and mission statements of the BoSs and PRCs. This helped in forming an initial understanding of their objectives and long-term goals. Secondly, the review examined the scope of work, including the range of activities undertaken by these organizations. This includes data collection methodologies, research initiatives, and analytical capabilities. Evaluating these sources allows for a pre-visit functional review of documents, ensuring that the subsequent on-site assessments are well-informed and targeted.

As part of the desk review, a draft statement of organizational responsibilities was prepared. This statement outlines the roles, responsibilities, and expected contributions of the BoSs and PRCs, based on the information gathered. To ensure accuracy and completeness, this information was verified through initial contact with representatives from the respective organizations. This verification is through direct communication through in-person meetings, emails, phone calls, or virtual meetings to confirm the details and gain further insights. Additionally, these communications are utilized to obtain any information not available on the respective organization’s website.

By conducting a thorough desk review, the groundwork was laid for i) preparing the ITNA survey tool and ii) a more focused and effective evaluation of the BoSs and PRCs. This initial step helped a lot, and the subsequent assessments and interactions were grounded in a well-rounded understanding of the organization's mandate, thereby facilitating more productive engagements and accurate evaluations.

b) Organizational Interviews and Visits:

Following the desk review, an initial point of contact was established with each organizational unit to further document institutional mandates, capacities, and needs, as well as to acquire any information not available on websites and publications. This step involved a detailed and multi-faceted approach, including department visits, in-depth interviews, and focus group discussions and consultations.

Experts and interviewers visit each organization to document the IT equipment, staffing levels, and other capacities. During these visits, a thorough assessment of the existing IT

infrastructure is conducted, including hardware, software, and network capabilities. Additionally, the visits allow for the evaluation of staff numbers, qualifications, and expertise within the organizations. This hands-on assessment helps in identifying resource gaps and understanding the current operational capabilities of each unit.

Additionally, along with the visits, **in-depth interviews with institutional heads** make up a crucial component of this ITNA. These interviews were conducted in person and focused on discussing the five dimensions outlined in the scope of the study which include:

a. organizational mandates,
b. institutional capacities,
c. current needs,
d. future requirements, and
e. priority areas for enhancement.

By engaging directly with the top leadership, the interviews provide valuable insights into the strategic vision and operational challenges faced by the organizations. Special emphasis was placed on understanding the IT needs and other capacity enhancement areas that require immediate attention. This detailed discussion helped in formulating a clear picture of what is needed to support the organization's missions effectively. Moreover, these interviews enabled the robustness of information gathered in the pre-visit review while also allowing for the bridging of any gaps that arise due to the unavailability of information on BoC and PRC websites and publications.

To gain a holistic understanding of organizational requirements, **focus group discussions and consultations with staff at the department level were also conducted**. These sessions involved engaging with various staff members to gather insights on the departmental-level challenges they face and their perspectives on the resource needs. These discussions were critical for understanding the day-to-day operational issues and identifying any special needs unique to the staff. The consultations helped in assessing the availability of resources and staff capabilities, skills, and level of training within the institutions, providing a comprehensive view of the organization's standing.

By establishing initial contact and conducting thorough assessments through department visits, in-depth interviews, and focus group discussions, a detailed understanding of the capacities and needs of each organizational unit was achieved. This multi-faceted approach ensured that all relevant information was gathered, enabling the formulation of targeted strategies and recommendations for capacity enhancement and resource allocation.

c) Survey Instrument:

Lastly, to ensure all aspects of organizational needs and capabilities are thoroughly captured, a survey approach is adopted. Findings from desk review and pre-visit engagement were integrated into the survey design. The survey was conducted using a comprehensive questionnaire divided into two main parts.

The first part of the survey focuses solely on assessing the IT equipment at the BoSs and PRCs. This includes a detailed inventory of existing equipment, such as desktop computers, laptops, and servers, as well as identifying additional equipment that needs

to be procured. By thoroughly documenting the current IT infrastructure, the survey provides a clear picture of the technological resources available and highlights any gaps that need to be addressed.

The second part of the survey addresses the broader infrastructure needed to support the IT equipment. This section evaluates the available software, including essential tools like MS Office, STATA, and MATLAB, and examines the current staffing levels and requirements. It also looks at planned initiatives for the next 1 to 3 years and identifies the IT equipment necessary for these projects. By understanding the broader context of IT infrastructure, the survey ensures that all technological needs are aligned with the organization's strategic goals.

Additionally, the survey captures the skill set and training levels of the staff. This includes skills related to survey design, data collection, cleaning, processing, dissemination, warehousing, security, research, publications, and communication. By assessing these competencies, the survey helps identify training needs and opportunities for professional development, ensuring that the staff is well-equipped to handle the organization's data and IT requirements.

The questionnaire was disseminated throughout each organization, ensuring comprehensive participation and input from all relevant stakeholders. The information entered in the survey form by respective organizations, before in-person visits for in-depth interviews, was discussed with the head of departments during the visits. This inclusive and multilayer approach helped gather diverse perspectives and ensured that the survey results were representative of the entire organization. By adopting this systematic and thorough survey approach, the assessment process provided a detailed understanding of each organization's IT Needs.

d) Expert Observations:

Experts' observations were also recorded to supplement the insights gained directly from the interviews. The IT and data expert, lead consultant of the ITNA, visited each organization in person to conduct the interviews and document observations. Noting these expert opinions allowed us for a more comprehensive understanding of the organization's current state and requirements.

The integration of these expert observations with the pre-visit review findings and insights from the interviews provides a thorough view of each organizational unit. This combined approach ensures that no significant aspect is overlooked and that both explicit and implicit needs are addressed. Additionally, it also acted as a check on a wish list in the name of needs.

e) Need Assessment

Using the thorough and multi-layered approach outlined beforehand, a detailed IT Needs is identified, by comparing the needs of an organization to its available resources. These resources analyzed include an assessment of the existing infrastructure, including IT equipment and software, and an evaluation of staffing levels, qualifications, and areas of expertise.

Additionally, it includes an analysis of current operational processes and efficiency, needs explicitly mentioned during the interviews, and those inferred from expert

observations and assessments. Any additional requirements identified from the pre-visit document review are also considered. Strategic needs for future growth, IT enhancements, staffing needs, and long-term priorities aligned with the organization's strategic vision are addressed as well.

The focus on IT and other critical areas ensures that the organizations are well-equipped to fulfill their mandates effectively and sustainably. Combining insights from institutional heads and staff forms a complete picture of organizational requirements and priorities, thereby facilitating more informed and effective decision-making. By soliciting and incorporating diverse inputs from multiple sources, including expert opinions, interview insights, and pre-visit reviews, a comprehensive and detailed IT Needs and needs assessment is achieved.

Against this information, a separate ITNA is provided for each of the BOS and PRCs. This robust assessment forms the foundation for targeted policies, which are to be presented to the stakeholders, in order to enhance the capacity and efficiency of each organizational unit, ensuring that all critical areas are addressed and that the organizations are well-equipped to meet their mandates and future challenges.

f) Underlying Considerations for IT Equipment and Trainings Recommendations

The methodology defined aforehand forms the basis of the recommendations given in this ITNA. The recommendations are then developed keeping in consideration the needs of the BOSs and PRCs over a medium-to-long-term horizon.

In terms of the IT needs and equipment suggested, we incorporate the nature of jobs at the respective organizations and a potential of handling large data sets. The advised machinery complements, supports, and enhances the capacities of the BOSs and PRCs, in line with their current areas of operation. Given that the workload of these organizations will increase in the coming years along with a rise in the flow of data, the equipment that we suggest is harmonious with the growing needs while being capable of handling large datasets and other growing IT requirements.

The longevity of these machines is a key factor in our recommendations, with a minimum 5-to-7-year operational capacity being set as a benchmark for the equipment. Similarly, the equipment we recommend is that which can also install and support the multipurpose softwares used by each organization. To ensure that the equipment does not become outdated quickly, we place focus on ensuring that any machinery recommended is up to date or is the latest version available - whichever may be appropriate for the organization in question.

For these softwares in specific, our recommendations consider the current capability and skillset of the staff that will be operating them. For BOSs and PRCs where technical skills are limited, priority is placed on essential systems, such as statistical packages, whereas in organizations that already have a strong grasp over essential software, we recommend more advanced are diverse softwares that encompass areas such as data visualization. Moreover, given the advancements in programs with the progress of time, our advisory ensures that updates in the softwares we suggest can easily be learned by the staff.

As new IT equipment and software may require additional training for staff, our recommendations for training are developed with multiple criteria in mind. Similar to the benchmarks for equipment, our first consideration is ensuring a training-job-match, that is, the training should be a supplement to the current and future needs and requirements of staff, building and strengthening their capacity in line with their roles. Secondly, the trainings are designed to be comprehensive and long-lasting with the goal of improving performance efficiency of the staff, complemented by the advised equipment and softwares.

The trainings are developed with the needs and current skills of each respective organization in mind, in order to ensure maximum productivity. Moreover, as the ITNA takes into account the future plans and demands of the BOSs and PRCs, we incorporate these plans in our trainings to enable the staff to achieve their outlined goals. Lastly, as a major focus of the trainings is to empower the staff, we place a key focus on ensuring that the staff can learn and adapt to any changes in the software and equipment that may arise in the future.

Chapter 2 - IT Needs Assessment-The Bureau of Statistics Punjab

2.1 Organization Introduction & Mandate

The Bureau of Statistics (BOS), Government of the Punjab, is the central authority for statistical data activities in the province, responsible for collecting, processing, and disseminating data through periodic publications and electronic media. As an attached department of the Planning and Development Department, Government of Punjab, BOSs standardized functions include provincial-level data collection, coordination of statistical activities, liaison with the Federal Statistical System, Pakistan Bureau of Statistics (PBS), and preparation of provincial indicators through institutional sources and surveys. Headquartered in Lahore, with nine divisional and seven district field offices, BOS ensures comprehensive data coverage across Punjab.

The primary functions of BOS include building and continuously reviewing an effective provincial statistical program to meet provincial needs within the national statistical framework. BOS reviews, coordinates, and clears statistical development and budgetary proposals of Provincial Statistical Cells, ensuring adherence to national standards in data collection, tabulation, and presentation. It identifies and eliminates duplication in provincial statistics, formulates provincial policies for adopting national recommendations, and acts as a liaison between Federal and Provincial Governments on statistical matters.

In addition to provincial data, the BOS coordinates with the Pakistan Bureau of Statistics (PBS). BOS also serves as a Secretariat for the Provincial Statistical Council, providing technical guidance and assistance to other Provincial Statistical Cells in designing and conducting censuses and surveys, data processing, and report preparation. Additionally, BOS prepares basic socio-economic indicators, issues statistical publications to disseminate information, maintains updated frames for conducting surveys and acts as the Provincial Electronic Data Processing Agency for various departments.

The Bureau compiles data from various other provincial departments and puts together industrial and price statistics, a registry of factories, land utilization and crop acreage data, health data, and an education census. It also works with UNICEF to conduct the Multiple Indicator Cluster Survey (MICS), a social indicators survey focused on women and children, at regular intervals.

The BOS in Punjab is the most highly developed in the country. In some ways, it provides a template for other provincial BOS to follow; however, it is likely to remain too large and too advanced for others to replicate fully. And yet, the Punjab BOS also has substantial room to improve in both technical and organizational aspects, as we will shortly explain.

2.2 Strong Areas

a) Primary Data Collection & Fieldwork

The BOS Punjab's strongest suit is probably Data Collection and Fieldwork. The Bureau maintains a large network of enumerators, who are overseen by a team supervisor, meet a minimum education requirement of graduation (completing high school), are selected after an interview screening process, and undergo comprehensive induction training before being finalized as part of the field data collection team.

The training they receive familiarizes them with questionnaires with the support of questionnaire manuals and provides hands-on Computer-Assisted Personal Interview (CAPI) training on BOS data entry tablets. CAPI data collection started in 2017-18 and the current team has the capacity to conduct such surveys on their own, following international best practices in data validation areas such as field checks and quality tables; however, the team itself is relatively small and vulnerable to attrition.

The binding constraint here is not a lack of additional training, but HR management: the team is small and vulnerable to attrition. Staff often prefer being moved to other departments in attachment mode, which brings additional financial allowances. BOS salaries are otherwise relatively limited. Finding ways to tackle this sustainably should be considered a high priority.

There is a significant equipment constraint for CAPI data collection also: the tablets used to collect data are Android-based and have aged. Specifically, BOS Punjab is currently using Android 4 (first released 2011) and Android 7 (first released 2016) generation tablets. These are obsolete operating systems that no longer provide security updates, creating a significant risk to any data collected using them.

However, we do not recommend purchasing more tablets at this time: purchases need to be timed to optimize usage for data collection before expected obsolescence after security updates end (which for Android typically happens in about 3 to 4 years). Moreover, the number of tablets required depends on the size of the specific surveys. Thus, tablet procurement should be done in project mode at the time a new survey is sanctioned.

b) Data Cleaning

BOS Punjab also does its own data cleaning work in-house. Staff with questionnaire training conduct the cleaning for MICS data. Logical queries are run after data has been approved by field supervisors. Survey manuals explain how to handle queries that are raised for follow-up. This work is satisfactory and of higher quality than other Bureaus covered in this study, but there is still room for further training to improve efficiency and accuracy. Both BOS and our analysis consider this a high priority, with a training priority score of 5/5.

c) Data Engineering, Including Warehousing & Security

The **C**ensus and **S**urvey **Pro**cessing System (CSPro) software package – a public domain software developed and supported by the US Census Bureau and used in more than 160 countries – is used for conducting Computer-Assisted Personal Interviews (CAPI). A synchronization Application Programming Interface (API) is used to synchronize CAPI inputs from the field with BOS servers locally.

Microsoft SQL Server Integration Services (SSIS) is used to perform Extract, Transform & Load (ETL) work, that is, extracting data from sources and enforcing data type and validity checks. BOS Punjab recognizes the need for more advanced ETL training – a consulting vendor has used open-source but more advanced tools in this area and BOS Punjab aims to build capacity to replicate this. They also plan to move from CSPro to Relational Data Base Management Systems (RDBMS) and their technical staff see this as important to reduce gaps in data security and transfer.

They have limited skills to build web portals for their data. While the Punjab Information Technology Board (PITB) assists in this function (and in data warehousing and security), BOS seeks advanced training in web dashboard design and execution and would benefit from Microsoft Professional Developer Certification, or from Coursera or Udemy subscriptions that allow them to training in relevant technologies like C# and ASP.net.

In sum, their data processing capability is satisfactory, and BOS Punjab now seeks to push into more refined and robust data engineering. That is, the organization can handle stand-alone datasets competently – in terms of initial collection, cleaning, organization, and preliminary analysis – but lacks the ability to directly synchronize data collected from the field into a system that seamlessly routes the data to update outputs like dashboards and reports, among others, or flag developments in near-real-time for decision-makers. This is the natural next step for BOS Punjab but requires major skills development and process retooling to be achieved. Currently, they report having only two software developers sufficiently trained for their processes, against an estimated need for five.

2.3 Weak Points

a) Survey Design

BOS Punjab has moderate survey design skills. UNICEF provides extensive training of trainers for MICS, but the Bureau would benefit from additional training, particularly in sampling, and questionnaire & indicator development. Most of the team have academic training in statistics but have been on their jobs for – on average – about ten years. This is assessed by BOS to be a high priority (BOS score 5/5) for further training.

However, relative to other areas assigned equally high priority by BOS, we consider it second-order with an expert score of 4/5, because this training would increase the breadth of their capacities making them better able to conduct surveys without relying on UNICEF. But it is not clear how strong the demand for such work is from other arms of government. In contrast, other types of training, such as data analysis and visualization using PowerBI or Tableau, among others, would improve the quality of the work they are already conducting, and so should be prioritized. It must however be noted these trainings are not mutually exclusive and can be prioritized simultaneously.

b) Secondary Data Collection

A primary function of the Bureau of Statistics is to collect data from government departments in various areas and to validate, collate, process, and disseminate this data. Historically, this function entails BOS sending data requests through performas to various departments, which would then organize data and return it in printed form. BOS would then re-enter data and clean it, requesting error resolutions from the departments.

This has often led to significant delays and slow turnaround, and the time from data availability at the department level to publication at the provincial level is often 1.5 to 2 years. In the world of modern computing, where even two days can be considered late, this is unacceptable.

To tackle this problem, an online statistical system project executed by PITB has been underway for the last year and a half and is expected to be completed by 2025. External consultants have been hired for a baseline study evaluating 10 selected departments, and for developing online tools for implementation, with BOS input.

As things stand, data is still predominantly collected manually, and this situation needs to be monitored and addressed if present efforts fail to bear fruit. Some of the issues present need to be addressed at a level above BOS. For example, data forms need to be standardized, and data reporting requirements need to be monitored and enforced at the Department or Secretariat level.

c) Data Analysis

The Multiple Indicator Cluster Survey (MICS) is currently tabulated and analyzed using the SPSS Statistical software, and BOS Punjab has solid functional command over this and has moved towards using STATA for some functions.

They are interested in moving from stand-alone data analysis in such software to integrated analysis, visualizations, and tabulation with Tableau, or PowerBI. A course that takes an existing dataset and manipulates it in PowerBI, generating tables, analysis, and visualizations, would be very useful, both because BOS Punjab anticipates that UNICEF will eventually move MICS to that platform, and because – even lacking such a shift – PowerBI provides improved data dissemination possibilities. While more advanced training can wait, preliminary training in PowerBI is appropriate for BOS Punjab and can be used as a test case and inspiration for other, less-developed Bureaus in the future.

d) Research

The main focus of the BOS is on releasing ten regular publications. There is little research done, and report writing capacity is very low and addressed by hiring external consultants. There is no formal training in the appropriateness of different visualization types, and publication graphics design is outsourced. Therefore, short workshops in data analysis, interpretation, and visualization principles are highly needed and strongly recommended with a 5/5 score. In preceding years, an equal focus is required on writing skills and developing policy analysis and messages for a non-technical audience.

e) Data Dissemination

Like other provinces' bureaus, the Punjab BOS has weak patterns of dissemination both of raw data and insights from analysis. There are about ten regular, annual publications that the Bureau puts out. Dissemination is principally done through physical ceremonies with senior ministers presiding. Reports are distributed, principally in hard, and to a lesser degree, soft forms to academia, NGOs, senior bureaucrats, and the like. Raw data is made available to researchers on request.

The flagship report – Punjab Development Statistics – has historically been disseminated by post or by hand. Through the PITB OSSP project, this is being moved online. The Punjab BOS needs training in the tools PITB has used to build this functionality.

Common with other bureaus, report writing capacity is very weak, and little to no research is done. Reports are often written by external consultants, and the design of infographics and publications is also contracted out. A systemic series of data producer and user engagement, through producer-user workshops, is strongly recommended. This will enhance access for users to data.

2.4 IT Equipment gap assessment

Keynote: Software currently in use is almost universally pirated. Staff frequently use private machines for work.

Table 1- Punjab IT Equipment recommendations and specifications

S.No	Items	Quantities Requested	Expert Assessment	Specifications	Approximate price per unit(Exclusive of taxes) (PEMRA Rules may Apply)
1	**Desktop Computers**	8	All 14 DG, Director, and Deputy Director posts at BOS Punjab HQ in Lahore need better primary machines. We recommend a split of 8 desktops and 6 laptops, but this is indicative and can be adjusted as per availability of funds.	**Dell OptiPlex 7010 Tower Computer** 13th Generation Intel® Core™ i7-13700 vPro® (30 MB cache, 16 cores, 24 threads, 2.40 GHz to 5.20 GHz, 65 W) M.2 2280, 1 TB, PCIe NVMe Gen4 x4, SSD, Class 40 16 GB, 1 x 16 GB, DDR4, 3200 MT/s, single channel Integrated Graphics: Intel UHD Graphics 770 Front USB Ports: 2x USB 3.2 Type-A Gen 2 (5 Gbps), 2x USB 2.0 Type-A Rear USB Ports: 2x USB 3.2 Type-A Gen 2, 2x USB 2.0 Type-A with Smart Power On, USB Type C (10Gbps) Ethernet: RJ-45 10/100/1000 Mbps Wi-Fi: USB AC WIFI Bluetooth: 4.2 Combo Dongle Audio: Internal Speakers	**260,000/-**

				Audio Ports: 1x Universal Headphone Jack, 1x Line-out jack Optical Drive: 8x DVD±RW, Slimline 9.5 mm Power Supply: 180W Includes: USB Mouse, USB Keyboard, Power Cable, WiFi/BT Dongle **Operating System:** Windows 11 Professional	
2	**Laptops**	21	15 laptops recommended for Field Formation Deputy and Assistant Directors. 6 laptops for HQ as described above (1)	**Lenovo ThinkPad T14 Gen 5 Intel Core Ultra 7 155U 14th Gen** Processor: Intel® Core™ Ultra 7 155U, 12C (2P + 8E + 2LPE) / 14T, Max Turbo up to 4.8GHz, 12MB NPU: Intel® AI Boost integrated in Intel Core™ Ultra processor Graphics: Integrated Intel® Graphics Chipset: Intel® SoC Platform Memory: 1x 16GB SO-DIMM DDR5-5600 Storage: 1TB SSD M.2 2280 PCIe® 4.0×4 NVMe® Opal 2.0 Audio Chip: High Definition (HD) Audio, Realtek® ALC3287 codec Speakers: Stereo speakers, 2W x2, Dolby Audio™ Camera: 5.0MP + IR Discrete with Privacy Shutter Microphone: 2x, 360° Battery: Integrated 52.5Wh Power Adapter: 65W USB-C® (3-pin)	**445,000/-**

				Display: 14" WUXGA (1920×1200) IPS 400nits Anti-glare, 45% NTSC, 60Hz, DBEF5 Touchscreen: None Keyboard: Backlit, US english keyboard layout Case Color: Black Weight Starting at 1.38 kg (3.05 lbs) Ethernet: 100/1000M (RJ-45) WLAN + Bluetooth: Intel® Wi-Fi® 6E AX211, 11ax 2×2 + BT5.3 Standard Ports: • 1x USB-A (USB 5Gbps / USB 3.2 Gen 1) • 1x USB-A (USB 5Gbps / USB 3.2 Gen 1), Always On • 2x USB-C® (Thunderbolt™ 4 / USB4® 40Gbps), with USB PD 3.0 and DisplayPort™ 2.1 • 1x HDMI® 2.1, up to 4K/60Hz • 1x Headphone / microphone combo jack (3.5mm) • 1x Ethernet (RJ-45) Security Chip Discrete TPM 2.0 Enabled Fingerprint Reader: Integrated in Power Button Base Warranty: One-year Local Warranty **Operating System: Windows® 11 Pro, English**	

3	**Tablets**	0	No number can be provided as this depends on the scale of data collection activities and sample size of the different activities. See discussion in writeup.	**N/A**	
4	**Printers/Scanners/Copiers**	3	Three printers are legitimately justified in our assessment for enhancing productivity. Any number between 1 and 3 is acceptable based on Availability of resources The larger the number, the better for the organization.	**Model: BP-50M45** **Make: SHARP** PRINTER, COPIER, SCANNER, NETWORK PRINTER, NETWORK SCANNER, DUPLEXING, RADF, WiFi Type Console Copy Speed Max. 45 CPM Process Laser Electrostatics Control panel display 10.1 Inch Original paper size Max. A3 (11" x 17") A5 / A3 Continuous copy 1 - 9999 countdown interrupting Capability copies Paper Capacity 1200 sheets (Two trays 550 sheets +100 sheets multi-bypass feeder) Memory 5 GB (copy/print shared) Solid State Drive 128 GB, Resolution (Scan) AE: 600 x 600 dpi (default) Photo: 600 x 600 dpi (Print) 600 dpi	**1,400,000/-**

				Gradation 256 levels S.O.P.M Scan once print many memory Zoom range 25 to 400% Network Printer Built-in Network Scanner Built-in Duplexing Built-in RADF Built-in Connection USB 2.0 (host, high-speed), 10Base-T/100Base-TX/1000Base-T, *9Windows Server® 2012, Windows Server® 2012 R2, Windows Server® 2016, Windows Server® 2019, Windows® 8.1, Windows® 10, Mac OS 10.9, 10.10, 10.11, 10.12, 10.13, 10.14, 10.15 Network protocols TCP/IP Interface USB 2.0, USB 3.0, 10Base-T / 100Base-TX / 1000Base-T Wireless LAN wireless LAN (IEEE 802.11 b/g/n) Toner Life: 40,000 pages (at 6% coverage) Drum Life: 300,000 pages (A4 Size) With Two Extra Toners	
5	**Monitors**	14	8 as primary screens for desktop computers are strictly necessary. For 6 machines, an extra	**Display: Dell 27 4K UHD Monitor - S2721QS** Display Type: LED-backlit LCD monitor / TFT active matrix	**130,000/-**

			external monitor is requested. Secondary screens have a demonstrated positive effect on researcher productivity. These additional 6 machines are recommended on availabiltuy of funds and can be prioritixed in second stage procurement	Diagonal Size: 27" Adaptive-Sync Technology: AMD FreeSync Panel Type: IPS Aspect Ratio: 6:9 Native Resolution: 4K 3840 x 2160 at 60 Hz Pixel Pitch: 0.1554 mm Pixel Per Inch: 163 Brightness: 350 cd/m^2 Contrast Ratio: 1000:1 Colour Support: 1.07 billion colours Colour Gamut: 99% sRGB Response Time: 4 ms (grey-to-grey extreme) Horizontal Viewing Angle: 178° Vertical Viewing Angle: 178° Screen Coating: Anti-glare 3H hardness Backlight Technology: WLED	
6	**Peripherals**	N/A		**Not Required**	
7	**Storage (External hard drive, flash drive)**	17	These are secondary priority and subject to availability of funds.	**Transcend External Hard Drive 25H3 4TB USB 3.0 Portable Hard Drive** • Military-grade shock resistance • Durable shock-resistant silicone outer shell	**45,000/-**

				• One-Touch Auto Backup Button • Advanced internal hard drive suspension system	
8	**Server**	1	BOS Punjab requests a Tier 3 Data Center (with cooling and controlled access). It can be prioritized in the later stage on availabilty of funds. However, PBS Punjab will require its own data center if it moves to real time data collection (Which it is piltong at 10 departments using PT server)	**Dell PowerEdge R7625 Rack Server Specifications** Exact specifications are not possible at this stage and require followup meeting with BOS. These Meeting can be scheduled next phase once the resources are available.	
9	**Projector/External Display (TV)**	0	BOS Punjab requests 3 large LED TVs to serve as external presentation devices. In our visit, we noted that they have sufficient such devices, and the marginal value of additional such equipment was judged to be low. These can be priritized in second or third phase depending on availability of resources	**ASTOUCH** A9i8-IWB07 INTRECTIVE LED DISPLAY SCREEN 98” 8GB RAM, 64GB ROM(Android) 4K display resolution, 98” diagonal Size Pen & Finger Touch Enabled (Full Interactive) Built-in 4k Camera & Microphone , Android 12	**1,950,000/-**
10	**Audio Equipment**	0		**NA**	

11	**Back-up Power Supply**	6	We recommend providing Uninterrupted Power Supply (UPS) backup for desk top machines.	**APC Easy UPS SRV 1000VA 230V SRV1KI**	**170,000/-**
12	**Other (specify)**	Controller-based WIFI, CCTV system	Given limited resources, we rank it second order priority for ease of network access in the HQ building, and for security. This will need a comprehensive feasibility study for more details	Fortinet FortiAP 231G | 2x2 Wi-Fi 6E, Indoor Access Point - Tri radio, Internal antenna, 1 x 2.5GE & 1 x GE RJ45 ports (FAP-231G-A)	**110,000/-**
13	**Software**	Firewall Microsoft Defender)		FortiGate-101F Hardware plus 5 Year 24x7 FortiCare and FortiGuard Unified Threat Protection (UTP)	**2,520,000/-**

		SPSS License	The BOS needs licensed software for data security and efficiency of work. Software costs are higher and continuous over time. UNFPA needs to plan a continued source of finances. Perpetual, one-time purchases for life, is expensive and costs more than USD8000 per user. Hence not recommended.	**IBM SPSS monthly subscription** **Standard SPSS with annual renewals**	**Price estimate depends on the user requirements**
		Windows/Office 365 (will cover PowerBI)		**Microsoft 365 E5**	**USD 35.75 / user / month**
		Adobe Acrobat		**Acrobat Pro**	**USD 239.88/yr**
		Anti-virus (Server and Client)		**Kaspersky Endpoint Security for Business- Advanced** **Note: minimum 5 user's license have to purchase**	**USD 160**

2.5 Training gap assessment

Table 2 - Punjab Training Gap Assessment

Domain	Skillset	Organization Priority Ranking (5 is highest, 1 is lowest)	Expert Rating & Comments
Research Design, Data Collection & Logistics	*Surveying: Sampling & Questionnaire Design*	5	5- Improving ability to conduct novel surveys is an important medium-term goal, equally important as collecting, organizing and disseminating data already being collected.
	Research Design	3	4- Capacity to develop good research design is essential for quality research
	Reproducibility & Managing Research	1	3- Of importance when the organization's core objectives eventually widen
	Data Collection & Fieldwork	1	1 - BOS is adept at fieldwork
	Research Methods	5	4 - BOS requests DAPPS/Spectrum software basic training (for getting projection). Building the ability to conduct demographic projections is an important functionality to have. (Spectrum is a suite of policy models that help with demographic projections and other decision-making processes. Demographic Analysis and Population Projections System (DAPPS) is an interface for the Rural-Urban Projection Program of the US Census Bureau.)
	M&E and Administration	4	Important for the organization but beyond our purview

	Writing Policy Briefs	5	5 - Support in building the capacity to write briefs scored highly across all organizations surveyed.
Data Analysis	*Probability & Statistics*	1	1 - BOS Punjab has well-trained statisticians
	GIS Tools	5	4 - Important for analysis and potentially for sampling
	Data Cleaning and processing	5	5 - Very important to ensure that data cleaning and validation are done as efficiently as possible
	Exploratory Data Analysis	5	5 - Important for data interpretation and real time policy inputs to P7D and other related stakeholders.
	Machine Learning	1	1 - BOS is currently dealing with numerical and textual data; cannot process images or video now. The priority score may increase if we plan for medium to long term.
	Introduction to Data Visualization	5	5 - Important to shift BOS publications from predominantly reporting tables in print form to delivering machine readable data and careful visualizations and storytelling. This is also critical to promote data culture in province/country.
Data Engineering	*Building data products (R-Shiny/Tableau/PowerBI)*	5	5 - Being able to develop data dashboards would significantly enhance the value BOS brings to the Gov of Punjab and citizens
	Statistical Software (specify)	5	5- Trainings requested in SPSS, STATA, PowerBI, QGIS, Spectrum, DAPPS, C#, ASP.net, MongoDB
	Data Warehousing & Security	5	5 - BOS Punjab has the willingness and capacity to improve data warehousing and security significantly

Chapter 3 – IT Needs Assessment-Bureau of Statistics KPK

3.1 Organization Introduction & Mandate

The Bureau of Statistics (BOS), Government of Khyber Pakhtunkhwa, is the central authority for statistical data activities in the province, responsible for collecting, processing, and disseminating data through periodic publications and electronic media. As an attached department of the Planning and Development Department, Government of Khyber Pakhtunkhwa, BOSs standardized functions include provincial-level data collection, coordination of statistical activities, liaison with the Federal Statistical system, and preparation of provincial indicators through institutional sources and new surveys. Headquartered in Peshawar, BOS is responsible for ensuring comprehensive data coverage across Khyber Pakhtunkhwa.

The primary functions of BOS include building and continuously reviewing an effective provincial statistical program to meet provincial needs within the national statistical framework. BOS reviews, coordinates, and clears statistical development and budgetary proposals of Provincial Statistical Cells, ensuring adherence to national standards in data collection, tabulation, and presentation. It identifies and eliminates duplication in provincial statistics, formulates provincial policies for adopting national recommendations, and acts as a liaison between Federal and Provincial Governments on statistical matters.

In addition to provincial data, the BOS coordinates with the Pakistan Bureau of Statistics (PBS). BOS also serves as a Secretariat for the Provincial Statistical Council, providing technical guidance and assistance to other Provincial Statistical Cells in designing and conducting censuses and surveys, data processing, and report preparation. Additionally, BOS prepares basic socio-economic indicators, issues statistical publications to disseminate information, maintains updated frames for conducting surveys and acts as the Provincial Electronic Data Processing Agency for various departments.

The Bureau compiles data from various other provincial departments and puts together industrial and price statistics, a registry of factories, land utilization and crop acreage data, health data, and an education census. It also works with UNICEF to conduct the Multiple Indicator Cluster Survey (MICS), a social indicators survey focused on women and children, at regular intervals.

The BOS in Khyber Pakhtunkhwa is moderately developed relative to its counterparts in other provinces. It is significantly better developed than Balochistan's BOS and significantly smaller and lacking in capacity than Punjab's, particularly in its data engineering capacity. However, BOS KP hosts the country's best public data portal. This portal was delivered by external consultants, however, and the BOS lacks the capacity to develop it further without additional support.

3.2 Strong Areas

a) Primary Data Collection & Fieldwork

BOS KP’s strongest suit in relative terms is probably Data Collection and Fieldwork. The Bureau maintains a large network of enumerators (For a recent KP Child Labor Survey in 2023, a total of 577 enumerators were recruited), who are overseen by a team supervisor, meet a minimum education requirement of graduation (completing high school), are

selected after an interview screening process, and undergo comprehensive induction training before being finalized as part of the field data collection team.

The training they receive familiarizes them with questionnaires with the support of questionnaire manuals and provides hands-on Computer-Assisted Personal Interview (CAPI) training on BOS data entry tablets, following international best practices in data validation areas such as field checks and quality tables; however, the team itself is relatively small, can benefit from further reinforcement of training and vulnerable to attrition.

BOS KP has a total sanctioned strength of 82 technical and non-technical staff, with another 41 recruited semi-permanently under project mode. UNICEF provides strong training for trainers, but BOS KP expressed a strong desire for further, more sustained training across the workflow in sampling, questionnaire and indicator development, data cleaning, and analysis.

b) Data Cleaning

Data collection apps have built-in validity checks, and data then goes to the KP Data Center hosted by the ST&IT Department. BOS KP has neither data storage nor data engineering capacity. Some surveys have an authentication layer at the supervisor level that must be checked and flagged as closed by the supervisor before being cleaned in secondary editing at Headquarters.

Data cleaning is done by staff with questionnaire training and logical checks are run using automated queries after data collection is finalized. The strength of data cleaning relies more on UNICEF or other external donor support, and less on organic capacity, but learning-by-doing experience has created sufficient rudimentary capacity to be gradually built up from.

3.3 Weak Points

a) Survey Design

BOS KP has below-average survey design skills. UNICEF provides extensive training of trainers for MICS, but as noted previously the Bureau would benefit from significant additional training, in particular in sampling, and questionnaire & indicator development. Most of the team have academic training in statistics but have been in their jobs for – on average – about ten years.

Further training would increase the breadth of their capacities, making them better able to conduct surveys without relying on UNICEF), but it isn't clear how strong the demand for such work is from other arms of government. In contrast, other types of training would improve the quality of the work they are already conducting, and so should be prioritized.

BOS KP (and BOS Balochistan) strongly noted the need for greater coordination in survey design, sampling, and survey protocols across the different provinces, to make it possible to use data thus collected for greater inter-provincial comparisons.

b) Secondary Data Collection

A primary function of the Bureau of Statistics is to collect data from government departments in various areas and to validate, collate, process, and disseminate this data.

Historically, this function entails BOS sending data requests through performas to various departments, which would then organize data and return it in printed form. BOS would then re-enter data and clean it, requesting error resolutions from the departments. This has often led to significant delays and slow turnaround, and the time from data availability at the department level to publication at the provincial level is often 1.5 to 2 years. In the world of modern computing, where even two days can be considered late, this is unacceptable.

Data forms need to be standardized, and data reporting requirements need to be monitored and enforced at the Department or Secretariat level.

c) Data Analysis

The Multiple Indicator Cluster Survey (MICS) is currently tabulated and analyzed using the SPSS Statistical software, and BOS KP has basic command over this and has moved towards using STATA for a narrow set of functions.

BOS KP seeks to consolidate this skill set, instead of moving from stand-alone data analysis in such software to integrated analysis, visualizations, and tabulation with Tableau, or PowerBI. A course that takes an existing dataset and manipulates it in PowerBI, generating tables, analysis, and visualizations, would be very useful.

d) Research

The main focus of the BOS is on releasing about ten regular publications. There is little research done, and report writing capacity is very low and addressed by hiring external consultants. There is no formal training in the appropriateness of different visualization types, and publication graphics design is outsourced.

Hence, a short workshop on data visualization principles is appropriate, but addressing other shortcomings may be impractical at this stage.

e) Data Dissemination

Like other provinces' bureaus, BOS KP has weak patterns of dissemination both of raw data and insights from analysis.

There are about ten regular, annual publications that the Bureau puts out. Dissemination is principally done through physical ceremonies with senior ministers presiding. Reports are distributed, principally in hard, and to a lesser degree, soft forms to academia, NGOs, senior bureaucrats, and the like. Raw data is made available to researchers on request.

The flagship report – Punjab Development Statistics – has historically been disseminated by post or by hand. Through the PITB OSSP project, this is being moved online. The Punjab BOS needs training in the tools PITB has used to build this functionality.

Common with other bureaus, report writing capacity is very weak, and little to no research is done. Reports are often written by external consultants, and the design of infographics and publications is also contracted out. A series of data producer-user workshops is strongly recommended.

f) Data Engineering, Including Warehousing & Security

BOS KP has minimal in-house data engineering capacity. KP's Science & Technology and Information Technology (ST&IT) department hosts a data center, and no other provincial

department in KP is allowed to host data. Thus, BOS KP routes finalized data to ST&IT for hosting and web-based dissemination. It also lacks the capacity to build its own data dashboard. PowerBI (or Tableau or R's Shiny package) is an important medium-term goal to facilitate this.

3.4 IT Equipment Gap Assessment

Software currently in use is almost universally pirated. Staff frequently use private machines for work.

Table 3 - KP IT Equipment Gap

Sr. No.	Item	Quantities Requested	Expert Assessment	Specifications	Approximate price per unit(Exclusive of taxes) (PEMRA Rules may Apply)
1	**Desktop Computers**	15	KP has 42 Technical posts in permanent/staff mode, and 28 technical posts in temporary/project mode. They require at least this number to function strongly, and the entire department have old, poorly functioning devices. They thus request 15 desktops with UPS support, and 15 laptops. This request is reasonable, and these additional machines would cover basic functionality needs. Strongly Recommended in Phase-1	**Dell OptiPlex 7000 Tower Computer** 12th Generation Intel® Core™ i9-12900 vPro® (30 MB cache, 16 cores, 24 threads, 2.40 GHz to 5.10 GHz, 65 W) M.2 2280, 1 TB, PCIe NVMe Gen4 x4, SSD, Class 40 16 GB, 1 x 16 GB, DDR4, 3200 MT/s, single channel Integrated Graphics: Intel UHD Graphics 770 Front USB Ports: 2x USB 3.2 Type-A Gen 2 (5 Gbps), 2x USB 2.0 Type-A Rear USB Ports: 2x USB 3.2 Type-A Gen 2, 2x USB 2.0 Type-A with Smart Power On, USB Type C (10Gbps) Ethernet: RJ-45 10/100/1000 Mbps	**260,000/-**

				Wi-Fi: USB AC WIFI Bluetooth: 4.2 Combo Dongle Audio: Internal Speakers Audio Ports: 1x Universal Headphone Jack, 1x Line-out jack Optical Drive: 8x DVD±RW, Slimline 9.5 mm Power Supply: 180W Includes: USB Mouse, USB Keyboard, Power Cable, WiFi/BT Dongle **Operating System:** Windows 11 Professional	
2	**Laptops**	15	See discussion above; The recommended split between desktop and laptop devices is indicative and can be adjusted according to resources availibility	**Lenovo ThinkPad T14 Gen 5 Intel Core Ultra 7 155U 14th Gen** Processor: Intel® Core™ Ultra 7 155U, 12C (2P + 8E + 2LPE) / 14T, Max Turbo up to 4.8GHz, 12MB NPU: Intel® AI Boost integrated in Intel Core™ Ultra processor Graphics: Integrated Intel® Graphics Chipset: Intel® SoC Platform Memory: 1x 16GB SO-DIMM DDR5-5600 Storage: 1TB SSD M.2 2280 PCIe® 4.0×4 NVMe® Opal 2.0 Audio Chip: High Definition (HD) Audio, Realtek® ALC3287 codec Speakers: Stereo speakers, 2W x2, Dolby Audio™ Camera: 5.0MP + IR Discrete with Privacy Shutter Microphone: 2x, 360°	**445,000/-**

				Battery: Integrated 52.5Wh Power Adapter: 65W USB-C® (3-pin) Display: 14" WUXGA (1920×1200) IPS 400nits Anti-glare, 45% NTSC, 60Hz, DBEF5 Touchscreen: None Keyboard: Backlit, US English keyboard layout Case Color: Black Weight Starting at 1.38 kg (3.05 lbs) Ethernet: 100/1000M (RJ-45) WLAN + Bluetooth: Intel® Wi-Fi® 6E AX211, 11ax 2×2 + BT5.3 Standard Ports: • 1x USB-A (USB 5Gbps / USB 3.2 Gen 1) • 1x USB-A (USB 5Gbps / USB 3.2 Gen 1), Always On • 2x USB-C® (Thunderbolt™ 4 / USB4® 40Gbps), with USB PD 3.0 and DisplayPort™ 2.1 • 1x HDMI® 2.1, up to 4K/60Hz • 1x Headphone / microphone combo jack (3.5mm) • 1x Ethernet (RJ-45) Security Chip Discrete TPM 2.0 Enabled Fingerprint Reader: Integrated in Power Button Base Warranty: One-year Local Warranty	

				Operating System: Windows® 11 Pro, Arabic / English	
3	**Tablets**	0	BOS KP requests 40 tablets for field staff to monitor enumerators with and to provide demonstrations. However, we do not recommend purchasing more tablets at this time: purchases need to be timed to optimize usage for data collection before expected obsolescence after security updates end (which for Android typically happens in about 3 to 4 years). Moreover, the number of tablets required depends on the size of the specific surveys. Thus, tablet procurement should only be done in project mode at the time a new survey is sanctioned	**N/A**	
4	**Printers/Scanners/Copiers**	3	Three printers are legitimately justified in our assessment for enhancing productivity. Any number between 1 and 3 is acceptable based on availability of funds. The larger the number, the better for the organization.	**Sharp BP-B547WD** Key features • Print, copy, Scan, Fax, File	**1,400,000/-**

			BOS KP staff were particularly emphatic in requesting this item, and so it is worth prioritizing. Can be gradually provided one printer each in next three years.	• Pages per minute: 47 B/W • Paper capacity: Std 550 Max 2350 sheets • Compact A4 Black and White MFP with space-saving inner finisher • Tiltable 7.0-inch full flat LCD colour touchscreen with easy UI mode • Fast high performance DSPF with scan speeds of up to 130ipm Multiple layers of security protect MFP and your data	
5	**Monitors**	15	For 15 machines, 15 monitors are requested (to be distributed between laptop and desktop users at BOS KP's discretion).	**Screen:** Dell 27 4K UHD Monitor - S2721QS	**130,000/-**
6	**Peripherals**	N/A	NA	**NA**	
7	**Storage (External hard drive, flash drive)**	10	Recommended	**Transcend External Hard Drive 25H3 4TB USB 3.0 Portable Hard Drive** • Military-grade shock resistance • Durable shock-resistant silicone outer shell • One-Touch Auto Backup Button Advanced internal hard drive suspension system	**45,000/-**
8	**Server**	0	N/A		

9	**Projector/External Display (TV)**	2	BOS KJP requests 2 large LED TVs to serve as external presentation devices. In our visit, we noted that they have insufficient such devices, and the marginal value of additional such equipment was judged to be high, albeit lower priority than laptops and desktops.	**Panasonic** PT-VZ580Panasonic PT-VZ580 Multimedia Projector, 5,000lms	**1,950,000/-**
10	**Audio Equipment**	0	NA	**NA**	
11	**Back-up Power Supply**	15	We recommend providing Uninterrupted Power Supply (UPS) backup for the 15 desktop machines listed above.	**APC Easy UPS SRV 1000VA 230V SRV1KI**	**170,000/-**
12	**Other (specify)**	Solar panels for HQ electrification	BOS KP Headquarters often suffers low electricity availability. Solar electrification would help raise reliability of electricity and therefore productivity if funding feasibility allows.	**We need more information and feasibility study**	**2,520,000/-**
13	**Software**	Firewall Microsoft Defender)		**Fortinet FortiGate 100E Specifications** Hardware Specifications • Firewall Throughput: 7.4 Gbps • Threat Protection Throughput: 900 Mbps • NGFW Throughput: 1.1 Gbps • IPS Throughput: 1.8 Gbps	

				• Interfaces: 14x GE RJ45 ports, 2x GE SFP ports, 2x RJ45/SFP shared media WAN ports, 1x RJ45 Management port, 1x RJ45 HA port Concurrent Sessions: 2.5 million • New Sessions per Second: 30,000 • SSL VPN Throughput: 250 Mbps • IPsec VPN Throughput: 4.3 Gbps • SSL Inspection Throughput: 900 Mbps • SSL Inspection CPS (HTTPS): 16,000 • Maximum Number of Forti Tokens: 1,000 • Power Consumption (Average/Maximum): 37 W / 45 W • Form Factor: Desktop Included Licensing and Subscriptions: • FortiGuard Security Services: • Web Filtering, Antivirus, Intrusion Prevention, Application Control, Advanced Threat Protection (sandboxing), FortiCare • Support: 24x7 Support	
		SPSS License	All of these software requests are legitimate and recommended. Perpetual, one-time purchases for life, is expensive and costs more	**IBM SPSS monthly subscription** **Standard SPSS with annual renewals**	**Price estimate depends on the user requirements**

			than USD8000 per user. Hence not recommended.		
		STATA License		**STATA SE-18 (5 User)/year**	**USD2300**
		Windows/Office 365 (will cover PowerBI)		**Microsoft 365 E5**	**USD 35.75 / user / month**
		Adobe Acrobat		**Acrobat Pro**	**USD 239.88/yr**
		Anti-virus (Server and Client)		**Kaspersky Endpoint Security for Business - Advanced Middle East Edition**	**USD 160**

3.5 Training Gap Assessment

Table 4 - KP Training Gap Assessment

Domain	Skillset	Organization Priority Ranking (5 is highest, 1 is lowest)	Expert Rating & Comments
Research Design, Data Collection & Logistics	*Surveying: Sampling & Questionnaire Design*	5	5 - Improving ability to conduct novel surveys is an important medium-term goal. BOS KP needs this more than BOS Punjab.
	Research Design	1	4- Capacity to develop good research design is essential for quality research
	Reproducibility & Managing Research	1	1 – See above
	Data Collection & Fieldwork	1	2 - BOS KP is adept at fieldwork
	Research Methods	2	3 - BOS KP sees value in training for sampling and survey design but understands that this is not a priority now relative to its other needs.
	M&E and Administration	3	Important for the organization but beyond our purview
	Writing Policy Briefs	3	5 - Support in building the capacity to write briefs scored highly across all organizations surveyed.
Data Analysis	*Probability & Statistics*	4	4 - BOS KP has statisticians who would benefit from refresher courses in statistics, especially if embedded into analysis software training
	GIS Tools	1	1 – Not a priority relative to other needs

	Data Cleaning and processing	4	5 - Very important to ensure that data cleaning and validation are done as efficiently as possible
	Exploratory Data Analysis	5	5 - Important for interpretation
	Machine Learning	1	1 – If available, BOS KP requests a one-day orientation, but this is more out of curiosity than an expectation of being able to apply it currently.
	Introduction to Data Visualization	5	5 - Important to shift BOS publications from predominantly reporting tables in print form to delivering machine readable data and careful visualizations
Data Engineering	*Building data products (R-Shiny/Tableau/PowerBI)*	4	5 - Being able to develop data dashboards would significantly enhance the value BOS brings to the Gov of KP and citizens; It would also improve BOS KP's ability to oversee work on the KP Data Portal. However, this is lower priority than strengthening more basic data analysis and visualization skills, as the BOS KP ranking reflects.
	Statistical Software (specify)	5	5- Trainings requested in SPSS (ideally hands-on training using MICS data), STATA and PowerBI. SPSS training is BOS KP's top priority, and of these, PowerBI is their lowest priority, but they still emphasize that it remains necessary.
	Data Warehousing & Security	2	2 - BOS KP would benefit from learning better protocols for data security, but their data is hosted and secured by the ST&IT department, and so they do not need significant capacity in this area at this time.

Chapter 4 – IT Needs Assessment-Bureau of Statistics Balochistan

4.1 Organization Introduction & Mandate

The Bureau of Statistics (BOS), Government of Balochistan, is the central authority for statistical data activities in the province, responsible for collecting, processing, and disseminating data through periodic publications and electronic media. As an attached department of the Planning and Development Department, Government of Balochistan, BOSs standardized functions include provincial-level data collection, coordination of statistical activities, liaison with the Federal Statistical system, and preparation of provincial indicators through institutional sources and new surveys. Headquartered in Quetta, BOS is responsible for ensuring comprehensive data coverage across Balochistan.

The primary functions of BOS include building and continuously reviewing an effective provincial statistical program to meet provincial needs within the national statistical framework. BOS reviews, coordinates, and clears statistical development and budgetary proposals of Provincial Statistical Cells, ensuring adherence to national standards in data collection, tabulation, and presentation. It identifies and eliminates duplication in provincial statistics, formulates provincial policies for adopting national recommendations, and acts as a liaison between Federal and Provincial Governments on statistical matters.

In addition to provincial data, the BOS coordinates with the Pakistan Bureau of Statistics (PBS). BOS also serves as a Secretariat for the Provincial Statistical Council, providing technical guidance and assistance to other Provincial Statistical Cells in designing and conducting censuses and surveys, data processing, and report preparation.

Additionally, BOS prepares basic socio-economic indicators, issues statistical publications to disseminate information, maintains updated frames for conducting surveys and acts as the Provincial Electronic Data Processing Agency for various departments. The Bureau compiles data from various other provincial departments and puts together industrial and price statistics, a registry of factories, land utilization and crop acreage data, health data, and an education census. It also works with UNICEF to conduct the Multiple Indicator Cluster Survey (MICS), a social indicators survey focused on women and children, at regular intervals.

The BOS in Balochistan is the least developed in the country. Unlike its counterpart Bureaus in other provinces, it lacks its building, and most of its posts, including the top two positions, are not filled. The Balochistan Planning & Development Department oversees BOS Balochistan, and officers are seconded to serve statistical functions in part-time roles. There are some well-trained and earnest officers assigned to conduct its affairs, but the Bureau's output and capacity lags that of the Bureaus in KP and Punjab by a large margin. There are also Balochistan-specific issues to consider: most of the province is administered by Levies, and the province is administratively divided between A areas and B areas – government officers cannot work freely in the latter. As a result of these complications, the intervention for BOS Balochistan must focus on strengthening basic functions.

Following our meetings with the Secretary and Minister of Planning and Development (P&D), and the ongoing concern that the Balochistan Bureau does not function

effectively in practice, P&D Balochistan has appointed a Chief Section Officer as Acting Director General of the Bureau. Previously, this role was managed by a data analyst. Chief Minister Balochistan, and particularly Minister for P&D, Zahoor Ahmed Buledi, have asked that UNFPA and SDPI undertake a restructuring of the Balochistan BOS. The Minister has assured full support from P&D and associated offices for this initiative.

4.2 Strong Areas

a) Secondary Data Collection

BOS Balochistan has a significantly lower capacity than other provincial bureaus. It collects primary data for MICS with support from UNICEF, but also – and in common with other bureaus – collects data from twenty-seven other sectors or departments of the provincial government.

While MICS data collection is underwritten by strong UNICEF support, there is relatively low capacity within BOS Balochistan to conduct its own primary surveys. Collection of secondary, administrative data is also slower and likely of poorer quality than other provinces but is still a function BOS Balochistan is conducting to completion.

BOS Balochistan has no field formation of its own. It relies on the staff of the Education, Health, and Agriculture Departments to share data. These staff are not well-trained, nor audited for performance, and face the hardest security context in Pakistan. Data is typically shared in printed form and often has discrepancies that BOS Balochistan needs to follow up on for corrections. Line department counterparts are often not data literate, and the process of collecting and validating data can often take years. The final data has questionable reliability.

There may be some potential for BOS Balochistan to eventually adopt the processes of other provinces (such as the effort BOS Punjab is making to 'plug' line departments' information systems directly into data collation systems, but this will take years before it is technologically feasible, and Balochistan will still face difficulties in operationalizing it.

For now, the most feasible medium-term target appears to be improving data cleaning abilities and creating better visibility of data demands for senior bureaucracy, in order for line departments to be pushed to become more efficient at sharing this data with BOS Balochistan.

4.3 Weak Points

a) Survey Design

BOS Balochistan lacks capacity in the full spectrum of survey collection capacities, from survey design to writing PC-1 to PC-5 administrative feasibilities and reports, to geolocation data, monitoring and evaluation, and the various functions explained in further detail elsewhere in this document. This does not appear to be a major priority to facilitate at the current time.

b) Primary Data Collection & Fieldwork

BOS Balochistan has no field formation, unlike Bureaus of Statistics in other provinces. While building this capacity is a useful medium-to-long-term goal, the primary focus at

this stage needs to be a stronger capacity for enabling the collection of MICS data and improving secondary data collection.

c) Data Analysis

It is crucial for BOS Balochistan to improve data analysis and visualization skills. Development Statistics of Balochistan, a key publication of the Bureau, merely reports data tables in printed (hard copy) form, making any analysis near impossible. This publication used to have figures until a few years ago when capacity was attired as more skilled personnel were lost.

To revive this, a longer training workshop (ideally of at least two weeks) that runs BOS Balochistan through the various steps of data cleaning and validation, tabulation, running queries, and building graphical outputs would be useful, ideally using SPSS software and based on MICS data. As a secondary goal, STATA and R familiarity should also be built.

BOS Balochistan has specifically requested substantially longer training than their usual experience of 3-day workshops. For learning outcomes to be met and to facilitate retention, we concur that significantly longer trainings are crucial. This may be the single most important intervention possible here. Given very poor capacities in multiple dimensions, BOS Balochistan may be provided a separate training for these two weeks, in addition to combined data analysis, interpretation, and visualization training.

d) Data Cleaning

BOS Balochistan needs to do its own data cleaning work in-house. In other provinces, staff with questionnaire training conduct the cleaning for MICS data. Logical queries are run after data has been approved by field supervisors. Survey manuals explain how to handle queries that are raised for follow-up. For BOS Balochistan to replicate this, they need applied training in the use of SPSS to manage the cleaning of MICS data. They currently only have Microsoft Excel capabilities in-house, and this is an urgent requirement to meet.

e) Data Engineering, including Warehousing & Security

BOS Balochistan has no data engineering capacity at the moment, and more advanced objectives like creating and maintaining an efficient data collection pipeline may have to be delayed for the long term. Planning & Development Department Balochistan already has an excellent server procured that BOS Balochistan can use to host data. However, technical support for warehousing and in particular data security will realistically have to be provided by external resources.

f) Research

No detailed policy notes or research publications are being produced. Report writing capacity is very low. There is no formal training in the appropriateness of different visualization types. Therefore, a short workshop on data visualization principles is appropriate.

g) Data Dissemination

Like other provinces' bureaus, the Balochistan BOS has weak patterns of dissemination both of raw data and insights from analysis.

There are about four regular, annual publications that the Bureau puts out. Dissemination is principally done through physical ceremonies with senior ministers presiding. Reports are distributed, principally in hard, and to a lesser degree, soft forms to academia, NGOs, senior bureaucrats, and the like. Only one hundred copies of data in hard copy form are published. A new website has been developed but not operationalized because senior bureaucrats need to sign off on its release and have not done so for months.

Unlike other provinces, which collect and disseminate some data on Industrial output, Balochistan has not been able to collect such data, because industrial firms worry about being included in the tax net. BoS Balochistan is not currently ready for data producer-user workshops. It needs to emerge and make its visibility as a trusted data producer.

4.4 IT Equipment Gap Assessment

Software currently in use is almost universally pirated. Staff frequently use private machines for work.

Table 5 - Balochistan IT Equipment Gap

Sr. No.	Item	Quantities Requested	Expert Assessment	Specifications	Approximate price per unit(Exclusive of taxes) (PEMRA Rules may Apply)
1	**Desktop Computers**	5	All 11 Director level officers at BOS Balochistan HQ in Quetta need better primary machines. We recommend a split of 5 desktops and 6 laptops, but this is indicative and can be adjusted according to availibility of resources.	**Dell OptiPlex 7000 Tower Computer** 12th Generation Intel® Core™ i9-12900 vPro® (30 MB cache, 16 cores, 24 threads, 2.40 GHz to 5.10 GHz, 65 W) M.2 2280, 1 TB, PCIe NVMe Gen4 x4, SSD, Class 40 16 GB, 1 x 16 GB, DDR4, 3200 MT/s, single channel Integrated Graphics: Intel UHD Graphics 770 Front USB Ports: 2x USB 3.2 Type-A Gen 2 (5 Gbps), 2x USB 2.0 Type-A Rear USB Ports: 2x USB 3.2 Type-A Gen 2, 2x USB 2.0 Type-A with Smart Power On, USB Type C (10Gbps) Ethernet: RJ-45 10/100/1000 Mbps Wi-Fi: USB AC WIFI Bluetooth: 4.2 Combo Dongle Audio: Internal Speakers	**260,000/-**

				Audio Ports: 1x Universal Headphone Jack, 1x Line-out jack Optical Drive: 8x DVD±RW, Slimline 9.5 mm Power Supply: 180W Includes: USB Mouse, USB Keyboard, Power Cable, WiFi/BT Dongle **Operating System:** Windows 11 Professional	
2	**Laptops**	6	6 laptops for HQ as described above	**Lenovo ThinkPad T14 Gen 5 Intel Core Ultra 7 155U 14th Gen** Processor: Intel® Core™ Ultra 7 155U, 12C (2P + 8E + 2LPE) / 14T, Max Turbo up to 4.8GHz, 12MB NPU: Intel® AI Boost integrated in Intel Core™ Ultra processor Graphics: Integrated Intel® Graphics Chipset: Intel® SoC Platform Memory: 1x 16GB SO-DIMM DDR5-5600 Storage: 1TB SSD M.2 2280 PCIe® 4.0×4 NVMe® Opal 2.0 Audio Chip: High Definition (HD) Audio, Realtek® ALC3287 codec Speakers: Stereo speakers, 2W x2, Dolby Audio™ Camera: 5.0MP + IR Discrete with Privacy Shutter Microphone: 2x, 360° Battery: Integrated 52.5Wh Power Adapter: 65W USB-C® (3-pin)	**445,000/-**

				Display: 14" WUXGA (1920×1200) IPS 400nits Anti-glare, 45% NTSC, 60Hz, DBEF5 Touchscreen: None Keyboard: Backlit, US english keyboard layout Case Color: Black Weight Starting at 1.38 kg (3.05 lbs) Ethernet: 100/1000M (RJ-45) WLAN + Bluetooth: Intel® Wi-Fi® 6E AX211, 11ax 2×2 + BT5.3 Standard Ports: • 1x USB-A (USB 5Gbps / USB 3.2 Gen 1) • 1x USB-A (USB 5Gbps / USB 3.2 Gen 1), Always On • 2x USB-C® (Thunderbolt™ 4 / USB4® 40Gbps), with USB PD 3.0 and DisplayPort™ 2.1 • 1x HDMI® 2.1, up to 4K/60Hz • 1x Headphone / microphone combo jack (3.5mm) • 1x Ethernet (RJ-45) Security Chip Discrete TPM 2.0 Enabled Fingerprint Reader: Integrated in Power Button Base Warranty: One-year Local Warranty Operating System: Windows® 11 Pro, Arabic / English	

3	**Tablets**	0	Not necessary	**N/A**	
4	**Printers/Scanners/Copiers**	3	Any number between 1 and 3 is acceptable based on availability of resources The larger the number, the better for the organization. Can be gradually provided one printer each in next three years.	**Sharp BP-B547WD** Key features • Print, copy, Scan, Fax, File • Pages per minute: 47 B/W • Paper capacity: Std 550 Max 2350 sheets • Compact A4 Black and White MFP with space-saving inner finisher • Tiltable 7.0-inch full flat LCD colour touchscreen with easy UI mode • Fast high performance DSPF with scan speeds of up to 130ipm Multiple layers of security protect MFP and your data	**1,400,000/-**
5	**Monitors**	11	5 as primary screens for desktop computers are strictly necessary.	**Screen:** Dell 27 4K UHD Monitor – S2721QS	**130,000/-**

			For 6 machines, an extra external monitor is requested. These additional 6 machines are recommended on availabiltuy of funds and can be prioritixed in second stage procurement		
6	**Peripherals**	N/A		**Not Required**	
7	**Storage (External hard drive, flash drive)**	8	Drives are recommended.	**Transcend External Hard Drive 25H3 4TB USB 3.0 Portable Hard Drive** • Military-grade shock resistance • Durable shock-resistant silicone outer shell • One-Touch Auto Backup Button Advanced internal hard drive suspension system	**45,000/-**
8	**Server**	0	NA	NA	
9	**Projector/External Display (TV)**	0	NA	NA	**1,950,000/-**
10	**Audio Equipment**	0	NA	NA	

11	**Back-up Power Supply**	5	We recommend providing Uninterrupted Power Supply (UPS) backup for listed above.	**APC Easy UPS SRV 1000VA 230V SRV1KI**	**170,000/-**
12	**Other (specify)**	NA	NA	**NA**	
13	**Software**	Firewall (e.g., Microsoft Defender)		**Fortinet FortiGate 100E Specifications** Hardware Specifications • Firewall Throughput: 7.4 Gbps • Threat Protection Throughput: 900 Mbps • NGFW Throughput: 1.1 Gbps • IPS Throughput: 1.8 Gbps • Interfaces: 14x GE RJ45 ports, 2x GE SFP ports, 2x RJ45/SFP shared media WAN ports, 1x RJ45 Management port, 1x RJ45 HA port • Concurrent Sessions: 2.5 million • New Sessions per Second: 30,000 • SSL VPN Throughput: 250 Mbps • Ipsec VPN Throughput: 4.3 Gbps • SSL Inspection Throughput: 900 Mbps • SSL Inspection CPS (HTTPS): 16,000	**2,520,000/-**

				• Maximum Number of Forti Tokens: 1,000 • Power Consumption (Average/Maximum): 37 W / 45 W • Form Factor: Desktop • Included Licensing and Subscriptions: • FortiGuard Security Services: • Web Filtering, Antivirus, Intrusion Prevention, Application Control, Advanced Threat Protection (sandboxing), FortiCare • Support: 24x7 Support	
		SPSS License	All of these software requests are legitimate and recommended. Perpetual, one-time purchases for life, is expensive and costs more than USD8000 per user. Hence not recommended.	**IBM SPSS monthly subscription** Standard SPSS with annual renewals	**Price estimate depends on the user requirements**
		Windows/Office 365 (will cover PowerBI)		**Microsoft 365 E5**	**USD 35.75 / user / month**
		Adobe Acrobat		**Acrobat Pro**	**USD239.88/yr**
		Anti-virus (Server and Client)		**Kaspersky Endpoint Security for Business – Advanced Middle East Edition**	**USD160**

4.5 Training Gap Assessment

Table 6 – Balochistan Training Gap Assessment

Domain	Skillset	Organization Priority Ranking (5 is highest, 1 is lowest)	Expert Rating & Comments
Research Design, Data Collection & Logistics	*Surveying: Sampling & Questionnaire Design*	3	4 – Improving ability to conduct novel surveys is an important medium-term goal, but secondary to improving collecting, organizing and disseminating data already being collected
	Research Design	1	4 – Necessary when novel research/surveys are conducted
	Reproducibility & Managing Research	1	1 – Of importance when the organization's core objectives eventually widen
	Data Collection & Fieldwork	3	4 – BOS needs to be adept at fieldwork
	Research Methods	1	4– Necessary
	M&E and Administration	3	3 – Important for the organization but beyond our purview
	Writing Policy Briefs	1	4- Support in building the capacity to write briefs scored highly across all organizations surveyed. However, for BOS the aim of ensuring that accurate and timely data is disseminated well must be a higher priority. BOS Balochistan produces no policy briefs currently.
Data Analysis	*Probability & Statistics*	2	2 – BOS Balochistan has trained statisticians
	GIS Tools	1	1 – Important for analysis and potentially for sampling, but not a priority for BOS Balochistan in the short to medium term

	Data Cleaning and processing	5	5 – Very important to ensure that data cleaning and validation are done as efficiently as possible
	Exploratory Data Analysis	5	5 – Crucial for interpretation to move from Excel to SPSS
	Machine Learning	1	1 – Not necessary now. BOS Balochistan is not ready for it, at this stage.
	Introduction to Data Visualization	5	5 – Important to shift BOS publications from predominantly reporting tables in print form to delivering machine readable data and careful visualizations
Data Engineering	*Building data products (R-Shiny/Tableau/PowerBI)*	5	4 – Being able to develop data dashboards would significantly enhance the value BOS brings to the Gov of Balochistan and citizens, but the Bureau is not ready for this now.
	Statistical Software (specify)	5	5- Trainings requested in SPSS, STATA and R
	Data Warehousing & Security	1	4- BOS Balochistan needs must improve data warehousing and security significantly in the medium term.

Chapter 5 – IT Needs – Pakistan Bureau of Statistics (PBS)

5.1 Organization Introduction & Mandate

The Pakistan Bureau of Statistics (PBS) is the primary institution in Pakistan responsible for the collection and dissemination of comprehensive statistics and data on various indicators ranging from economic to population and trade. The PBS ensures accurate statistical data essential for economic planning, policy formulation, and public administration. Additionally, the PBS carries out various economic surveys, including those related to agriculture, and industry, to monitor and analyze economic trends and performance. The Bureau is also responsible for compiling and publishing the national accounts, which include Gross Domestic Product (GDP) statistics and other macroeconomic indicators. Conducting major national surveys such as the Population and Housing Census and the Pakistan Social and Living Standards Measurement (PSLM) which is the main source of calculation Multi-Dimensional Poverty in the country.

The mandate of the PBS includes:

- Gathering, compiling, and analyzing statistical data across various economic sectors.
- Publishing statistical information.
- Carrying out national censuses and surveys,
- Providing statistical data to federal ministries, provincial governments, and other organizations.
- Conducting research to enhance statistical methodologies.
- Offering technical guidance and coordinating statistical efforts with other departments.
- Assessing and establishing standard concepts, definitions, and classifications for national statistical data.
- Reviewing and approving statistical projects conducted by different organizations.
- Evaluating and implementing efficient methods for statistical estimation.
- Enforcing policies set by the Ministry or Division by adapting the Statistical System of Pakistan to align with these policies.
- Facilitating the exchange of statistical data with international counterparts.

5.2 Assessed Priorities for IT Equipment

Table 7 – PBS IT Equipment Gap

SR No	Department: DP +(Data Center); Admin; Training (Wing); Business Register; PSLM; DDSS; Call Center; LFS					
	Items	**Quantities Requested**	**Specifications**	**Approximate price/unit**	**Comments**	
1	Desktop Computers	**300**	**Dell OptiPlex 7000 Tower Computer** 12th Generation Intel® Core™ i9-12900 vPro® (30 MB cache, 16 cores, 24 threads, 2.40 GHz to 5.10 GHz, 65 W) M.2 2280, 1 TB, PCIe NVMe Gen4 x4, SSD, Class 40 16 GB, 1 x 16 GB, DDR4, 3200 MT/s, single channel Integrated Graphics: Intel UHD Graphics 770 Front USB Ports: 2x USB 3.2 Type-A Gen 2 (5 Gbps), 2x USB 2.0 Type-A Rear USB Ports: 2x USB 3.2 Type-A Gen 2, 2x USB 2.0 Type-A with Smart Power On, USB Type C (10Gbps) Ethernet: RJ-45 10/100/1000 Mbps Wi-Fi: USB AC WIFI Bluetooth: 4.2 Combo Dongle Audio: Internal Speakers Audio Ports: 1x Universal Headphone Jack, 1x Line-out jack Optical Drive: 8x DVD±RW, Slimline 9.5 mm Power Supply: 180W Includes: USB Mouse, USB Keyboard, Power Cable, WiFi/BT Dongle Operating System: Windows 11 Professional	**260,000/-**		NEEDED IMMEDIATELY

2	Laptops	**100**	**Lenovo ThinkPad T14 Gen 5 Intel Core Ultra 7 155U 14th Gen** Processor: Intel® Core™ Ultra 7 155U, 12C (2P + 8E + 2LPE) / 14T, Max Turbo up to 4.8GHz, 12MB NPU: Intel® AI Boost integrated in Intel Core™ Ultra processor Graphics: Integrated Intel® Graphics Chipset: Intel® SoC Platform Memory: 1x 16GB SO-DIMM DDR5-5600 Storage: 1TB SSD M.2 2280 PCIe® 4.0×4 NVMe® Opal 2.0 Audio Chip: High Definition (HD) Audio, Realtek® ALC3287 codec Speakers: Stereo speakers, 2W x2, Dolby Audio™ Camera: 5.0MP + IR Discrete with Privacy Shutter Microphone: 2x, 360° Battery: Integrated 52.5Wh Power Adapter: 65W USB-C® (3-pin) Display: 14" WUXGA (1920×1200) IPS 400nits Anti-glare, 45% NTSC, 60Hz, DBEF5 Touchscreen: None Keyboard: Backlit, US English keyboard layout Case Color: Black Weight Starting at 1.38 kg (3.05 lbs) Ethernet: 100/1000M (RJ-45) WLAN + Bluetooth: Intel® Wi-Fi® 6E AX211, 11ax 2×2 + BT5.3 Standard Ports: 1x USB-A (USB 5Gbps / USB 3.2 Gen 1) • 1x USB-A (USB 5Gbps / USB 3.2 Gen 1), Always On • 2x USB-C® (Thunderbolt™ 4 / USB4® 40Gbps), with USB PD 3.0 and DisplayPort™ 2.1 • 1x HDMI® 2.1, up to 4K/60H • 1x Headphone / microphone combo jack (3.5mm) • 1x Ethernet (RJ-45) Security Chip Discrete TPM 2.0 Enabled	**445,000/-**		

			Fingerprint Reader: Integrated in Power Button Base Warranty: One-year Local Warranty Operating System: Windows® 11 Pro, Arabic / English			
3	LED Screens 65''	**10**	**Samsung 65" QLED 4K Q70B** Display Type: QLED (Quantum Dot LED) Screen Size: 65 inches Resolution: 4K UHD (3840 x 2160 pixels) Quantum Processor 4K: Enhances picture quality with AI upscaling Refresh Rate: 120Hz native refresh rate, ideal for smooth motion HDR Support: Quantum HDR, HDR10+, HLG (Hybrid Log-Gamma) Smart TV Platform: Tizen OS with access to various apps and streaming services Gaming Features: Motion Xcelerator Turbo+ for reduced input lag and enhanced gaming performance Connectivity: 4 HDMI ports (HDMI 2.1 supported), 2 USB ports, Wi-Fi, Bluetooth Sound: 20W speakers with Dolby Digital Plus and Object Tracking Sound Lite (OTS Lite) Design: Slim and sleek design with narrow bezels and adjustable stand Voice Assistants: Built-in support for Bixby, Alexa, and Google Assistant	**426,000/-**		
4	Neon Board	**1**	3 d fascia signage backlit mode made with acrylic letters installation on ACP sheet, light source SMD module and adapters. Only acrylic letters and logo areas glow in night	**Cost estimate varies between 3000-4500/ sq ft**	**More info needed and can be priritiozed in the secnd phase**	

5	Developer Workstations	**30**	**Customize Workstation** Processor: Core i9 13900k Colling System: Corsair H150 cooler Mother Board: Gigabyte Z790 ddr5 board Ram: Xpg 64gb DDR5 6000Mhz Samsung 980 500GB Nvme Graphic Card: GIGABYTE RTX 3080 Ti Gaming OC 12G Graphics Card, 12GB 384-Bit GDDR6X Corsair 1200 watt Fully Modular Corsair Case 1 Year All Parts Warranty	**850,000/-**		
			OR			
			Precision 3460 Small Form Factor Workstation Processor: Intel® Core™ i9 14900 (36 MB cache, 24 cores, 32 threads, up to 5.8 GHz Turbo, 65 W) Video card: NVIDIA® T1000, 4 GB GDDR6, 4 mDP to DP adapters Memory: 32 GB: 1 x 32 GB, DDR5, 5200MT/s, SO-DIMM, non-ECC Hard drive: 2 TB, M.2, Gen 4 PCIe NVMe, SSD, Class 40 Fallback color Precision 3460 SFF with 300W (80 Plus Platinum) PSU, RPL-R compatible Windows 11 Pro, English	**2600$ + Tax** **The Equipment is not available in the local market.**		

6	Developer Laptops	**30**	**Lenovo ThinkPad T14 Gen 5 Intel Core Ultra 7 155U 14th Gen** Processor: Intel® Core™ Ultra 7 155U, 12C (2P + 8E + 2LPE) / 14T, Max Turbo up to 4.8GHz, 12MB NPU: Intel® AI Boost integrated in Intel Core™ Ultra processor Graphics: Integrated Intel® Graphics Chipset: Intel® SoC Platform Memory: 1x 32GB SO-DIMM DDR5-5600 Storage: 1TB SSD M.2 2280 PCIe® 4.0×4 NVMe® Opal 2.0 Audio Chip: High Definition (HD) Audio, Realtek® ALC3287 codec Speakers: Stereo speakers, 2W x2, Dolby Audio™ Camera: 5.0MP + IR Discrete with Privacy Shutter Microphone: 2x, 360° Battery: Integrated 52.5Wh Power Adapter: 65W USB-C® (3-pin) Display: 14" WUXGA (1920×1200) IPS 400nits Anti-glare, 45% NTSC, 60Hz, DBEF5 Touchscreen: None Keyboard: Backlit, US English keyboard layout Case Color: Black Weight Starting at 1.38 kg (3.05 lbs) Ethernet: 100/1000M (RJ-45) WLAN + Bluetooth: Intel® Wi-Fi® 6E AX211, 11ax 2×2 + BT5.3 Security Chip Discrete TPM 2.0 Enabled Fingerprint Reader: Integrated in Power Button Base Warranty: One-year Local Warranty Operating System: Windows® 11 Pro, Arabic / English	**460,000/-**		
7	Touch Digital Standees	**10**	OPT-43" Touch Digital Poster	**415,000/-**		

8	Multi-Touch Interactive White Boards	**5**	ASTOUCH A9i8-IWB07 INTRECTIVE LED DISPLAY SCREEN (98'') 8GB RAM, 64GB ROM(Android) 4K display resolution, 98" diagonal Size Pen & Finger Touch Enabled (Full Interactive) Built-in 4k Camera & Microphone Android 12@1,950,000/- OPS PC Core i5 6th GEN 8GB RAM, 512GB SSD Slotable & One Touch Sw	**2,100,000/-**	**this is smart board**	

Table 8-PBS Departmental IT Needs

	Media Dept					
1	Digital Diary	80	Digital Diary or Tab, requirement is not clear			NEEDED IMMEDIATELY
2	Highend Laptop	1	**Lenovo ThinkPad T14 Gen 5 Intel Core Ultra 7 155U 14th Gen** Processor: Intel® Core™ Ultra 7 155U, 12C (2P + 8E + 2LPE) / 14T, Max Turbo up to 4.8GHz, 12MB NPU: Intel® AI Boost integrated in Intel Core™ Ultra processor Graphics: Integrated Intel® Graphics Chipset: Intel® SoC Platform Memory: 1x 32GB SO-DIMM DDR5-5600 Storage: 1TB SSD M.2 2280 PCIe® 4.0×4 NVMe® Opal 2.0 Audio Chip: High Definition (HD) Audio, Realtek® ALC3287 codec Speakers: Stereo speakers, 2W x2, Dolby Audio™ Camera: 5.0MP + IR Discrete with Privacy Shutter Microphone: 2x, 360° Battery: Integrated 52.5Wh Power Adapter: 65W USB-C® (3-pin) Display: 14" WUXGA (1920×1200) IPS 400nits Anti-glare, 45% NTSC, 60Hz, DBEF5 Touchscreen: None Keyboard: Backlit, US English keyboard layout Case Color: Black Weight Starting at 1.38 kg (3.05 lbs) Ethernet: 100/1000M (RJ-45) WLAN + Bluetooth: Intel® Wi-Fi® 6E AX211, 11ax 2×2 + BT5.3 Security Chip Discrete TPM 2.0 Enabled Fingerprint Reader: Integrated in Power Button Base Warranty: One-year Local Warranty Operating System: Windows® 11 Pro, Arabic / English	460,000/-	This is a good machine. But, PBS may be asked for their definiton of high-end	
3	Colour Printer	1	**HP Color LaserJet Enterprise HP MFP M776dn** Speed B/W 45 Pages Per Minute Speed Color 45 Pages Per Minute Resolution 600 X 600 dpi Paper Capacity Single 550 Sheet Drawer Toner Impressions B/W 16,000 Impressions Toner Impressions Color 13,000 Impressions Copier Type Office Copier	1,800,000/-		

			Color Capability Color Copier Properties Copier-Printer-Scan-fax			
4	Technical Support & Equipment for Establishment of PBS FM Radio				further info is needed	
5	Digital Cameras EOS 90D or equivalent	3	Model: Nikon Z50 Type: Mirrorless interchangeable lens camera Sensor: 20.9 MP DX-format (APS-C) CMOS sensor. Processor: EXPEED 6 image-processing engine. ISO Range: ISO 100 to 51,200 (expandable to 204,800). Autofocus System: 209-point Hybrid AF system with eye-detection AF. Video: 4K UHD recording at 30p, 25p, and 24p without crop. Full HD Video: Recording at up to 120p for slow-motion playback. Continuous Shooting: Up to 11 fps with AF/AE. Viewfinder: 2.36M-dot OLED electronic viewfinder. LCD Screen: 3.2-inch tilting touchscreen LCD with 1.04M dots. Built-in Flash: Yes, with a guide number of 7 meters at ISO 100. Connectivity: Wi-Fi and Bluetooth with SnapBridge support. Storage: Single UHS-I SD card slot. Battery: EN-EL25 rechargeable Li-ion battery. Battery Life: Approximately 300 shots per charge (CIPA rating). Body Features: Magnesium alloy front and top covers, weather sealed. Body + 16-50mm f/3.5-6.3 VR + 50-250mm f/4.5-6.3 VR Carrying Bag Flush Gun	350,000/-		NOT NEEDED IMMEDIATELY
	Printing Press Dept					
1	Digital Printer for Printing of Publications/Reports	Waiting for the items availablity and price				NEEDED IMMEDIATELY
2	Gum Binding Machine	1				NOT NEEDED IMMEDIATELY
3	Lamination Machin	1				
4	Stiching Machine	2				
5	Offset Printing Machine	1				

	Security Dept					
1	CCTV Latest System		Requirements are unclear, share the indoor and outdoor cameras quantity, area and location, location of NVR placement, power backup etc.			NEEDED IMMEDIATELY
2	Biomatric Attendance System		**ZKTeco uFace800 Dual-Mode Biometric** 800 x 480 Pixel, LCD Capacitive Touch Screen Capacity: ID Cards: 10,000 Transactions: 100,000 Face templates: 1500 Fingerprint templates: 3,000 Communications: Ethernet, Serial RS 232/RS 485, USB (host & client), Wi-Fi Power: 12V DC, 3A 12V POE injector			
3	Centralized Sound System		Requirements are not clear, where it neet to place meeting room or conference hall, sorrounding area for speakers			NOT NEEDED IMMEDIATELY
	Regional & Field Offices					
1	WAD Interactive Display	10	The requirements are unclear. We need detailed information or further discussion with the user.			NEEDED IMMEDIATELY
2	Biomatric Attendance System		**ZKTeco uFace800 Dual-Mode Biometric** 800 x 480 Pixel, LCD Capacitive Touch Screen Capacity: ID Cards: 10,000 Transactions: 100,000 Face templates: 1500 Fingerprint templates: 3,000 Communications: Ethernet, Serial RS 232/RS 485, USB (host & client), Wi-Fi Power: 12V DC, 3A 12V POE injector	70,000/-		
3	Zoom Conferencing System	2			further info is needed	NOT NEEDED IMMEDIATELY

	GIS (ALL Pakistan)					
1	Workstation PCs	50	Customize Workstation Processor: Core i9 13900k Colling System: Corsair H150 cooler Mother Board: Gigabyte Z790 ddr5 board Ram: Xpg 64gb DDR5 6000Mhz Samsung 980 500GB Nvme Graphic Card: GIGABYTE RTX 3080 Ti Gaming OC 12G Graphics Card, 12GB 384-Bit GDDR6X Corsair 1200 watt Fully Modular Corsair Case 1 Year All Parts Warranty			
2	Laptops (Storage 100 TB)	10	The requirements are unclear. We need detailed information or further discussion with the user.			
3	Batteries for UPS in GIS Labs	8	The requirements are unclear. We need detailed information or further discussion with the user.			
4	GPU Servers		The requirements are unclear. We need detailed information or further discussion with the user.			NOT IMMEDIATELY NEEDED
5	complete network infrastructure for 8 GIS Labs		The requirements are unclear. We need detailed information or further discussion with the user.			

5.3 Assessed Priorities for Software

Table 9 – PBS Software Needs

SR No	Department: DP +(Data Center); Admin; Training (Wing); Business Register; PSLM; DDSS; Call Center; LFS				
	Items		**Specifications**	**Approximate price of one unit**	
1	Software		**Quantities Requested**			IMMEDIATELY NEEDED
		Licensed Firewall		FortiGate-100F Hardware plus 3 Year FortiCare Premium and FortiGuard Unified Threat Protection (UTP)	**2,700,000/-**	
		License MS Office	**100**	Microsoft 365 E5	**$54.75 per user/per month**	
		SPSS Licenses	**10**	IBM SPSS monthly subscription. Standard SPSS with annual renewals.	**Price estimate depends on the user requirements**	
		Power BI License	**1(multi users)**	covered in MS Office 365 E5		
		Canva License	**1(multi users)**			
2	Server Class GPUs	**3**				NOT NEEDED IMMEDIATELY
3	Sangfor EndPoint Secure agent for PC	**300**				

4	Fortinet 201F 3 Year UTM Bundle	**2**			
5	ChatGPT Pro Team Version	**1**			

Table 10 – GIS Software Needs (All of Pakistan)

Sr. No.	**GIS (ALL Pakistan)**		
	Items	**Quantities Requested**	
1	Sofware	**ArcGIS Pro**	IMMEDIATELY NEEDED
2	Firewalls		NOT IMMEDIATELY NEEDED
3	complete network infrastructure for 8 GIS Labs		

5.4 Assessed Priorities for Trainings

Table 11 – PBS Training Needs

Rate the following in relevance or necessity to your unit (1 = lowest; 5 = highest need)	
Probability & Statistics	1
Survey Design	3
Data Cleaning	4
Web scraping	5
GIS Tools	5
Introduction to Data Visualization	5
Exploratory Data Analysis	3
Basics of Research Design	1
Machine Learning	5
Writing better code	2
Statistical Software	4
...(Specify: PYTHON, STATA - Data Visualization & Analysis)	5
Building data products (PowerBI/Tableau)	5
Reproducibility & Managing Research	1
Data Warehousing	4
Writing Policy Briefs	3
Making infographics	5

Consolidated Report for PRC Lahore, Quetta, Peshawar & Islamabad

6.1 Organization Introduction & Mandate

The Punjab, Balochistan, Khyber Pakhtunkhwa, and Federal Population Research Centers (PRCs) are housed at the Forman Christian College in Lahore, BUITEMS in Quetta, University of Peshawar, and at NUST in Islamabad respectively.

The PRCs are very homogenous in structure and mandate; at a very infant stage, they all consist of two to three faculty leads and a similar number of research assistants, conducting independent research in the broad domain of demography for consumption by policymakers. The PRCs are all relatively new and still in various stages of the process of establishing their work portfolios. However, all four centers studied clearly had strong statistical and research capacities and showed significant promise.

Given their homogeneity, they have similar training and equipment needs, mostly with subtle differences. We describe reported training priorities separately. The PRCs all need practically identical equipment. There are two requests for special items or support: PRC Quetta has requested additional furniture, and PRC Peshawar has requested significantly higher support to set up a dedicated lab. Both the requests have strong support from this ITNA.

More broadly and stepping away from the main purview of this report, the PRCs appear to be relatively moderately resourced in terms of human resources and finances and may be unable to deliver sustained high-quality work if they are unable to secure a greater amount of funding in the next few years.

6.2 Province-wise PRC situational summary

a) Balochistan

Balochistan's PRC is housed at BUITEMS Quetta. At the time of writing, the PRC was still in the process of being raised and lacked any equipment, full-time staff, or computing equipment. However, BUITEMS has well-managed facilities and Dr. Nabeel Ul Haq, the assigned resource we interviewed, clearly has the capacity to raise a functional unit. They foresee staffing to eventually comprise about 3 Research Associates (likely to be recruited from BUITEM postgraduates) and be led by between 1 and 2 faculty members. These faculty will need to be externally funded in order to justify their reallocation away from their routine work but will also raise research funds for specific projects from academic sources, as is routine in academia. The overall success of PRC Quetta will hinge on the retention of faculty, and whether sufficient resources are available at the PRC, including remunerating faculty and staff time.

b) Khyber Pakhtunkhwa

The Khyber Pakhtunkhwa PRC is housed at the University of Peshawar in its Statistics Department. The University is the apex educational institution of the province of Khyber Pakhtunkhwa and traces its history back to the establishment of its predecessor, Islamia College, in 1913. The Department has nine Statisticians in its full-time faculty, with eight of these trained at the PhD level. Professor Dr. Muhammad Iqbal heads the PRC, with Dr. Said Farooq Shah as his principal collaborator at the center. However, the PRC is a

resource that counts on the support of the rest of the Department and colleagues in related Departments.

As with other PRCs, there is – relative to most Bureaus of Statistics – significant quality and depth of skills in statistical analysis. In comparison to BOS KP, PRC KP has data analysis capacity that can be leveraged to help improve the province's analysis needs. However, there is a serious lack of resources. Besides the equipment needed for the research center, PRC KP requests a computer lab where statistics students can receive hands-on training. While this can be considered outside the strict purview of a PRC, I am supportive of this proposal because of the high probability of positive externalities for BOS KP and the broader mission of improving data analytics in the province's public sector.

c) Punjab

The Punjab PRC is housed at the Forman Christian College University in Lahore, with faculty drawn from the sociology and economics departments, and with expertise in criminology and gerontology. The center is staffed by four people: Dr. Vaqas Ali and Professor Jawad Tariq, along with a research assistant and an administrator. As with other PRCs, the center draws support from the broader departmental research community as well.

d) Islamabad

The Federal (Islamabad) PRC is housed in the School of Social Sciences & Humanities (S3H) at the National University of Sciences and Technology (NUST). It therefore has easy access to researchers studying, *inter alia*, economics, public policy, behavioral sciences, law, and mass communication. The center is staffed by two faculty: Dr. Faisal Abbas and Dr. Mohammad Ali, both of whom are economists, as well as by three research assistants who conduct a mix of data analysis and event management.]

6.3 Assessed Priorities for IT Equipment

All PRCs surveyed are poorly equipped. Staff often use personal devices, and most software used is unlicensed (pirated).

All four PRCs need a basic package of machines and software, as described in the table that follows. In addition, Quetta and Peshawar request additional support which is detailed further below.

Table 12 – PRC IT Equipment Needs

Sr. No.	Item	Quantities Requested per PRC	Expert Assessment	Specifications	Approximate price per unit(Exclusive of taxes) (PEMRA Rules may Apply)
1	**Desktop Computers**	3	Each PRC requires 4 or 5 computers (4 are immediately necessary, and a 5th would be useful as they start enrolling more graduate students or research associates, as is expected in the near future for all PRCs)	**Dell OptiPlex 7000 Tower Computer** 12th Generation Intel® Core™ i9-12900 vPro® (30 MB cache, 16 cores, 24 threads, 2.40 GHz to 5.10 GHz, 65 W) M.2 2280, 1 TB, PCIe NVMe Gen4 x4, SSD, Class 40 16 GB, 1 x 16 GB, DDR4, 3200 MT/s, single channel Integrated Graphics: Intel UHD Graphics 770 Front USB Ports: 2x USB 3.2 Type-A Gen 2 (5 Gbps), 2x USB 2.0 Type-A Rear USB Ports: 2x USB 3.2 Type-A Gen 2, 2x USB 2.0 Type-A with Smart Power On, USB Type C (10Gbps) Ethernet: RJ-45 10/100/1000 Mbps Wi-Fi: USB AC WIFI Bluetooth: 4.2 Combo Dongle Audio: Internal Speakers Audio Ports: 1x Universal Headphone Jack, 1x Line-out jack Optical Drive: 8x DVD±RW, Slimline 9.5 mm Power Supply: 180W Includes: USB Mouse, USB Keyboard, Power Cable, WiFi/BT Dongle Operating System: Windows 11 Professional	**260,000/-**

2	**Laptops**	2	Each PRC requested a mix of desktops and laptops. There was no strong preference for an exact mix. Desktops were seen as easier to secure in their environments, while laptops allow the flexibility to work from home and require less back up power to function. An indicative split between the two form factors of 3 and 2 is described here but can be modified as necessary.	**Lenovo ThinkPad T14 Gen 5 Intel Core Ultra 7 155U 14th Gen** Processor: Intel® Core™ Ultra 7 155U, 12C (2P + 8E + 2LPE) / 14T, Max Turbo up to 4.8GHz, 12MB NPU: Intel® AI Boost integrated in Intel Core™ Ultra processor Graphics: Integrated Intel® Graphics Chipset: Intel® SoC Platform Memory: 1x 16GB SO-DIMM DDR5-5600 Storage: 1TB SSD M.2 2280 PCIe® 4.0×4 NVMe® Opal 2.0 Audio Chip: High Definition (HD) Audio, Realtek® ALC3287 codec Speakers: Stereo speakers, 2W x2, Dolby Audio™ Camera: 5.0MP + IR Discrete with Privacy Shutter Microphone: 2x, 360° Battery: Integrated 52.5Wh Power Adapter: 65W USB-C® (3-pin) Display: 14" WUXGA (1920×1200) IPS 400nits Anti-glare, 45% NTSC, 60Hz, DBEF5 Touchscreen: None Keyboard: Backlit, US english keyboard layout Case Color: Black Weight Starting at 1.38 kg (3.05 lbs) Ethernet: 100/1000M (RJ-45) WLAN + Bluetooth: Intel® Wi-Fi® 6E AX211, 11ax 2×2 + BT5.3 Standard Ports: • 1x USB-A (USB 5Gbps / USB 3.2 Gen 1) • 1x USB-A (USB 5Gbps / USB 3.2 Gen 1), Always On • 2x USB-C® (Thunderbolt™ 4 / USB4® 40Gbps), with USB PD 3.0 and DisplayPort™ 2.1 • 1x HDMI® 2.1, up to 4K/60Hz • 1x Headphone / microphone combo jack (3.5mm) • 1x Ethernet (RJ-45) Security Chip Discrete TPM 2.0 Enable • Fingerprint Reader: Integrated in Power Button • Base Warranty: One-year Local Warranty Operating System: Windows® 11 Pro, Arabic / English	**445,000/-**

3	**Printers/Scanners/Copiers**	2	A 3-in-1 printer would help with routine office tasks as well as for printing survey questionnaires and manuals, which typically require a larger amount of printing. In addition, PRCs requested a secondary laser printer for routine printing jobs. PRC faculty typically work from their own offices, and it would be less convenient to visit the PRC site for every printing job.	**Sharp BP-B547WD** Key features • Print, copy, Scan, Fax, File • Pages per minute: 47 B/W • Paper capacity: Std 550 Max 2350 sheets • Compact A4 Black and White MFP with space-saving inner finisher • Tiltable 7.0-inch full flat LCD colour touchscreen with easy UI mode • Fast high performance DSPF with scan speeds of up to 130ipm Multiple layers of security protect MFP and your data	**1,400,000/-**
4	**Peripherals**	1	Audio Recorder (such as Zoom H1essential) for recording interviews	Sony ICD-PX470	**25,000/-**
5	**Storage (External hard drive, flash drive)**	3	Flash Drives are recommended, but not strictly necessary	**Transcend External Hard Drive 25H3 4TB USB 3.0 Portable Hard Drive** • Military-grade shock resistance • Durable shock-resistant silicone outer shell • One-Touch Auto Backup Button Advanced internal hard drive suspension system	**45,000/-**
6	**Back-up Power Supply**	1	We support providing Uninterrupted Power Supply (UPS) backup for the desktops.	One per center **APC Easy UPS SRV 1000VA 230V SRV1KI**	**170,000/-**

7	**Software**	Microsoft 365 (includes Windows OS, Office, and PowerBI) - annual subscription	All of these software requests are legitimate and recommended.	**Microsoft 365 E5**	**USD35.75 / user / month**
		Dropbox - annual subscription		3 Users per account	**Business USD 15 / user / month**
		1 Zoom license per PRC - annual subscription		Meeting + Webinar Account+ 200GB Cloud Storage	**USD1350**
		IBM SPSS		**IBM SPSS monthly subscription** Standard SPSS with annual renewals Perpetual, one-time purchases for life, is expensive and costs more than USD8000 per user. Hence not recommended.	**Price estimate depends on the user requirements**
		STATA SE (perpetual license recommended)		**STATA SE-18 (5 User)/year**	**USD2300**
		Adobe Acrobat		**Acrobat Pro**	**USD 239.88/yr**
		Anti-virus		**Kaspersky Endpoint Security for Business - Advanced Middle East Edition**	**USD160**

There are two special requests for additional equipment.

First, the PRC in Quetta will require furniture and has requested support in this. The rooms earmarked for the PRC are currently lying empty. The specific details need further consultation with BUITEMS and PRC leadership after their workspace allocations are finalized, but three workstation tables, a conference table with chairs, and appropriate shelving are likely required at a minimum.

Second, the PRC in Peshawar has requested a computer lab. This would require between 15 and 25 additional workstations of similar quality as the Core i5 machines recommended for PRCs. Ideally, it would also include refurnishing the space currently allocated to the PRC with entry control, CCTV security, and if possible, the installation of solar panels to power the lab (given Peshawar's challenges with reliable energy). The machines would need to be networked, and there would ideally be a projector installed as well.

The size of this request is as large or larger than the total project of equipping all four PRCs studied. However, the Department of Statistics at Peshawar University is a particularly worthy candidate for consideration for extra support. The Department has good faculty that can be leveraged to train a substantial number of future data scientists in a province that requires the building of this capacity. Such a lab would also encourage students to engage with demographic and public policy questions early in their careers.

6.4 Assessed Priorities for Trainings

In contrast to interviews at the Bureaus of Statistics, PRC interviews were more informal and relied on the stated preferences of a smaller number of respondents (BOS interviews were all conducted with committees). As a result, PRC feedback on trainings required more interpretation, and the numbers reported rely on an assessment of the entire conversation and not simply stated preferences.

Table 13 – PRC Training Needs

Relevance or necessity to unit (1 – lowest; 5 highest need)	Quetta	Islamabad	Lahore	Peshawar
Probability & Statistics	3	3	3	2
Survey Design	4	5	5	4
Data Cleaning	4	4	4	3
Web scraping	2	1	3	3
GIS Tools	5	4	4	4
Exploratory Data Analysis	3	2	4	3
Basics of Research Design	1	4	3	4
Reproducibility & Managing Research	3	3	3	3
Introduction to Data Visualization	3	4	4	4
Making infographics	5	5	5	5
Building data products (R/Shiny/PowerBI/Tableau)	3	5	5	5
Writing better code	1	2	3	2
Machine Learning	4	2	4	4
Data Warehousing	1	1	1	1
Policy Writing/Policy Briefs	5	5	5	5

The PRCs all expressed very strong interest in advancing their skills in data visualization, making infographics, and developing data dashboards and interactive websites to display data findings. They also expressed very strong interest in being provided support in policy writing. Finally, strong interest was expressed in enhancing their skills in Survey Design, GIS Tools, and data cleaning. Nearly every PRC expressed an interest in learning

machine learning tools, but this appeared to be more out of curiosity or general interest, and less because of a well-articulated, functional need for this training.

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